A Global MetaUniversity to Lead by Design to a Sustainable Well-Being Future

Robert Costanza[1]*, Ida Kubiszewski[1], Tom Kompas[2] and Paul C. Sutton[1,3]

[1] Crawford School of Public Policy, The Australian National University, Canberra, ACT, Australia, [2] School of Biosciences and the School of Ecosystem and Forest Sciences, University of Melbourne, Melbourne, VIC, Australia, [3] Department of Geography, University of Denver, Denver, CO, United States

The COVID19 pandemic has revealed deep, ingrained problems with higher education, but also opportunities for positive transformation. In the post-COVID world, education at all levels has the chance to become: (1) universally available at low cost; (2) focused on developing competencies, (3) empowering fulfilling lives, not merely job training; and (4) engaged with communities to solve real-world problems. Achieving this will require overcoming the mass production model of higher education by utilizing the full potential of the Internet in creative ways balanced with face-to-face solutions-based integrated learning, research, and outreach agenda. Building a global collaborative consortium of universities and other educational institutions can move this agenda forward. We describe how this "MetaUniversity" could be structured and how it would serve to advance this agenda and lead the way to a sustainable well-being future for humanity and the rest of nature.

Keywords: higher education, problem-based learning, pedagogical approaches, online education, community engagement, global collaboration

INTRODUCTION

Education is not a preparation for life; education is life itself.

-John Dewey

We stand at a critical moment in Earth's history, a time when humanity faces significant challenges, but also significant opportunities to redirect our course toward a more sustainable and desirable future. Universities must play a critical role in this transformation. They educate future leaders and supporting researchers in the quest for deeper understanding and applied solutions, they also serve as models of innovative practices and sustainable systems. Universities have not yet risen to this challenge and many sustainability initiatives have dissolved into fragmented and ineffectual reforms that fail to address the underlying causes of our complex socio-ecological problems.

We also live in a technologically very different world from the one that created traditional universities. We now have the ability to communicate in real-time with almost everyone on the planet. As the COVID19 pandemic has made obvious, interactive video allows meetings, classrooms, workshops, and conferences of almost limitless size with participants from around the world. Although, these come with their own problems, this shows that the accumulated knowledge of the world is no longer stored only on paper in libraries but is available to everyone with an Internet connection (Kubiszewski et al., 2011).

In this context, we need to revisit the primary purposes of higher education (McArthur, 2011). These include:

1. **Mental development**: Critical thinking, but balanced with skills in creativity, synthesis, and communication.
2. **Character development:** Learning about the world and how to live in it, including discovery, research, engagement, civility, etc.
3. **Social development:** Networking, making contacts, and building social capital that will endure throughout life.
4. **Career development:** Credentialing and the preparation for work or the next phase of education.
5. **Intergenerational transfer of knowledge:** Our complex civilization is built on the accomplishments of many human generations. Many of these accomplishments must be understood and applied by some fraction of our current population in order to maintain, sustain, and develop the world. As Herman Daly has said, *"We are always only one failed generational transfer of knowledge away from darkest ignorance."*
6. **Achieving a sustainable well-being future:** All of the earth's systems are interdependent, and real solutions to the current challenges must employ holistic, integrated analysis and creative, transdisciplinary education, and solutions. Higher education and academic research play a critical role in achieving sustainable well-being, not only in educating future leaders and producing knowledge but as an active agent in the co-production of real solutions.

Universities have drifted away from a balance of these purposes toward an emphasis on credentialing and career development (Wegner, 2008). Many have come to see themselves as businesses, competing to attract fee-paying students rather than public goods providers interested in building human and social capital. This is partially due to the decreasing financial support from governments. This has made them overly expensive and led many to restrict access to an elite segment of the population. Increasingly "elite" means wealthy, and access to the best universities is increasingly a function of wealth rather than merit or motivation (Durkin, 2019).

Tuition is increasing worldwide. For example, at some U.S. private institutions, it costs around $200,000 for a 4 year undergraduate University education (World University Rankings, 2020). At the same time, state funding is being drastically cut to most public universities around the world (Sav, 2016). As a result, faculty members are compelled to teach more courses, with more students, and, likely, with less help from teaching assistants. They are also often compelled to raise considerable external funds. This trend may be eroding the overall student experience and the degree of interaction with professors (Umbach, 2007). Professors also have less time to do research and service within the community as more of their time is taken up by teaching, grading, grant applications, and administrative burdens.

