

## Futuristic approach for the sustainable evolution of Higher Education following the Covid-19 Pandemic

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**Abstract:** The purpose of this paper is to explore the concept of future technology workshop, the paper seeks to recommend the futuristic approach and technology training as different education design to sustain evolution of higher education in the new era. This research involves reviewing existing prior research, data, and literature in understanding the concept of future technology workshop. The existing literature is summarized and arranged to develop conclusions and recommendations on the Futuristic approach for sustainable evolution of higher education. Due to the global pandemic of Covid-19, many businesses in various industries came to the conclusion that the future is unpredictable. Nevertheless, it is important to plan for the future. Accordingly, the Future Technology Workshop (FTW) training emerged looking for providing specialist with knowledge or experience in a specific area by envisioning and designing interactions between current and future scenarios in a specific field. This research should be further developed using primary data collection. This paper is seeking to bring synthesized knowledge from previous work about future technology workshop, how it is implemented, the criteria for application and the relevance of using the training in higher education institutions to sustain improvement of the education system in the future. This paper presents the topic in a new context drawing together the concept of sustainability of education and the futuristic approach to provide a springboard for new research that will fill knowledge gaps and develop further opportunities for research.

**Keywords:** COVID-19, eLearning, Future Technology Workshop, Higher Education, Futuristic Task, Sustainability.

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### I. Introduction

The Future Workshop Training is a futuristic technique developed by Robert Jungk, Ruediger Lutz, and Norbert Mullert in the 1970s [1]. In the early 2000, it was reintroduced to include technology-based, concentrating on the design of new imaging technologies and activities [2]. The future technology workshops are created to empower and support individuals to develop new positions, visions or solutions of various problems in a domain or field of interest [3]. Researches have concluded that a future workshop is suitable for the multifaceted problem that requires many stakeholders' involvement in strategic thinking and planning. Individuals are not required to be extraordinary when coming up with innovative ideas because it is a collaborative effort [4]. Accordingly, this is needed for the future vision of HE worldwide due to the impairments caused by the COVID-19 pandemic and the obligation to change that faced society [5]. Another recent study investigated the application of “theory of change” process to encourage transdisciplinary ideologies among career researchers with the objective to reveal their assumptions about complex situations as well as to depict causal linkages, and propose support the development of a systems perspective. Their findings show, that independently of field or aspirations, a theory of change can encourage transdisciplinary thinking for sustainability [6]. As defined by earlier researches, sustainability, is the economic development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs [7]. Sustainability requires that actions be undertaken with a focus on the long term, not just the short term [8]. In this research we aim to highlight the relationship between the crucial need for futuristic approaches in order to ensure a sustainable evolution of the Higher Education sector.

### II. Literature Review

The Future Technology Workshop (FTW) is a form of a collaborative method of training among a group of members for exploring and designing the suitable action plans that can be taken in the present day for the future [9]. When the idea of this workshop emerged, it was to aid people to discover how individuals can interact later on in the future with different technologies and to enlighten on the development of new trends and their possible uses for educational purposes [2]. The workshop was originally developed for people who wanted to design a strategic concept for value-added and enriched decision making for the future. It is destined to

highlight: “common problematic situation, to generate visions about the future, and to discuss how these visions can be realized” [4]. Academics also explained that when thinking of developing a planned course of new-generation products, it requires a process composed of 3 stages: (1) Exploratory Design, (2) Concept Refinement and Analysis, (3) and Formal Design [10]. Nevertheless, the future technology workshop is a training that focuses on and targets the Exploratory Design. The workshop intends to identify, theorize and proposes a user-centered, organized approach to originality and modernization in developing concepts [10]. The FTW represents several sessions, which are as follows:

### **2.1 The Concept of Future Technology Workshop (FTW)**

Participants in the future workshop sit together and brainstorm relevant futuristic and high-tech ideas about the field of training [3]. Participants do not have to be considered technology experts but only relevant to the domain of interest. Within the collaborative session, participants are required to go through a specific arrangement of planned tasks in order to address questions regarding the support of technologies to current activities, how can these activities be affected by future technologies, as well as the development of new activities using technologies [2].

Exploring and searching for the possible answers for the four main questions aid participants in the training to reach a great understanding of future situations that may occur in the domain or field of interest in order to grasp how individuals may deal with technology in the near future [12]. This workshop includes aspects of prototyping, as well as participatory and informative design [13,14,15].

