

THE IMPACT OF COVID IN HIGHER EDUCATION

Higher education and Sustainable Development Goals during COVID-19: coping strategies of a university in Wuhan, China

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Abstract

Background: It is widely perceived that COVID-19 has significant influence on higher education and also contribution to development including Sustainable Development Goals (SDGs). However there is insufficient evidence about investigations on such influences, especially at micro level.

Design and method: A university located in Wuhan, China, is selected for the case study to explore how COVID-19 affects higher education and how universities' coping strategies of COVID-19 can contribute to SDGs. The method is an analysis of 32 institutional documents published by the university.

Results: The university in the case study has taken a number of coping strategies of COVID-19, largely in four aspects including medical services, online education, logistic support, and graduate employment promotion. These coping strategies contribute to achieving SDGs, especially SDGs 1, 3, 4, 5, 8, and 10.

Conclusions: The case study provides micro-level empirical evidence, which supports that appropriate university coping strategies of COVID-19 can contribute to SDGs, even it is widely perceived that the pandemic has brought strong negative impact on higher education and sustainable development. The selection of a university in Wuhan, China, can generate more practical implications, as Wuhan is the first city that experienced the unprecedented lockdown, and China is the first country that reopened university campuses after the lockdown.

Introduction

The 17 Sustainable Development Goals (SDGs) are the core of the 2030 Agenda for Sustainable Development, which was approved by the United Nations (UN) as a 15-years plan to achieve a better, inclusive, and more sustainable future for the world. The 17 SDGs have a wide coverage of different but interacted dimensions of sustainable development such as end of poverty, environmental protection, public health, access to education, and decent work. Currently there are 169 targets which serve as sub-components to contribute to achieving the SDGs, and 247 indicators which measure the progress of achieving the SDGs.¹

Higher education's contribution to and connection with the SDGs are significant. SDG 4 clearly indicates that higher educa-

tion is part of this SDG, as higher education is a component of quality education and can provide lifelong learning opportunities. More specifically, SDG Target 4.3 sets a target to promote equal access to higher education regardless of gender and Socioeconomic Status (SES). Aleixo *et al.* find that education (including higher education) in itself is part of the SDGs, while it is also an approach to achieving other SDGs.² This can be reflected by the SDG Target 4.7, which aims to equip learners with knowledge of and skills for sustainable development through proper education, culture of peace and appreciation of diversity. Furthermore, Higher Educational Institutions (HEIs) such as universities are considered as important members of local communities, and therefore contribute to the sustainable development at local level, especially via their strengths in teaching and research.³ Realizing the importance of collaboration in achieving SDGs especially SDG 17, Tandon and Chakrabarti explore HEIs' role in achieving SDGs via partnerships and provide a number of practical suggestions.⁴ Higher education's influence on SDGs also varies across regions.⁵

Although the impact of COVID-19 on higher education has been observed by scholars,⁶ there is a relative paucity of research on how COVID-19 influences higher education's connection with and contribution to the SDGs. A lot of these studies focus on whether and how COVID-19 has impact on the sustainability of higher education itself (particularly the HEIs), and explore how such impact generates further influences on SDGs. For example, via a global survey, QS reports that 85% of surveyed institutions responded that crisis management strategies have been adopted to fight against COVID-19.⁷ This is possible to create burdens for the sustainable development of higher education as such strategies may consume substantial resources such as finances and staff stints, and therefore reduce HEIs' contribution to SDGs via teaching and research. For example, crisis management strategies such as contact-tracing and quarantines may reduce the enrollment of new students, and create long term uncertainties.⁸ Marshman and Larkins estimate the loss of oversea student revenues of 38 Australian universities, and find that the Australian higher education sector will face long-lasting financial challenges which may lead to major expenditure reduction initiatives.⁹ In particular, universities may face the challenge to properly balance their long term sustainability and urgent needs in short terms.¹⁰ The lower sustainability of HEIs as a result of the COVID-19 is likely to reduce HEIs' contribution to SDGs locally, nationally, and global-

Significance for public health

With relatively high population density, universities are heavily affected by the COVID-19 and have to take suitable coping strategies to ensure the health of its staff and students, as well as the local communities. This article introduces how universities are affected by the COVID-19 and their coping strategies from the perspective of sustainable development, and is directly linked with the UN Sustainable Development Goal 3, which focuses on public health.