At the same time, our evolving system of higher education has been undergoing a paradigm shift since the 1980s. Universities have moved away from unidirectional, instructor-focused teaching to a more distributed, "learning by doing"

student experience (Davis and Botkin, 1998; Reese, 2011). For example, most medical schools in the United States began using problem-based curricula decades ago, resulting in improved student performance (Schmidt et al., 2006). Business schools are beginning a similar shift. This shift toward more interactive, solutions-based courses is crucial, especially if it can be balanced and combined with the possibilities that the Internet has made available internationally. Especially since COVID19, full or partially online courses are becoming routine. Many universities are even providing entire degrees online. However, to fulfill the six purposes of higher education listed above, online education can and must be balanced with equal emphasis on solutions-focused, interactive courses aimed at engaging faculty, students, and stakeholders in the co-production of new knowledge and real world solutions.

The COVID19 pandemic has forced universities to rapidly transition to online learning. This has opened the door to a major rethink and transformation of higher education globally. Rather than competing with each other for students and funding, universities should collaborate in producing and sharing the highest quality online courses, freeing faculty to engage students and stakeholders in the co-production of solutions focused education, research, and applications. We call this proposed global collaboration the "MetaUniversity."

A CONSORTIUM OF UNIVERSITIES

The proposed MetaUniversity would be a consortium of accredited, member universities providing quality education at lower cost through a balanced integration of: (1) high-quality online courses focusing on basic tools; and (2) real-world, face-to-face, solutions-oriented courses, that require transdisciplinary collaboration and outside the box thinking. This balanced curriculum of both types of courses allows students to integrate analysis, synthesis, and communications skills toward the life-long co-production of creative, real-world solutions.

High-Quality Online Courses

Online learning has become a major trend in higher education (Dykman and Davis, 2008; Allen and Seaman, 2011; Martin, 2012; Deming et al., 2015). These courses range from being completely online to having an additional face-to-face component. The COVID-19 crisis forced education, at all levels, to go online almost overnight (Sun et al., 2020). With some notable exceptions, this experience has shown how ill-equipped many universities were to fully utilize online learning (Garris and Fleck, 2020).

Regardless of the structure, to be done well, these courses require a significantly higher up-front cost compared to traditional, face-to-face courses (McPherson and Bacow, 2015). These costs are not only financial but time-intensive for faculty members. Many universities often attempt to convert most of their offered courses into an online form in a short time, as seen in early 2020 when COVID lockdowns came into effect in many countries. This stretches already tight resources in an attempt to develop high-quality courses and to keep them up-to-date. It creates the problem where courses that are designed to be very

hands-on, and require face-to-face interaction, are forced into an online form for which they are not well-suited. This detracts from the student and faculty experience. Because of these costs and challenges, most universities struggle to provide their students with high-quality online education (Nguyen, 2015).

Although the initial costs of quality online courses are high, once well-developed, they are relatively inexpensive to offer to a large number of students. Updating a course with more current information and reoffering it requires little faculty time and little additional cost for the University. There is also minimal additional cost in offering the course to a broader audience.

The MetaUniversity can be established as a non-degree granting third party that coordinates universities around the world in offering their best quality online-courses, to the rest of the consortium. It can organize students from universities around the world to take credited online courses through any of the consortium University members. Universities can create, and offer, the courses in which they have the greatest expertise, and for which they can produce the highest quality courses. For example, if University A, is known for its outstanding curriculum in Geographic Information Systems (GIS) and creates a high-quality online GIS course, it will be available to students attending any of the other consortium universities. These universities will not have to assume the costs of developing a high-quality course of their own. In return, these other universities will have more resources available to develop high quality courses in subjects they excel in and offer them to University A and other consortium members. This will result in a suite of evolving high-quality courses on the full range of topics available to all consortium members.

