Check for updates

Original Article

IJEEE

International Journal of Electrical Engineering & Education
0(0) 1–12
© The Author(s) 2020
Article reuse guidelines:
sagepub.com/journals-permissions
DOI: 10.1177/0020720920922518
journals.sagepub.com/home/ije
SAGE

The effect of academic breaks on undergraduate academic performance

Artem Lenskiy[1,2], Raad Shariat[1] and Soonuk Seol[1]

Abstract

Leaving school for a period of time can have significant effects on students' academic success. In this article, we analyze how taking an academic break for a different number of semesters affects students' academic performance in terms of their Grade Point Average. This study is conducted at a university in Korea by analysing academic records of 653 undergraduate students who entered the university from 1998 to 2013. In addition, 101 currently enrolled students were surveyed to collect students' opinions on the effects of academic breaks. We investigate changes in grades before and after a school leave and compare the final grades of students who had academic breaks to students who continued their studies without having any breaks during their undergraduate education.Our results indicate that students' grades improve after coming back to the university from a four or more consecutive semesters break, however their final GPAs did not statistically differ from their peers who studied continuously, this suggests that students should not be afraid of taking longer academic breaks.

Keywords

Education, gap year, academic performance, curriculum development

[1]School of Electrical, Electronics and Communication Engineering, Korea University of Technology and Education, Chungcheongnam-do, Republic of Korea
[2]Research School of Computer Science, The Australian National University, Canberra, Australia

Corresponding author:
Artem Lenskiy, Australian National University, Canberra, Australian Capital Territory 0200, Australia.
Email: artem.lenskiy@anu.edu.au

Introduction

It is not unusual for college students to take a leave of absence or have a "gap year" during their education for various reasons, e.g. internship, leisure and travel, recovery from and preventing a burn-out, or earning money to support their education. Jones[1] divides undergraduates who take a gap year into five sub-groups: (1) "students who take a planned gap year before entering a university with desired targets during the gap year," (2) "students who take an unplanned gap year before entering college, in particular, those who failed to achieve higher education qualifications," (3) "students who take a regular gap year during their education," (4) "students who take a degree-related gap year during college which is related to course-required activities out of school", and (5) "students who take a gap year after their graduation to find a job or continue higher education."

Prior studies have shown that having a gap year can both positively and negatively affect one's academic performance depending on whether it is a structured or unstructured gap year. Keup[2] described a gap year as an opportunity for students' personal growth and enhancing their perspective about their relationships and the world around them. Heath[3] also describes a number of positive features of having structured gap years, in particular, personal development, a better transformation to college life, career interpretation, and promoting soft skills. Flynn and Butcher[4] also noted that a gap year allows students to deliberate about their future plans, enabling some students to follow a different degree path than they initially contemplated. Fitzsimmons et al.[5] defines a gap year as a "turning point" for students because students coming back from a gap year have a better understanding of their academic goals, extracurricular activities, and future career. According to Tank,[6] taking time off during college benefits students in many ways, such as increasing their focus on studying, improving their Grade Point Average (GPA), and increasing their employability.

On the other hand, taking an unstructured gap year may also present such disadvantageous consequences as frustration,[7] falling out of one's academic routine,[8] and losing the motivation to continue one's studies.[9] Besides, it is also known to increase the level of students' overall stress after returning to school.[10] Burley[11] had found that students who studied continuously outperformed their peers who had other types of enrollment patterns, specifically, "dropouts" (students who withdraw from school permanently) and "stopouts" (students who withdraw from school temporarily). Desjardins et al.[12] demonstrated that students who had an initial stopout were more likely to have subsequent stopouts in their education, which negatively affected the graduation of students. Being absent from school for a short period of time at different academic levels also negatively affects the academic performance of students.[13–17]

Some research has examined the reasons for the poor academic performance of students,[18] identified the reasons why students leave school,[19] and studied university students' learning experiences.[20] However, little research has been conducted

to explore the effects of different lengths of academic breaks and their starting points on the grades of students.

