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Study on Students' GPA in Open-space on Campus: A case of Kansai University

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Abstract

The university campus has provided a wide range of spaces for learning and activity to ensure that students receive an education of the highest quality. The open space on campus is usually used for extracurricular learning, rest, and places that promote communication among students. Because the location and size of the open space are different and there are other differences in the spaces, the attributes of the students who are using the space may also be different. Thus, grade point average (GPA) was used as the measurement of students' attributes in this study. The relationship between the open space and students' GPA is as follows: 1) GPA in the central part of the campus was found to be higher than that of the surrounding areas and the students' GPA tended to decrease gradually from the center to the periphery; 2) GPA in the smoking area and the open spaces containing a smoking area was lower; and 3) In areas where students from all faculties gathered, the students' GPA was higher, while in areas where students from specific faculties gathered, the students' was lower .

1. Introduction

University in Japan is defined as the educational institution that develops students' desire for learning and discovery and cultivates the right ethics and values through focusing on academic research. Thus, the university campus has provided a wide range of space for learning and activity to ensure that the students have the highest quality education. Open space on campus (e.g. courtyard, playground, square) is an inseparable part of student life on campus, in addition to teaching buildings, libraries, gymnasiums, and other educational facilities. Open space on campus is usually used for extracurricular learning, rest, and places to promote communication between students. Because the location and size of the open spaces are different and there are other differences in the spaces, attributes of the students who use these spaces may also be different.

In this study, grade point average (GPA) was used to measure the students' attributes. The results of this study support the relationship between open spaces on the campus and students' GPA.

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Pictures and graphs

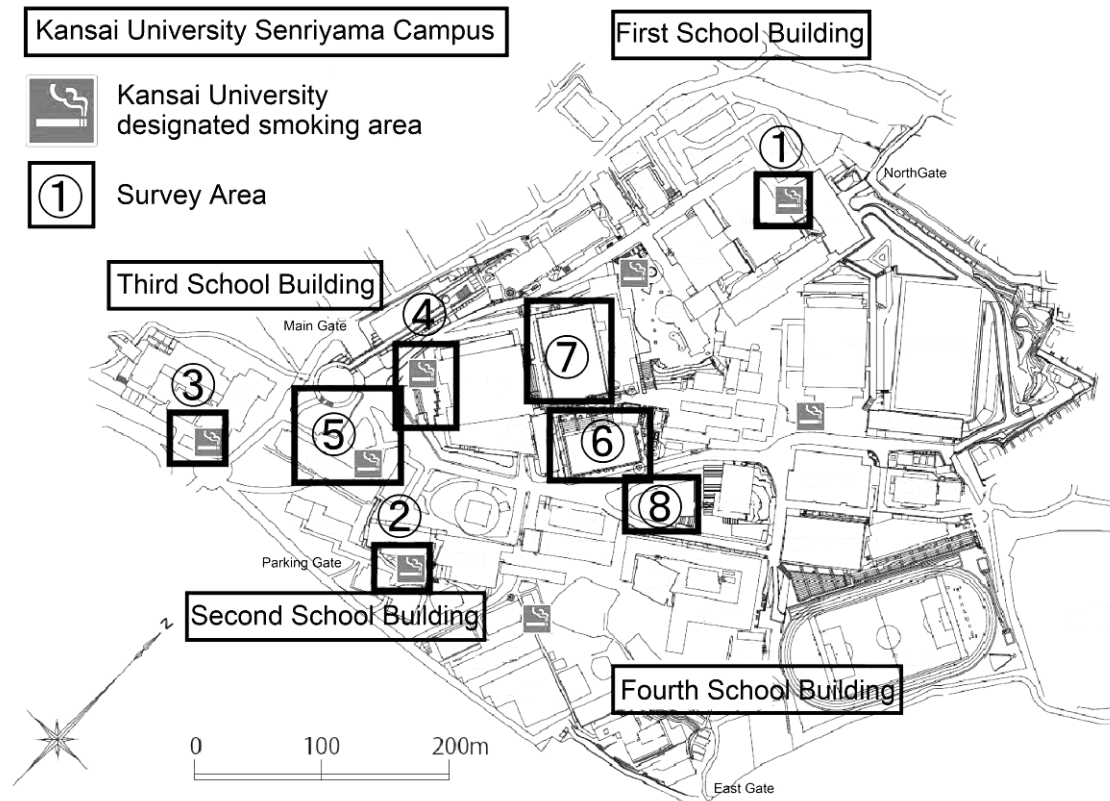


Fig 1. Senriyama Campus of Kansai University (8 survey areas)

Table 1. Selection factors of the survey area

Selection factor	The presence or absence of smoking area	The amount of student	The presence or absence of a shield	The openness of the area	The presence or absence of tables and chairs
1.Smoking area of 1st school building	○	○	○		
2.Smoking area behind the cafeteria of 2nd school building	○		△		○
3.Smoking area next to 3rd school building	○	△		○	
4.In front of the university library	△	○		○	
5.In front of the 2nd school building	△	○	○	○	○
6.YUKYU NO NIWA		○		○	
7.University library backyard			○		
8.Mediapark RINPUKAN (Commons Lounge)		○	○		△

※ △ is a place where the place including the selected factor and the place not including it are mixed.

2. Survey Outline

2.1 Survey Area

Eight survey areas were selected after a preliminary survey of the open spaces at the Senriyama Campus at Kansai University. These survey areas included the following five space characteristics: the presence or absence of a smoking area; the amount of student flow; the presence or absence of a shield; the openness of the area; and whether it was equipped with tables and chairs.

2.2 Survey Method

An observational survey and interview survey related to the GPA of students in each survey area was conducted. The observational survey investigated characteristics such as the number, gender, and behavior of the users, while the GPA-related survey investigated the students' school grades, their faculty, and their GPA. The survey target was limited to students from first-year to fourth-year. The students' GPA from the grade inquiry system was recorded and there were nine stages from less than 0.5 to 4.0. The average GPA was calculated as 0.25 for less than 0.5 and 4.0 for 4.0. If the GPA was greater than 0.5 and less than 1.0, an intermediate value was obtained and calculated as 0.75.

