

Experiential teaching at the universities to naturally include the SDGs and ESD with undergrad students

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The COVID-19 pandemic changed the dynamics at the Universities, it made us all, teachers and students, realize that for many classes we do not need to be face-to-face, that we can only share a screen with someone even on the other side of the world and that way, share knowledge. But there is numerous research showing that excessive screen time may affect brain development in young adults in negative ways, such as increasing the risk of cognitive, behavioral, and emotional disorders, as well as developing dementia in late adulthood^{1,2}.

Since the launching of the slide-creating programs and the spread use of computers in the academic world, the use of Powerpoint-type presentations is every day more present in all types of classes, even the ones that were usually more practical. The architecture discipline, in which I teach, had always been experiential, as it is about the built environment and has a tangible impact on all human daily activities. For architects, is it essential to understand the physical boundaries of space and experiential learning has a key role in it, thus, the importance of experiencing as you are learning in the profession³. Anyhow, as everyone went into lockdown, so architecture students and the architecture teaching had to change as well. The slides became the norm, and the best tool for understanding concepts, from general to the specifics of the discipline.

When every discipline became an obstinate user of the Powerpoint-type presentations, now known in other formats, at schools we became to notice that the grade of satisfaction with the classes lowered, even with the best teachers, the so-called inspiring ones at my university. These results came from a special survey we apply at the end of each semester for measuring that, along with other relevant data. Also, the level of understanding of many theoretical concepts, that were regularly taught in this format, decreased, as shown in exams and the comparative standardized ones with which we measure the quality of universities in Mexico, from which we also receive data every semester.

1. American College of Pediatricians, "The impact of media use and screen time on children, adolescents, and families," *American College of Pediatricians* (November, 2016): 1-9, <https://acped.org/assets/imported/11.9.16-The-Impact-of-Media-Use-and-Screen-Time-on-Children-updated-with-ref-64.pdf>
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3. Neha Kolhe and Aparna Tartar, "Learning architecture through experimentation," *International Journal of Engineering Research and Technology*, vol. 10 no. 1 (2017): 62-68, https://www.ripublication.com/irph/ijert_spl17/ijertv10n1spl_12.pdf

The main thesis is that it is not exactly the slides strategy that is failing, but the lack of connection between students and teachers that often appears in the classroom, and that is quietly created by a screen between two people, even when they are in the same room⁴. And this is because, as everyone went back to regular classes and schooling, the issue persisted, because we teachers found out that it was very easy to keep replicating the lectures that we used during the pandemics, that many classes could be kept online, and that we could even record in-person classes, so students did not have to pay attention in class and could watch the recording later, at the comfort of their own homes. So when we keep just teaching concepts from behind a screen or a slide, and we keep the students in their comfort zone, the understanding of these concepts decreases.

One example of that is that many of the professors at the university in which I work, especially the ones that teach more theoretical classes, have been using the same exams or similar ones for years, and most of us have found out that, since the pandemics, we have to simplify them more and more, every semester or have more students failing them or having every time lower grades and a lower group average. And this relates a lot to the dependency that the students developed during this time on being glued to a screen and the everyday smaller span of attention we humans have, which, according to the US National Center of Biotechnology Information, from 2000 to 2015, decreased from 12 to 8.5 seconds^{5,6,7}.

More than that, these issues are also related to adolescence, which, according to some studies and scientists such as Dr. Susan M. Sawyer, has now spread into the early twenties, sometimes as late as 24⁸. The delay time in role transitions that the new older adolescents live and the decrease in responsibilities that this entails, along with the effects of social media, especially the quick video platforms, reflects in how our current university students learn, or not^{8,9}. Just as an example, a study conducted by Microsoft, and published in the journal *Computers in Human Behaviour*, revealed that people that used TikTok for 20 minutes had an important decrease in their attention span and working memory, plus depression, and social anxiety already scientifically related to the platform^{9,10}. So, currently at the universities we are teaching older adolescents who have a decreased span of attention, and we keep trying that they to understand concepts through a method that increases barriers between people, decreases learning and understanding, Powerpoint-presentations, making our teacher's jobs harder, and suffering from having a lot of students that do not understand the basic concepts that had been taught for generations.

4. Peter Felten, "Partnering with students", Elon University, Accessed July 30th, 2023, https://www.academia.edu/58454078/Partnering_with_Students
5. Corine Collins, "Critical Issues in Education Heading into 2022", Student Treasures Publishing, Accessed July 28th, 2023, <https://studenttreasures.com/blog/social-emotional-learning/critical-issues-in-education-2022/>
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From this understanding comes the idea that maybe PowerPoint was not the best method to teach theoretical concepts that most of the time are some of the hardest to understand by the young students. They do not really care too much about it and how will they impact their life in the near future, so the question is, how to show them of this importance? How to make them understand it? And from this question comes the idea of returning to experiential teaching at my faculty and my classes to review if this could help students to understand better the boring theoretical concepts and their importance.