Such a sharing of courses will allow universities to offer their students high quality courses, with more diversity, for a significantly lower cost. Faculty around the world will no longer have to duplicate efforts in recreating the same course in thousands of locations. This will allow them to focus their time on offering more courses that require significant creative interactions, either face-to-face or live online. It would free up faculty time, and University money, to provide students with a more interactive, hands on, and compelling education in which they received the opportunity to learn how to solve real-world problems and think critically about the world. The MetaUniversity would allow a better balance between high quality online "tools" courses, and on-the-ground, solutions-focused interactive courses that blur the boundaries between research, education, and outreach.

The MetaUniversity could develop a user-friendly, online platform that facilitates a dynamic, evolving, and improving curriculum over time. Such a platform would enable new faculty and new ideas to be easily integrated, giving courses the opportunity to be enlarged and improved, giving future educators more flexibility and resources and adapting to meet student needs and abilities. Students would also be able to incorporate their feedback into future versions of a course, constantly improving and enhancing it with suggestions of new content and better organization.

The advent of Massively Open Online Courses (MOOCs), the Khan Academy, edX, and other online course initiatives are a clear move in this direction. Outside the University structure, MOOCs have become very popular over the past few years as part of the open educational resource movement. Massively Open Online Courses are courses structured similarly to traditional University courses, but they often do not offer credit. They are free, and have no prerequisites, but may offer some form of certificate of completion. The first such course was offered in 2011 on the topic of artificial intelligence (AI) and had 160,000 registered students. 23,000[1] completed the 10-week course[2] Since then, MOOCs have been offered on numerous topics all over the world. The MetaUniversity could build on the experience with MOOCs in a way that improves quality and consistency, while allowing for credentialing and integration into University curricula.

The very successful California master plan for higher education consisted of a hierarchy of community colleges ($n = 116$), state universities ($n = 23$), and universities ($n = 10$)[3] This system manifested as a master plan in 1960 (Douglass, 2000). The MetaUniversity could easily mesh with this type of hierarchy by matching its curriculum delivery roughly along the same lines—that is with the full range of community colleges and Universities.

The online courses available through the MetaUniversity can be available at three distinct levels (Kubiszewski et al., 2013).

1. **Independent Learning (Level I):** This is for anyone that would like to obtain the knowledge within the course and does not require University credits or a certificate of completion. This method allows individuals to complete the course asynchronously and for free. However, this option does not provide any faculty interaction or tutorial support but does allow for interaction with others taking the course by this means.

2. **Non-Credit (Level II):** This is for professionals or anyone in the public that would like to receive a certificate of completion but do not require University credits. The certificate will be awarded by the consortium of members as a whole. This option provides some faculty interaction and can be taken asynchronously or on a semester schedule. This option could have a small or nominal course fee, as determined by the MetaUniversity.

3. **University Credit (Level III):** This is for those students or anyone that would like to receive University credits for a course. Course credits are required for anyone who wishes to receive a degree through a specific accredited member University. Courses for these degrees must be taken per the requirements of that University at appropriate fees (recognizing the potential cost savings from online delivery). This option provides full faculty interaction, tutorial support, and accreditation and requires attendance at a member University.

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[1]https://www.scientificamerican.com/article/massive-open-online-courses-transform-higher-education-and-science/
[2]https://www.economist.com/the-economist-explains/2013/10/01/will-moocs-kill-University-degrees.
[3]https://www.ppic.org/publication/higher-education-in-california-californias-higher-education-system/.

As a means of providing information and knowledge to the broadest audience possible, all content, resources, and results from the MetaUniversity courses will be freely accessible to the public (Level I above). No registration will be required to access content; registration will only be required for taking a course at Level II or III.

Course content can be grouped on various scales to accommodate the different needs of educators, policymakers, students, and the public. These scales will include full syllabi, modules, sub-modules, and independent resources. Such various groupings provide access to individuals looking for very specific assignments, readings, videos, etc., but also individuals looking for an overview, or a comprehensive picture, of a subject area. Students in the Levels II and III categories must demonstrate proficiency after completing the courses (Doroudi, 2020). Developing assessments to measure the knowledge and skills in their content domain is challenging and expensive on the front-end of development (Towns, 2014; Bearman et al., 2017), but techniques are evolving rapidly to improve this, even without human intervention (Kurnia et al., 2001).