2.3 Survey Period

The survey was conducted nine times at each survey area, as follows: three times during class; three times during lunch break; and three times after class. Data were collected from December 17, 2018, to January 21, 2019, with the exception of rainy days and holidays.

1) Smoking area of the first school building

This smoking area is within the scope of the Faculty of Letters, the Faculty of Law, and the Faculty of Policy Studies (Fig. 2). Because it is located under the roof of adjacent buildings, it can also be used on rainy days. This area includes three ashtrays and two benches in the smoking area. Although this smoking area is very small, there were many students who used it, and people who were outside the smoking area can see the students who smoke.

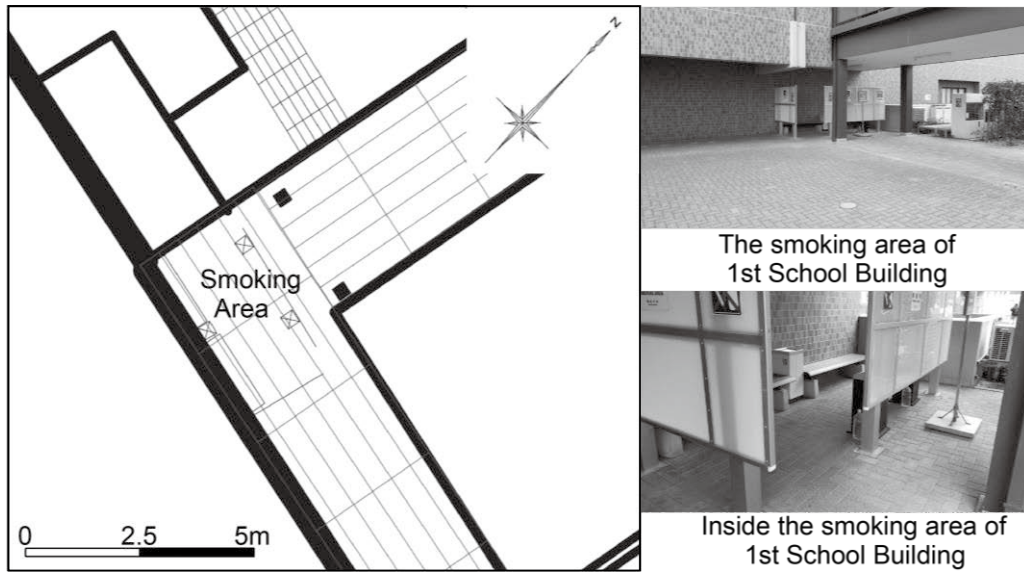


Fig 2. Smoking area of first school building

2) Smoking area behind the cafeteria of the second school building

This smoking area is adjacent to the cafeteria of Hall 2 of the second school building (Fig. 3). It is surrounded by green trees and plants, but there were relatively few users. The second school building belongs to the Faculty of Economics and the Faculty of Business and Commerce. Therefore, there are many students from the two faculties around this smoking area.

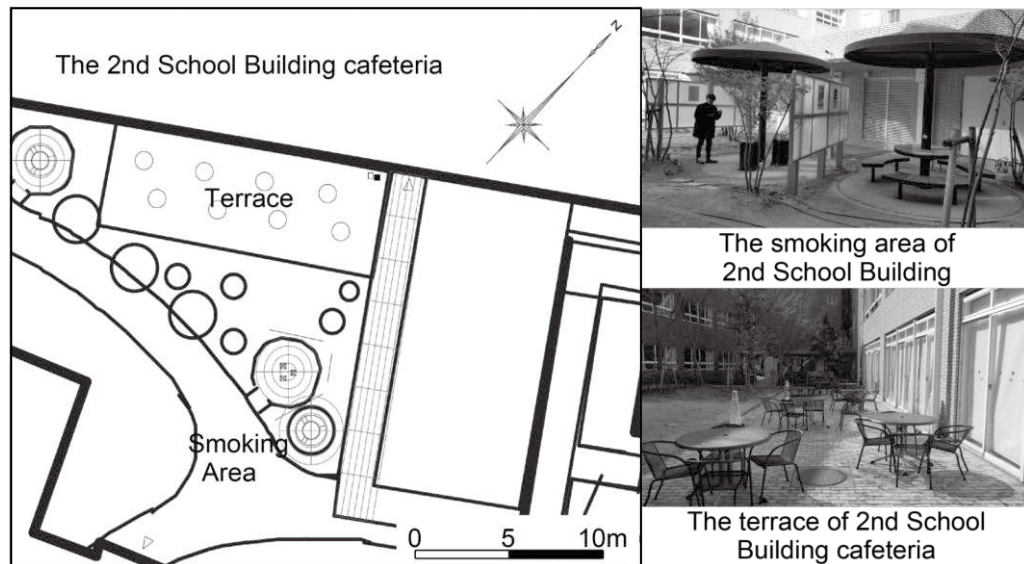


Fig 3. Smoking area behind the cafeteria of second school building

3) Smoking area next to the third school building

This smoking area was near the third school building. The entrance and exit of the smoking area are at either end and it is 6 m long and 2 m wide. There are three ashtrays in this area. Some students sit on the bench outside and smoke because the bench is set outside

the smoking area. Additionally, the third school building belongs to the Faculty of Sociology, so there are many students from this faculty who use this area.

