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## **Belonging, Engagement, and Growth: Evaluating Learning Outcomes of a Residential College in the Asian Context**

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## ABSTRACT

In this case study of a living-and-learning programme (LLP) in a residential college in an Asian context, we evaluated the learning outcomes related to belonging, engagement, and growth, and examined their impact on various student groups. We first situated the College within the typology of LLPs, and contextualised the learning outcomes that were important to its educational mission. Our research was guided by Astin's (1993) Input-Environment-Output model, and Strange and Banning's (2001) hierarchy of learning environment purposes. A comprehensive 199-item questionnaire was used to assess the students' perceptions of learning outcomes for two surveys conducted in 2014 (n=249) and 2015 (n=235). Our analyses showed that the means for the learning outcomes were higher in 2015 compared to 2014. There was no strong gender effect for most of the learning outcomes, except for some aspects of engagement and growth. For academic discipline, both STEM and non-STEM students benefitted in various ways from the LLP, although non-STEM students reported holding more leadership roles in both years. For year of study, students who stayed longer at the College benefitted more from the LLP. The positive effects were multi-faceted, ranging from a greater sense of belonging and leadership roles held, to higher learning outcomes related to audacity and integrity.

## INTRODUCTION

Living and learning programmes (LLPs) have been utilised at many institutions of higher learning to enhance the educational experiences of college students (Inkelas & Associates, 2007; Decarie, 2016; Hu, Hung, Ching, & Liao, 2013). LLPs have evolved from the “Oxbridge model” to many contemporary variations in the United States, Europe, and Asia (Dunn & Dean, 2013). The literature on LLPs covers the breadth and depth of the attributes and outcomes of these programmes and how they were designed to improve undergraduate education. Specifically, there have been efforts towards creating structures that enable intentional learning, establish strong intellectual and social support systems, and provide opportunities for students and faculty to connect beyond classroom spaces (Inkelas, 2008; Dunn & Dean, 2013). These efforts lead to positive outcomes in terms of increasing the sense of belonging among undergraduates, helping them to be more engaged, and to grow holistically (Inkelas, Vogt, Longerbeam, Owen, & Johnson, 2006; Hu, Ching, & Hung, 2015).

In this paper, we provide a case-study of a pioneering residential college (RC) at the National University of Singapore (NUS) that adopts a living and learning programme (hereinafter referred to as “the College”). Through its formal and informal curriculum, the College strives to create a supportive social and intellectual environment that seeks to cultivate critical thinking, nurture articulate communicators, and enable students to develop an understanding of the complexities of issues and a tolerance for uncertainty and diversity. Learning outcomes that promote a sense of belonging, encourage engagement and support growth, are emphasised in the LLP for all students of the College. The objective of this case-study is to evaluate these outcomes and examine its impact for the overall student cohort of the College.

First, we situate the College within the typology of LLPs as suggested by Inkelas (2007) and identify its unique characteristics as a residential college in the Asian context. Second, we present the theoretical framework and research methodology for this case-study. Third, we discuss the results from two surveys administered on the College’s students, and highlight the patterns of belonging, engagement, and growth across students from diverse backgrounds, including year of study (students in their first year of study up to the fifth year of study), gender (male versus female) and academic discipline (Science-based faculties versus non-Science-based faculties<sup>1</sup>). Fourth, we conclude with some lessons learnt from doing this case study.

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<sup>1</sup> Faculties here refer to schools organised by academic discipline in NUS. It does not refer to individual academic staff members.

## THE RESEARCH CONTEXT

### *Situating the College within the typology of living and learning programmes*

As a first step towards understanding how an RC in an Asian context may be similar to or different from LLPs in other parts of the world, we utilised the typology suggested by Inkelas (2007) in the content analysis of 600 LLPs in the United States. The analysis classified 41 types of LLPs under 17 broad themes. Academic staff (also known as Fellows) at the College were consulted for their opinions on how the College may fit into this typology. The consensus was that the College does not fit in any single broad theme but the programmes have considerable overlaps with the three broad categories of (a) civic and social leadership programmes, (b) general academic programmes, and (c) residential colleges. For civic and social leadership programmes, the College has a strong ethos of civic/community engagement and participation, but relatively little on political activism given the nature of the political climate in Singapore. The College can be considered a general academic programme as it admits students from multiple faculties and there is no single disciplinary theme. The students are primarily in their first and second year of study, and the College provides an environment for their academic, cultural and social pursuits during the initial formative years at the University.

