



Higher Education and Small Countries

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Abstract

The world at large is essentially a world of small states, and in Europe, nearly two-thirds of the countries could be classified as 'small'. Science, technology, education and innovation (STEI) are crucial drivers for an increase in national wealth and economic development; small countries are no exclusion. Education today is increasingly focusing on what is needed knowledge for a certain time, rather than being seen as the process to accumulate knowledge. The main purpose of education these days is to provide students with certain specialist knowledge needed for a job, and the most important is to prepare them for future learning. To provide students with enough knowledge and experience for a job means a good relationship among academic staff and institutions with surrounding industry so as to contextualize the curriculum for real life. To prepare students for "lifelong learning" is more complicated. This process is more complex in small countries because of their not having developed infrastructure, or the human and economic potential to follow the trends of development. Furthermore, in the field of research and education, new technologies have increased the challenges faced by small countries. This basically means creating a balance between theoretical and practical work. In the world which is characterized by an "unknown future" the following premises should be common: our students need to be very adaptable, flexible, creative, lifelong learners and tremendously curious. Thus, in order to provide future generations with the proper skills and knowledge it is most important not only to know how higher education institutes would accommodate to new challenges but how the process of education will be transformed.

1. Introduction

In providing global public goods, science, technology, education and innovation (STEI) serve as crucial drivers for raising prosperity and improving national competitiveness. Innovation and technology are needed to transform countries' shift from reliance on the exploitation of natural resources to technological innovation as the basis for development, which is, in particular, required for small countries.

Every nation manages education in its own way, but in that process there are some countries that are far more efficient than the others. Education is not restricted to large countries. Some of the top 20 education systems in the world are actually in very small countries. Education is increasingly seen as a major contributor to national wealth and economic development.

Education is increasingly becoming "just in time" rather than "just in case". It is more about what is needed to know for a certain time, than accumulating knowledge that may never

be needed. Universities, while educating future generations, emphasize their role as being the basis for innovations. In order to provide future generations with the proper skills and knowledge it is most important to realize how higher education institutes would be affected by the Fourth Industrial Revolution and how the process of education will be transformed.

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2. Education and Time

The small country is a relative concept, it might be reasonable to consider it a small state if it has less than 10 million people. Under such a definition the world is a world of small states in which many of them have populations of less than 5 million, and about fifty have populations below 1.5 million. In Europe, nearly two-thirds of the countries could be classified as ‘small’ countries.

The basic purpose of higher education is in many folds.* The main purpose should be to provide students with certain knowledge needed for a job, and the most important is to prepare them for future learning. This basically means creating a balance between theoretical and practical work. To provide students with enough knowledge and experience for the job should be an easier problem to face. It needs, above all, a good relationship among academic staff and institutions with surrounding industry so as to accommodate curriculum in real life. To prepare students for “lifelong learning” is more complicated. Basically, at present, it looks like this problem is solved, at universities in many countries, mainly with additional courses such as M.Sc., Ph.D. or specific diploma. Students should understand that education by itself would not fully prepare them for a job, since skills they would need to be successful will continuously change. Therefore, the ability to learn for life is essential. This process is more complex in small countries because of their not having developed infrastructure, and human and economic potentials to follow the trends of development.

Universities are a unique kind of global institution, institution intended to be durable and enduring. When properly established, governed and financed, universities are special institutions. Universities should foster development through direct engagement so as to adapt and innovate, embrace their cultural, socioeconomic and physical settings, while at the same time being socially embedded. Universities should become successful by becoming student-centric, rather than faculty-centric. They have been for long vital and powerful drivers of global innovation and economic development. Today, universities must break free from outmoded paradigms if they plan to achieve meaningful progress.

* The benefits of higher education are not only career oriented but also include in the 21st century the following factors:

- Economic
- Civic Involvement
- Personal Development
- Better Communication (verbal and written)
- Realization of aspirations
- Health
- Greater Sense of Discipline
- Sense of Accomplishment

The world outside schools is changing at a tremendous speed. Jobs for life are almost non-existent, and look like utopia. Most of the students today experience a “mash-up” of micro jobs. They will face jobs that we cannot even imagine today. They will live with technologies that most of us have never even dreamed about. It looks realistic that, in their life, today’s students have to be prepared to change 10 to 12 different careers, having multiple jobs at the same time. Regarding such prognoses schools are still using the same methods, the same processes to educate future generation. Thus, starting to educate for the 4th Industrial Revolution seems to be coming a bit delayed. It is in the elementary and high schools where young people should start to build learning skills necessary to master the 4th Industrial Revolution.

Smaller countries have a special role to play in the international higher education system. How does size matter when it comes to educational success of small countries? Among the problems common to small countries for education, three deserve specific attention: economic vulnerability, isolation and high costs of administration. Equally they share a number of disadvantages in comparison with their larger neighbors, such as limited human resources, limited funding, difficulties in setting priorities and a small base for direct innovation and diverse curriculum. Beyond having those disadvantage small countries have advantages: they can accommodate faster, develop and introduce innovative changes faster, which equally applies to education. On the other hand, opportunities in small countries for ‘open innovation’ partnerships between multinational companies, SMEs and universities and the tertiary sectors look less challenging. Globalization certainly asks new questions about the relations between population size and development.

