

# SUSTANABILITY IN THE ONLINE EDUCATION: MORE SUSTANAIBLE FUTURE?

*Discussion Paper*

Mario Silic, Swiss School of Business and Management, Switzerland, mario@ssbm.ch

College of Environmental Health and Safety, Croatia

Marijana Leontic, College of Environmental Health and Safety, Croatia

Marga Hajdin, College of Environmental Health and Safety, Croatia

## **Abstract**

*Sustainability in online education is an important topic that has gained high importance in the last few years. How to achieve sustainable goals through online education is one of the key concerns for many educational institutions. Technology driven online education has bright future but further research is needed to better reposition the role and the future of online education within sustainable boundaries.*

*New technologies (Virtual Reality, Augmented Reality, etc.) will try to jeopardize current campus based models in the same way that Covid19 pandemic has done. New research should aim at unveiling the success factors of the online education but at same time, keeping the campus based premises that mainly relate to quality indicators.*

*Keywords: sustainability, online education, Education for Sustainable Development (ESD).*

## **1 Introduction**

Past research has made important efforts in trying to better understand how educational institutions approach and integrate sustainable development into teaching and learning (Felgendreher et al., 2018). As sustainability is one of the highly relevant and important topics in today's modern world, and education being an important pillar that can offer first level support in understanding how we can act toward sustainable goals, it is evident that education can play pivotal role in the sustainable efforts.

This importance was also highlighted by United Nation's initiative on Education for Sustainable Development (ESD) that has identified the importance of the right education, training and spreading the public awareness.

Interestingly, many educational institutions have recently either started implementing various sustainability initiatives or are in the process of adopting strategic directions that would incorporate sustainability objectives. According to Purcell et al. (2019), universities are the engine of transformational sustainability but also can do more to deliver against the sustainable development goals (SDGs).

What is common to the sustainability objectives that educational institutions aim to follow is that it is all about adopting and following specific strategic aspiration that aims at defining specific purpose with the mission to be "more" sustainable.

Being more environmentally friendly, greener, or adopting any of the existing SDGs is a first step in trying to set up the agenda that would allow educational institutions to be part of the sustainable ecosystem. According to Bestcolleges (2022), the greenest universities in 2022 are Stanford University, Princeton University, Columbia, etc...to name a few. Interestingly, most of these universities focus on delivering sustainable courses (e.g., Stanford has over 390 sustainability courses) or teaching students how to properly recycle, conserve water, and limit their everyday waste production.

Although all these efforts are for sure having or will have high impact on the society and the environment in particular, the question that remains is how and to what extent these initiatives can be further leveraged to take sustainability efforts and objectives to another level.

For example, it is well known, that the impact of student and staff travel on the carbon footprint is very high (Versteijlen et al., 2017). Interestingly, the same study showed that online education can be an important method to decrease travel-related carbon emissions.

In the next chapter we will discuss the impact of the Online education in the context of achieving sustainable goals.

## 2 Sustainability and Online Education

For the sustainability measure to be effective in the online education context, the delivery of the online education should really be delivered as education at a distance. The “physical” dimension is an important aspect as for the online education to be an effective method of reducing carbon emissions, there has to be a clear physical separation between the lecturer and the student in such a way that the student does not travel physically to the campus facilities.

According to Ally(2004) and Moore and Kearsley (2011), online education can be defined as: *“distance education using the internet to create a learning environment, in which a student interacts with content, lecturer and other students during his/her learning process in order to acquire knowledge and competences.”*

The way the online education is delivered is of a high importance. In Table 1. the classification of learning courses is depicted.

| Proportion of content delivered online | Type of course  | Typical description  |
|--|-----------------|--|
| 0%                                     | Face-to-face    | Course with no online technology used. Content is delivered in writing or orally in a classroom.   |
| 1–29%                                  | Web facilitated | Course that uses web-based technology to facilitate what is essentially a face-to-face course. Uses a course management system (CMS) or web pages to post the syllabus and assignments, for example. |
| 30–79%                                 | Blended/hybrid  | Course that blends online and face-to-face delivery. Substantial proportion of the content is delivered online, typically uses online discussions, and typically has some face-to-face meetings.     |
| 80+%                                   | Online          | A course where most or all of the content is delivered online. Typically has no or very few face-to-face meetings.   |

Table 1. Classification of learning courses (Ally, 2004)

In this position paper, we argue that the online education premises will outperform in the long run the campus based education.