Compared to the modal size of 50 students in LLPs in the United States (Inkelas, 2007), the College is a large LLP with about 600 students. It has an academic programme in place that is part of the larger overall University Town College Programme (UTCP) of NUS, which currently has three LLPs. Unlike most LLPs in the United States where 64% of the LLPs include one to three faculty members, the College has a high level of involvement from academic staff. At any one time, it has about 18 to 20 Fellows who teach, do research, supervise students in academic projects, provide student guidance and mentoring, and so on.

In addition to the categorisation above, we observed that the College as an RC is integrated within NUS's larger learning system (in terms of academic curriculum and funding). The academic courses offered in the College and other RCs are part of the General Education Modules offered in NUS's faculties, even though enrolment is only open to students staying in the RCs. As part of the integration, the College also enjoys a high level of support (both financial and otherwise) from the larger NUS administration. This is an advantage for the RCs in NUS, considering that some smaller LLPs in other countries/institutions may face resource constraints.

### ***Contextualisation of learning outcomes***

Although LLPs vary considerably in their scope of operation and influence, our review of the literature revealed key learning outcomes in some common areas such as a smooth transition to college life, a sense of belonging, academic performance in terms of retention rates and the likelihood of completing the degree, civic engagement, and personal and intellectual growth (Inkelas *et al.*, 2006). These learning outcomes are applicable to LLPs in an Asian context and also to the College, but with some contextualisation. For example, Kuh (2009) suggested that student engagement or positive involvement in educationally purposeful activities could contribute to gains on academic and social fronts. Civic engagement can be defined as citizenship aimed at social change (Tyree, 1998) and operationalised as students' attitude towards or participation in activities such as service-learning and other community-focused activities (e.g., volunteering, activism, etc). In our case study, civic engagement overlaps with the College's ethos of community engagement where students develop an awareness and understanding of the communities around them and are part of progressive social change.

Several studies have shown that LLPs play an important role in helping students adapt effectively to the university environment, whether they are first-year students (Byoun, 2016; Decarie, 2016; Stier, 2014; Purdie, 2007) or first-generation students (Inkelas, Daver, Vogt, & Leonard, 2007). For American students, going to college and leaving the familial home for good is a significant rite of passage in their transition to adulthood. This may not be the case for most Asian countries where students tend to live with their families until they get married. Thus, a smooth transition to college life has a different connotation in the Asian context. While the transition may not be as dramatic, living in an RC and participating in an LLP may provide Asian students an array of opportunities for personal growth and development. In the Singaporean context, because of the compulsory military service for males, male students are two years older than female students when they go to the university and would have had an opportunity to try out independent living in the army barracks. Thus, it is important to examine if there are any gender differences in LLPs in the Asian context. In this case study, we assess whether learning outcomes vary for male and female students.

In their comparison of residential colleges in four universities in Taiwan, Hu and colleagues (2013) noted that factors such as school type [STEM (i.e., Science Technologies Engineering Mathematics) versus non-STEM], college scale (in terms of number of students), founding concepts and specific goals, and strategies (curriculum planning and other activities) could potentially affect the effectiveness of the LLPs in these RCs. Several studies have examined the impact of LLPs specifically on STEM students and found positive outcomes such as an enhanced sense of belonging (Johnson, 2007), and increased self-reported likelihood of completing the degree (Soldner, Rowan-Kenyon, Inkelas, Garvey, & Robbins, 2012). Byoun (2016) also found that STEM students in LLPs were more engaged with various learning activities (especially active and collaborative learning, and faculty-student interaction) and were more likely to contribute to their institution upon graduation. While these studies compared STEM students in both LLPs and traditional halls of residence, our case study provides another perspective by comparing STEM versus non-STEM students within a single LLP. This inquiry is important as the LLPs in the context of NUS are multidisciplinary in their design and cater to students from many faculties.

The physical environment of Singapore introduces another interesting point of contrast between RCs in NUS/Singapore and those in other parts of the world. Being a smallish island city state, the majority of students stay at home and commute to the university every day. A minority of students (15-25%) stay on the university campus and an even smaller percentage stay in RCs with an LLP. Even for those who stay on the university campus, it is a common practice to go home during the weekends. The physical and the attendant social/emotional disengagement from home is less intense and disruptive compared to students in other countries. In light of this situation, it is important to assess the impact of RC life on a student given the limited time a student may spend in the RC. In this case study, we assess whether the year of study (e.g., second-year and older students who would have spent more time in the RC) makes a difference.

