

ABSTRACT

How Should Higher Education Respond to 21st Century Challenges? Some Practical Comments

Higher education's most important role is to effectively respond to 21st century challenges by generating new knowledge and shaping human and social capital to resolve communities/stakeholder problems and secure sustainable development. The 21st century has been characterized by rapid changes that have produced numerous challenges, ranging from climate change, information overload and fake news; growing populism, nationalism and xenophobia that increase the probability of conflicts and wars; huge gaps between the rich and the poor; and emerging new technologies that could either empower people or make them more dependent on ruling, and often non-democratic, governments. All these challenges make the future much more uncertain and riskier than ever before. Academia needs to respond to these emerging conditions with an appropriate "toolkit" for students to survive and prosper.

Key words: learning community, learning process and organization, peer-to-peer-training, entrepreneurship, leadership, sustainability.

1. Introduction

As we approach the end of the second decade of the 21st century, we see that it has brought us not only new hope related to advancements in science and technology, but also unprecedented challenges. As an educator with five decades of experience, I think that the most important role for higher education is to meet these challenges by generating new knowledge and facilitating the professional

development of our graduates to help them succeed in our fast-changing world. For economists this process means investing in and shaping human and social capital to secure continuous returns via resolving community problems, particularly for main stakeholders, and securing sustainable development. For the human capital owners – university graduates – this used to take the form of securing a professional career for life or at least several decades.

Unfortunately, professional security is a thing of the past. The 20th century, which was characterized by large, periodical economic changes, looks stable in comparison to the continuous and rapid changes of the 21st century – a veritable "world in flux" (Davidson 2017) where "change as the [only] constant" feature (Harari 2018). We need to prepare our graduates to "to reinvent themselves" and their professional careers every decade (ibid.). Davidson's follow up research after her successful book in 2017, based on series of interviews with top political, business and education leaders clearly indicates that the current education system is not prepared –either intellectually or financially to meet the challenges (2018). Even more critical is assessment of Brunnhuber stating in title of his article: "Education Isn't Education" (2017) showing basic deficiencies in designing education system, particularly in building emotional part of students – the most critical for personal management in the fast changing world. His contributions is a part of series of publications by fallows of World Academy of Art and Science (WAAS) over last few years devoted to the needs of transition to human-centered education (Zucconi, 2017) as an important factor to paradigm shift from predominant liberal economics to New Economic Theory (Jacobs et al, 2018) with human-centered economy (Nagan & Manausa, 2018) based on the newest achievements of science and technology.

In addition to opportunities and threats from new scientific and technological innovations (e.g., the

Industrial Revolution 4.0, disruptive technologies, human genomic modification), our students are facing the effects of climate change: huge natural disasters and declining species diversity due to accelerated species extinction and resource depletion. In the latest report of the International Panel for Climate Change (IPCC), *Global Warming of 1.5°C: Summary for Policymakers* (October 8, 2018), over 90 prominent experts indicate that humankind has about a 10-15 year window of opportunity to take effective actions and save our planet from irreversible climate changes that could lead to the decline of our civilization as we know it now. The climate crisis calls for fast and effective actions from our global community. Are we prepared for it now?

Year after year our students are exponentially flooded with information, which is impossible to manage or absorb. In addition, this information overload is “enriched” by fake news that makes people more confused than informed, disoriented and scared. Fake news is dangerous for population health and national stability; false prophets and political leaders use this medium to cultivate fear, which sets the foundation to manipulate minds. The anti-vaccination movement and anti-refugee/immigration movement, active even in a country like Poland which does not have a significant number of refugees, have both been significantly buoyed by fake news. People’s irrational beliefs are fed via conspiracy theories, i.e., Big Pharma is “imposing” mandatory vaccinations or powerful nations are “boosting” the flows of refugees and immigrants. The solution offered by these political leaders is to create an ethnically “clean” nation with strong borders that keep out hostile populations. Unfortunately, history shows us where such nationalistic and xenophobic policies lead.

After the completion of the GATT Uruguay Round in the late 1980s, accelerated globalization brought over a billion people out of poverty and shifted

millions of simple jobs from advanced to less developed countries, leaving less skilled workers in advanced economies with fewer job prospects. Many of these workers became frustrated and migrated in search of work. The geographical shift of low paying jobs also fueled the growth of huge gaps between the rich and the poor, building ground for social unrest. All these factors have contributed to fast spreading uncertainty and fear of the unknown, breeding new waves of populism, nationalism and xenophobia.

Finally, emerging new technologies in IT and AI such as cognitive informatics and computing provide opportunities to empower people *and* make them more dependent on non-democratic governments or the huge international corporations that control the technology. The case of collaboration between the Chinese government and some of the biggest IT companies to control information flows among their citizens is even worse than being controlled by only one monopoly – either private or public. The existential question wrought by this situation is how to secure our personal freedom in light of these circumstances, particularly when the technology is under government control? Here we observe a great variety of answers from pessimistic or warning (Harari, 2018 or Henderson, 2018) to more optimistic (Alvarez-Pereira, 2017 or Fiorini, 2018).

