Critical Design: The need for sleep

A potential, scalable and replicable solution for sleep deprivation among college and university students.

Caspar Neervoort
Published 17 - 12 - 2018

Table of contents

Motivation

A major issue for students has always been sleep, or rather, a lack thereof. Students have lots of assignments to work on, exams to study for and part-time jobs to do leaving them with very little free time to do anything else including sleep. Hershner (2015) reports that college students simply do not have the time to 'schedule' in any sleep due to school, work, commute and other obligations.

A study on the causes and consequences of sleep deprivation with college students in the US (Hershner & Chervin, 2014) reports that 50% of college students report daytime sleepiness and that 70% do not manage to get enough sleep.

According to a report by Kelly, Kelly & Clanton (2001) there is direct link between a student's average length of sleep and their academic performance (measured in GPA). This lack of sleep a significant group of students are experiencing is harming their academic performance which can result in even more pressure on them, which would then make them even less likely to get enough rest.

Question

So why can't we find a way to combat this issue that has been plaguing colleges and universities around the world for years? What could a potential, viable and replicable solution look like? After looking into this issue and posing myself these questions I believe I've come up with a possible solution to the problem.

Solution

In 2015, Faraut et al. found that two 30-minute naps starting at 09:30 and 15:30 already made significant improvements to subjects' physical stress levels and health. Klein (2007) reports that an ongoing study at the time found that subjects showed improved cognitive performance immediately after a nap and into the next day, when compared with days that didn't include (and weren't preceded by a day with) a nap.

My proposed solution is therefore to provide space for students to nap and/or sleep at the school campuses themselves. A common room for naps would be a good first step towards giving students a chance to make up for some sleep. The second step would be to adjust school schedules to give them the time to take the naps as well. Accounting for the time it takes to get to the space and to fall asleep, I would recommend two daily breaks of 45 to 60 minutes around 10:00 (and 16:00 provided the schedule extends beyond 17:00). Another suggestion would be for the teachers to communicate more about the amount of work they give students to do in their off time.

To combat a lack of sleep you could also introduce the concept of dorm rooms to Dutch school campuses. Since this would require a lot time, money and space to implement for everyone, I

would suggest only accepting or prioritizing students with a commute time of over 2 hours initially. They would be allowed to stay in the dorm rooms during the week, going home over the weekends. This would save them 4 hours or more every day, which is a lot of time that takes away from the time they could be doing other, more important things.

Execution

I made 3D representations of my solutions to visualize how these rooms could be designed in a manner that can be easily scaled up and replicated.