## THEORETICAL FRAMEWORK

To facilitate our analysis and interpretation of whether certain learning outcomes have been reached, we adopted and adapted Strange and Banning's (2001) hierarchy of learning environment purposes as a guiding framework. There are three levels of learning outcomes: (1) Belonging (2) Engagement, and (3) Growth (see Figure 1).

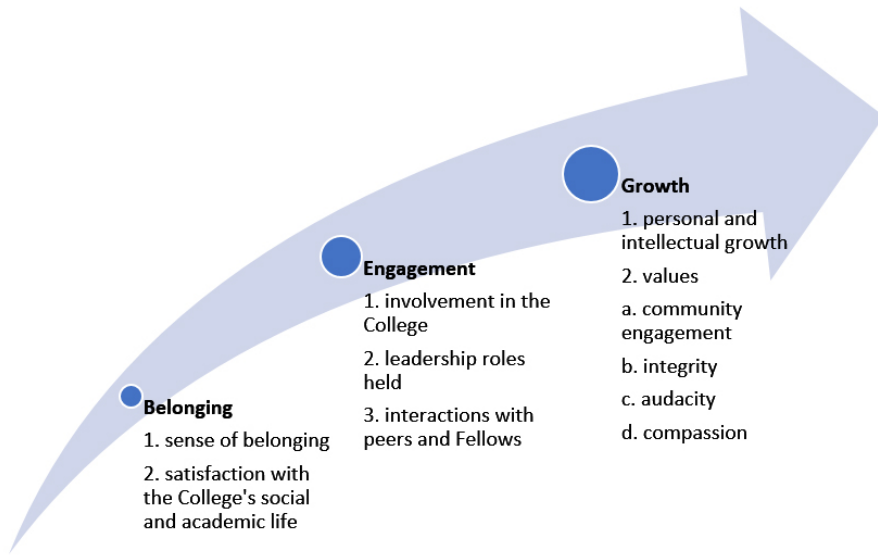


Figure 1. Three levels of learning outcomes

These three levels are aligned with Maslow's Hierarchy of Needs (Maslow, 1968), and the tiering suggests a progression towards higher order needs or outcomes once lower order needs or outcomes are met. Within each level, we list the key variables of our study that contribute to each outcome and the survey questions that were used to measure these variables (see Table 1).

Table 1  
*Three levels of analysis and the key variables for each level*

<b>Background Variables</b>	
Demographic information	Gender – male; female
College information <sup>2</sup>	Current year – first-year, second-year, third-year and older Faculty of study – STEM; non-STEM
<b>Level I Variables – Belonging</b>	
Holistic development at the College	Sense of belonging (5 items on a scale of 1 = strongly disagree, 2 = disagree, 3 = agree and 4 = strongly agree).  Overall satisfaction with the College (9 items on a scale of 1 = very dissatisfied, 2 = dissatisfied, 3 = satisfied and 4 = very satisfied)
<b>Level II Variables – Engagement</b>	
Involvement within the College	Neighbourhood events, ACE events (main community engagement group), College events, Interest groups, and College talks and workshops (measured on a scale of 1 = not at all involved, 2 = somewhat involved, 3 = involved and 4 = very involved)
Held leadership roles	Yes/No
Interactions within the College	Interactions with peers outside of class (5 items on a scale of 1 = never, 2 = a few times a semester, 3 = a few times a month and 4 = once or more a week)  Interactions with peers from different cultural and religious backgrounds (6 items on a scale of 1 = not at all, 2 = a little, 3 = a lot and 4 = all the time)  Interactions with Fellows (6 items on a scale of 1 = never, 2 = a few times a semester, 3 = a few times a month and 4 = once or more a week)
<b>Level III Variables – Growth</b>	
Holistic development at the College	Personal and intellectual growth (8 items on a scale of 1 = not grown at all, 2 = grown somewhat, 3 = grown and 4 = very much grown)  Values (measured on a scale of 1 = strongly disagree, 2 = disagree, 3 = agree and 4 = strongly agree) <ul style="list-style-type: none"> <li>➤ Community engagement (7 items)</li> <li>➤ Integrity (4 items)</li> <li>➤ Audacity (4 items)</li> <li>➤ Compassion (4 items)</li> </ul>

<sup>2</sup> The variables “Current Year” and “Faculty” have been recoded to form coherent groups.

Current year recoded to form three groups – first-year (only the first-year students); second-year (only the second-year students); and third-year and older (third-year students and students beyond the third year).