ly. This is supported by Lewin, who argues that the economic recession caused by COVID-19 may have negative results on educational financing,¹¹ which may further lead to chronic impact on higher education and its contribution to SDGs. It is therefore suggested to revisit and revise SDG 4 including its targets and indicators.¹¹

A few papers discuss COVID-19's impact on higher education's contribution to sustainable development (including SDGs), and provides implications for coping strategies. The shock of COVID-19 on education demonstrates the weakness of the strong reliance on classroom based teaching, especially in the context of insufficient suitable textbooks and guidance to support home-based learning.¹² Suitable textbooks and guidance to support home-based learning are believed as necessities to keep SDG 4 on track.¹² Vlachopoulos finds that the COVID-19 provides an opportunity to promote online education, but at same time there are also concerns about online teaching as a means to ensure the continuity of education (including higher education).¹³ The conflicted views are also reflected by the situation in least developed countries and some developing countries, where access to essential online teaching resources such as internet and basic shelter is insufficient, so the attainments of SDG 4 face challenges.¹⁴ As a response to the challenges, Iyengar argues that after COVID-19, education systems need to adopt technology in order to reduce digital learning inequalities, and also emphasize the SDG 4.7 and its connection with crisis including climate change.¹⁵ This supports Aleixo's argument that higher education is a component of SDGs itself, while also a tool to reach SDGs.²

In addition to SDG 4, existing literature also examines how COVID-19 has revealed and influenced higher education's connection with other SDGs. For example, Lopes and McKay find that the current formal education system (including higher education) does not make learners successfully prepare for disasters and developing suitable health defense systems,¹⁶ which is an important dimension of SDG 3 and SDG 13. Iwuoha and Jude-Iwuoha also find that students (including university students) in less-developed countries are more likely to suffer from disadvantages in access to educational resources in the pandemic of COVID-19, which has negative impact on achieving SDG 10 to reduce inequality within and among countries.¹⁴ COVID-19's influence on higher education and economy may also lead to a diminishing human capital and economic opportunities, and therefore generates negative impact on SDG 8.¹⁷ This can also be reflected by the high unemployment (including youth employment) in many countries since the spring of 2020.

Previous studies have discussed the relationship between higher education and SDGs, and also investigated the impact of COVID-19 on higher education including how the pandemic reduces higher education's contribution to achieving SDGs. However, in comparison with macro level policy-oriented studies, there is limited research based on empirical evidence at micro-level that focuses on how COVID-19 affects the relationship between higher education and SDGs. In particular, the situation of China is under explored, even though China is the first country experienced the outbreak of COVID-19 and also the first country that reopened its higher education (back to normal). This article therefore bridges the gap by analyzing empirical evidence from a case study of a university located in Wuhan City, China. Wuhan is the first city where the outbreak of COVID-19 occurred. It is also the first city experienced the unprecedented lockdown, which is followed by many other cities and countries in the world.

Case study site, data and method

Case study site

Zhongnan University of Economics and Law (ZUEL) is selected as the site of case study. ZUEL is a 'double first-class' university under the direct leadership and supervision of Chinese Ministry of Education (MoE). ZUEL's domestic campus has two sites that are both located in Wuhan. Since these two sites are not far away from each other and are under the similar governance by the university, this article considers the two sites together as its Wuhan campus. Founded in 1948, ZUEL currently has over 2,400 staff members and around full-time 30,000 students, including more than 20,000 undergraduates, over 8,000 master students and 1,300 PhD students (the figures are updated yearly and most recently updated in September 2020).¹⁸ Based on an informal discussion with a senior professor of ZUEL, the students' population has a rather equal gender distribution as at least over 45% of its current students are females. This estimation is consistent with the general situation of gender balance in the population of Chinese university students. This is largely because of the long-lasting 'one-child policy' in China in the past 30 years which provides more equal opportunities for females to access education including higher education.¹⁹ In particular, being different from universities specialized in engineering and natural sciences which have relatively high percentage of male students,²⁰ ZUEL is a university specialized in humanity and social sciences, which has a more balanced gender distribution in its student population.