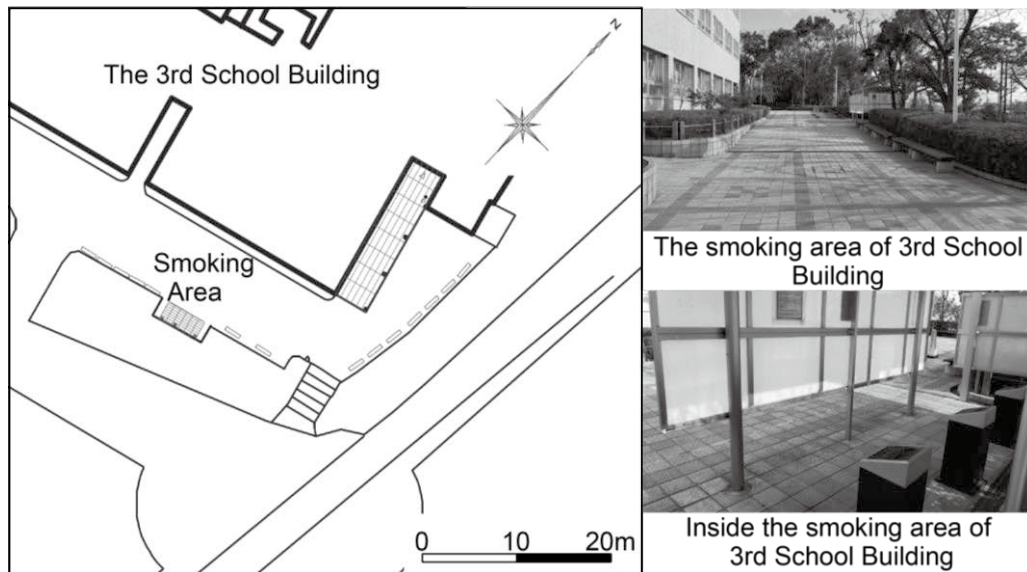


Fig 4. Smoking area next to third school building

4) In front of the university library

Located beside the entrance and exit of the library, which is near the main gate of the campus (Fig. 5), this smoking area is used by students from various departments and also by teaching staff, high school students, and neighborhood residents. This smoking area is 5 m long and 2.5 m wide, and there are three ashtrays in this area.

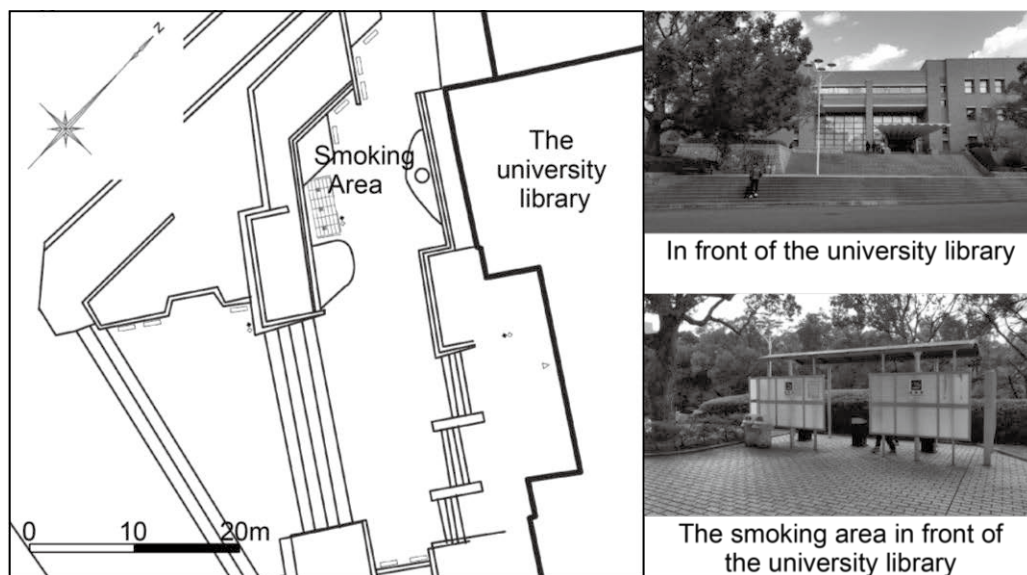


Fig 5. In front of the university library

5) In front of the second school building

This is the area where the Senriyama Campus plants the most trees (Fig. 6). It is a smoking area and the benches are located directly on the ground. This smoking area is

located outdoors and has no shield, so the users are easily affected by the weather.

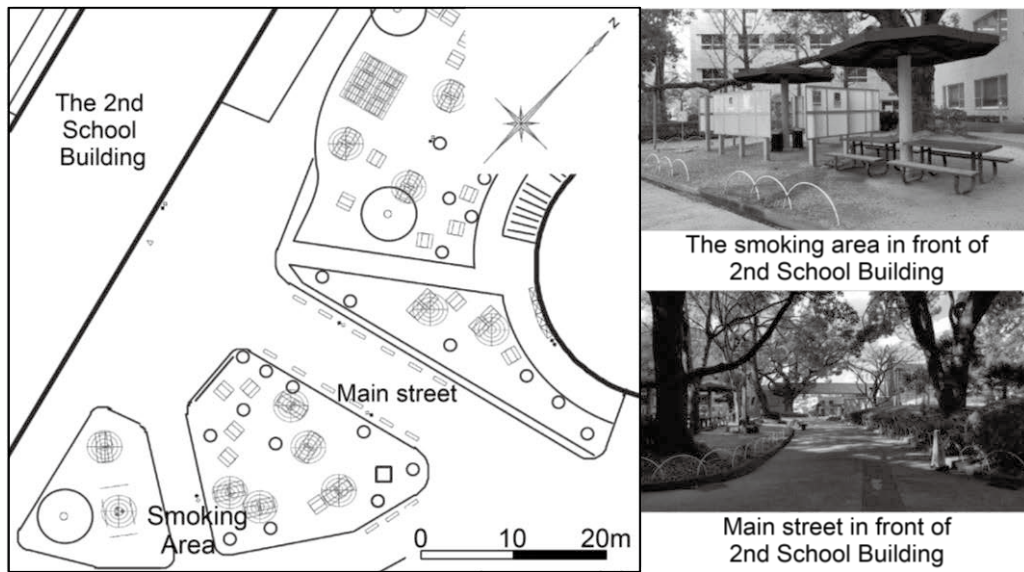


Fig 6. In front of the second school building

6) YUKYU NO NIWA

YUKYU NO NIWA is the largest lawn square located in the center of the campus (Fig. 7). Students from all faculties and from all years gather on the seat-integrated stairs.