In the Republic of Korea, academic breaks are common among college students. A large portion of students prefer to take an academic leave to participate in work and travel programs, study English or help their parents. The other major reason for taking a leave is a compulsory military service. In particular, all male citizens are required to serve for at least 21 months between the ages of 18 and 35 years. In other countries with compulsory military service, students prefer to serve in the army before entering university or some might postpone it until after graduation, while in Korea, the majority of students serve in the army during their undergraduate studies.[21] According to Korean Statistical Information Service, from 1998 to 2013, 96.3% of male citizens who enrolled in active military service were 19 to 22 years old.[22] As there is a lack of prior research studies on the impact of leave of absence on the academic performance of students during undergraduate studies, this topic is investigated in this paper. Furthermore, many universities adopt data analysis to improve students' academic experience, as such in this paper we analyzed available student data with the aim of providing recommendations for future students on whether they should consider taking a break to improve their performance or, in contrast, avoid leaving school.

Data and methodology

The academic performance of students is often measured by their Grade Point Average (GPA). The original hypothesis (the null hypothesis) was taking as an academic break would not affect students' academic performance. The study was conducted in the Korea University of Technology and Education (KOREATECH) using data from 653 undergraduate students who entered university between 1998 and 2013 and graduated by 2018 with the degrees in Information and Communication Engineering, and Electronic Engineering.

Out of 653 students, 69 were excluded from the study because they were either transfer students or students who took less than 8 semesters and passed less than the required number of credits. Thus, our sample consisted of 584 students. This sample was analyzed to examine the differences between 24 students who took an academic break (a leave of absence) for 1 semester, 45 students for 2 semesters, 0 students for 3 semesters, 263 students for 4 semesters, 159 students for 5 or more semesters, and 93 students who studied continuously without any breaks (Figure 1). Figure 2 shows the distribution of the longest academic breaks by academic semester. The term long leave of absence in this study refers to an academic break for four or more semesters and a short leave of absence refers to an academic leave of absence for one or two semesters.

To test the above hypothesis, we analyzed shifts in grades throughout the students' undergraduate education and compared the distributions of the final GPAs of students who had an academic leave of absence and those who studied continuously without any breaks. For students who had multiple academic breaks

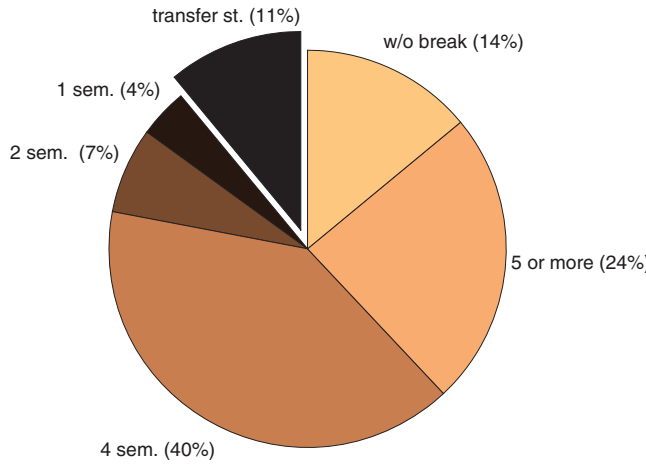

Figure 1. Distribution of academic breaks.

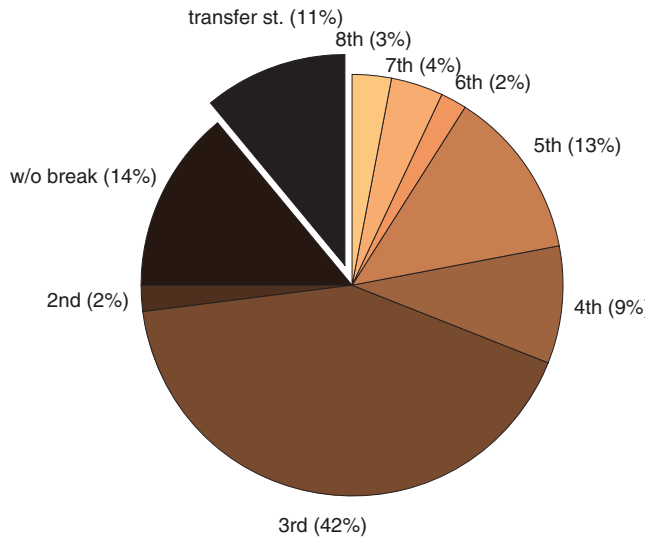

Figure 2. Distribution of students' academic breaks by academic semesters.