The profile of educational development is in most cases modeled on what is appropriate and fashionable in large states. Educational planning in small countries is often a bigger challenge than in large countries. Small nations should not be treated as merely scaled-down versions of larger countries. Obviously, there should be many factors which influence particular strategies in the smaller states. These include remoteness and isolation of small communities, no economies of scale, greater transparency, closely knit social organizations, critical shortage of essential manpower and heavy dependence on external assistance. Beyond many other issues when planning education in small countries there should be found balances between the demands of “small-state nationalism” and the realities of economics and international dependence.

Internationalization of teaching and research are critical objectives for most small countries. Many small nations, including prosperous ones, introduce limits in the process of education which they can provide for their citizens. To improve this, smaller countries have to do much more in international society to gain visibility and awareness of the quality of their education system. On top of all this, they should try to attract the brightest minds to their education systems. Many degree programs often depend on international students. The special problem arises in the process of attracting the best students and staff when it comes to raising quality standards and global relevance. This has resulted in fewer universities in small countries and fewer choices for prospective students.

The smallest countries can hardly operate universities; and those that do can only practice a restricted range of specialties. The solutions to these limits vary. One is to send their students

abroad.[†] The key feature of the global tertiary education sector has been the growth in number of international students. TNE (Transnational education) is attractive to students looking for a foreign diploma without moving from their country of residence. When considering future opportunities for TNE, whether through joint or independent initiatives, a number of key drivers involved should be considered. Another possibility is to establish regional universities. This solution experiences, often, severe political misunderstandings since “national pride” often requires at least some domestic higher education provision. In that line, in some small countries, there are universities which, usually, cannot compete with the needed standards. External institutions are often perceived to be less relevant to local needs. All these solutions have merits and problems. Thus it looks like there is more economic sense in sending students abroad, and/or making arrangements with external institutions (TNE), than trying to do everything domestically.

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There are a variety of ways in which education is performed transnationally: via distance education, twinning programs, articulation programs, branch campuses, and franchising arrangements. Such a model of education is attractive to employers and governments looking at options for human resource development. In this process multinational or global corporations with a geographically dispersed workforce should be included. This sort of education has been related closely to world trade growth as well as world GDP growth over the past 20 years.

The demographic and economic movements, at a global level, will affect the tertiary education sector—it is expected to grow more than one per cent/year on average, compared with five per cent/year in previous decades. It is expected that the growth of student mobility (international) will follow these trends, which will lead to a significant reduction in student mobility.

The contemporary system of the neo-liberal ideology has increased the economy of higher education systems around the world. Promoting competition, efficiency and revenue generation, many countries have recruited larger number of foreign students. In that sense higher education has become a profitable activity to be traded internationally. (In USA it is a top business economy.) Nowadays, some small countries (Ireland, Finland), where successful learning and innovation systems were created, play a significant role in the international student market. Furthermore, Eastern European countries have transformed their higher

[†] The number of international students in tertiary education rose from 800,000 in the mid-1970s to over 3.5 million in 2009. Total global tertiary enrolments are forecast to grow by 21 million between 2011 and 2020, or 1.4 per cent per year on average. This compares with the global tertiary enrolment growth of five per cent per year in the previous two decades (and almost six per cent between 2002 and 2009), which indicates a significant slowing down in growth rates of tertiary enrolments to 2020.

education systems into some of the fastest developing systems in Europe. They are active in opening new degree programs, even in small countries, and equally in student mobility. Furthermore, there are some very small European countries with populations of less than one million people, which have been very active in the higher education field.

The central critique of contemporary university education is that lecture-based instruction, which is today the most common mode at universities, does not effectively engage students' interest or help students develop the conceptual understanding and 'liquid' skills they would need to address tomorrow's needs. Thus, education today is failing to prepare young people for their working future. Young people need to develop right-brain skills (creativity) just as much as left-brain skills (mathematics and technical) to adapt to the emerging economy. Certainly, the most needed 21st century skills will be: creativity, critical thinking, collaborative ability, adaptability, communication skills, citizenship, and character skills. In that sense digital tools need to be used so as to let young people learn anything they need to achieve success.

3. Small Universities and Research

It is not easy for smaller countries to find answers to questions such as 'why conduct research?', 'how much research can a country afford?' and 'to what extent should research be controlled?' The United Nations Task Force on Science, Technology and Innovation noted that innovation and technology are needed to transform countries from emphasis on reliance on the exploitation of natural resources to technological innovation as the basis for development, which is the most important issue in small countries. Innovations are important to every sector of the economy. The learning opportunities for innovation come from investments in new machinery and equipment, technology suppliers, mobility of labor, interactions with other knowledge agents, trade and investments, and certainly from research. Knowledge accumulation in any country depends on steady investments to increase science education improving the STI policy. In that way it is possible to foster innovations by learning and research. This can be achieved by incorporating science education in the curricula from primary and high school levels to the encouragement of research poles around existing universities. The partnership of university research institutes with industry, broadening the culture of science, technology and innovation, and making science and technology accessible to all levels of learning, are key issues.

