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Maintaining Quality Education at the University of Medan Area during COVID-19 Pandemic

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Abstract. Higher Education Institutions play a key role in achieving the 17 Sustainable Development Goals through teaching and learning, research as well as community services. COVID-19 Pandemic outbreak requires certain and special methods in conducting education systems especially in teaching and learning process as well as administrative affairs. Online system has become the most popular and preferable since March 2020 when lockdown enforcement was implemented at the University of Medan Area (UMA). It is much easier today at the UMA because an online system has been introduced for years before the outbreak. Besides applying numbers of online applications, UMA has also committed to align the curricula and research with Sustainable Development Goals.

Keyword:

Teaching and Learning, Program, SDGs, Pandemic

1. Introduction

Quality Education is one of the established Sustainable Development Goals (SDGs) by the United Nations (UN) that needs to be achieved as a commitment to reach a better future. The goals encourage all concerned parties as well as government and higher education institutions to improve qualities not only in education itself but also in food safety and socio-economic balance sustainability. Universities have significant contributions in SDGs implementation through teaching and research as well as community service. Universities have a strong engagement with the SDGs, it is known that universities aid SDGs in terms of providing knowledge and solutions, furthermore universities also play an important role in

demonstrating proper method for SDGs support and implementation by the governance. On the other hand, universities need SDGs for broader education demand, framework, collaboration, and funding [1].

Running a higher education institution in the pandemic era has become a great challenge which requires distinctive methods and approaches. The COVID-19 pandemic demonstrates that sophisticated technologies should be used by all areas of society to respond to change [2]. Since COVID-19 is known as a highly contagious disease which could be easily spread among individuals only by droplets, it is paramount to organize an education system which has minimum close contact among people. Despite some emerging problems at the beginning, people seem to be more adaptable to this method today. Various applications to reduce the use of paper have been set up at the UMA for five years before the outbreak. In this initial period, academic and administrative staff used the online application to report their work performance. In the following years (2017) UMA has had a (Academic Online Campus) AOC platform, which allows for an online study plan and evaluation system. Currently, UMA has 51 online applications which were started to be optimally used in the era of COVID-19 pandemic.

As one of the greenest universities in North Sumatra, Indonesia, University of Medan Area (UMA) has set up online education and administration for years before the pandemic. University of Medan Area has been involved as a participant of UI Green Metric World University Ranking Network (UIGMWURN) since 2017. This ranking system helps the university to augment efforts on realizing sustainable university and society notably in keeping a sustainable environment. Previously the university won the award from the ministry of forestry for mini forest inside the campus and some student organizations keep involving in environmental events. In line with these activities, online teaching and learning as well as online administration give positive credit on reducing the use of paper in the campus as a means to save more trees and forest.

2. University Efforts for Sustainability

2.1. Campus Setting

University of Medan Area is a private comprehensive education institution located in the 138775.79 m² suburban region with an excellent ratio of open space to the area covered by buildings. The UMA's buildings were designed to provide adequate day lighting and adequate ventilation in order to maintain a comfortable teaching and learning environment. Therefore, it enhances energy usage efficiency besides replacing high-energy-consumption equipment with low-energy-consumption instruments. The purpose of installing solar panels is to partially replace the use of fossil fuels in order to reduce carbon emissions. Currently, UMA develops several researches to investigate renewable energy alternatives which are conducted by lecturers and students.

Wide open space area at the university is occupied for worthwhile green purposes such as water absorption area, experimental gardens as well as plant and animal conservation. The forest has a number of rare plant species which are equipped with butterfly-park which are used to support teaching and learning as well. UMA participations in UIGMWURN ranked 230 most sustainable university in the world in 2020 which climbed

up each year since 2017 (fig. 1)