during their undergraduate education, their longest leave of absence was selected. Shapiro–Wilk and Kolmogorov–Smirnov tests were employed to check the normality of the data. To test our hypothesis, we used analysis of variance (ANOVA) for normally distributed data and the Kruskal–Wallis test for data that were not normally distributed.

Table 1. Average GPAs before and after academic breaks of different lengths.

Break length (semesters)	1	2	4	≥5
Avg. GPA before the break	3.50 ± 0.76	3.44 ± 0.47	3.20 ± 0.50	3.16 ± 0.56
Avg. GPA after the break	3.51 ± 0.68	3.60 ± 0.52	3.55 ± 0.45	3.65 ± 0.48

Results

To compare the change in GPA before and after the break, we applied the Parzen-window non-parametric estimation method to estimate the probability density functions (PDF) of students' GPA.

We started with the null hypothesis that distributions of students' grades before and after the break are not different; hence, taking an academic break, regardless of its length, does not affect students' GPAs after returning to the university. The average GPAs before and after an academic break of different lengths are shown in Table 1.

The differences between the distributions of GPAs before and after taking an academic break for one, two, four, and five or more consecutive semesters are shown in Figure 3.

In Table 2, these four groups are divided into eight different subgroups with respect to the beginning semester of an academic break. GPA change and (sample size) of each subgroup are also presented in the table.

The p values for the statistical test of students who had one or two sequential semesters' breaks were higher than the critical value (>0.05); hence, the null hypothesis was not rejected for these two specific groups. The p value for the Kruskal–Wallis test comparing the students who had a break of four semesters and five or more successive semesters was zero (($p = 1.7345 \times 10^{-15}$, $D.F = 524$) and ($p = 1.4346 \times 10^{-14}$, $D.F = 316$), respectively), and hence, we rejected the null hypothesis. In Figure 3, it is easy to see with the naked eye that students' GPAs substantially increased after returning from a long academic break of four or five or more semesters. To check the reliability of the tests with respect to their sample size, we calculated the minimum required number of samples by employing power analysis. Power value was set to 0.9 which defines the probability that the test rejects the null hypothesis when a specific alternative hypothesis is true. Minimum required amount of samples for students with four semesters and five or more breaks were 47 and 30, respectively.

The final GPAs of these four groups of students were compared to those of students who studied continuously without academic breaks (the control group) (see Figure 4). The average final GPAs were $\mu = 3.55 \pm 0.40$ for students who studied without having academic breaks, $\mu = 3.49 \pm 0.45$ for students who had a one-semester break, $\mu = 3.48 \pm 0.31$ for students who had a two-semester break, $\mu = 3.53 \pm 0.32$ for students who had a four-semester break, and $\mu = 3.56 \pm 0.35$ for students who took an academic break of five or more continuous semesters.