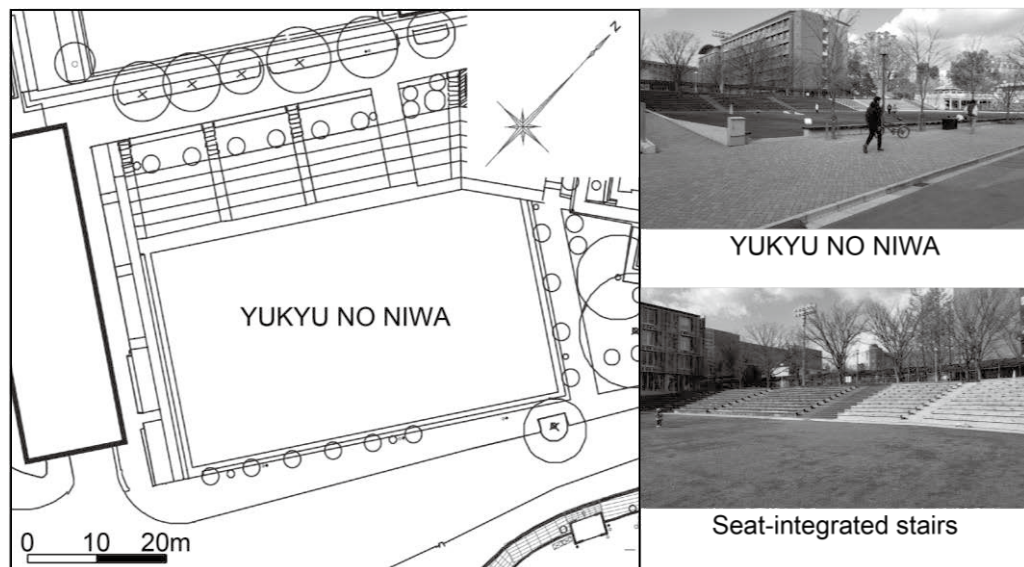


Fig 7. YUKYU NO NIWA

7) University library backyard

The university library backyard is located between the YUKYU NO NIWA and the university library (Fig. 8). It is a very quiet place because there is very little traffic. Wooden benches are set up around the lawn. There are more graduate students here because the backyard of the university library is adjacent to the graduate students' school building.

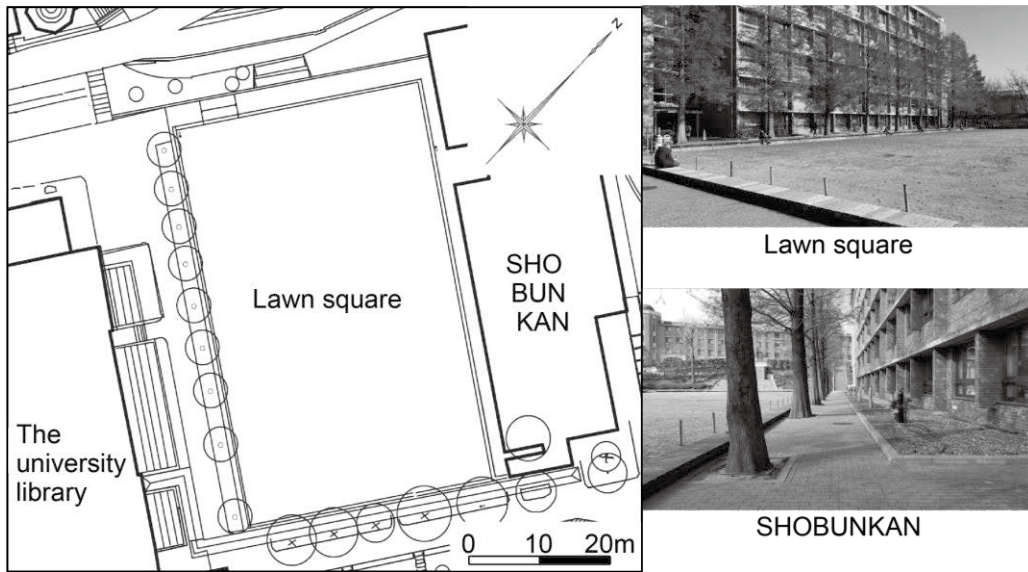


Fig 8. University library backyard

8) Mediapark RINPUKAN (Commons Lounge)

RINPUKAN is a comprehensive student hall that is located in the central area of the campus (Fig. 9). It is used by the students in each faculty, and neighborhood residents and high school students also go there. The Commons Lounge on the first floor is separated by dividing screens, sofas, tables, chairs, and bookshelves, which are used to provide students with free space to use. Because of the sudden decrease in outdoors users in the winter survey, the RINPUKAN Commons Lounge, where students can easily gather, was used as the Survey area.