Faculty recoded to form 2 groups – all academic disciplines related to STEM (Computing; Engineering; Design and Environment; Science; Medicine; Dentistry and Pharmacy) and non-STEM (Arts and Social Sciences; Business; Law and Music).



## RESEARCH METHODOLOGY

Many studies on the evaluation of learning outcomes in LLPs have used Astin's Input-Environment-Output model (Astin, 1993) as a guiding framework (Inkelas *et al.*, 2006, 2007; Dunn & Dean, 2013). The research design of our case study also draws from this model. The evidence for this case study is based on a survey that was conducted on different cohorts of students over two academic years in the College. Most of the survey questions were informed by existing literature on LLPs (Inkelas *et al.*, 2006; Inkelas, 2007; Rowan-Kenyon, Soldner, & Inkelas, 2007; Spanierman *et al.*, 2013), and some were specifically developed for the context of the College. We also reviewed studies on learning outcomes and their measurements from various universities (e.g., University of Central Florida, Whitman College, etc.)<sup>3</sup>. This allowed us to identify the design aspects and holistic growth opportunities that characterised these types of programmes. The 199-item survey instrument included questions in the following areas: students' background and pre-College information, their prior perceptions on the importance of curricular and co-curricular involvement, their level of confidence in broad cognitive and psychosocial skills, their involvement and interactions in the College, their sense of personal and intellectual growth, sense of belonging, sense of satisfaction and their perceptions about the values of community engagement, compassion, audacity, and integrity (these values were aligned with the ethos of the College).

Considering the dynamic and evolving nature of the College, we collected data from two cohorts of students in 2014 and 2015 (at the end of the College's second and third academic years of operation respectively). We used a random sampling method with no exclusion criteria. The first survey was made available to all students of the College in May 2014. Through e-mail and two consecutive follow-up communications, all students in the College were invited to participate in the survey. Students were given a S\$10 food and beverage gift card as a token of appreciation if they completed the survey. The second survey followed the same protocol and was administered in May 2015. Students who

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<sup>3</sup> 1. University of Central Florida. Student Development and Enrolment Services. Divisional Student Learning Objectives. <http://www.sdes.ucf.edu/docs/student-learning-obj.pdf>. Accessed 24 June 2013.

2. Loyola Marymount University. Undergraduate Learning Goals and Outcomes. [http://www.lmu.edu/about/services/academicplanning/assessment/Undergraduate\\_Learning\\_Goals\\_and\\_Outcomes.htm](http://www.lmu.edu/about/services/academicplanning/assessment/Undergraduate_Learning_Goals_and_Outcomes.htm). Accessed 24 June 2013.

3. Whitman College. Assessing Residential Learning Outcomes: Key Findings from the Residence Life 2008 Quality of Life and Learning Study. <https://www.whitman.edu/Documents/Student%20Life/2008.QLLS.Final.Report.pdf>. Accessed 3 March 2013.

completed the survey were given a chance to participate in a raffle to win a S\$20 food and beverage gift card. Although students received tokens of appreciation and a chance to win a raffle prize for responding to the survey, their responses remained anonymous and confidential as their personal information were not identified in their responses. All completed surveys were assigned Survey IDs which were randomly generated; student IDs were not used at all.

### ***Sample characteristics and data analysis***

For the first survey in 2014, a total of 249 respondents (44% males and 56% females) submitted completed surveys. The majority of respondents, with a mean age of 21.49 years, were first-year (47.6%) or second-year (37.1%) students and had lived in the College for at least two semesters (48.2%). For the second survey in 2015, a total of 235 respondents (48.1% males and 51.9% females) submitted completed surveys. The majority of the respondents, with the mean age of 21.47 years, were first-year (58.3%) or second-year (31.1%) students and had lived in the College for at least two semesters (55.3%) during the time of the survey. All respondents indicated their faculty of study. There were almost equal percentages of STEM and non-STEM students in both years (2014: 48.2% non-STEM and 51.8% STEM; 2015: 49.8% non-STEM and 50.2% STEM). There were no respondents undertaking double-degree programmes.

For the data analysis, we utilised different means tests and comparisons to examine the extent to which respondents' perceptions of the belonging, engagement, and growth variables were different across the two surveys. First, the means for the entire samples of the two surveys (2014 and 2015) were tested to examine the difference in the scores as the College matured. Second, each year's data were then broken into groups based on gender, academic discipline, and year of study, and the means were compared for each group across the three levels of learning outcomes to examine any significant differences for the groups. Third, as the year of study is an important variable, we conducted factorial ANOVA to assess whether there were any significant differences between male and female students, and between students from different disciplines (STEM versus non-STEM) within each year of study. Last, correlation analyses were run between the variables from the three levels of learning outcomes to examine the relationships between belonging, engagement, and growth for both years.

