

EDUCATION-TO-GO IN THE FUTURE IN DEVELOPING COUNTRIES?

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Abstract

Many typically good paying jobs have not yet recovered to the pre-pandemic level in many countries. On the other hand, due to the use of many digital technologies to order, store and deliver goods during the pandemic, many professionals were and are still needed for creating computer applications, data management and in analytics (aside from blue collar workers needed in call centers, warehouses, and delivery services). However, not many people are qualified because there were not many careers created in those fields mainly in developing countries. Despite that, the current demand for this type of talent is high. Therefore, many higher education institutions and small colleges may take the opportunity and offer the essentials of basic higher education and training needed for some of those jobs. Some younger individuals might not want to go back and be confined in a classical classroom after having tasted the “freedom of virtual education” which could even be accessed through a cell phone anywhere and at any time. This could be the beginning of Education-To-Go schools all around the world but mainly in underdeveloped countries, an education which would be affordable, quick, and very specific and aiming to certify some professional skills. This education would be tailored to fit the needs for the vacancies that are urged for the market to fill. Mainly the schools which would prepare those young adults could hire fewer teachers who would prepare or assemble the course materials and make them available on the school websites. This practice on the other hand will contribute to the “uberization of education” and drastically change the number of teacher-to-student ratios. In this paper the possibility of Education-To-Go in Mexico is analyzed considering the economic sectors which could possibly grow in the coming years matching them with the competencies needed. The analysis is carried out using quality control tools such as Ishikawa and Pareto Diagrams. There are scenarios in which it is a possibility, and the country could even export some of the trained people, mainly to the United States. Specialization through the teaching of specific competencies could be possible in some countries like Mexico in the post-pandemic era.

Keywords: *Competencies, engineering, tools, uberization.*

1. Introduction

In some countries during the pandemic, several truckers resigned which caused problems in supplying fuels, food, medicine, and other goods to the population. People working in medical services got exhausted, sick, or even died. Many older populations also unfortunately died. Other workers are still part of the great renounce in search of better working conditions, salaries, and benefits. So, many specialized workers were not or are not available yet for many reasons. Robots are not yet “competent” to replace the many workers to fill the vacancies (Dominguez-Perez et al, 2017). The pandemic changed in many ways how we buy, educate, work, have fun, and communicate. Therefore, other professionals are needed for the post-pandemic world in many countries; most of the professions will remain necessary and many pre-pandemic jobs are still essential. But the question is if we are prepared for another catastrophe in which we might need workers who should be available in the short term, to replace a segment of the population that could not be available in a certain economic sector or to prepare them in new jobs which might surge in the future. Future catastrophes could be originated by climate change, pandemics, or wars if many people die. Although, it is not necessary for a catastrophe to try to have better educated people for higher paying jobs. It is also necessary that women have access to high skilled jobs in order to reduce the salary gap between men and women and it will be also necessary to train migrants from the south to the north as the population of countries in this last region becomes older. Some governments would desire for their minorities to be trained for high paid jobs which require high skills.

Therefore, it is important to design education systems to prepare professionals in the short term. Currently, there is an opportunity to attempt it because there is a demand for many professionals with special skills, but the offer is not comparable, in part because graduates in university careers spend a few years being educated and the ordinary universities cannot prepare people in a short time. Besides that, if for any circumstance many workers with a specific university training are needed it could not be possible to prepare them because not many can afford to pay for an expensive career in a university in countries like the United States of America (USA). Currently, many families due to the COVID-19 pandemic might have depleted their savings for the higher education of their children in places where higher education is expensive. In the USA university fees and tuition have increased around 120% during the last 20 years. Many people with specialized training could be needed in a future crisis caused for example, by climate change, pandemics, or wars. Currently, The Intergovernmental Panel on Climate Change and its Working Group Impacts of Climate Change, Adaptation and Vulnerability, advert the possibility of severe crises due to climate change in a very near future and even mass extinctions of some species.

The reasons explained above lead to explore quick ways to affordably educate people in specific branches of science, engineering, medicine, administration, law, architecture and in many other fields. So, it is necessary to start designing ways to “urgently” prepare the necessary people to occupy some high skilled jobs. We should design ways to fill the current job market but not only of the productive sector but also of other sectors of society in order to advance towards a more equal society. For example, searching for new non-predatory economic systems far from the rampant consumption of capitalism, or just to design cooperative economic systems for the betterment of some communities, such as, distributed generation, storage and commercialization of energy from clean renewable energy sources in rural communities or to just prepare communities for surviving the upcoming global climate change disasters. Obviously if students study very narrow fields of knowledge, are trained in very specific abilities and develop a few special aptitudes they will not have a “universal” knowledge that the formal and classic universities provide, and perhaps the teachers to teach them may not be the most prestigious in research, so the students might receive a “reduced” education because the “best” professors in the universities are those who not only teach but research and apply the skills they teach and some of the knowledge they create are transferred to students through their teachings.