Common napping room

The common napping room is designed to have as little distractions as possible and to give room to a lot of students to rest at the same time. On the one hand I wanted to give students a few different ways to rest, with some preferring comfy chairs with sound dampening walls over beds. On the other hand, my goal was also to make some efficient use of the space so that a few of these rooms could be made across the campus to give students easy access to them.
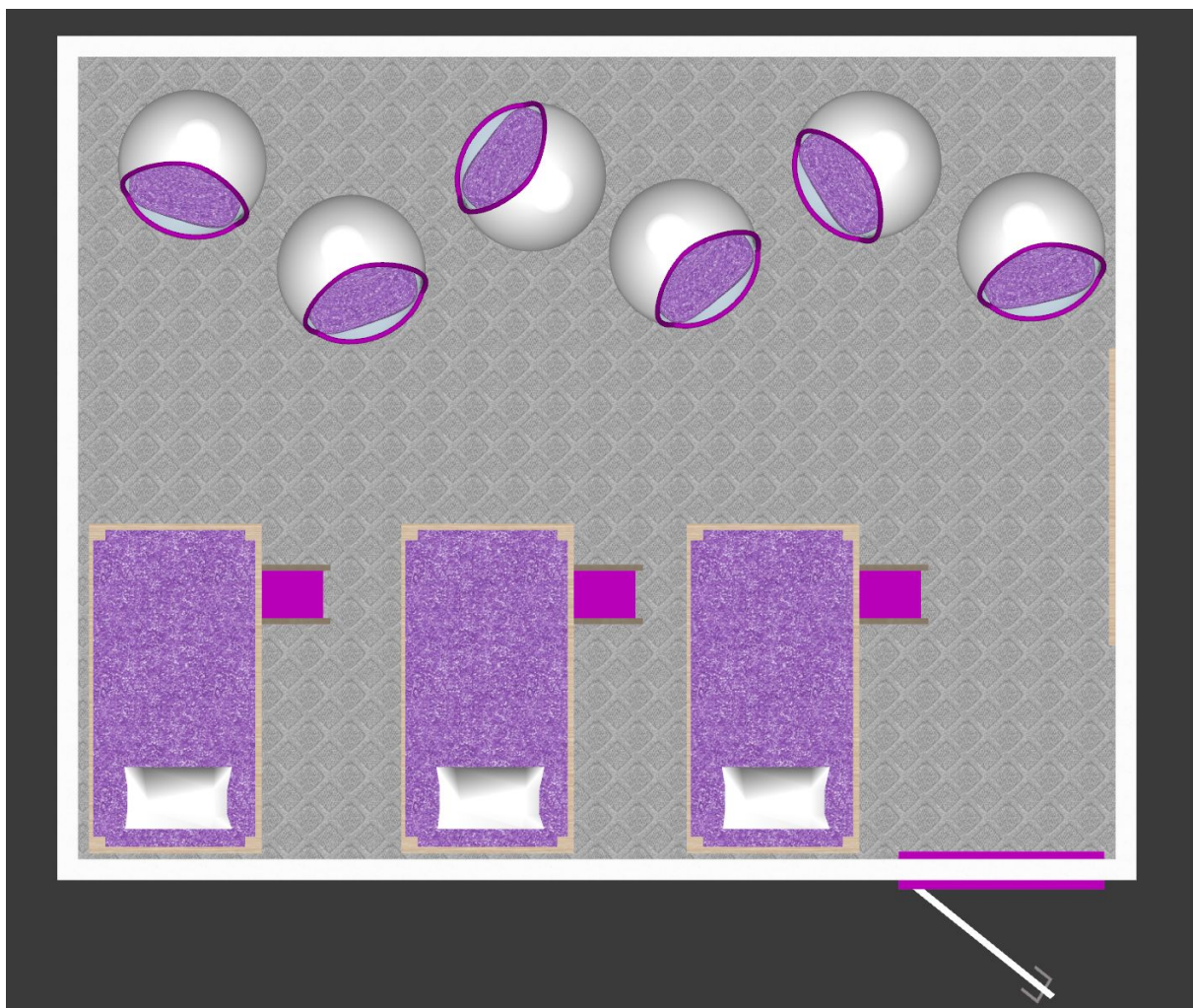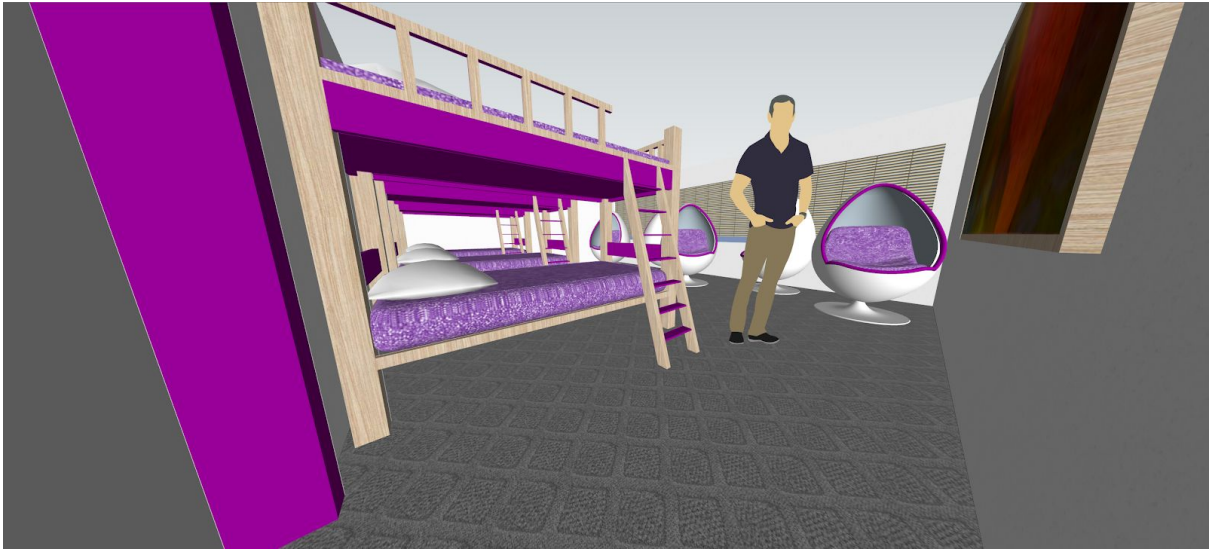
Dorm rooms