This and many other questions related to consequences of technological innovations, particularly in cognitive informatics and cognitive computing, are perfect issues for discussion and dialogue between representatives from technical and social sciences. First, we need to understand each other better and find transdisciplinary bridges that connect the driving forces behind what we do. Second, we need to mutually determine an appropriate timeframe for analyzing the potential benefits and threats of new innovations and establish a general criterion for sustainability. Third, we need to find a common ground for the

value set behind the sustainability criterion. Finally, as educators, we need to apply the results of these dialogues to creating learning processes to prepare the next generation for emerging and unknown technological challenges.

In general, all of these challenges make the future much more uncertain and riskier than ever before. Academia has an obligation to respond to these emerging conditions with a “toolkit” for students to survive and prosper. Inspired my colleagues from WAAS cited earlier and based on my practical experiences and shared knowledge from all over the world, I suggest that the toolkit should include at least the following elements:

- (1) Designing the learning process as the discovery of new knowledge and innovative solutions to emerging problems in a learning community environment;
- (2) Critical thinking through practical case solving, practicing peer-to-peer training, and asking challenging questions to learn to discern legitimate information from fake or manipulated news;
- (3) Shaping social competencies to communicate effectively and work in transdisciplinary teams in resolving practical problems;
- (4) Working closely with main stakeholders and involving them in finding solutions to emerging challenges;
- (5) Building confidence in newly created human and social capital by celebrating successful solutions to community problems.

2. Designing the learning process as discovery

Over millions of years of evolution, our brain cells developed by learning how to adapt and survive. As children we continue this discovery-based learning process even before we can verbalize our findings.

For that reason, I recommend, like my colleagues – educators from Scotland who practice outdoor education, introduce sustainability programs at all levels of development (Higgins & Christie 2016). This is the way to discover how the local environment is interconnected with the rest of the world, our place on Earth and our responsibility to the Earth. If we want our students to become valuable actors in their communities, we must facilitate the development of their knowledge, skills and attitudes with an interdisciplinary educational approach for them to properly understand the complexity of our global environment.

The position taken by the Partnership for 21st (P21) Century Learning (2019) shows signs of being the most appropriate way to respond to our fast-changing world, from our early years to our professional careers. This organization has over 5 million members in the US and worldwide and offers a collaborative platform for education, business and government leaders “to advance evidence-based education policy and practice, and innovative teaching and learning . . . for all” (ibid). They recommended academic knowledge discovery in five interdisciplinary areas (subjects). “Global Awareness” is the first key subject, which is followed by “Finance, Economics, Business and Entrepreneurship Literacy” as the basic knowledge to survive and prosper in the modern economic environment as an individual, household or SME (ibid). Although this basic economic knowledge is crucial, we cannot succeed if we do not know how to participate, cooperate within, govern and care for our own community or larger ones at the national or supra-national level. This is why we have to learn “Civic Literacy” followed by “Health Literacy” to take good care for ourselves (ibid). The last of the key subjects for 21st century knowledge is “Environmental Literacy,” which will help us to understand our roles and responsibilities for the local, regional and global environment (ibid).

3. Critical thinking and other learning skills

Designing learning process as knowledge discovery is critical for internalizing knowledge and developing a personal attachment to the process. It is not an easy task for teachers, but worth the attempt for the sake of empowering students' intellectual capacity – a significant part of human capital. However, expanding knowledge without building the appropriate practical skills to apply it might be an ineffective investment in human capital. For that reason, we need to allocate sufficient time for building practical skills in the design of the learning process. Practical skill building is not fully recognized by many European universities, which still prefer to allocate more time for knowledge development compared with American universities. In this fast-changing world, which produces new knowledge continuously and where access to the Internet is common, knowledge is becoming obsolete much faster than ever. In these circumstances developing critical thinking and continuous learning skills or habits is more important for securing a professional career than ever before.

Over last few years I have practiced “building a learning community” with my students in which everybody is an equal partner in resolving practical problems from case discussions or in action research team projects. This person-centered process mobilizes students to be creative in identifying problems and looking for innovative solutions in practical case solving. The peer pressure to contribute from the learning community is an additional element that shapes creativity and innovation. As a facilitator of case discussions via targeted questions, the instructor strengthens the above-mentioned skills and helps students understand what are real facts and what are fake or manipulated news and data. Another method applied in this area is essay writing and team-based action research reports. They give students an

opportunity to compare data taken from many different sources, analyze them and discard what was fake or manipulated. These skills should be further complemented by basic statistical tools and benefit-cost analysis to make rational choices and assessments of innovations and their impacts on society, the economy, the environment and institutions – the quadruple bottom-line (Spangenberg 2008; Bochniarz 2018) – to keep them on the path to sustainable development.

Finally, in our technology- and media-driven contemporary environment, graduates should demonstrate effective information, media and technology skills (P21). These are preconditions to be an attractive job candidate, effective worker and citizen in their communities.