Collaboration in academic research depends on a number of factors. It does not simply represent growth in the overall higher education system-ring. It has been estimated that informal networking between academics is mostly responsible for initiating joint research projects. It has been found that 80 per cent of countries' research impact is explained through their collaboration rate, i.e. the higher the international research collaboration rate, the higher the impact of the research output.[‡]

Internationalization of research is a crucial issue for most tertiary institutions, and in particular for small countries. For example, the foreign scientists from developing countries who are involved in international research produce 4.5 times more publications and 10 times more patents than their colleges at home. It has been recorded that internationalization of higher education tends to move to a new stage, i.e. the international students will continue

[‡] China and the USA contributed to the largest growth in collaborative articles with the US producing 78000+ articles since 2000 and China, 40000+ articles; growth to 2020 is expected to be driven by high volume markets, with China matching the US by the end of the decade

to play an important role, but research and joint delivery of education will be growing with overseas partners. Maintaining international relevance through teaching and research should be a key preoccupation for the tertiary sector in most small countries.

In many ways, in the field of research and education, new technologies have increased the challenges which are faced by small countries. For example, the Internet has reduced, by providing electronical access to a variety of information, the problems arising due to the lack of libraries in small states. Furthermore, the Internet also facilitates distance learning. It provides to personnel in small nations specialist assistance so they don't have to go abroad. In that way small nations are becoming more fully integrated into a globalized world. These factors have major implications in curricula, examination systems, and even research.

Higher education and the need for research are among the principal reasons for permanent migration. The international student mobility is driven by demographic and economic drivers. The international student movement, which has been very much driven by student recruitment, nearly equally for education and research in the past decades, was largely towards the advanced countries. It has been enlarged since the second part of XX century. Certainly, there are other key drivers, such as the legal framework in overseas markets governing transnational education, as well as, in particular, better possibilities for research. The outbound mobility ratio (mobile tertiary students divided by total tertiary enrolments) has remained stable from the early 1990s at the rate of just over two per cent.

Higher education has played an important role in promoting sustainable development during the period that has just ended. It is especially important to continue to do so regarding the post-2014 implementation of the GAP[§], the document on education for sustainable development.

4. Conclusions

Mainly due to advanced and emerging economies, the last decade was the time of many changes in the higher education sector, so it is expected that the coming time is going to experience even larger changes in higher education. These changes will happen not only because of advancement of technology. They will be characterized by intensifying competition and strengthening collaborations globally. This is, in particular, very important for higher education in small countries. Following shifts in economic power the tertiary education sector will move more to the east and less to the south.

Many of tomorrow's professional fields are not known today, and are even hard to predict. In such a situation, in small countries, a fundamental solution for the higher education sector would be to address it in such a way that the students would be competent to self-educate during their career. In that way they would have the capacity to compete, not only in the field in which they obtained undergraduate education, but in new professional fields. Certainly,

[§] GAP (Global Action Programme) is generic in nature and applies to all levels of education. It identifies five priority action areas:

- mainstreaming education for sustainable development in both education and sustainable development policies;
- transforming learning and training institutions by integrating sustainable development principles in daily activities;
- building capacities in educators and trainers;
- empowering and mobilizing youth; and
- accelerating the implementation of sustainable solutions at local and community levels.

this issue questions the basic pattern of higher education[¶], in particular undergraduate study, as practised in many countries. The question is, what should be the concept and what should be practised in basic higher education (first 3/4 years) and in the second stage (one, two or more additional years), and for what purpose? In solving this problem it should not be forgotten that, especially in small countries, informal education is going to play a significant role. Another very important issue should be: how is research included in this process? Basic research is the key driver of innovation; the academia-industry connections should play the major role since industry helps researchers to implement their ideas to market products. In particular basic research should take place at universities in small countries but that is not a common case today. Basically, the relationship between teaching and research has to be reexamined. In any solution, developing and encouraging creativity and innovation should be the focal point.

Altering higher education looks more necessary than ever before! However, higher education institutions need to act to ensure effective and immediate transformation. Certainly, “digital higher” education can be more affordable and efficient compared to other education options. In any case one should consider the best ways to reach all populations, since education should play a crucial role in changing contemporary practice.

In the world in which we live today which is characterized by “*unknown future*”, the following premises should be common: our students need to be adaptable, flexible, creative, lifelong learners and tremendously curious. So, there is the obligation to create the models and contexts of higher education so as to make “it happen”, otherwise we will have generations with shortage of skills to meet the new demands of the labor market. There would not be, in future, shortage of jobs, but there would be shortage of skills, which will become a big problem to society. In any case, ubiquity of change must be on top of our minds in the consideration of any educational strategy.

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¶ B.Sc + further degrees: basic 3-4 years courses + further higher education in M.Sc., Diploma or Ph.D. courses.