There are several reasons for which we believe that the future of the online education is bright, and especially in the context of sustainability efforts.

To start with, the common belief is that the campus-based learning is of a higher quality than the education delivered through an online method. Comparing the quality of the online education 15 years ago to today, we can observe significant improvements in the way the online education is delivered in today's modern world.

Starting with modern learning management system, down to the proliferation of Massive Open Online Courses (MOOCs) and with the explosion of the online course providers such as Coursera, EdX, etc., we can conclude that the online education is advancing at an incredible pace.

On the other side, we could wonder what and how the traditional way of delivering the campus bases lecturers has really changed in the methodology part? The way the campus based lecturers are delivered today, has more or less remained pretty much the same.

Secondly, with the technological advances when it comes to the online education, we have reached just the first level of the knowledge acquisition.

New technologies such as Virtual Reality, Augmented Reality or other immersive experiential methods may change the way the online education is delivered. The right word is “may” as the challenge with the online mode of delivery is essentially in the “trial-and-error” approach where we still do not know how learners will react to these new technologies.

For example, Cortiz and Silva (2017), found that Virtual Reality (VR) can improve online learning in some aspects, such as giving students the sense of presence in an immersive world but also that VR brings a new way to interact between two or more sides when they are not in the same place. This notion of “distance” of high importance in the online context. Similarly, according to Fernandez (2017) augmented reality can help improving the educational system.

Domingo and Bradely (2018), found that most of students do have technical difficulties in using these technologies but the majority reported positive aspects of using the virtual space, including increased meaningful social interactions and reduced social anxiety.

Now, what does sustainability has to do with this evolution?

Clearly, it has a lot to do. Not only sustainability is something that grew considerably in importance in the last few years, but, most importantly, sustainability, will also have to follow the technological advances.

While it is clear that the online education necessitates the redesign of the pedagogical approach (Bliuc et al., 2007), it is also evident that sustainability will have to be repositioned within the new realities.

Indeed, if we want to succeed and reach sustainability goals, it will be necessary to redefine these goals within the online education realms.

However, there is still an important reluctance from major education institutions (Versteijlen, 2017) to replace their campus-based approach with the online education. Covid 19 pandemic situation has for sure helped in understanding that “online” is not as bad as we may have thought it is, but that, actually

it is a good alternative solution. Obviously, was there any alternative when the entire country, city or region was under the complete lock down.

In any case, the pandemic situation helped to understand that online could be a viable solution.

We call for future research that will help in better understanding how online education can replace the campus based education in the sustainability context. How to integrate sustainability and transparency strategically into educational operations? How to be more agile when the next crisis will happen? Or is it the right time to move away from the traditional way of delivering lectures and shift completely to a new mode (blended maybe) of delivering education and staying sustainable at the same time?

These important questions call for further research that will address these important questions. By better understanding how online can serve a more sustainable future, we could better reposition the way we deliver the education.

Despite some first promising insights, research in this area is still at nascent stages.

### **3 Conclusion**

How educational institutions should approach and integrate sustainable development goals is not an easy question.

Interestingly, somehow, thanks to the pandemic situation related to Covid 19, we have “discovered” a viable alternative to the traditional mode of delivering education which is the online method.

Past research has already found that online education can be an important contributor to reaching good practices of sustainability and primarily to the “physical” distance factor that is a high consumer of pollution.

There are several avenues for further research. To start with, despite the clear evidence that the online education plays an important role in the sustainability efforts, there are still areas that need to be better understood. This is especially true for better understanding how technology fueled online education can replace the campus-based education in the context of building fully sustainable education. Indeed, past research has demonstrated that partial solutions (e.g., hybrid education) can be even worse alternatives as the campus-based capacities will have to be maintained at the same level.

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