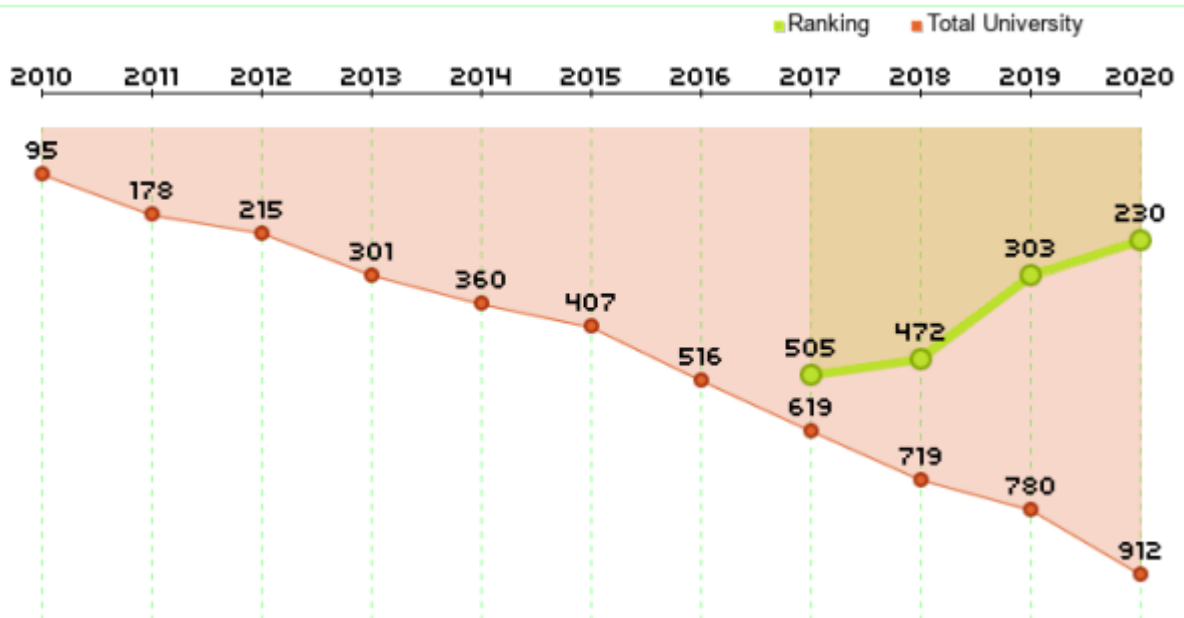


Figure 1. University Medan Area UIGMWURN Ranking History [3]

2.2. Waste Handling

Furthermore, the university has a good reputation for waste management. UMA has been implementing a reduce, reuse, and recycle program for a couple of years. Organic waste yielded from the internal campus environment is processed in the composting center which was established in 2016. Not only developing studies and investigation internally in the campus, but the implementation also has a wider spectrum for some districts and regions in North Sumatra and Aceh to overcome problems in landfills i.e. removing odors and reducing waste volume and converting waste into beneficial products such as fertilizer (fig 2). As the higher education institutions play a key role in reaching SDGs particularly in offering and demonstrating solutions for better life, UMA carried out the actions by providing solutions for environmental issues in the surrounding community. The implemented technologies for waste management are taught in several courses in particular departments, such as biology that has subjects in the area of waste management, such as bioremediation, AMDAL (environmental analysis). Therefore, the students of UMA acquire knowledge and skills in waste handling.



Figure 2. Landfills waste handling in Aceh

In the pandemic situation the activities are conducted in recommended health protocols to avoid virus transmission. After completing initial steps such as introduction and overview by online meeting, on site demonstration could be applied with a limited number of participants and straight hygiene protocols. The processed waste resulted in some beneficial products i.e. organic fertilizer, aromatic briquettes and animal feed were marketed by using UMA Green start up namely Greenshop UMA (fig.3), the startup is not configured for marketing purposes only but also for green campaign through community services program.



Figure 3. University of Medan Area Green Startup

2.3. Water Management

In order to enhance water efficiency at the University, UMA has applied rain water harvesting system, ablution water recycling and reuse of air conditioning water. Rain water harvesting system applies a reverse osmosis (RO) filtration system to remove all of unwanted traces in water and the water quality is examined and certified by Indonesian Regional Water Utility Company (PDAM Tirtanadi). Whereas, waste water from the mosque ablution site is processed by using a technology called waste water processing installation (IPAL) thus used for fish culture. In addition, the water that is resulted from the air conditioning system is utilized for plant culture media as well as windows and cars cleaning.

2.4. Transportation and Environmental Assessment

In spite of limitations in constructing vertical parking, UMA has implemented some policies to reduce carbon emission, especially in this pandemic season. Restriction enforcement is implemented for vehicles. Lockdown policy inevitably helps the campus environment to recover, the less intervention of humans as well as under COVID-19 lockdown condition, the less human disturbance to nature [4]. Moreover, UMA also provides zero emission vehicles (Fig 4a and 4b) for inside campus transportation. Environmental Parameter Assessments are periodically carried out at the university. The examinations

consist of not only the air and water quality and pollutant level, but also noise level which is properly measured (Figure 5a, 5b and 5c). The assessments are run by Indonesian environment development and reported periodically (twice a year).