Trying to rush the preparation of the needed professionals may cause the creation of schools or redirecting some of the already existing schools to the uberization of education in which, older teachers are forced to retire to reduce costs and hire younger teachers with scarce benefits and low salaries. This could also be the result of the current economic situation due to the pandemic. Nowadays, many private schools have closed because many of their former students could not continue paying for their education and the public schools have a budget increased only by the inflation of the last year but the inflation, in some countries, has doubled at the onset of the current year, and therefore they have less economic resources. In this bleak economic situation, some schools reluctant to reduce their upper bureaucracy might start firing older teachers and other workers or force them to retire.

2. Why could Education-To-Go be feasible?

Education-To-Go is a possibility in the next years. This is concluded by using a decision tree which is shown in Figure 1. We start with the question: why Education-To-Go is a possibility? And the answer is: because of the technological change in the organizations, wars, global climate change or pandemics. Then we asked why are some new systems of education needed to face these issues? The answer is because there are less economic resources, teachers, and infrastructure in universities as well as the organizations need professionals with new skills. Afterwards, we ask the question: why is that the situation in universities and organizations? The answers are that old people retire, people flee in case of wars and that there is no good economic growth. At the same time there is high inflation and also due to the digitalization and the onset of new ways to conduct businesses.

Nowadays we observe that organizations are adopting new technologies, they are becoming digitalized, and are adopting text, image and voice processing, internet of things connected to devices, cloud computing, big data analysis, e-commerce and digital trade, artificial intelligence (machine learning, neural networks, natural language processing and others), encryption and cybersecurity, augmented and virtual reality, 3D and 4D printing and modeling and robotics (industrial automation, drones, and others) (WEF, 2021). Therefore, industry and other sectors of society need people who dominate these technologies (not for creating them, just to used them). They also need that their employees are proficient in emerging skills (including soft skills) (Dominguez-Vergara et al., 2021), among these are complex problem-solving, active learning and learning strategies, analytical thinking and analysis, technology design and programming, reasoning, problem-solving and ideation, creativity, originality and initiative, emotional intelligence, troubleshooting and user experience, service orientation,

resilience, stress tolerance and flexibility, technology use, monitoring and control, leadership and social influence (WEF, 2021). Among the job roles in high demand are artificial intelligence and machine learning specialists, data analysts and scientists, big data specialists and information security analysts (WEF, 2021).

Figure 1. Decision Tree of why there is the need of Education-To-Go.



Recent conflicts in the world could trigger the creation of Education-To-Go universities. Nowadays the prices of oil have been above 100 dollars per barrel for some time, which is causing more inflation, on top of the one caused by the disruption of productive chains due to the COVID-19 pandemic. The effects of the Russian-Ukrainian war and high inflation are impacting negatively the budgets for education in many countries of the world. And because of the war many countries in Europe and in other parts of the world (like China) will allocate more money to their armies in detriment of resources for education, this is also a reason for the feasibility of Education-To-Go. Some European countries are being rearmed and this means less money for education. Rearming could cost much more than education; some countries will be financing violence instead of education.

It is then possible that in the coming months the demand for oil is destroyed which might lead to recession or to no economic growth in a few countries which would result in less production, which could lead to less jobs and therefore to the dismissal of workers in several organizations including schools. On the other hand, because of the European war there will be a few million migrants spreading in the world searching for jobs and not speaking the language of the countries they flee to. The migrants have a non-homogenous education and might not integrate completely and quickly to the economic and social sectors of their destination countries. This could stress the economic, health and educational systems of these countries, because they would not increase the number of jobs, social security, and the educational coverage overnight. On top of that, new epidemics could surge in the future. Therefore, there will be the need to prepare professionals relatively quickly of those people who have different and non-homogenous educational backgrounds from the standards in the hosting countries. The solution in some parts of the world, could be the Education-To-Go but avoiding unfair or discriminatory practices in its implementation and including in the new schemes of education migrants of all the world, not just the Europeans.