### ***Limitations***

One of the limitations of this case study is that there were possible overlaps between the two samples across the two time-points. While we felt that utilising the overlapping samples allowed us to respect participants' anonymity in sharing their perceptions for the two surveys, the results could have varied slightly had we used the same sample across the two time-points. However, based on the current research design, it was not possible to perform a longitudinal analysis by tracking the responses of the same sample of students. The surveys were based on entire cohorts of students at each particular point in time.

## **RESULTS**

### ***Comparing means for key variables for 2014 and 2015***

An examination of the means for all respondents across the two years indicated that generally, students experienced a relatively strong sense of belonging, engagement and growth in both years (Table 2). Most of the means were higher in 2015 compared to 2014. At Level I, the average sense of belonging reported by students in 2015 was significantly higher than 2014. The means of the overall satisfaction with the College's social and academic life did not differ significantly across the two years. However, a closer look at the items showed that mean for "the academic support received at the College" increased significantly in 2015.

Table 2

*Means and standard deviations for key variables for 2014 and 2015*

	2014	2015
<b>Level I – Belonging</b>		
Sense of belonging	3.4 (0.52)*	3.47 (0.498)*
Overall satisfaction with the College's social life	3.19 (0.48)	3.17 (0.53)
academic life	2.98 (0.44)	2.96 (0.498)
academic support received at the College	2.97 (0.51)*	3.04 (0.54)*
<b>Level II – Engagement</b>		
Involvement in the College	2.39 (0.59)**	2.49 (0.55)**
Neighborhoods	2.64 (0.93)+	2.76 (0.89)+
ACE	1.88 (0.84)*	2 (0.897)*
Interactions		
with peers outside class	2.83 (0.67)*	2.92 (0.67)*
with peers from different religious/cultural backgrounds	2.57 (0.69)**	2.83 (0.71)**
with Fellows (academic staff)	1.91 (0.72)	1.94 (0.65)
attended social events with Fellows	1.81 (0.77)*	1.92 (0.74)*
<b>Level III – Growth</b>		
Personal and intellectual growth	2.85 (0.56)	2.97 (0.504)
Learning more about things that are new to you	3 (0.68)**	3.12 (0.68)**
Motivation to further explore ideas presented in class	2.75 (0.73)**	2.91 (0.78)**
Acquiring knowledge that is outside your core discipline	3 (0.69)**	3.16 (0.72)**
Developing your own values and ethical standards	2.86 (0.77)*	2.97 (0.78)*
Values		
Community engagement	3.19 (0.44)	3.22 (0.56)
Integrity	3.15 (0.42)**	3.29 (0.59)**
Audacity	3.1 (0.46)	3.07 (0.55)
Compassion	3.2 (0.48)	3.25 (0.46)

\*sig < 0.05 level; \*\*sig < 0.01 level; + p=0.057

At Level II, students reported more involvement within their neighbourhoods and the main student group (Active Community Engagement, or ACE) in 2015 compared to 2014. Neighbourhoods are the primary social groups for students staying at the College. The College has five neighbourhoods; each comprises 100 to 120 students staying on three consecutive floors. The ACE is the largest student group and runs many programmes and activities focused primarily on community engagement. Thus, increased engagement in these areas is a positive finding for the LLP. Further, a comparative review showed that the means for involvement in the College and interactions with peers from outside the classroom and with peers from different religious and cultural backgrounds were significantly higher in 2015 than in 2014. The average interactions with Fellows were not significantly different between 2014 and

2015. However, students reporting that they “attended social events” with Fellows had significantly gone up in 2015 from 2014. Further, the College leadership roles held in 2015 by students (60.9%) were higher than in 2014 (52.2%) (Table 3).

Table 3  
*Leadership roles held in 2014 and 2015*

	2014 (%)	2015 (%)
Yes	52.2	60.9
No	47.8	39.1

At Level III, the personal and intellectual growth was significantly higher in 2015 than 2014. Students perceived they learned more about things that were new to them; were motivated to explore ideas further; acquired knowledge outside their core disciplines; and developed their own values and ethical standards. For values, only integrity showed a significant difference in the mean scores between 2014 and 2015.