Figure 4. Zero Emission Vehicles inside the Campus

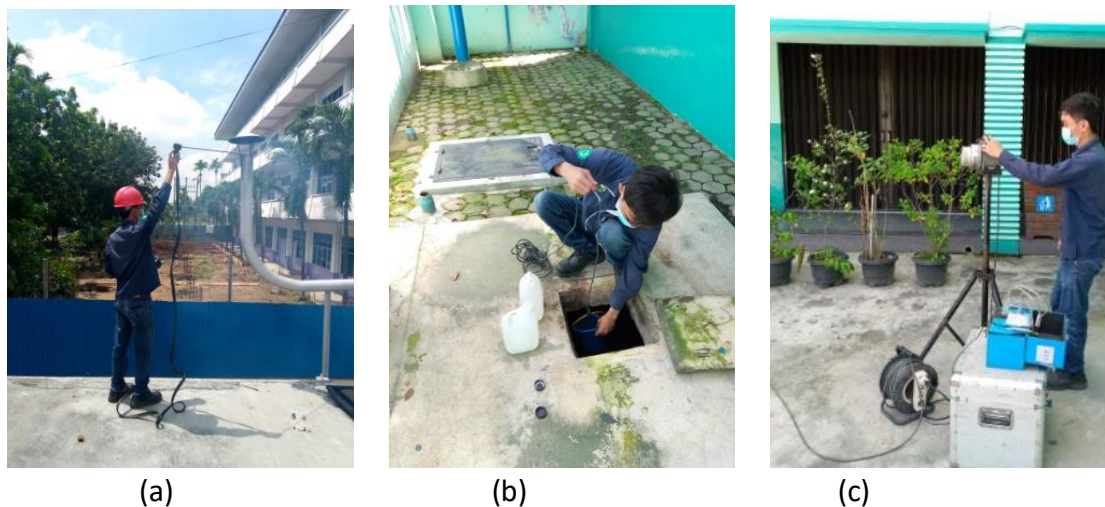


Figure 5. Environmental Parameter Analysis at the University of Medan Area

2.5. Research and Education

Lecturers and Researchers at the UMA have a good concern in conducting studies aiming to achieve SDGs. Both social and natural science researchers at the university have a decent interest in developing investigations and publications to support SDGs achievement. It was proven by a significant escalation of research and publications in 2020. It was counted as 82 researches and 149 publications in 2020.

Another UMA's prominent contribution to SDGs was proven by curriculum arrangement and organization at the university. UMA provides numerous subjects related to sustainability. In 2020 it was counted as 708 (67.11%) subjects related to sustainability. Each subject provides learning outcomes and descriptions related to sustainability (samples are provided in table 1). Currently, Merdeka belajar Kampus Merdeka (MBKM) program which was exhibited by Indonesian Ministry of Education augments the curriculum and is set up and adapted in the MBKM curriculum policies at the university.

Table 1. Subjects Related to Sustainability

Subjects	Department	Description
International/Global Economy	Management	The Learning topics include (1) prominent environmental issues that affects global finance and economic growth (2) strategies in seeking opportunities to enhance profit which in line with environment sustainability (3) fulfilling customer requirements and government rules related to environmental parameters which certified by ISO 14001:2015
Early childhood education	Psychology	The learning topics include (1) strategies to involve environmental elements in childhood education to trigger environmental awareness to support sustainability goals (2) empathy and critical thinking embodying by involving environmental elements into the childhood education curricula. The learning outcomes include the student's ability in explaining the importance of environmental awareness to build pro-environmental attitude and behavior to achieve sustainability goals.
Product Design	Industrial Engineering	The learning topics include (1) The concept of green product design (2) Climate change consideration in product design (3) Demanding products in the modern market due to environmental issues (4) Low cost and material product design (5) Minimizing potential hazard by appropriate green product design. The learning outcomes include Student's ability in understanding, explaining and designing Desirable green product design to realize environment sustainability

2.6. Students Events

COVID-19 Pandemic limits social activities that enable students to perform their interest including eco-friendly events. Consequently, some events are conducted online for instance

the making of organic hand sanitizer which was conducted by the Biology Department. This event was conducted in order to fulfill the necessity of sanitation, replacing alcohol-based hand rub which was known to possess adverse effects on skin and the absence of a reliable supply source [5]. Meanwhile offline events such as water purification for local communities and animal feed production were conducted with permitted health protocols. The events were broadcasted by Metro TV (National TV Channel) to enhance local quality of life and 3 and 6 SDGs (Good health and Wellbeing and Clean Water and Sanitation) achievement.

2.7. Programs Designed to Cope with COVID-19 Pandemic

COVID-19 has triggered a global crisis of unprecedented proportions, fueled by inadequate health systems, a lack of good water and sanitation, poverty, hunger, limited access to education, and global cooperation. The pandemic has wreaked havoc on almost every facet of the global economy (Wozniak and Tyczewska, 2021). COVID-19 pandemic turns the world into an economic vulnerability, it has great impacts on employment and family income (Karpman., et al 2020), many families as well as those in the developing countries as if in Indonesia also experience significant effects of this instability. More people lost their jobs during the pandemic. In addition, informal employees also lost a significant amount of money (33.2 %). This is due to a policy of reducing the intensity of human contacts in order to mitigate the virus's rate of spread, resulting in demand and supply disruptions. Only a few haphazard workers have wages that aren't falling or disappearing as a result of the pandemic (7.7 %) (Pitoyo et al., 2020). The condition drove the university to support teaching and learning processes by providing internet data packages to the students. Data distribution has become a commitment of the University since the initial periods of lockdown in 2020.

In the necessity of vaccination against severe viral infections, the institution facilitated the program of vaccination for university staff. Online registration was applied to minimize social contact and the injection process was scheduled properly to avoid the crowd during vaccination. Regular health examinations and Coronavirus swab tests are also available for staff.

3. Summary/ Concluding Remarks

Sustainable Development Goals achievement needs the role of Higher Education Institution for acceleration, strong linkage exists between university and SDGs. In spite of a number of limitations in implementing some programs, the COVID-19 pandemic lets people learn how to switch some ordinary methods into various unique techniques. University Medan Area exhibits a quick adaptation to new normal mode to maintain the quality education as stated in goal 4 of SDGs.

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