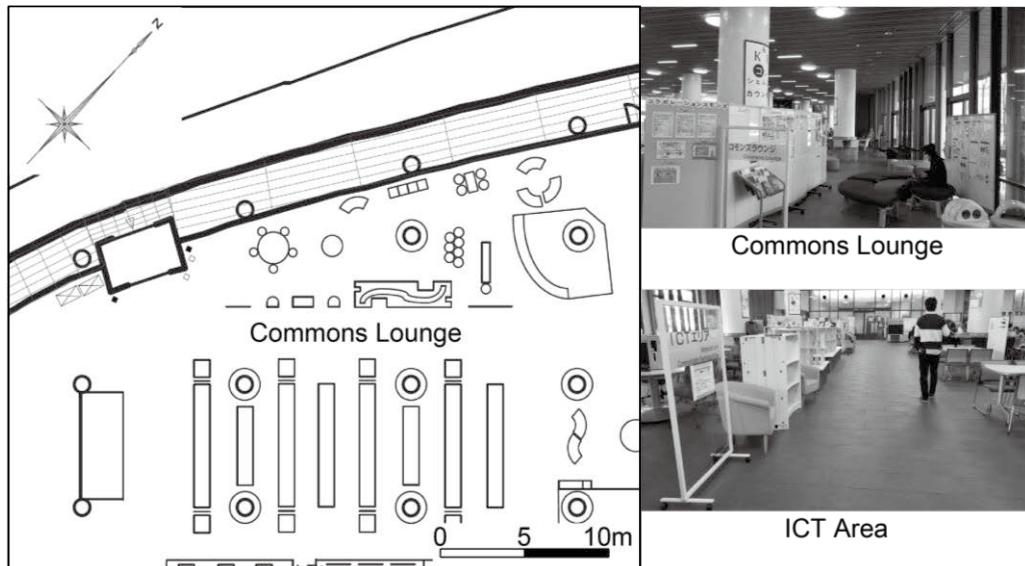


Fig 9. Mediapark RINPUKAN (Commons Lounge)

3. Survey Results and Considerations

3.1 Number of Students

Table 2 shows the number of students, with females ranging from 5% to 48% of males. . There were fewer female students closer to the smoking area, while there were more female students in the square and courtyard. Among 481 participants who were surveyed, there are 395 male and 86 female students. The other data in Table 2 represent the number of teaching staff, graduate students, neighborhood residents, and high school students.

The relationship between the survey times and the number of students is shown in Figure 10. There are many students who use the open space in front of the second school building during class because most of them smoke in the smoking area. There are also many people using RINPUKAN during class, which is because many club activities take place in this area. Students choose to have lunch in the YUKYU NO NIWA, which is why it is most widely used during the lunch break. However, few people use this space between classes because it is not a smoking area, and there is a high volume of traffic, which makes it unsuitable for taking a rest. Few people use the university library backyard at any time, because there are few students in this area and there is no suitable place for people to gather.

Table 2. Number of students

Survey target Survey area	Male university student	Female university student	Others
1.Smoking area of 1st school building	51	5	10
2.Smoking area behind the cafeteria of 2nd school building	49	6	13
3.Smoking area next to 3rd school building	40	3	9
4.In front of the university library	44	9	10
5.In front of the 2nd school building	56	3	19
6.YUKYU NO NIWA	67	32	15
7.University library backyard	32	9	8
8.Mediapark RINPUKAN (Commons Lounge)	56	19	2
Total	395	86	86

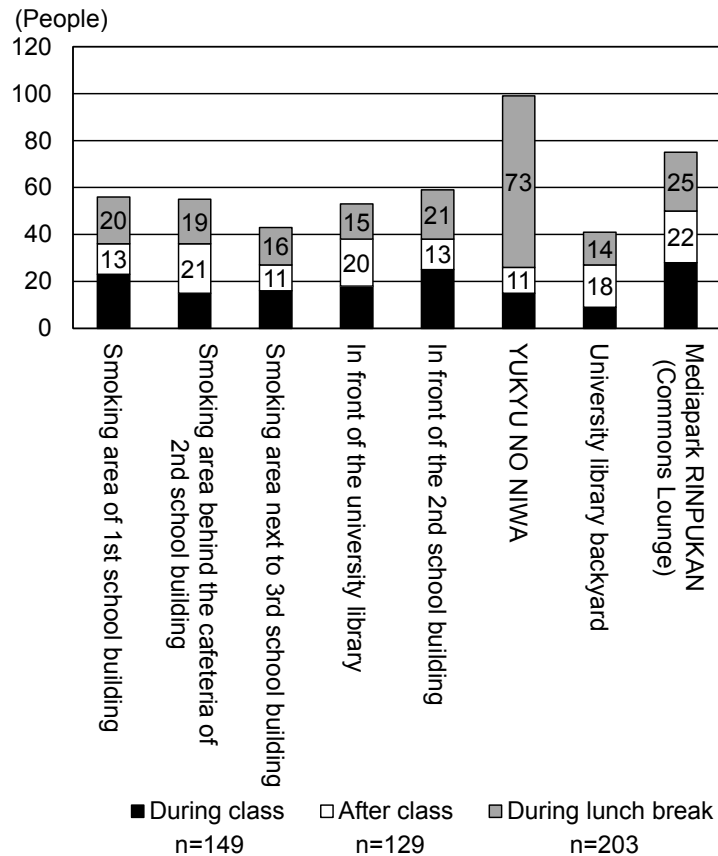


Fig 10. Relationship between survey time and the number of students

3.2 Relationship between the survey area and GPA

Figure 11 shows the relationship between the survey area and the students' GPA, and the GPA MAP is shown in Figure 12. The GPA of students in the smoking area associated with the first school building, the smoking area behind the cafeteria of the second school building, and the smoking area associated with the third school building was under 1.9. The GPA survey showed that students in the smoking area near the front of the university library and the second school building was between 1.8 and 2.0. The GPA survey results for students in the YUKYU NO NIWA, the university library backyard, and the RINPUKAN without a smoking area were all above 2.1. Thus, there is a correlation between the students' GPA and the existence of a smoking area. Additionally, the GPA of students in the smoking area behind the cafeteria of the second school building was the lowest and the standard deviation was the smallest, because there were few people in this area, and the space was not open. There were female smokers in this space. However, the fewest number of people were in the university library backyard, but their GPA was very high. The YUKYU NO NIWA had the largest number of people, and they had the highest GPA. The GPA of students in the central part of the campus was higher than that of the surrounding areas on the GPA MAP, while the students' GPA tended to decrease gradually from the center to the periphery.