### **2.2 Criteria for Implementing Future Technology Workshop**

Many scholars have considered the FTW a ‘future gazing’ or scenario planning method. It is created to support collective decision making or contribute in strategic planning. In order to implement a Future Technology Workshop, specific standards must be respected [11]:

- **Minimal past training.** It could be used by any group of people (adults, students, or children) to endorse and analyze cooperative interaction with technologies that have not yet been predicted, imagined, or implemented before. No prior training is needed, but imagination and critical thinking are necessary.
- **Collaborative.** Participants need to discuss jointly imaginative fears, possibilities, obstacles, etc. in the field and then find solutions. Collective activities, role playing, and general interaction among people are needed regarding future collaborative technology, to develop strategic concepts and decision making in the domain of interest.
- **Cost-effective to run.** The training requires people to be flexible, walking around, brainstorming, role-playing, and writing down scenarios. Therefore, it should be carried out in a large room. There is no need for expensive supplies in the room. Some training might require inexpensive and moveable equipment, in a day workshop.
- **Relates people and technology.** The training is about imagining the future of the domain or field of interest. It investigates the relationship amid future activity and future technology, offering necessities for socio-technical systems, not just new parts of hardware. So participants have to be accepting of the possibilities of various technologies changing the future of behaviors of the field or domain.
- **Open-ended.** The training is assumptions of the future. Participants are free to imagine. It does not limit the shape and scope of the new socio-technical scheme by demanding certain patterns of behavior or particular use contexts.
- **Pragmatic.** The training requires practical thinkers. It requires people to think of future developments, and then identifies actions that meet the need and also may possibly be planned by practical present-day methods. Participants focus on the sequential activities and processes behind the future chore, initiative, or aim. Their principal priority is to find out how the team is going to perform.

### **2.3 The Stages in the Future Technology Workshop**

**Session 1: Imagineering.** The training begins by requiring all participants to think and imagine how the future of the field or domain of interest will be. Brainstorming is a technique for creative development of ideas [16]. According to research in order for brainstorming to be as efficient as possible in the training, it requires that the group must be careful regarding a few key concepts. Judging in the idea development phase should be avoided, having concern over quality as well as quantity, being able to express and voice out opinions and perceptions and finally working together to associate ideas and thoughts [17]. Once the brainstorming session is over, the ideas that emerged are renowned by the head (the trainer) and put on public display on a flip chart or power-point presentation, or whatever tools they had available during the brainstorm session [2]. The purpose of the display is that participants see and grasp each other’s ideas and make related suggestions in order to allow the major topics to be recognized at the end of the session [3]. The core result of this session is to establish the situation and encourage the members to reason in a specific way that encourages imagining the future and its

technological needs [11].

**Session 2: Modeling.** The members are separated into clusters and get a collection of craft-kits and standard stationery items, such as colored pencils and paper, post-it notes, sticky paper, markers, crayons, PlayDoh, pins, etc. The head of the training (the trainer) asks the groups to choose an idea (or more) that emerged within the imagining session and to construct a model that can determine the pertinent activities needed to be performed. During this session, the emphasis is functionality rather than detailed interface design. Therefore, the groups are to develop ideas of activities (develop models of activity contexts with the required technology props), and to avoid producing detailed designs of technology.

**Session 3: Role Play.** The participants in each group are required to present the models that they worked on during the previous session. The groups are to exchange with each other the models that were emerged and discussed. The exchange of models is vital as it permits the first attempt at searching and examining the appropriate newly developed technology, as an introduction into people's lives [11]. With the new model received by each group, they are to imagine a situation, that shows how the model can be used. The challenge in this role play is that the scenario that is to be developed, requires the participant to bring the future into the present, getting participants to illustrate various "performance" as if future technologies were already present to support new activities. This concept allows participants to be involved in future concrete actions [4].

According to researchers, it was claimed that one of the important goal of the design phase is to create systems that can be applied by people in everyday life [18]. Subsequently, they enact the scenario they came up with [3]. Previous research also explained that worthy scenarios are not independent of individuals behavior but they should have chosen stories affected by future concepts, in order to help in stimulation situation [19]. The role-play session aids the groups to rise the opportunities proposed by each other's models and to represent and discover future usages of the models in situations of their choice. The role play follows a short discussion to aid the consolidation of views in the feedback gained [11].