4. Shaping social competences: communication, collaboration and other competences

Both knowledge and skills are very important components of human capital. However, without good communication and collaborative attitudes, we cannot resolve complex interdisciplinary problems. These and other social competences are strongly attached with values (see also Nagan & Manausa, 2018). For that reason that should be at least equally treated as the other component of human capital – knowledge and skills. For the last two decades, employers worldwide have listed good communication skills at the top of their list of requirements. Unfortunately, many universities do not recognize the importance of these skills and focus on maximizing “knowledge transfer” from faculty to students in a typically passive, top-down approach. Introducing interactive lectures and case studies is a major step forward. Another step forward is team-based research projects in which students have to communicate with each other and maintain continuous communication with their professors. New IT development offers many possibilities for such interactions, but it cannot fully

substitute for face-to-face interaction and its “chemistry.” These interactive activities generate additional human capital in the form of a collaborative attitude, which is very important to survive and prosper in new professional or residential communities. They also shape such values as mutual respect and appreciation for team diversity.

A critical factor for successful student projects is team building, which includes assigning roles, rules and responsibilities with a timetable or roadmap. A “team constitution” serves as a “compass” for reaching the project’s goal and objectives. Good constitutional design will teach students to flex and adapt according to team capacities and limitations, which will potentially change the conditions of the research project and secures the avoidance of “free rider” behavior. A well-designed project’s synergetic interactions produces significant social values such as fairness, responsibility for individual and team work, solidarity with team members and team spirit.

5. Working closely with the main stakeholders

The learning community approach, and particularly a team action research project with a good constitution, gives individual students opportunities to exercise their own initiatives and become entrepreneurial actors. It also helps them discover their own power to find self-direction, which is a critical feature for succeeding in their future professional careers in a fast-changing world. Team research projects also engender other critical life and career skills (P21), particularly when coupled with selected stakeholders who represent different social strata and/or ethnic cultures. Through this experience students practice the development of new social and cross-cultural skills, which are both necessary to survive and succeed in an increasingly globalized economy.

Constant peer pressure within the teams to follow the timetable forces a certain level of productivity for which each student is responsible, teaching both productivity and accountability. The team projects also shape student leadership and responsibility for the final outcome. Team members often complete and even engage in conflict for leadership. Resolving these social micro-problems creates good opportunities for learning conflict management skills.

Finally, the student action research team’s work develops intellectual capacity and civic responsibilities for designing and delivering evidence-based conclusions and policy recommendations to their major stakeholders. Team members take on the challenge of synthesizing the knowledge they discovered and utilize their verbal and written communication skills to deliver the team report to the interested stakeholders. It requires team courage to deliver critical comments and recommendations, and it may also require articulating a long-term vision, which stakeholders overwhelmed by everyday problems might miss. Good action research may bring to light that stakeholders do not see the potentially dangerous future consequences of the new technology they are employing. These are both important values that good action research project could produce for their stakeholders.

6. Building confidence in newly developed human and social capital

For economists, the above described processes point to building human capital and social capital – the most important components for development in 21st century. In my work on effective clusters, my team and I defined social capital “as a special type of capital resulting from investments in building relations, institutions and networks that produce collaborative attitudes, shared norms and values, mutual understanding and trust” (Bochniarz *et al* 2016). All of these investments are critical factors

for effective cooperation with other types of capital. The learning community venue with its student-centered approach produces not only significant human capital, but it's design also contributes to building rich social capital. Economic and social activities in our fast-changing world depend on rich social capital to create the stable institutions, trust, shared values and standards that serve as stability feedback loops. As with the other forms of capital, social capital requires continual investment in maintaining its value and significance. In the US, the main channel of investing in university social capital are the alumni associations that continue relationships students established during their studies, creating loyalty and trust, as well as continuing support. Their social capital developed during the course, and particularly through the team project, has the potential to be further maintained within the alumni networks of young professionals.

In the case of student action research projects, successful project completion and the presentation of results to peers and stakeholders for evaluation develops professional confidence and pride in the completion of a significant step in their professional career. Students have presented their report as a "signature product," demonstrating their entrepreneurial credentials. It is incumbent for 21st century universities to equip their graduates with professional confidence, which contributes to their resilience capacities to survive rapid changes and adjust to new conditions. This confidence should be balanced with their creativity and openness to innovation mentioned earlier to sustain their professional careers in a fast-changing world.

7. Conclusions

The challenge of building collaborative relationships between technical science and social sciences in the era of cognitive informatics and cognitive computing is a serious one. Participating in joint conferences and workshops create opportunities to build better understanding of each

other. Representatives of the social sciences express serious concern for the growing gap between the tremendous growth of technological innovation that is changing our world faster and faster and the slow growth or even regression of the development of human-centered values demonstrated by the deterioration of basic human values, natural resource degradation and wars. Correspondingly, there is a growing demand for human-centered values to undergird economic development and technological innovations, which will require a significant paradigm shift in economic development and radical changes in the way we teach economics and other social sciences. As a practicing educator for over 50 years, I see these changes coming step-by-step until the existing paradigm becomes obsolete. This path will be much slower than in the technical sciences where changes take place at an increasingly faster and faster pace and disruptive technologies present huge and unexpected impacts. For that reason, I have shared my and others' experiences in how to respond to this rapid and continuing change to educational processes in the 21st century. I hope it will open a good dialogue among technical scientists, as well as with other interested educators.

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