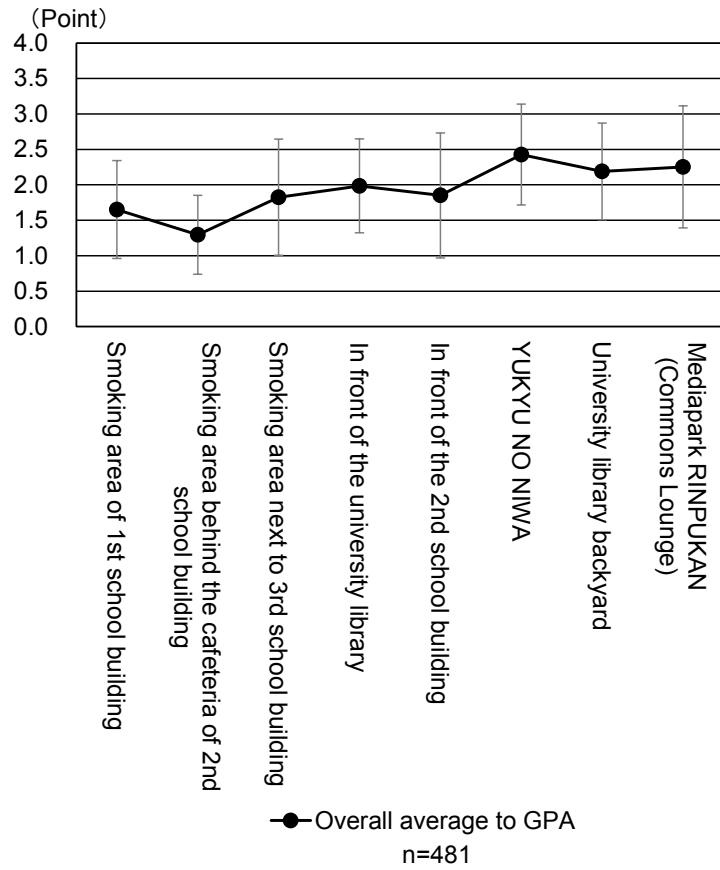


Fig 11. Relationship between survey area and GPA

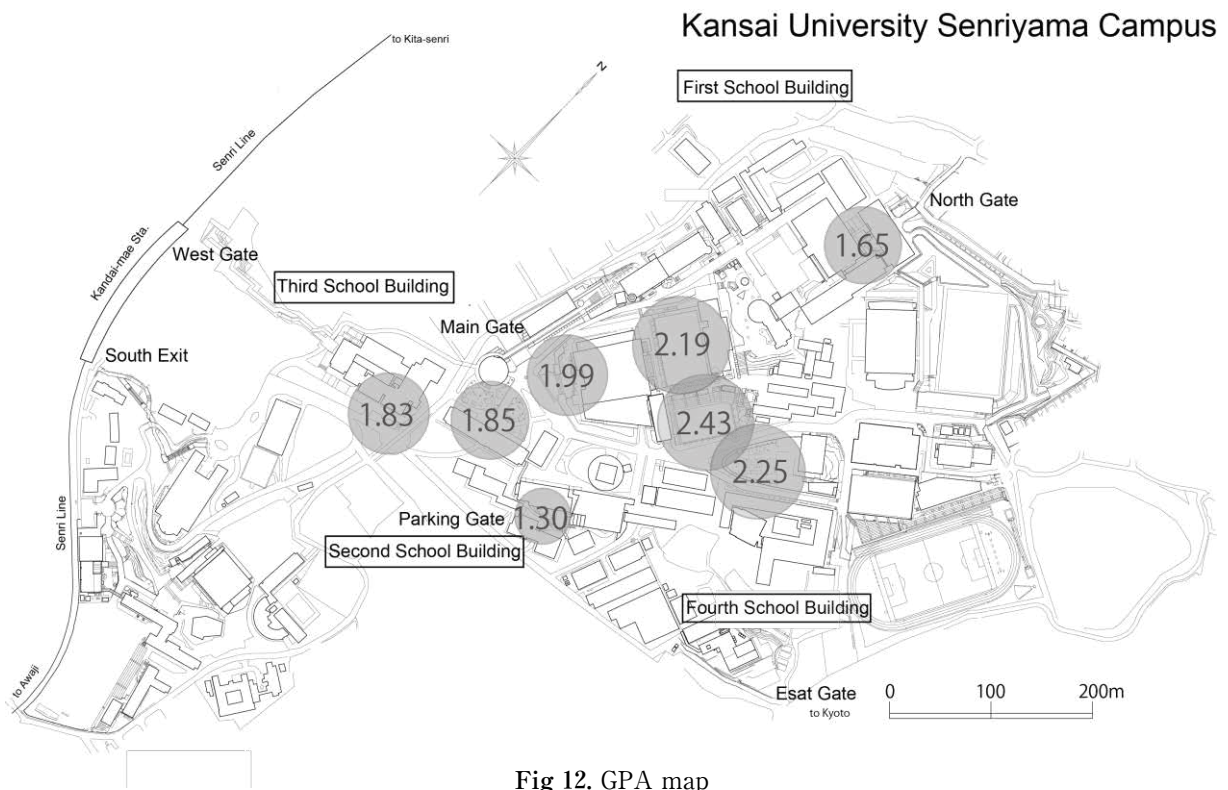


Fig 12. GPA map

3.3 Relationship between survey time and GPA

Figure 13 shows the relationship between the survey times and the students' GPA. The GPA of the students in each survey area was low when the time at which the survey was conducted was different. The difference in students' GPA between the smoking areas behind the cafeteria of the second school building was at least from 0.1 to 0.2, and the GPA at each sampling time was the lowest in the whole survey area.