***Differences due to gender, academic discipline, and year of study***

For a closer look at the variations in the effects of the learning outcomes across the three levels, we ran another series of data analyses comparing respondents in groups based on gender, academic discipline, and year of study for 2014 and then 2015. In 2014, for gender, males were more audacious than females. For academic discipline, STEM students were more satisfied with the College’s academic life. In contrast, the non-STEM students were more involved in the College, held more leadership roles and interacted more with peers from different religious and cultural backgrounds. For year of study, the older students exhibited more audacity. Integrity as a value also varied among students from different years of study. Interestingly, unlike audacity, integrity rose for second-year students but fell for the third-year and older students (see Table 4).

Table 4  
*Significant differences between gender, academic discipline and year of study for 2014*

	Male vs Female	STEM vs Non-STEM	First-year/Second-year/Third-year and older
<b>Level I – Belonging</b>			
Sense of belonging	NSD		NSD
Overall satisfaction with the College's social life academic life		STEM {3.04(0.389)**} > Non-STEM {2.9(0.48)**}	
<b>Level II – Engagement</b>			
Leadership roles	NSD	60.8% Non-STEM > 44.2% STEM	NSD
Involvement in the College		Non-STEM {2.47(0.57)*} > STEM {2.32(0.604)*}	
Interactions with peers outside class			
with peers from different religious/cultural backgrounds		Non-STEM {2.69(0.73)**} > STEM {2.45(0.64)**}	
with Fellows (faculty members)			
<b>Level III – Growth</b>			
Personal and intellectual growth		NSD	
Values Community engagement Integrity			Second-year {3.21(0.43)*} > First-year {3.16(0.41)*} > Third-year and older {3.01(0.39)*}
Audacity	Males {3.2(0.47)**} > Females {3.02(0.43)**}		Third-year and above {3.24(0.52)*} > Second- year {3.15(0.42)*} > First- year {3.03(0.45)*}
Compassion			

\*siq at 0.05; \*\*siq at 0.01; \*siq < 0.05 level; \*\*siq < 0.01 level NSD=no significant difference

When analysed in groups based on gender, academic discipline, and year of study for 2015 (see Table 5), some significant differences were noted. For gender, males interacted more with the Fellows, while females experienced more personal and intellectual growth. Similarly, non-STEM students experienced more personal and intellectual growth than STEM students. Non-STEM students also held more leadership roles and interacted more with peers outside class, while STEM students interacted more with the Fellows. Non-STEM students were more satisfied with the College's academic life and reported higher agreement on community engagement and integrity as values. For year of study, seniority determined the leadership roles held. The senior students were more satisfied with the academic life of the College and felt a greater sense of belonging.

Table 5  
*Significant differences between gender, academic discipline and year of study for 2015*

	Male vs Female	STEM vs Non-STEM	First-year/Second-year/Third-year and older
<b>Level I – Belonging</b>			
Sense of belonging	<i>NSD</i>		Third-year and older {3.79(0.302)*} > First-year {3.41(0.59)*} > Second-year {3.403(0.61)*}
Overall satisfaction with the College's social life academic life		Non-STEM {3.03(0.39)*} > STEM {2.89(0.58)*}	Third-year and older {3.197(0.61)*} > Second-year {3.004(0.55)*} > First-year {2.902(0.44)*}
<b>Level II – Engagement</b>			
Leadership roles		72.6% Non-STEM > 50% STEM	81.8% Third-year and older > 70.6% Second-year > 52.3% First-year
Involvement in the College Interactions with peers outside class		Non-STEM {3.12(0.58)**} > STEM {2.75(0.701)**}	
with peers from different religious/cultural backgrounds		STEM {2.03(0.68)*} > non-STEM {1.84(0.61)*}	
with Fellows (academic staff)	Males {2.06(0.65)**} > Females {1.82(0.64)**}		
<b>Level III – Growth</b>			
Personal and intellectual growth	Females {3(0.51)-} > Males {2.86(0.66)-}	Non-STEM {3.04(0.52)**} > STEM {2.82(0.595)**}	<i>NSD</i>
Values Community engagement		Non-STEM {3.32(0.48)**} > STEM {3.12(0.64)**}	
Integrity		Non-STEM {3.41(0.45)**} > STEM {3.18(0.67)**}	
Audacity			
Compassion			

\*sig at 0.05; \*\*sig at 0.01; \*sig < 0.05 level; \*\*sig < 0.01 level      NSD=no significant difference

The groups based on year of study were further analysed by using factorial ANOVA to examine the interactions with gender and academic discipline across all three levels of learning outcomes for both years. The year of study is an important variable in this case study. When students were enrolled in the LLP, they were offered two years of residency. Later, if any students wanted to continue to live in the College for the third year, they applied for senior retention and went through a rigorous selection procedure. Thus, examining these interactions was important in understanding the effect of the learning outcomes on students categorised in different groups. Interestingly, the results for 2015 showed no significance at all for these interactions. The significant

differences observed were all in 2014 and for specific learning outcomes in Level III (growth) only (see Table 6).