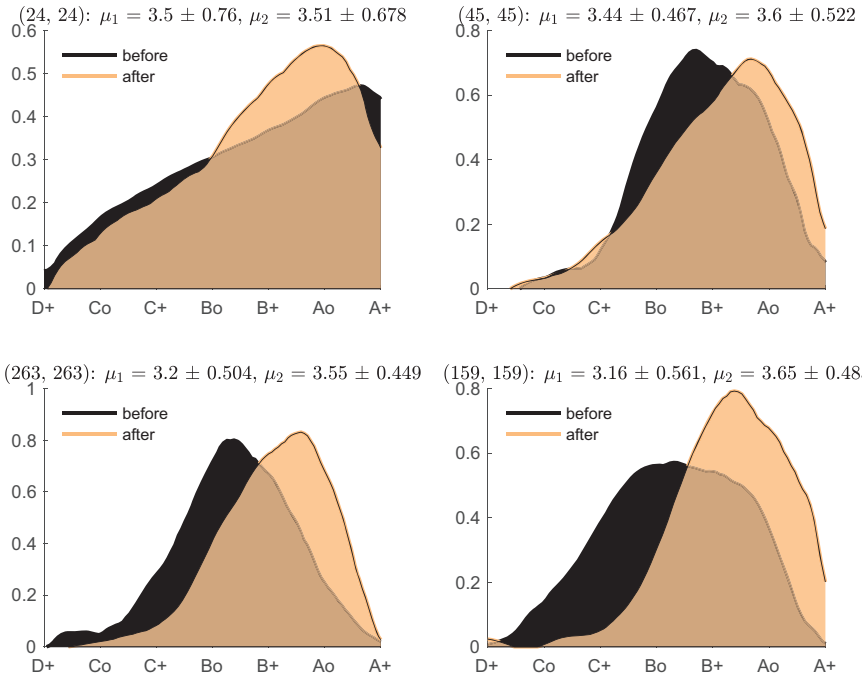

Figure 3. Distributions of GPAs before and after taking academic breaks of different lengths: (top left) one semester (top right), two semesters (bottom left), four semesters (bottom right), five or more semesters.

Table 2. Subcategories of GPA change of students with different lengths of academic breaks with respect to their sample size.

	Beginning semester of the academic break						
	2	3	4	5	6	7	≥8
1 sem. break	0(0)	−0.33(2)	0.39(4)	0.38(4)	−0.02(1)	0.07(6)	−0.39(7)
2 sem. break	0(0)	−0.35(6)	0.16(4)	0.54(9)	0.24(4)	0.309(11)	−0.04(11)
4 sem. break	−0.02(4)	0.28(178)	0.46(25)	0.59(46)	0.17(4)	0.60(3)	−0.15(3)
≥5 sem. Break	0.99(7)	0.48(91)	0.61(27)	0.42(26)	0(1)	0.63(3)	−0.12(4)

The null hypothesis is formulated as the distributions of final GPAs' are statistically equivalent regardless whether the students had academic break or not. The p values for the statistical hypothesis comparing distributions of students who had one, two, four, and five or more sequential academic breaks were higher than the critical value (>0.05). Hence, the null hypothesis was not rejected, and hence having academic breaks did not influence the final academic performance of the students.

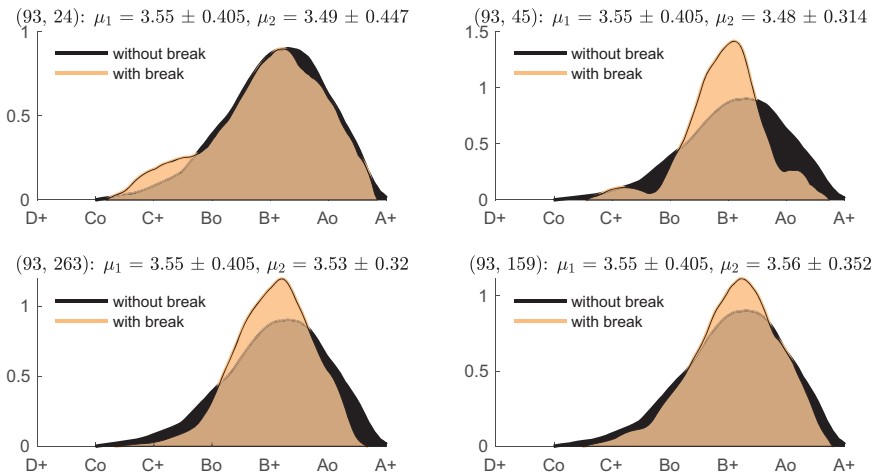

Figure 4. Distributions of the final GPAs of students who had an academic break and students who studied continuously without a break.