The students' age usually range between 18 and 23 years old for undergraduates and within the range of 23-32 years old for master and PhD students. This is because of the rigid educational system in China, where the statutory age of starting education is 6 years old, and it usually takes 12 years to finish pre-university education and be eligible to attend university entrance exams. Then it takes 4 years to complete undergraduate education. Gap years are not widely accepted in China before obtained a university degree. Afterwards it takes another 3 years for completing master and PhD studies respectively. Although unable to know the exact SES of students, an administrative official of ZUEL estimated in an informal conversation that the vast majority of students are able to afford the tuition and maintenance, including access to essential Information Technology (IT) resources without financial difficulties. This is because of the rapid development of infrastructure in China where internet has a wide coverage in both rural and urban areas. The country's strong manufacture sector also contributes to the affordable cost of basic IT products such as computers and smartphones. Smartphones and computers are considered as daily essentials instead of luxuries in China, especially in the young and well-educated generations.²¹ In addition, since it is compulsory for university students in China to pass national level computer test before they obtain their degrees, it is reasonable to believe that students at ZUEL should have sufficient IT skills to attend education online. Similar to the vast majority of universities in China, before the pandemic, the teaching activities were largely classroom-based for full-time students. Remote teaching was seldom adopted and only arranged in exceptional cases (e.g., for continuing education students who are usually not on-campus residents). However, since early 2000s, the university has started to promote the use of internet to assist teaching. According to an informal discussion with a senior professor and administration official of ZUEL, before the outbreak of pandemic, slightly over half of the teaching modules have developed their online supporting materials such as lecture notes, exercises and answers. A university-wide online platform has been developed to facilitate post-classroom interactions

between teachers and students, although the use of it is not compulsory. University administration and management were implemented with a mixture of traditional in-person and paper-based approach, as well as the digitalized approach. Before the pandemic, the university provided few training sessions of remote teaching and management. In general, IT was mainly used as a supporting tool to facilitate the teaching and management rather than a main platform at ZUEL before the outbreak of COVID-19. Nevertheless, the ZUEL campus is fully covered by WIFI and cable-internet/broadband, which can be easily accessed by staff and students.

ZUEL is selected as the case study site due to a number of considerations. Firstly, it is a MoE supervised 'double first-class' university, which demonstrates its academic status and educational reputation, and therefore has a good representativeness of Chinese higher education. Secondly, considering the population size of its staff and students, ZUEL also has high representativeness of Chinese HEIs. Thirdly, ZUEL is located in Wuhan and has strong interactions with local communities, which is suitable for the article to explore how the pandemic affects higher education's contribution to SDGs at local and regional levels. Fourthly, ZUEL is located in the first city of the world that witnessed the outbreak of the COVID-19 and experienced large scale lockdown, and also one of the earliest cities which resumed higher education in normal. This experience of whole cycle of the pandemic can enrich the academic knowledge of how COVID-19 affects higher education, and also generate practical implications to other countries and cities.

Data and Methods

This case study is based on the analysis of 32 institutional documents of ZUEL, which were published on the university official website. These 32 documents are the information about ZUEL's coping strategies that can be publicly accessed online. This also corresponds to ZUEL's mixed practice of paper-based and computer-based management, as mentioned in the previous section. The author has also arranged a field trip to ZUEL in 2021 when the travel restrictions due to COVID-19 are expected to be removed, in order to collect more internal documents for future research.

These institutional documents are issued by the university administration and cover different aspects of the university's coping strategies for COVID-19 such as learning continuity, safety measures, social services, which can reflect the contributions to SDGs. The issuance dates of these institutional documents range from late January 2020 (the beginning of the outbreak of COVID-19) to mid-August 2020 when the university formally allowed students to return to campus.

The content analysis of these documents follows the widely-used hands-on guide for novices in the field of public health and social sciences.²² Starting from reading and re-reading the documents thoroughly in order to develop an understanding of the whole contents and context, the text of documents were further divided into meaning units and codes. Based on these meaning units and codes four categories are developed: medical support, remote teaching and operation, logistic services, and graduate employment promotion. These four categories are developed with the consideration of the research question and the contents of these documents. Since the majority of these documents are relatively short (29 of the 32 documents are between 0-2,000 Chinese words/1-2 A4 pages with proper margin and formatting, two are within 2,000-4,000 Chinese words, and only one is longer than 4,000 Chinese words), the analysis did not compose sub-categories (themes).