In experiential learning, you use all of your senses, creativity, fun, challenges, and diverse actions to generate knowledge which, because of this, not only goes to the brain but keeps embedded in the body¹¹. So you learn by doing, not just listening, and that also changes your perception of the concepts and the importance of it. However, with this method, you have to start thinking about specific and different tasks that the students have to perform during the class in the classroom or outside of it, because it is completely valid and good to take the class outside, to the real world, and it is also helpful. Through these activities, the students build their own knowledge, experience, and abilities, but this also impacts their values, what they understand as important, and how they see the world.

As an example, if you want to teach the SDGs to the new generations, it is quite easy to just show the students an infographic on a slide, but they will see the colors and maybe remember one or two, the ones that are more important for them, but not all. More than that, the level of understanding of the topic, will also depend highly on the level of privilege of the students. As I work with quite privileged students, it is a hard topic, thus, I had to develop a series of exercises so they understand complex topics such as the right to the city, the importance of SDGs and leaving no one behind, gender equality and the female perception of the cities, etc. Mostly everything that relates to quite basic rights is hard to understand by privileged university students. And there, experiential learning became a quite powerful tool.

According to Edgar Dale, we only remember, learn, and integrate 10% of what we read and 20% of a lecture, however, when we explain and write, we retain up to 70%, but when we do and make, the percent goes up to 90%, and because of that, it is really important to simulate real experiences or make the students live real problems through the teaching process¹². More than that, this way we took the passivity away from the learning process, integrate the student with its own process, and make them create their own knowledge and consciousness of the problems, solutions, and the real world. If the student gets interested in the problem, they will continue analyzing it and caring about it for the rest of their life, and that is the importance of experiential teaching for the SDGs and sustainability.

To prove this theory, there was an exercise designed to be implemented with 1st-year architecture students in Mexico. An activity in which they had to live in their city through the eyes of underprivileged people. The goal of it was to make them understand the theoretical topic of the right to the city, mobility theories, and privilege.

11. Mario Ramos Carmona, "Aprendizaje vivencial", Revista Educarnos, Accessed July 30th, 2023, <https://revistaeducarnos.com/aprendizaje-vivencial/>

12. Miguel Ángel Romero, "Aprendizaje vivencial: ¿Por qué tanto empeño en defender las dinámicas y las historias?", Escuela Europea para la Formación de Formadores, Accessed July 20th, 2023, <https://formacionparaformadores.com/aprendizaje-vivencial/>

The exercise was put into practice in a Geomatics class, which is one of the least loved ones on the system because it is heavy in theory and quite complex. Some of the main topics of it are the right to the city, accessibility, and space perception, which are usually taught through lectures or readings, which usually do not help the students to understand the topics. So the main goal of the exercise was to help them to develop a critical mind about how are we creating our cities, for whom, and what rights are we granting to each person, and even automobiles. It took them to live in the city in a different way than they are used to and to understand the importance of leaving no one behind when designing.

The activity was as easy as making them walk around the campus because they usually drive, and a second level of it was to go from one side to the other of the campus on a wheelchair or blindfolded and found out it was even harder than just to walk. When they returned with the activity and we performed some analysis rounds on the group, it was clear that they had understood their privilege and all the theories around the right to the city, accessibility, and space perception. It was easier to talk to them about all the theories because they were interested, we did not need a presentation or slides, because we were having a conversation as a group because the topic mattered.



Figures 1 and 2: Students performing the experiential activity for understanding accessibility and the right to the city around their campus.

An additional perk of the implementation of this kind of activity was that the students' perception and liking for the class improved. As it was stated above, Geomatics is one of the least-liked classes in the university's system, having a national average of 8.9 satisfaction with the class on a scale of 10. In the first year of implementation of these activities, the results of the groups where the activity was implemented went up to 9.92, and in the second year up to 9.67.

The architecture discipline had always been an experiential one, but this quality is being lost more and more every day. The reimplementation of experiential activities in the architecture classes, in a conscious way, especially in the theoretical classes, along with a reduction of the Powerpoint presentations and the lectures, increases the enjoyment of the students for the classes, supports their development of critical thinking, facilitates the interiorization of complex theoretical concepts and improves the perception that the students have of their classes and professors. This relates strongly to other disciplines and everything related to the SDGs and ESD because everything that has to do with sustainability is related to humans and rights.

An understanding that came from this implementation and experience is that experiential teaching should be used in every discipline at the university, as it shows us how all our difficult concepts are important and related to real-life situations. Moreover, it helps us to link knowledge with what we know and how we live, to rights, wealth distribution, privileges, perceptions, and opportunities, thus, it relates to the sustainable development goals, as it helps the students to mainly understand the concept of basic rights and inequality. If they understand that, which is the most basic of the topic, then we can keep developing strategies to help them improve their critical thinking. If they care about it, then they will, by themselves, develop projects that can have an impact on sustainable development, but it is the teacher's job to plant that seed.

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