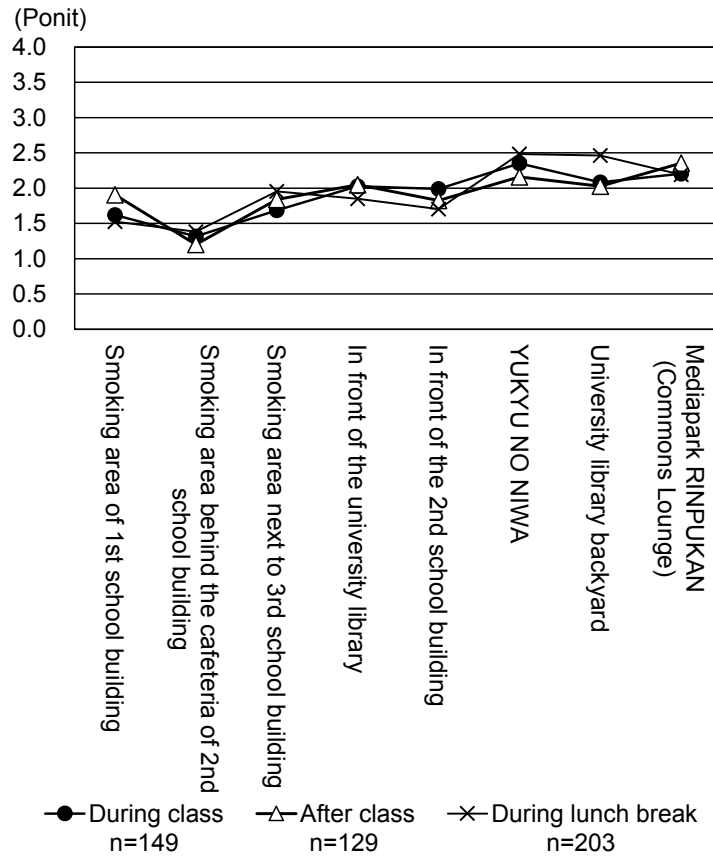


Fig 13. Relationship between survey time and GPA

3.4 Relationship between gender and GPA

Figure 14 shows the relationship between gender and GPA. The GPA for female university students outside the YUKYU NO NIWA is higher than that of the male university students. The GPA value for the female university students in the smoking area in front of the third school building and the open space in front of the second school building was very high. However, there was only a small difference in the GPA between male and female university students in the YUKYU NO NIWA, the university library backyard, and the RINPUKAN, and the GPA of students in these areas was also high. The survey did not show a difference in the GPA based on different behavior activities of men and women and the different methods of using open space. Generally, the average GPA of male and female university students was 1.9 and 2.33, respectively.

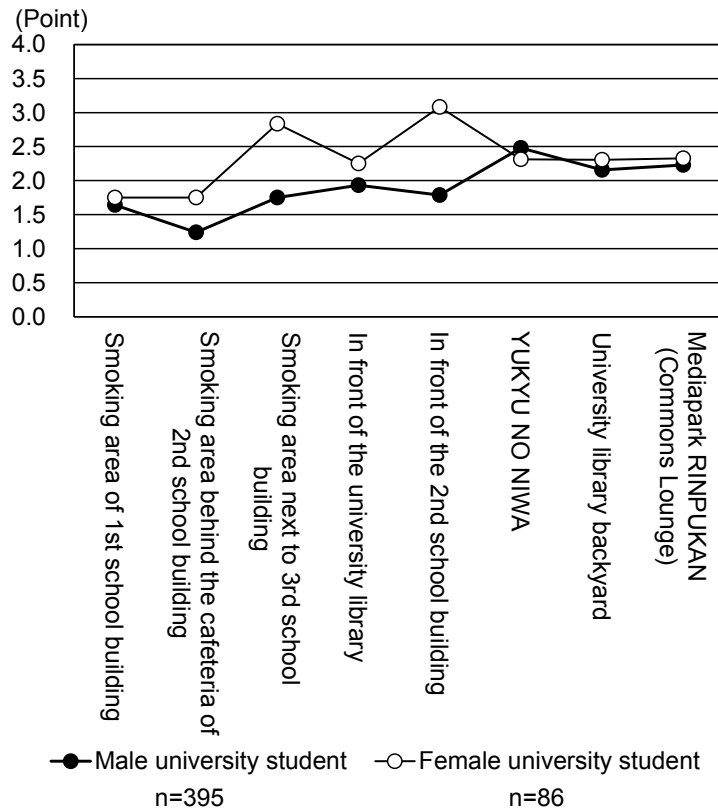


Fig 14. Relationship between gender and GPA

3.5 Relationship between school grade and GPA

Figure 15 shows the relationship between school grades and the students' GPA. The GPA for 4th-year students at YUKYU NO NIWA and 3rd-year students at the university library backyard were very high, with a large difference between the school grades that was from 1 to 1.1. The difference in the school grades among students in the smoking area behind the cafeteria of second school building, the open space in front of the university library, and the open space of the second school building was very small (approximately 0.3). Thus, the different survey areas are associated with large or small differences between the GPA and school grades. The 2nd-year students' GPA was the lowest, and the difference in GPA among 1st-, 3rd-, and 4th-year was very small. However, the GPA of 4th-year students in the smoking area of the first school building and 1st-year students in the smoking area behind the cafeteria of the second school building was very low, at approximately 1 to 1.125.