Results

ZUEL's coping strategies for COVID-19

ZUEL has adopted a number of effective strategies in response to COVID-19. As in the previous section, these strategies cover but are not limited to the four categories: medical support; remote teaching and operation; logistic services; and graduate employment promotion. These four categories are directly associated with SDGs, and also correspond to a university's main commitments to the society such as educating people and providing suitable talents for the labor market. The following paragraphs describe these four aspects of coping strategies in more detail.

Medical support

ZUEL has taken a number of efforts to provide essential medical support to students, staff members, and local communities. On 22 January 2020, two days before the full lockdown of Wuhan, the hospital affiliated to ZUEL (a hospital on the campus of ZUEL and partially administrated by the university, but has some flexibility in daily management and operations) has issued a warning of COVID-19 which suggested a number of protective actions to be taken by ZUEL students and staff members. In the following weeks, the university and the attached hospital have taken efforts to ensure a sufficient supply of protective products (such as face masks) for students and staff members. ZUEL also took the responsibility to ensure that all students are covered by the required medical insurance (in China, all university students are entitled to national medical insurance via proper administrative procedures at the universities). Therefore, students will not have strong financial concerns when using necessary medical services such as infection testing or quarantine.

The ZUEL-affiliated hospital started to run 24-hours services, especially the treatments of COVID-19 symptoms such as coughing. During the lockdown, a few hundred of students, staff and their family members have benefited from the services provided by the ZUEL-affiliated hospital as they have no easy access to other medical service providers. The services are open to all including the local community until the lockdown of the campus when the public is restricted from entering the university premises including the university-affiliated hospital. Doctors of the ZUEL-affiliated hospital also provided voluntary outpatient services and guidance to local communities.

Remote teaching and operation

The ZUEL started to organize teaching and other essential operations (e.g. research and administration) remotely via different channels and platforms such as WeChat, telephone, and Internet after the lockdown. The university has established a special supervision group to lead, supervise, and monitor the online teaching progress. An advantage taken by the university is that the lockdown started in the mid of university winter break and right before the Chinese New Year holiday. Therefore, the university obtained near 1 month time to prepare for online teaching before the start of the new semester.

According to a senior professor of ZUEL, since the start of the new semester in March 2020, teaching in ZUEL has been delivered remotely via internet. Classroom-based teaching was cancelled or moved to online platforms. The oral defense of theses (for post-graduates and final year undergraduates) was also conducted online. In addition, the university library offered students and staff members with access to a large size of digital resources. All the administrative operations were delayed or conducted remotely dur-

ing the lockdown, and they were still partially operated via Internet even after the end of lockdown in April 2020. Around 90% of teaching modules have been conducted remotely via internet in the new semester started in March 2020, and the remaining about 10% of teaching modules were cancelled or postponed to a later time after the resume of classroom-based teaching. Almost all modules have developed supportive materials that can be accessed online by students, which is a significant advancement from slightly over 50% as before the pandemic. Those teaching modules cancelled or postponed mainly because the teachers have concerns about the quality of online teaching, especially they feel unconfident about the outcomes of module-end assessments as they cannot be easily monitored remotely. Teachers also have concerns about the lack of in person communications and interactions may reduce the modules' contribution to students' personal development such as their motivation to learn without supervision.

Logistic support

Analysis of the institutional documents shows that ZUEL has put substantial efforts in providing logistic support to the delivery of education and the operation of university. Firstly, in order to support online education, the university provided technological support to ensure the supply of essential hardware and software. For the very few students who do not have enough resources to access digital devices, the university also provided reasonable support. Secondly, the university logistic teams delivered necessary groceries to students, staff members and their families who have been locked down on campus. This is particularly important because in China, a significant proportion of staff members and their families live in on-campus accommodation arranged by universities, and there are also some students staying in university accommodation during university closures. Thirdly, the university financially supported students and staff members. For example, students' pre-paid accommodation fees were refunded during the lockdown, and premiums were paid to students and staff members who were infected. Fourthly, the university strictly implemented the lockdown measures, and made all efforts to contact students remotely with updated information. All these logistic support are covered by extra-budgetary funds, which have been raised by the university from different sources such as the government and the alumni. Unfortunately it is unable to know the exact amount of these funds.