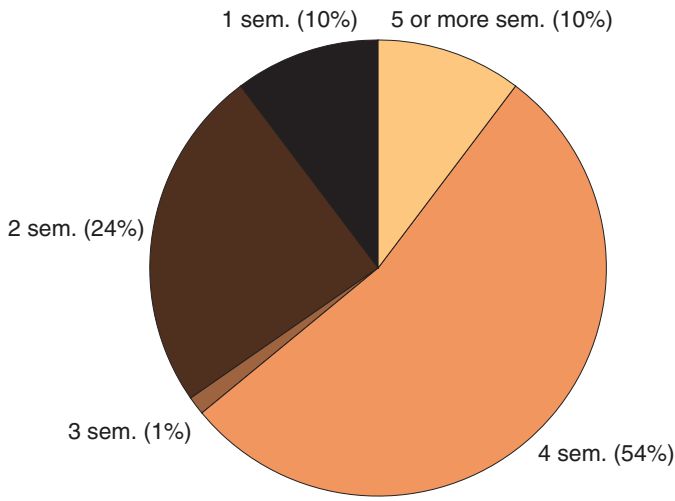

Figure 5. Distribution of break lengths of surveyed students.

Survey results

In order to check the accuracy of our statistical results, we distributed a survey to 101 undergraduate students in the same departments to obtain their personal perceptions about having an academic break and its influence on students' academic achievements. Among 101 students, the majority of whom were enrolled in the university for four or more academic semesters, 78 reported they had academic

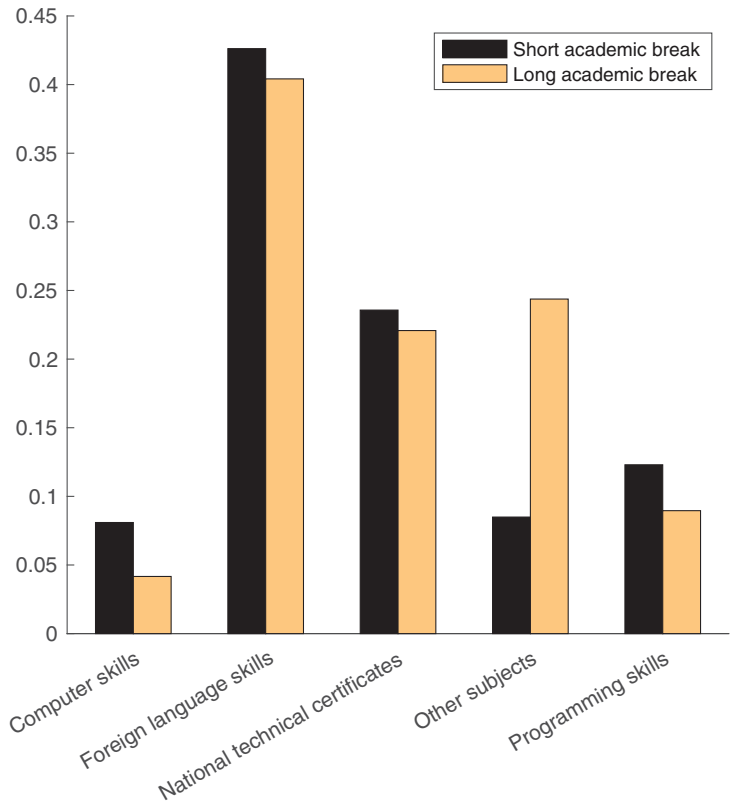

Figure 6. Developed skills among students with short and long academic breaks.

breaks during their undergraduate education and 23 reported they studied continuously without taking breaks. Out of 78 students who had academic breaks, 58 students said they left school to serve in the military and the rest of them took breaks to travel, study abroad, or for reasons related to illness or frustration (The distribution of the length of their breaks is shown in Figure 5).

On the one hand, 41% of the students claimed having an academic break positively affected their academic performance, and they returned to school more focused and motivated. On the other hand, 29.5% of the students claimed having an academic break negatively affected their academic performance after returning to school. The remaining 29.5% claimed having an academic break had no significant effect on their academic performance. Among students who mentioned the positive effect of the academic break on their academic achievements, 65.6% had a long academic break, while, 57% of the students who claimed having a break had no effect on their academic performance had a short break, which is consistent with our statistical results.