For gender and year of study, interaction was significant for personal and intellectual growth. For first- and second-year students, females experienced more personal and intellectual growth, but the reverse was true for male students in the third-year and older. For academic discipline and year of study, interaction was significant for community engagement, audacity, and compassion. Among the first-year students, STEM students exhibited higher agreement for all three values. In contrast, among the second-year students, non-STEM students agreed more with these values. Among the third-year and older students, STEM students showed more agreement for both community engagement and compassion, but non-STEM students agreed more with audacity.

Table 6

*Significant differences between gender and academic discipline within the different years of study for 2014*

Level III – Growth	
Gender (Male vs Female)	
Personal and intellectual growth	<u>2014</u>
	Female first-year {2.89(0.48)*} > Male first-year {2.73(0.59)*}
	Female second-year {2.99(0.53)*} > Male second-year {2.89(0.61)*}
	Male third-year and older {2.91(0.64)*} > Female third-year and older {2.58(0.497)*}
Academic Discipline (STEM vs non-STEM)	
Values – Community Engagement	<u>2014</u>
	STEM first-year {3.26(0.5)*} > Non-STEM first-year {3.11(0.37)*}
	Non-STEM second-year {3.29(0.45)*} > STEM second-year {3.16(0.36)*}
Values – Audacity	<u>2014</u>
	STEM first-year {3.09(0.43)**} > Non-STEM first-year {2.96(0.47)**}
	Non-STEM second-year {3.28(0.42)**} > STEM second-year {3.03(0.39)**}
Values – Compassion	<u>2014</u>
	STEM first-year {3.28(0.46)*} > Non-STEM first-year students {3.12(0.42)*}
	Non-STEM second-year {3.26(0.44)*} > STEM second-year {3.16(0.51)*}
	STEM third-year and older {3.29(0.58)*} > non-STEM third-year and older {2.99(0.53)*}

\*sig at 0.05; \*\*sig at 0.01; \*sig < 0.05 level; \*\*sig < 0.01 level



***Bivariate correlations among belonging, engagement, and growth for 2014 and 2015***

The bivariate correlations were examined across variables from the three levels of learning outcomes. The significant associations in both 2014 and 2015 are presented in Table 7. Measures were associated with each other in the expected direction as conceptualised by the theoretical framework, and also noticeably stronger in 2015 than in 2014. A higher sense of belonging was associated with higher levels of total involvement which in turn was associated with a greater sense of personal and intellectual growth. Interactions with peers also influenced a greater sense of personal and intellectual growth. Turning to the correlations between the belonging and growth variables, both measures of belonging (sense of belonging and satisfaction with the College’s social and academic life) were positively related to personal and intellectual growth and community engagement. A sense of belonging was also strongly related to compassion.

Table 7

*Significant correlations among belonging, engagement and growth in 2014 and 2015*

Level 1 and Level 2	Belonging and Engagement					
	Total involvement					
	2014	2015				
Sense of belonging	.352**	.44**				
Level 2 and Level 3	Engagement and Growth					
	Personal and intellectual growth					
	2014	2015				
Total involvement	.318**	.332**				
Interactions with peers outside the class	.36**	.393**				
Level 1 and Level 3	Belonging and Growth					
	Personal and intellectual growth		Community engagement		Compassion	
	2014	2015	2014	2015	2014	2015
Sense of belonging	.432**	.517**	.385**	.492**	.325**	.462**
Satisfaction with the College’s social life	.433**	.612**	.448**	.497**		
academic life	.543**	.537**	.417**	.475**		

\*\*sig < 0.01 level

## DISCUSSION

This case study examined the effects of the learning outcomes across all students in the context of an RC in Asia. The findings of the study suggest that generally, belonging, engagement, and growth were higher and stronger in 2015 compared to 2014 for all respondents. This seems to indicate that as the College moved on from one academic year of operation to the next, we see some encouraging and positive results from the LLP in terms of its learning outcomes and the impact on the entire cohort of students. For instance, though the in-depth analysis of the means for respondents grouped on the basis of gender, academic discipline, and year of study revealed some significant differences in the learning outcomes within each group for 2014, there were fewer differences in 2015.