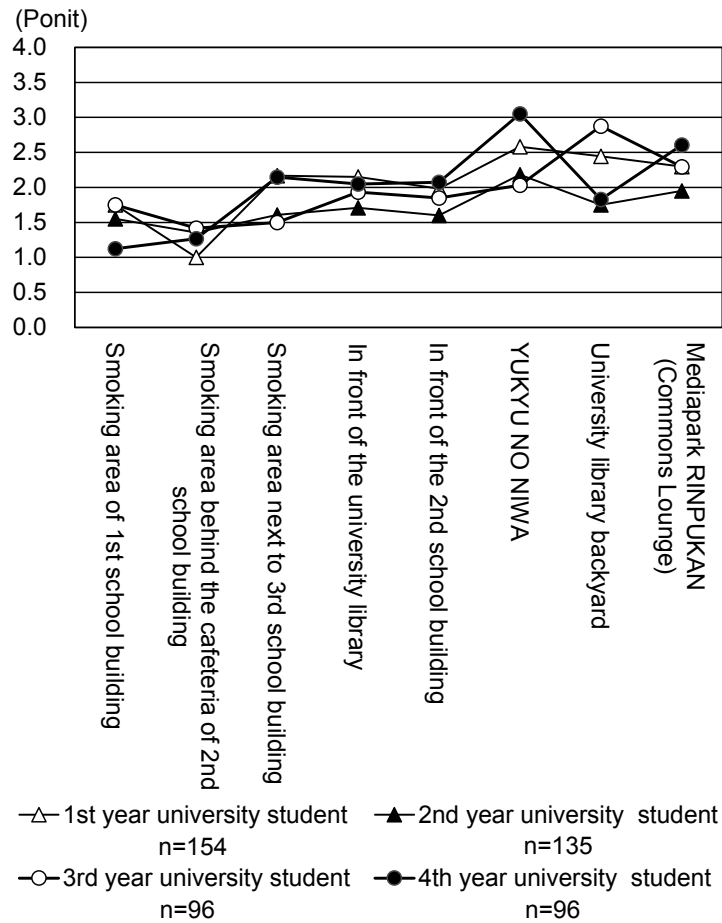


Fig 15. Relationship between school grade and GPA

3.6 Relationship between faculty and GPA

Figure 16 shows the relationship between faculties and the students' GPA. The area surrounding the university library, the YUKYU NO NIWA, the RINPUKAN are places that can be used by students who belong to any school faculty, and students from the 8 to 10 faculties use these areas. The GPA difference among the faculties was about 1.5. The difference in GPA between the faculties in the smoking area of the third school building was about 2.5. In addition to the areas belonging to specific faculties, the open spaces on the campus were used by students in all different faculties. Thus, the GPA of students in the places used by students in different faculties was higher, and the GPA of students in places used by students from a specific faculty was lower.

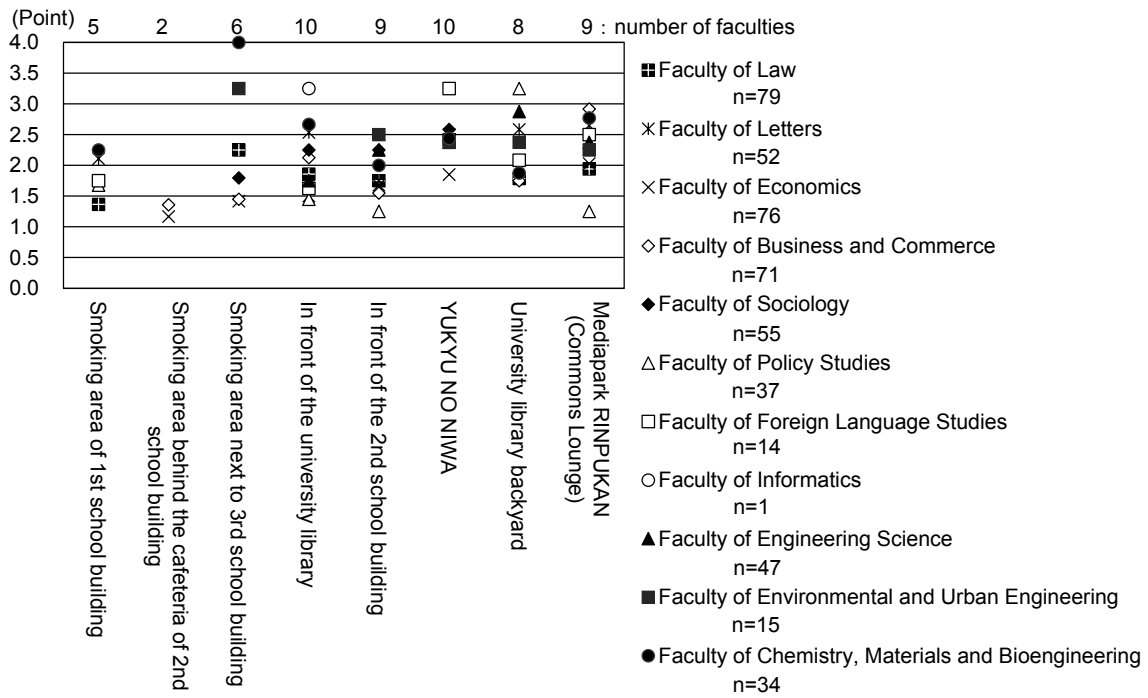


Fig 16. Relationship between faculty and GPA

4. Conclusions

Depending on the time of day, there are places where there are many students and there are places where there are few students. With different areas of the survey, there were some differences in the students' GPAs. However, there is not much difference in the GPA of students when the time of the survey is different. For gender, GPA was higher for female university students than for male university students in most survey areas. By grade, the GPA of 4th-year students tended to be high and the GPA of 2nd-year students tended to be low, but there were places where the difference in GPA between grades was large or small.

The GPA of students in the smoking area and the open spaces containing a smoking area were lower than in the other areas, and GPA was especially lower in the smoking area behind the cafeteria of the second school building, which had a low flow of people and poor openness of the space. Additionally, the GPA was very low if only two specific faculties were used. The GPA in the places used by many students was relatively high, especially in YUKYU NO NIWA, the university library backyard, and the RINPUKAN. However, the GPA in spaces where it was easy to gather in the center of the campus was higher than that of the surrounding area where there was little traffic. The open spaces on campus tended to have students with a higher GPA when more users were gathered.

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