The characteristics of the Education-To-Go could be identified in the Ishikawa Diagram of Figure 2, which would be: urgent, affordable, accessible, quick for reskilling or retraining people, tailored to the market or society needs and competent (schools equipped with high technologies and appropriate curricula).

Due to the COVID-19 pandemic face-to-face education was abandoned for many months and replaced with virtual education, which is technology based. In the new world in which the job market needs skilled people in some special disciplines, the universities could have three paths as it is shown in Figure 3, nowadays some universities do not have them, but just one. One of the professional paths could be to study a traditional career face to face, a second path could be to study a traditional career online based on the experience received during the pandemic and the third path would be The Education-To-Go path, to prepare students to acquire skills in a narrow set of competences the job market or society need.

Depending on the university, the students would not necessarily be prepared to help corporations in the private sector but in the social sector; that is, Education-To-Go should not be only aimed to help corporations but the whole society. In the non-traditional third path the students could be prepared at distance except for labs (in some professions) which would be taken physically and in this case the students could take the labs at “any time”, so the labs would have to function “permanently”, as much as possible (open the most hours during the day and with free access to the enrolled students). The part of

the labs, in some cases, could be accredited with the time working in an organization of the sector the students intent to work in the future, if they are not already working in it. The students in the Education-To-Go path would complete their education with certain certifications. After the certifications, the students would hunt for a job (those who were not working during their studies), and after graduation they could go back to school at any time and complete a career online in the second path.

Figure 2. Characteristics of Education-To-Go.

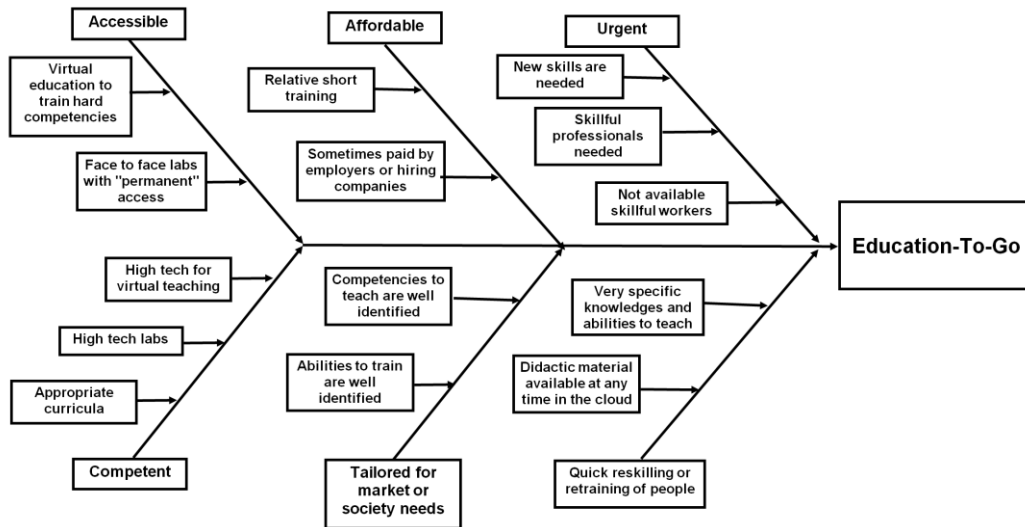
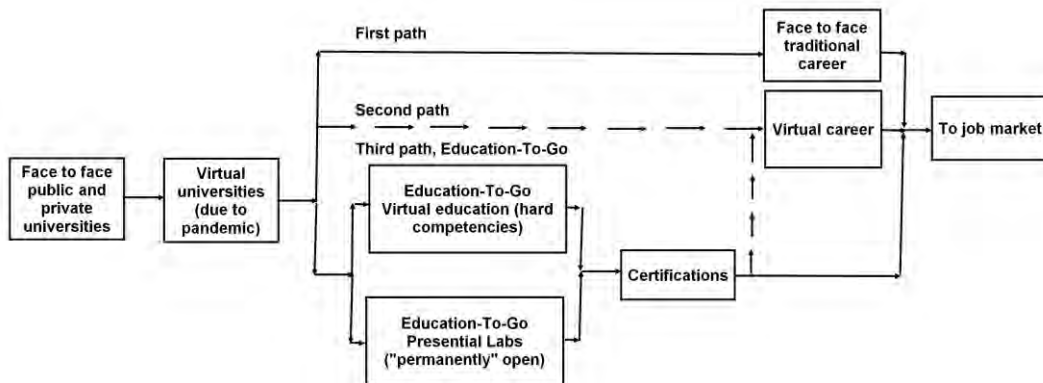


Figure 3. Face to face education, virtual education and Education to go.