I designed two types of dorm rooms to provide the maximum amount of use out of as little space as possible so that as many students as possible can have access to one.
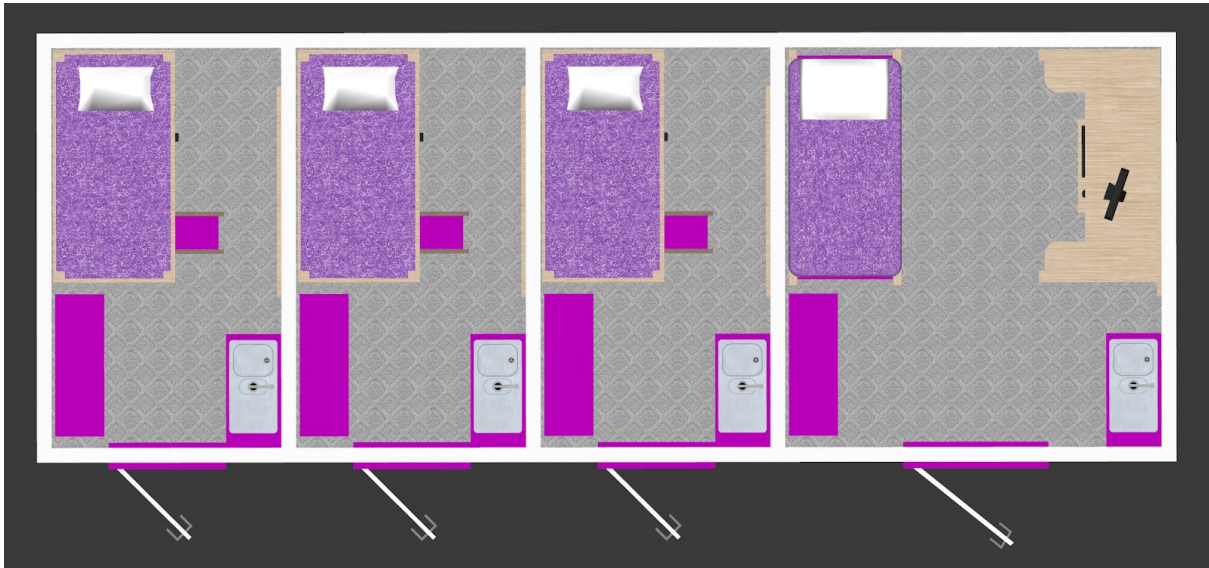
The first kind is the standard room, which features a highsleeper with a desk under it for students to work at, a dresser and a sink.