Assessing the learning outcomes for 2014 and 2015 across male and female students showed no strong gender effect for most of the learning outcomes. The few differences that existed were for engagement and growth. For instance, males were more audacious than females in 2014; males also interacted more with the Fellows in 2015. One possible explanation could be that males are usually two years older than females when they start their university education because of the period of compulsory military service in Singapore. Thus, they are more mature and confident. The gender differences for females were observed in their experience of personal and intellectual growth, where the reported means were higher than males in 2015. The lack of significant gender differences with most of the learning outcomes implies that given some time, females would be on par with the males on belonging, engagement, and growth.

More variations were observed when students were analysed in groups based on their academic discipline. Though non-STEM students had higher means for most of the learning outcomes for 2014 and 2015, these variations did not indicate any consistent pattern of differences between STEM and non-STEM students. It appeared that both STEM and non-STEM students in our study had benefitted from the LLP in the College in their unique ways. For instance, STEM students in 2014 were satisfied with the academic aspects of the LLP, and in 2015, non-STEM students indicated the same. In 2014, non-STEM students interacted more with peers from different cultural and religious backgrounds and in 2015, they interacted more with peers outside the classroom. STEM students, on the other hand, reported more interactions with Fellows in 2015. The only consistency observed between STEM versus non-STEM students in both 2014 and 2015 was in the leadership roles held. Non-STEM students reported holding more leadership roles than STEM students in both years.

This has important implications. The College, since its inception, has promoted its mission of community engagement and active citizenship by guiding and supporting student-led efforts to build relationships and work in partnership with communities and community-based institutions. The underlying objective behind this mission is to encourage students to take up leadership roles and learn the skills of a leader. Hence, it appears that non-STEM students are benefitting more from this mission. The College may need to examine the context in which this is happening and evaluate whether the perspectives of STEM students on holding leadership positions are captured and analysed.

When the respondents were analysed based on their year of study, insightful differences were observed among the three groups of students—first-year, second-year, third-year and older. It appeared that second-year as well as third-year and older students, having lived for a longer time at the College, exhibited more of the learning outcomes measured and seemed to have benefitted more from their LLP experience. Specifically, these students exhibited the values of integrity and audacity more than the first-year students in 2014. In 2015, they expressed a greater sense of belonging and satisfaction with the College's academic life. In addition, they held more leadership roles in the College. These may imply that a one-year stay at the RC might not make much of an impact on students. This interpretation is further supported by the interaction effects of the year of study and the other grouping variables of gender and academic discipline. Though there were significant differences with the interactions in 2014, there were no significant interactions in 2015. Based on the analyses, in 2014, it seemed that females in the first and second year of study experienced more personal and intellectual growth, and STEM students in the first and third year of study exhibited more of the values of community engagement and compassion. The lack of similar findings in 2015 suggested that, over time, all groups have benefitted from the LLP. As the College offers first-year students a two-year stay at the RC, we anticipate that the second year of residency will help students continue their learning journey in their second year onwards, regardless of their gender or academic discipline. However, we cannot account for other intervening factors (e.g., what they have learned and experienced at their faculties) that may have contributed to their growth.

## CONCLUSION

This case study evaluated the learning outcomes pertaining to belonging, engagement, and growth, and examined their impact on various student groups in the College. The data was collected from a comprehensive survey of two cohorts of students in 2014 and 2015. Our analyses accounted for the variations in students' perceptions of learning outcomes between 2014 and 2015 as the LLP of the College evolved. We also noted and elaborated on the significant differences due to gender, academic discipline, and year of study, including the interactions among these variables. Correlation analyses further supported the progressive connections between the three levels of learning outcomes. Our results have contributed to the collective understanding of how certain student groups have benefitted from their participation in LLPs.

Learning outcomes of LLPs are embedded in the context of the RC and the larger societal and institutional space, and their effects should be studied in context to appreciate their complexity. Belonging, engagement, and growth involve a plethora of interactions, the nature of which can be subtle and unique. As the LLP at the College continues to evolve, additional research would be needed to evaluate the various facets of the LLP and how they contribute to the learning outcomes for the students. Also, as each cohort of students leaves its own imprint on the College, it would be interesting to see if between-group differences for gender and academic discipline would cease to be significant over time.

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