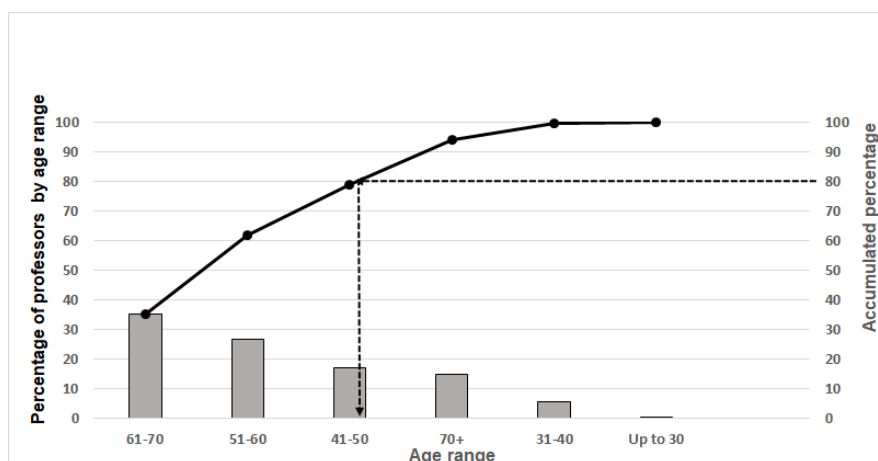


Many careers could be taught in the second path, for example those in social and humanities sciences. In engineering and in other fields only the theoretical part would be taken online in the second path. In fact, all the online material could be put into packages for students to download and study at their own pace, with online evaluations. But it would be necessary to go further because these courses should not have schedules, but rather students could review the information at the time they wanted at their own pace, without using the university facilities, which would expand the coverage of the schools without the school increasing the physical enrollment. The laboratory courses would be scheduled at all hours depending on demand. Students on the Education-To-Go path do not always have to take classes, they could self-study and pass the certifications without the “hassle” of attending classes, presenting partial and final term exams. However, these exams should be designed to ensure that the students’ study process was not exclusively focused on memorization and should have abstract problems that require critical thinking and problem solving based on the information of the study material. Students in paths one and two who are at risk of not finishing their careers could transfer to path three; nowadays in some schools if students for any reason do not finish their careers, they go out of school empty handed. Governments of all levels, higher education institutions, the interested employers and other interested sectors of society would have to be involved in the design of Education-To-Go.

3. Possible negative effects of Education-To-Go

Older teachers might be fired with the excuse that there is no money to pay their high salaries because of their labor seniority and also because they might not be skillful with the technologies to teach. For example, at the Mexican Universidad Autónoma Metropolitana (UAM) the average age of the tenured professors is of 59.2 years (UAM, 2021); and as it is shown in the Pareto Diagram in Figure 4 tenured professors older than 60 years account for more than 50% of the tenured faculty. Therefore, young people would be hired as it has been done in the years of the pandemic during which some public Mexican higher education institutions paid low salaries to young teachers and did not even offer contracts for many months to temporary workers. For the third path many schools would have few teachers because virtual courses for students might consist of assembled teaching materials from diverse places. There are many experiences in the world in the creation of small technological universities and other universities spread in several regions of the developing countries and in the community colleges in USA. The experiences of those schools could be used for the creation of Education-To-Go in universities to help develop the countries during the period between the end of the COVID-19 pandemic and the first big global climate change crises, other pandemics, and probable wars. If some countries are successful, they could generate professionals needed in USA and other countries which are currently affected by the war between Russia and Ukraine. Or for the future, as the population of some countries grows older.

Figure 4. Pareto Diagram of the percentage of tenured professors by age range.



7. Conclusion

Due to current and future global events, Education-To-Go could emerge in several countries of the world to solve the problems of the education of migrants, many women, poor people, minorities and others who could help to fill out jobs in industry and other sectors of society. It could be feasible because it could be cheap, competent, and quick to reduce unemployment in some countries and increase the skills of unemployed people or retrain people in their current jobs. Society should be attentive to participate in the creation of this education if it is considered useful. Although traditional schools should continue because top notch scientists and engineers are always needed because they are the main inventors or innovators of the information and communication technologies which are changing the world, as well as other technologies and new knowledge. Education-To-Go could be a good solution to employ people to develop the countries, if its implementation does not lead to unfair or illegal hiring and precarious retirement practices.

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