As it is mandatory for students of KOREATECH university to pass at least one English language proficiency test and obtain a national technical certificate in order to graduate, the majority of the students (53.6%) worked on their foreign language skills, 30.4% tried to obtain a national technical certificate during their break. Furthermore, 23.2% studied other subjects, and the rest enhanced their computer and programming skills. Figure 6 illustrates the comparison between the attributes that students developed on the short and long academic breaks. Regardless of the break's length, the skills that students improved are not significantly different ($p > 0.05$), except for students who studied other subjects ($p = 0.00081$).

According to one of the survey respondents

> Achieving academic goals depends on an individual's will. If you are not able to put enough effort into your courses, it is better to leave the school for a certain period of time and return to college fresh-minded. In the past, I had some doubts about my major, but now I am confident about my choice. Even though my academic leave of absence lasted for a long time, I started to recall the materials that I forgot during the break . . . Throughout the leave of absence you become more mature, which can boost your academic performance.

Although many students who took academic breaks said they did not study for the courses while on the break, they were more determined and inspired to obtain better grades after returning to school. Furthermore, students had a better perspective about their future goals and the ways to achieve them, most likely because most of these students spent the break serving in the military and they developed these attitudes as a result of principles they learned in the military environment. Other students described their academic break as a turning point for themselves, since they came back to school mentally refreshed and were more prepared to continue their studies and make decisions about their future, which is in accordance with Fitzsimmons et al.[5] Because they were absent from school for a long time, some students felt they might fall behind in their studies; hence, students put much more effort into studying for the courses after returning to school to avoid such consequences.

Discussion

The grades of students did not change significantly after returning to school from a short break or leave of absence. However, students had a significant increase in their GPAs after taking a long break. As seen in Figure 3 And Table 1, the change in the GPAs of students before and after a short academic break was small (0.01 for students with a one-semester break and 0.16 for students with a two continuous semester break), whereas the GPA change was substantially higher for the students who had a long break of four semesters (0.35) and five or more successive academic semesters (0.49). A short leave of absence are taken for various reasons, such as

leisure or illness, which generally does not affect students' performance appreciably, whereas a long leave of absence is normally taken with a specific purpose, such as serving in the military or doing an internship, which is defined as a structured gap year during students' college years. It has been previously reported that students during structured academic leaves of absence increase their focus on their courses,[6] grow in their personality,[2] improve their soft skills,[3] and enhance their perspective of academic goals.[5]

It should also be noted that although students' grades increased significantly right after returning to school from a leave of absence of four or more semesters, these specific students had poorer academic performance before they left school, compared to other students (Table 1). This may be attributable to these students' anxiety and expectations about being absent from school for a long time, since students anticipate forgetting the courses' contents, they neglect their studies until after returning from a long academic break.

Recommendations for students

As seen from the survey, many students develop valuable attributes during long structured leaves of absence and they are able to employ these attributes to catch up with other students and get back into course routines. Given this observation, we recommend that students who decide to leave college for a long time put more effort into their studies and heed their course grades before their leave, thereby reducing their level of anxiety about leaving school, and that they utilize the characteristics they gain during their leave of absence and renew their academic achievements when they come back to school. If a student's grades are decreasing and they feel frustrated with their courses, they are recommended to have a structured gap year to avoid a drop in their GPA and return to school with stronger determination and aspirations.

Conclusion

This study analyzed the effect of length of academic breaks on students' scholarly attainment. Our results showed that a longer structured academic leave of absence taken for four or more consecutive semesters positively affected students' GPAs after returning to college, whereas short academic breaks did not have such an effect on students' academic achievement. Although students' grades improved after coming back to the university, their final GPAs did not statistically differ from their peers who studied continuously without having academic breaks during their undergraduate education. Hence, students should not be afraid of taking academic breaks during college.

However, this conclusion should be taken with caution, considering that Korea is known to have a competitive social and academical environment that distinguishes it from other countries. Moreover, majority of male students in Korea take

academic breaks to comply with conscription, which also makes Korea noticeably different from countries without compulsory military service.