**Session 4: Retrofit.** The units are requested to change their set-up from the previous session to only consider current technologies during performance. Therefore, they are not required to imagine what future technology might be upheld. This is a practice to endorse the visionary capacities of the members have done in the past sessions [11]. This session is made to allow participants to visualize, understand and gather the relevance of the future to the present. By doing so, they are: investigating whether they can do the future activities they have proposed; guessing how problematic or complex the future activities will be; and accepting how new technology might improve life [2]. Participants in the training might not make their imagination excel beyond prospect. Therefore, the head of the training (the trainer) might assist and guide the members' thinking about current technologies by exemplifying a range of relevant technologies, explaining the basic functionality [4].

**Session 5: Everyday.** The training moves to allow participants to identify and explain what performance they now do using present technology, while relating it to the precise activity that was presented in the brainstorming phase. The head of training (the trainer) shows the group photos of current technologies significant to the design task, as in the Retrofit session. The members explain the current situations and activities in the domain and field of interest in order to identify the relevant and important problems and shortcomings of the existing technologies. The current activities and problems are identified and placed on a flip-chart or power point presentation. The current activities and problems are exhibited for the remainder of the workshop [2]. It is important for participants to reflect on their lives in to develop the habits and work. This session focus on retelling members the activities accomplished and the faced difficulties during operation phase. With all this occurring prior to the members imagining new technology and activities, the everyday session is able to motivate members to reflect on the gaps and look at future opportunities [11].

**Session 6: Future-fit.** In the training, the participants move on to modify their original models that were developed at the beginning of the workshop in order to support current as well as future activity. In this session, they are required to persuade to the other groups why this model is ideal in the present and future situations [2]. The groups in this session are requested to analyze the present activities and issues that were presently identified and discuss how these activities and problems will be approached later on. Throughout the session's brainstorming pursuit, the groups produce a list of futuristic technologies that examine the issues faced currently [11]. They come up with envisioned solutions related to the developed models they had constructed earlier. Future and present are merged in this session, members are then encouraged to develop a unified vision [4].

**Session 7: Requirements.** When the session is ending, the participants in all groups are required to make a group of requests for every model, according to their past session experience as well as their needs [2].The

concept of “requirements” obliges the participants to develop a set of primary instructions they would give to practitioners in a specified domain or field of interest in order to implement the model [20]. This Necessary session is the highpoint of the Future Technology Workshop. Throughout the training sessions, the members are interactive, collaborative, and already imagined, modeled, and experienced activities and technologies of the future. This workshop has empowered and allowed participants to reflect and comprehend future actions [11].

#### **2.4 Importance of the FTW for a sustainable evolution of Higher Education**

During the early months of the year 2020, a pandemic spread throughout the world, spreading shockwaves throughout the global economy. The virus was assumed to have emerged in Wuhan and spread to other countries. The spread of the virus in different nations depended on citizens of different countries’ connectivity and proximity to the Chinese city. The virus spread through the population at varying speeds, leading to severe damages to human lives and severe illnesses. Countries were urged to close borders and to enforce citizens to keep social distances, implementing curfews and quarantine practices. Many businesses that was not up-to-date with the advancement and digitalization of technologies failed significantly in loss, which almost led to the business extinction [21].

According to reports by the International Association of Universities, that reflect the Global Voice of Higher Education (2020), claimed that the Covid-19 sanitary crisis has affected more than 1.5 billion students and youth all over the word with the closing of educational institutions. Accordingly, they provided several recommendations that aid to improve higher education institutions during this time of crisis. These recommendations shed light to higher education establishments regarding how to continue teaching and learning activities throughout the current socio-economic, and sanitary crisis and also how could they be addressed in the future [5].

2019 research also discussed the culture and institutional structure of academic field as a continuous challenge, that requires innovative methods and also highlight strategies that are capable to foster interdisciplinary research and practice, like knowledge-based, attitude-oriented, and practice-focused methods. Their research indicates that these strategies are needed to Implicit in to build capacity for learners within and outside academia [22]. Recent studies also depicted the barriers to progress in Australian educational policies, and how they could lead to failure of providing adequate opportunities for young adults. Their findings also indicated that the lack of individual autonomy present in young people can lead to feelings of disempowerment regarding sustainability. they included in their interviews with Australian students and teachers, but also past research of successful international frameworks for youth programs, policy review, and a deep analysis of Australian educational frameworks. The crucial conclusion of this research is that it highlights how independent organizations should promote and enhance different methods and tools in all countries so that educational institutions are able to obtain and keep the capacities required for the coming years to initiate a remarkable progress in education in the new world [23].