The second kind is one designed for less mobile students and is made more spacious to account for wheelchairs. It features a lower, normal bed, a modified desk and a lower sink to support wheelchair use.
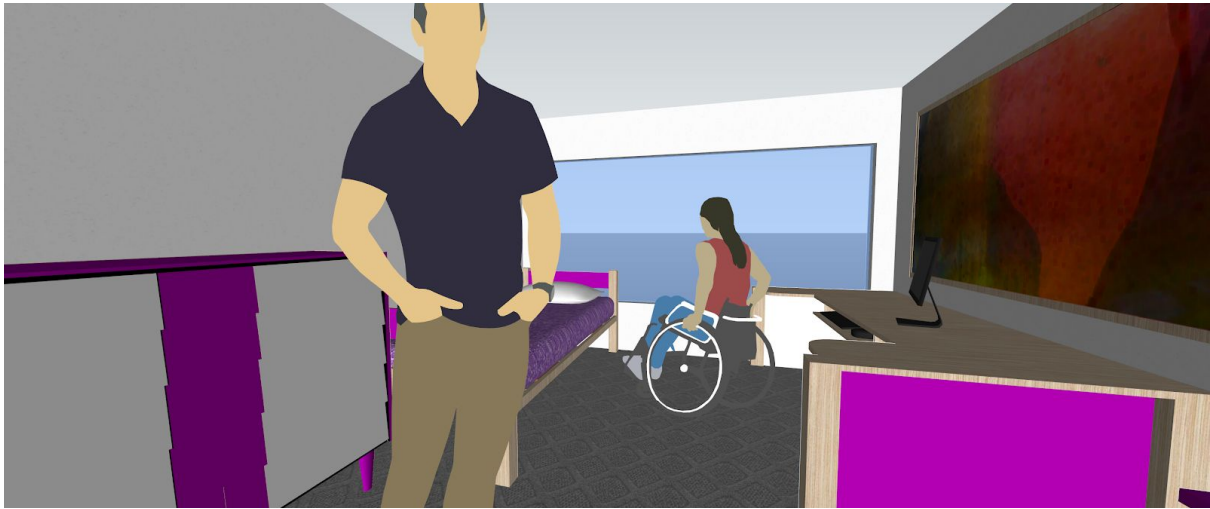
Conclusion

I believe these solutions could provide an actual direct benefit to all students willing to use these facilities. While it would be a sizable investment, the benefit would be having students with fitter minds and bodies. When students can get enough rest, their academic performance goes up which can save them time not only at home, but also at school.

Bibliography

I. Faraut, B., Nakib, S., Drogou, C., Elbaz, M., Sauvet, F., De Bandt, J. P., & Léger, D. (2015, March 1). Napping Reverses the Salivary Interleukin-6 and Urinary Norepinephrine Changes Induced by Sleep Restriction, The Journal of Clinical Endocrinology & Metabolism, Volume 100, Issue 3, 1 March 2015, Pages E416–E426. Retrieved December 17, 2018, from https://doi.org/10.1210/jc.2014-2566

II. Hershner, S. D. (2015). Is sleep a luxury that college students cannot afford?. Retrieved from https://www.sleephealthjournal.org/article/S2352-7218(14)00011-4/pdf

III. Hershner, S. D., & Chervin, R. D. (2014, June 23). Causes and consequences of sleepiness among college students. Retrieved December 17, 2018, from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4075951/

IV. Kelly, W. E., Kelly, K. E., & Clanton, R. C. (2001). The relationship between sleep length and grade-point average among college students. (College student journal, 35(1), 84-86). Retrieved from https://www.sleephealthjournal.org/article/S2352-7218(14)00011-4/pdf

V. Klein, A. (2007, October 15). Nap now, sleep tonight -- and think better tomorrow | Cornell Chronicle. Retrieved December 17, 2018, from http://news.cornell.edu/stories/2007/10/napping-doesnt-impair-nighttime-sleep-research-finds