As a future research, we plan to increase the size of our data and investigate similar cases in other countries. We are also planning on exploring the effects of gender on the academic achievements of students, as the gender of students was not examined in this research. Since our survey results demonstrated that many male students tend to leave school for a long period of time during their undergraduate studies with intention of serving in the army, we will focus on this particular group of students in our future work to enhance students' decisions on taking breaks during their studies. Furthermore, we plan to gather information about different reasons of having academic breaks and analyze their impacts on students' performance.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

ORCID iDs

Artem Lenskiy https://orcid.org/0000-0002-4745-6756
Raad Shariat https://orcid.org/0000-0001-5735-975X

References

1. Jones A. *Review of gap year provision*. Annesley, Nottingham: DFES Publications; 2004.
2. Keup J. Gap year: how delaying college changes people in ways the world needs by Joseph O'shea by Joseph O'Shea. *J High Educ* 2015; 86: 484–487.
3. Heath S. Widening the gap: pre university gap years and the economy of experience. *Br J Sociol Educ* 2007; 28: 89–103.
4. Flynn M and Butcher V. *Taking a year off*. Richmond: Trotman, 2003.
5. Fitzsimmons W, McGrath M and Ducey C. Time out or burn out for the next generation, https://college.harvard.edu/admissions/preparing-college/should-i-take-time (2000, accessed 8 November 2018).
6. Tank A. Is taking a year off college the end of the world? www.goabroad.com/articles/gap-year/taking-year-off-college (2017, accessed 8 November 2018).
7. Torpey ME. Gap year: time off with a plan. *Occup Outlook Quarter* 2009; 53: 10–15.
8. Davidson Institute for Talent Development. Considering your options: a guidebook for investigating gap year opportunities, www.davidsongifted.org/Young-Scholars/Free-Guidebooks (2018, accessed 8 November 2018).
9. Nieman M. South African students' perceptions of the role of a gap year in preparing them for higher education. *Africa Educ Rev* 2013; 10: 132–147.

10. Heather P, Ayesha K and Michael A. Stressing in the Fall: effects of a fall break on undergraduate students. *Canad J High Educ* 2018; 48: 141–164.
11. Bonita B and Brent Cejda H. Dropout and stopout patterns among developmental education students in Texas community colleges. *Commun Coll J Res Pract* 2001; 25: 767–782.
12. DesJardins S, Ahlburg D and McCall B. The effects of interrupted enrollment on graduation from college: racial, income, and ability differences. *Econ Educ Rev* 2006; 25: 575–590.
13. DeKalb J. Student truancy. ERIC Paper ED429334, 1999.
14. Carroll H. The effect of pupil absenteeism on literacy and numeracy in the primary school. *School Psychol Int* 2010; 31: 115–130.
15. Ziegler C. *School attendance as a factor in school progress: a study of the relations existing between the school attendance of pupils and their scholastic achievements and progress and their home environment together with other causal factors*. New York: AMS Press, 1972.
16. Balks M, Arslan G and Duru E. The school absenteeism among high school students: contributing factors. *Educ Sci Theor Pract* 2016; 16(6): 1819–1831.
17. Marburger D. Absenteeism and undergraduate exam performance. *J Econ Educ* 2001; 32: 99–109.
18. Hoe A, Ahmad M, Hooi T, et al. Analyzing students records to identify patterns of students' performance. In: *International conference on research and innovation in information systems (ICRIIS)*, Kuala Lumpur, Malaysia, 27– 28 2013 November, paper no. 14046136. New York: IEEE, pp. 544–547.
19. Kori K, Pedaste M, Tonisson E, et al. First-year dropout in ICT studies. In: *IEEE global engineering education conference (EDUCON)*, Tallinn, Estonia, 18–20 March, paper no. 15092731. New York: IEEE, pp. 444–452.
20. Henning M. *Students' motivation to learn, academic achievement, and academic advising*. PhD Thesis, Auckland University of Technology, NZ, 2007.
21. Enthoven J. Korean students balance military service, academics, www.stanforddaily.com/2013/04/08/korean-students-balance-military-service-academics (2013, accessed 8 November 2018).
22. Korean Statistical Information Service (KOSIS). Active Duty Member Status By Ages, http://kosis.kr/statHtml/statHtml.do?orgId=144&tblId=TX_14401_A057 (2019, accessed 5 December 2019).