The COVID-19 pandemic made citizens worldwide to not interact in groups and to implement social distancing. Thus, many traditional methods of teaching were eliminated. Many universities began to be open to the idea of digitalization and the full implementation of eLearning or other technology/ internet driven teaching methodologies [5]. Teaching activities transferred online have had a significant role in Higher Education during the global pandemic, which countries are not sure when it will end [21]. According to research conducted in 2020, 85% of the HEI representatives worldwide replaced traditional methods of teaching and the modern interactive workshop approach in teaching with online methodologies, totally or partially. The research report also indicated that 12% of the HEIs globally, suspended their classes completely, executing the concept of self-study. Some universities and other higher education institutions were not prepared to deliver education remotely [24].

The FTW is deemed important to specialized persons who work in fields that face challenges and needs that eventually will be encountered in the overall marketplace. Therefore, specialists in education sector could seek finding solutions to those needs [12]. These persons are identified as “lead users”. The training is beneficial, as it is considered to lead members to be familiar with future circumstances and find precise date on needs [25].

The FTW can involve responsible in different fields of operations and different positions held in the organizations [26]. As the education domain is one of the most important sectors needed to be in continuous evolution. Participants from the education sector could discover the common critical situations to create future visions about it [4]. Based on research, it was indicated that for specialized parts, it involves knowledgeable notions that help educational experts with specific tools for learning purposes [11]. This method of training has been adopted in multiple design projects, that include children and adults [14]. Therefore, this type of training is particularly necessary these days, during the global pandemic, to enhance a sustainable evolution in the Higher Education sector.

Various levels of sustainability could be differentiated in order for scholars to be able to investigate the effects and required efforts. First, Microlevel sustainability that relates to the level of Employees and firms, then Societal-level sustainability like Ethical income distributions. Last, systematic sustainability, which is the considered the biggest and most important level. This level is usually referred to as the global ecosystem within which our society and economy exist [8]. These levels of sustainability all need to be addressed in the future of education.

Erasmus Student Network research (2020) further explained that most higher education establishments have faced many challenges related to the pandemic in order to continue providing their same quality of education and handling the structural changes that needed to be addressed. In all fields, academics paid attention to the relationship between the future of education and sustainability [24]. Also a recent 2020 study investigates how markers of sustainable environmental wellbeing are related to disparities in human capital [27]. The effects of climate change and the crucial need of educating the coming generations in a more of environmental friendly way has also been an important topic of research. A field experience for undergraduate and graduate students interested in order to educate and cultivate a diverse audience of future leaders, environmental guardians, and sustainability advocates with a focus on engaging underrepresented minorities (URM) in science. The experience intended to develop a framework that could be translatable to other field-based curriculums and the paper conclusions addresses specific engagement mechanisms for educating future science leaders [28]. It will be imperative to study these changes in a more detailed manner, both from Higher education institutions as well as student perspectives. Therefore, the researcher recommends it through the future technology workshop training.

## **2.6 Predictions for Higher Education's Future**

Most specialists and authority figures have declared that a vaccine for COVID-19 would not exist until mid-2021 [21]. Simultaneously, the higher education environment is going to be transformed and the educational system might not return ever back to normal [29]. Nevertheless, existing technology today has enabled a new learning approach. With the universal reach of the Internet and smart technologies, "*a new age of anytime anywhere education is dawning*" [30].

2020 research also summarized certain predictions to expect. The following points are some of the changes that are or will be caused due to the COVID-19 pandemic [31].