Graduate employment promotion

ZUEL has taken a lot of actions to promote graduate employment, especially for the 2020 cohort of graduates. Based on the educational system, it is estimated that over 10,000 undergraduates and postgraduates will seek employment this year (1/4 of undergraduates plus 1/3 of postgraduates). A special working group consisting of university senior leaders was established to promote graduate employment, which emphasized that due to the impact of COVID-19, the university will use remote systems to better connect its graduates and potential employers. The university also took advantage of its alumni network to expand graduate employment opportunities. For example, a special online career fair open to ZUEL alumni employers was organized in April 2020. More than 350 alumni employers attended this career fair with 24,966 job vacancies, and they have received over 5,100 applications. In addition, with an edge in legal studies, ZUEL has made special efforts to preventing its graduates from suffering discriminations, which sometimes appeared in job markets under COVID-19. Graduates were provided with guidance on how to seek support in case of discrimination. The university also sent an official letter to a large number of potential employers to seek understanding of its

graduates and reduce the pressure on and discrimination against its graduates, as its graduates could be negatively labeled as 'people from the center of pandemic'.

Achievements of the coping strategies

ZUEL's coping strategies of COVID-19 have advantages and achievements. Firstly, these strategies ensure the timely supply of necessities for students and staff members who were locked down on campus. These supplies are provided regardless of nationality, gender, and SES, which minimized the inequalities caused by COVID-19. Secondly, benefiting from the good infrastructure conditions,²³ ZUEL's remote teaching and management strategies ensured the proper delivery of education to all students. This is a response to the MoE's initiative of 'Disruptive Classes, Undisrupted Learning'. This also becomes a good opportunity to enhance the IT skills of students and staff members. ZUEL's achievements in remote teaching received positive comments from the MoE. Thirdly, the university has provided good medical support to students, staff members, and local communities. In particular, the university's efforts to ensure its students under the coverage of health insurance reduced students' financial concerns to seek medical support. Fourthly, the university's efforts to expand graduate employment opportunities and reduce discriminations are also supportive to the students, although currently the outcome is not obvious because the main graduate employment season has not arrived.

Discussion

ZUEL's coping strategies of COVID-19 reflect how higher education is connected with SDGs, and how the pandemic has affected such connections. On the one hand, higher education's contribution to SDGs could be reduced by external shocks such as COVID-19, for example, international collaborations between HEIs, which are important components of SDG 4 and SDG 17, have been largely disrupted by COVID-19. On the other hand, ZUEL's coping strategies and their achievements suggest that higher education sector can still contribute to SDGs in face of external crisis such as COVID-19.

ZUEL's strong logistic support to staff and students contributes to SDG targets 1.4 and 1.5, which aim to improve people especially vulnerable groups' access to basic services and resources, and reduce their exposure to shocks and disasters. Strong medical support from ZUEL and its affiliated hospital directly contributes to SDG 3, especially SDG target 3.8, which promotes universal health coverage regardless of SES. Its medical support to local communities is consistent with SDG target 3.d, which aims to improve early warning, risk reduction and management of health risks. ZUEL's efforts to promoting graduate employment and protect graduates' rights in labor market contribute to more jobs, better entrepreneurship, and labor rights. These are directly reflected by SDG 8 especially SDG targets 8.3 and 8.8.

ZUEL's coping strategies of COVID-19 also demonstrate that higher education is an approach to achieve SDGs, and itself is also part of SDGs. For example, ZUEL's strong support to remote teaching (including technical and financial support) improved the access of affordable and quality tertiary education, as reflected by SDG target 4.3. In addition, during the pandemic especially the lockdown, students of ZUEL can develop more knowledge of sustainable development and its importance via their personal experience of such a pandemic and its impact on people's life, which is consistent with SDG target 4.7. The ability to study without close classroom supervision or traditional textbooks gained via remote

teaching during COVID-19 would also enhance students' capacity to seek more lifelong learning opportunity, which is an essential component of SDG 4. This would be also important to reduce the negative impact on the continuity of learning caused by insufficient suitable textbooks.¹² The university's efforts to ensure students with low SES to have access to IT resources can also reduce the concern of equity of online education.^{13,15}