Solutions-Focused Courses

Solutions-focused courses allow students to apply the tools and skills that they gained through the online courses to collaboratively solve problems. These will be dynamic, on-the-ground, solutions-oriented courses that may send students and faculty into the community to address urgent, real-world problems, and help identify and implement solutions with broad policy implications. They will address problems at multiple temporal and spatial scales. These courses can involve students and faculty from a broad range of disciplines and those from universities that are part of the MetaUniversity consortia, as well as community stakeholders and decision-makers to collaboratively find whole-system solutions. Because these courses require creativity and interactive communication between the professor, students, and community members, they cannot be taught in large, impersonal online courses. They require small group, in-person interaction. This approach is a form of "co-learning" that blurs the boundaries between research, teaching, and outreach (Heron et al., 2006).

Being involved in such an exercise will provide students the opportunity to use the knowledge they obtained through the online courses in the real-world, but with faculty cooperation, oversight, and facilitation. These courses can provide, if properly designed and conducted, both the faculty and students with an unforgettable educational experience and the opportunity to do on-the-ground, real-world, practical research. They also provide students with the opportunity to learn and practice their communication skills. Students will have to learn to communicate and interact with a broad range of community stakeholders throughout the project and to communicate their results to the appropriate audiences. This may take the form of a peer-reviewed publication, short video, pamphlets, press release, website, or any other media appropriate to the project. Students will receive University credit from the universities they are enrolled in. The main elements of these courses (Kubiszewski et al., 2013) include:

(1) transdisciplinary, solutions-focused learning; (2) community-client interaction; (3) stakeholder participation; (4) blurring of the distinction between faculty and student, research education, and outreach; (5) adaptive management and flexible working groups; and (6) appropriate and practical communication of results.

Learning Outcomes Assessment: Solutions-Based Courses

Successful students in these solutions based courses will have applied their mastery of knowledge and skills in their respective disciplines to transdisciplinary real-world problems. Typically these efforts will be collaborations between faculty, students, and many other potential partners in government, civil society, or the public at large. The MetaUniversity is designed to educate people to achieve a balance of the six purposes of higher education listed above, including to serve the public good and to help build a more sustainable and desirable future. It will help to develop the key competencies needed to achieve these goals (Adomssent et al., 2007; Wiek et al., 2011; Rieckmann, 2012; Lozano et al., 2019).

One objection often heard of collaborative courses is that it is difficult to assign individual grades to group work. But difficult is not impossible as this form of grading has been routinely done (Davies, 2009; Burke, 2011; Maiden and Perry, 2011). For example, instructors can evaluate an individual's contribution to the collaborative assignment, as well as the work of the group as a whole. They can allow group members to evaluate each other's contributions through peer evaluation procedures. The interactive nature of these courses can allow assessments to be an integral part of the collaborative learning process. This will also replicate real-world job situations where individuals are often assessed for, and need to assess, their contributions to group work.

Administrative Structure

The administrative structure of the MetaUniversity can be both lean and inclusive. It can include a core staff to handle details of the network and a distributed decision-making structure involving all the member universities. The decision-making structure can include broad global participation from member universities through a Stewardship Committee and Advisory Board who provide advice on policies, curriculum, and programs.

The Stewardship Committee can be comprised of representatives from each of the member universities. This Committee can communicate regularly about course development and be responsible for approving newly developed courses within their respective universities. The Stewardship Committee can meet bi-annually in-person, and as needed online, to discuss the development of further courses and curriculum, make membership decisions, and overall operations of MetaUniversity.

The Advisory Board can be comprised of education thought-leaders from around the world to provide guidance and ideas on a macro level. The advisory board can meet with the Stewardship Committee to provide advice and guidance when appropriate.

University Approval

Any courses taken at Level III for University credit will first have to be approved by each member University before students from that University are permitted to enroll. For a course to be approved, each instructor will have to submit a detailed syllabus and their CV to the MetaUniversity. Each University and students within each University will be able to browse proposed and approved syllabi, including instructor's CVs on the website. Each course and the instructors will be evaluated by the students and all evaluations will be available openly at the MetaUniversity website.

PRECEDENTS AND POTENTIAL OBSTACLES

Many aspects of such a system have been tested on smaller scales (King and Cerrone Arnold, 2012). At the international scale, the European Union's "Young Universities for the Future of Europe (YUFE)[4]" is an alliance of ten young research-intensive universities and four non-academic partners located across Europe funded by the Erasmus program. Another precedent is the Bologna Process, a series of ministerial meetings and agreements between European countries to ensure comparability in the standards and quality of higher-education qualifications (Crosier and Parveva, 2013).