- **Colleges will maintain a major online presence.** Higher Education institutions understand that there is a necessity to propose online classes to conserve social distancing and that education operations will change, making universities want to renovate many of their degree programs into stable online programs. Many common governance challenges will appear as a result. In order to exploit technological competence gains higher education institutions must recognize modernization in education and have tactics to respond timely to the newest digital developments with possible roles in education, like augmented reality and artificial intelligence (AI). New infrastructure and systems must be organized through partnerships with trustworthy providers to guarantee data security and sustainability.
- **Improvements are essential in IT infrastructure to provide appropriate online education.** Since higher education will take place online, with virtual classes, there are issues related to hardware as well as software that should be tackled before remote learning can grow. There is no hesitation that digital devices (mobile, cloud, AI, etc.) can be arranged, yet there is continuous development. On the perspective of hardware, the capacities and digital inequalities need tackling. As for software developments, key functions still need to be addressed like higher number capacities for classes.
- **Investment in student-centric learning outcomes will be more important than technological innovation.** Low quality teaching cannot be enhanced by technology. Through giving live classes online, teachers and lecturers need to understand the content very to blend lively material (videos, speeches, case studies, etc.) to make learning interesting and attention-grabbing. With online education, students have faced interruptions from the digital world. organizations must instead advance in student-learning outcomes, modernizing their curricula and pedagogy. Furthermore, online courses might entail educational sustenance on the ground: professionals like instructional designers, trainers, and coaches to guarantee coherent student learning and course achievement.
- **There will be massive online competition and consolidation.** Since the majority of higher educations will operate online, students can choose any entity from around the world to enroll in. The competition will be fierce. All universities seek to stay online so they will market new online programs. Not all universities will succeed in bringing the target intake. Students if they choose online universities will seek well-known institutions globally.
- **Collaboration is needed among universities.** The market will have a maximum of 50 major online universities; several of them driven by partnerships with principal Fortune 500 corporations and the remaining

organizations will be struggling to survive. Organizations will need to shape their offerings to a particular niche -- or own a resilient and lasting brand to have a chance to survive. Novel partnerships are better developed throughout staff cooperation, then progressively extended by official support. Universities should look for qualified and proficient partners, operating in areas of harmonizing strength.

- **More businesses will join the market.** As education nowadays is performed using technological devices and not in traditional settings, it is expected that new technology companies will join the education market. In certain cases, they will do join in a collaboration with universities. We could expect to see new concepts like “the University of XYZ, powered by Google.” When an educational institution is considered as a technological platform, not a classic campus, it is a initiation for major technology organizations, who have greater brand image to start competing in this market as well.
- **Greater inequality will result.** A decreased number of organizations will propose traditional residential education to wealthy or special students, who will gain additional benefits from the situation on a personal as well as a professional level. Wealthy students own the newest laptops, better material, better internet connections, and more hi-tech tools. The remaining students (the unfortunate) will be harmed with online education if they lack the resources needed.

### **III. Conclusion and Recommendations**

Functions of the FTW have revealed that it could be a success as a method to change and redefine technology interactions [11]. Researches have shown that this workshop training can be beneficial for product and or system design. A recent report, “Insights on Day-to-Day Living in 2050”, the researchers investigated the future of many fields that affect human life and how it could be envisioned in 2050. Concerning Education. The report states the primary changes that are expected in education is access, format and purpose of Education. Considering the purpose of education, the report highlights the growing importance of ongoing education, vocational training, new and soft skill development and repurposed education. It is mentioned that education will no longer be a target but rather a lifelong pursuit. The fast pace of societal changes that include technological revolutions and ongoing upgrades of knowledge will be available throughout an individual’s life in order to offer new opportunities to develop and promote new skills and attitudes. As for the Access and format of education they importance of technology-assisted education and out-of-school learning are the main focuses. The crucial development of technology will be essential to redefining the access and format of education as well as the increased availability of information and knowledge online. The report also mentioned the potential of virtual classes being a new norm – and it has been recently proven with the COVID-19 pandemic in 2020. The format of education was also mentioned to be changed by the introduction of Computer science and technology interaction learning being taught to students earlier in life, and also offering students skills that cannot be replaced by artificial intelligence [32]. After the review of the literature, the researcher believes that this workshop can be advantageous for the higher education institutions to implement. The researcher believes that this workshop can allow practitioners in the higher education to be exposed and acquainted with collaborative group creativity with practical design since it is able to link activity and technology together. The workshop provides a group collective easily-comprehended framework that makes the technique easy to teach to other designers and practitioners. The future technology workshop provides users with a certain involvement in conceptualizing new technologies and methods that lead to the development of solutions that address specific needs [33]. This is significant because scholars have concluded that the educational system might never return back to the traditional approaches of teaching [29].

As recommendations, the researcher highlights the idea that everything cannot continue as before and, to ensure the sustainability of our societies, it is necessary to remedy the shortcomings of a development model based on economic growth alone and to consider our ways of doing things. according to new priorities. Sustainable development pursues the following three objectives:

- Maintain the integrity of the environment to ensure the health and safety of human communities and to preserve the ecosystems that support life;
- Ensure social equity to allow the suitable education of all women and men, the development of communities and respect for diversity;
- Aim for economic efficiency to create an innovative and prosperous economy that is ecologically and socially responsible for the new upcoming era.

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