This article is an attempt to explore higher education's relationship with SDGs under the shock of COVID-19 by using a case study of ZUEL. The core findings demonstrate that while COVID-19 definitely has negative impact on higher education's contribution to SDGs, universities' coping strategies can still contribute to SDGs in different means. This case study provides evidence to support the existing argument that universities are important participants of local communities, and their involvement is contributory to SDGs especially at local levels.³ However their contribution is not limited to teaching and research as widely perceived. In contrast, as shown by the case of ZUEL, universities can also provide some medical services to local communities in face of such a large scale pandemic. This is particularly the situation in China where many universities have their affiliated hospitals, and in some developed countries where a lot of high standard hospitals are (partially) operated by universities. Universities' coping strategies of COVID-19 should pay attention to the equality issue including gender mainstreaming. ZUEL's coping strategies, especially the logistic support, paid sufficient attention to students with low SES and took actions to minimize the possible inequalities caused by COVID-19.^{14,15} This would also be supportive to contribute to SDGs, particularly SDG 5, to achieve gender equality and empower all women and girls, as well as SDG targets 4.3 and 10.2, which focus on equal access to education and inclusion regardless of gender and SES.

Although ZUEL's coping strategies of COVID-19 have generated a number of achievements and contributions to the SDGs, this article does not support a replication of experience from this case study without consideration of context. To the contrary, the analysis suggests that the national and local context must be considered when transplanting successful experiences from other countries or regions. As shown in the case study, ZUEL's success in remote teaching and management is not possible without China's strong infrastructure sector.²³ In addition, although China is the first country which witnessed the outbreak of COVID-19 and Wuhan is the center of the first outbreak of this pandemic, the city and the country's rapid reaction to the pandemic and the strict enforcement of lockdown make China the first country to reopen university campuses and bring higher education back to normal.²⁴ This is an important background for ZUEL's coping strategies of COVID-19 and contribution to SDGs. It may also leave spaces for future research to expand the current knowledge about higher education's contribution to SDG 17.⁴

Conclusions

With the outbreak of COVID-19 since early 2020, there has been research examining how the pandemic affects the relationship between higher education and SDGs. The existing literature has contributed tremendously to the knowledge and practice, but empirical analysis based on micro level evidence is still insufficient. This article therefore attempts to bridge the literature gap by sharing a case study of ZUEL's coping strategies of COVID-19. The results demonstrate that although higher education's relationship to SDGs have been affected by COVID-19, universities' coping strategies can contribute to achieving SDGs in this difficult

time. The unique location of ZUEL in the first city that experienced the outbreak of COVID-19 and the subsequent lockdown can also generate more academic knowledge and practical experience to universities in other cities and countries. This is particularly the situation as Wuhan has already experienced a full cycle of pandemic and returned to normal life, and ZUEL has also completed its campus lockdown and normal education and management have restarted. This article is of course not without limitations. Firstly, due to travel restrictions caused by COVID-19, it is unable to collect data via interviews or questionnaires. Although document analysis is also a widely adopted method for case studies, a lack of other methods and data makes it impossible to compare results obtained via different methods. Secondly, the graduate job market season has not arrived yet when the article was being drafted, so it is unable to identify the real impact of COVID-19 on the graduate employment and the effectiveness of ZUEL's coping strategies to promote employment for its graduates in this difficult period. Thirdly, ZUEL is a well-reputed public university in China, which receives most of its budget from the government and therefore has very little financial pressure in the face of such a pandemic. It also benefits from China's rapid economic development especially the infrastructure sector. Therefore, when generating the experience to higher education in other countries, possible contextual varieties must be noted and considered. Fourthly, this study does not have sufficient information to explore global higher education partnership under COVID-19, and therefore cannot make more contribution to the knowledge of the linkage between higher education and SDG 17.

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Conflict of interest: The author declares no conflict of interest.

Availability of data and materials: Data used to support the findings in this article, as introduced in the sub-section 'Data and method', is accessible on the official webpage of ZUEL at the time of submission. It is also available upon request to the author. Data obtained from informal discussion with the staff at ZUEL, aiming to provide some background information of this study and ZUEL, is available upon request to the author, subject to the agreement of the staff.

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