However, potential difficulties may arise on larger international and global scales. Managing time zones and overcoming language barriers are just two of the obstacles that need to be addressed. This can partially be resolved through a selection of core basic courses across different languages, but issues of coordination across countries remain.

Recent experience with online education as a result of the COVID pandemic has received mixed results. However, this transition to online-only education was rushed and the results were inconsistent at best. It also made clear that online-only education cannot meet the full list of six purposes for higher education listed above. The MetaUniversity would allow investment in a balance of high quality online courses with in-person solutions-focused courses, which would address this issue.

Certain fundamental aspects of higher education will also need to be addressed (Kubiszewski et al., 2013). One such issue is the property rights assigned to content created by professors, especially for shared online courses (Klein, 2004). Currently, all course content produced by faculty is owned by their home University. For this consortia to work, course content will need to be shared among the universities and may require more flexible copyrights, such as a creative commons license (Liu et al., 2014). This license allows the creator to retain credit for the production of the content but with more allowances for certain types of usage. This content can be produced by faculty members of the collaborative universities, academic societies, or independent scholars. All courses will require approval before being accessible to students and the public.

The transfer of course credits may also need to be rethought. Currently, the process for students to transfer credits is inefficient. Simplifying the exchange of credits between universities may be the first step in enabling the sharing of faculty among the MetaUniversity members in a way that benefits both the students and the universities. One potential way to make this happen is to have the MetaUniversity collaboratively, or the universities themselves, approve courses that their students would take at other universities to gain credits toward their degrees. Tuition fees would be distributed between those universities in a prearranged way.

There are also a host of issues over financial concerns across universities around the world with differing "business models." Many universities are only viable on substantial student revenue. Others have large endowments or sufficient public funding. The MetaUniversity will have to resolve how to appropriately cost and distribute funds from online or in-person courses, that are jointly offered between its members. It also must be stated that even online offerings require considerable local assistance from both faculty and administrators. It seems desirable to have local expert faculty run tutorials and targeted discussion groups to support online offerings, not to mention certification exercises and assessments. This will also have to be properly costed and resourced. There are many other challenges that will be encountered within such a new system. However, through creative cooperation toward a shared goal, such obstacles can be overcome.

A key potential benefit of the MetaUniversity model is significantly lower costs for basic courses, higher quality of content, and more time for faculty to engage in solutions-focused courses. However, local teaching demands for the basic course would still remain. These could be minimized via intelligent online course design and new research into automated grading, but they cannot be eliminated completely.

CONCLUSIONS

The higher education system needs to adjust to a quickly changing world. The traditional role of universities as storehouses of knowledge and the source of delivery of that content is being overshadowed by the massive availability of information on the Internet (Hrubos, 2011). Technical skills quickly become obsolete as technology changes. The University of the future will need to teach students the tools they will need in this quickly changing world, as well as how to think critically and creatively regardless of what job they have or what problem they are asked to solve. Education is key to solving our global problems and creating a sustainable and desirable future. This will require an educational structure that changes our current way of thinking to one that allows us to better focus our global intellectual capital on solving the multitude of problems we now face.

The MetaUniversity we propose can:

- add significant value to the programs within member universities by using resources more effectively, avoiding

unnecessary duplication of basic courses at every University, and reducing overall costs;

- provide students access to "the world's best" tools and analysis-based courses, regardless of their physical location, while allowing local faculty to focus on interactive, transdisciplinary, in-person, solutions-focused courses that address real-world problems to help create a sustainable and desirable future.
- increase the overall quality and utility of the University educational experience for a wider audience; and
- allow access to world-class University education in developing countries with relatively modest educational infrastructure.

Universities are critical to addressing the massive challenges of transforming our society into one that can create and sustain the well-being of humans and the rest of nature. The old model of higher education needs to be transformed in order to lead this transformation. A global, collaborative MetaUniversity like we have described is one way for this to happen.

DATA AVAILABILITY STATEMENT

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author/s.

AUTHOR CONTRIBUTIONS

All authors listed have made a substantial, direct and intellectual contribution to the work, and approved it for publication.

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