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**HIGHER EDUCATION FOR THE 4TH INDUSTRIAL
REVOLUTION: LIBERAL ARTS AS THE WAY FORWARD**

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Abstract

Liberal Arts education, which includes humanities, social sciences and natural sciences stresses on an undergraduate study that is broad instead of specialized subjects like law and engineering. There is however, a demand that education be technically and vocationally focused in order to produce a workforce relevant to the fourth IR which requires experts in emerging technologies such as robotics, artificial intelligence, genomics and biotechnology. This paper argues that the goal of higher education is to develop better young people. “Better” implies “to have habits of the mind to adjust their knowledge to the societal context”. In a broader context, the goal of higher education should be to ensure that the workforce produced are able to not only utilize their expertise in science and technology to earn a living and to provide solutions to global issues, but to do so responsibly and compassionately towards the environment, towards mankind, towards society and towards individuals. Liberal Arts Education with its broad and transdisciplinary curriculum is advocated as the way forward in creating young people who are relevant, responsible and ethical in the face of the impact that the fourth Industrial Revolution and subsequent ones will produce.

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1. Introduction

The 4th IR is often described as the result of integration and compounding effects of multiple “exponential technologies”, such as artificial intelligence, biotechnologies and nanomaterials. As a result, super computers can reach amazing high speeds. This will become widespread enough to create massive societal change; for example, driverless cars. Another example is the increasing population and the loss of productive land due to climate change will require an increase in food production. 4IR technologies can enable more proficient and effective manufacturing methods.

In the 4th IR, education focuses on emerging technologies, that is robotics, AI, nanomaterials, biotech, in order to provide a workforce capable of utilizing and developing them. However, this workforce should be able to predict, analyse and solve problems with ways which are ethical. They should be able to communicate and work in teams. Their decisions should be compassionate towards animals, mankind and the environment. The solutions they provide need to be just and fair, sustainable and compassionate.

Liberal Arts education is broadly defined as education that includes the Arts, Humanities, Social Sciences and Natural Sciences. It generally refers to education that encompasses a broad range of study as opposed to professional studies in the fields of law, medicine or engineering. It is based on the belief that education needs to respond to the changes to ensure education remain relevant. Education needs to emphasize on the interconnectedness of the physical sciences, economical impacts, political aspects and social dimension in topics of study.

The argument for liberal arts education includes the following:

1. **Citizenship**

By developing critical reasoning skills and practising the arts of discussion and negotiation, students should be better able to debate matters of global importance, to be civic in their arguments and to be respectful of others’ political and civic slants.

2. **Produce more innovative contributors to the economy and society**

While technical education is important for the development of society, employers do value softer skills such as creativity, the ability to think outside the box, openness to multiple perspectives. These skills will become more important as artificial intelligence replaces human workers in many technical fields.

3. **Prepare young people for a multicultural society**

There is a need to create awareness of a variety of culture and the need to communicate effectively and respectfully across cultural differences. This prevents young people from making biased assumptions, encourages them to confront their beliefs and at the same time, consider new ideas and evidence and to formulate opinions based on sound knowledge rather than unfounded prejudices.

4. **Cultivating character**

Liberal education makes us aware of the importance of examining our own prejudices and assumptions by fostering habits of self-awareness and self-criticism.

5. Better quality of life –

Education which is broad allows the individual greater enjoyment of life, for example appreciating works of art, appreciating an argument in philosophy, understanding an equation in math, marvelling at the diversity of the natural world and appreciating another culture.

2. Problem Statement

How is this related to the 4th IR?

Liberal Arts is often associated with the idea of freedom. Think of the word liberal and it denotes freedom to choose, to speak, to mix and match, to form and give opinions, to debate, freedom to cross disciplines and more importantly, the autonomy to have different intellectual viewpoints.

However, freedom without boundaries and ethical responsibility can be destructive. According to Ishiguro (2013) in *When We Were Orphans*, "... the modern criminal is growing increasingly clever. He has grown more ambitious, more daring, and science has placed a whole new array of sophisticated tools at his disposal" (p. 19). With new frontiers achieved in the field of artificial intelligence and robotics in the 4th IR, there needs to be a broad base education that teaches and trains students both the privileges and responsibilities of freedom.

Therefore, the interdependence of liberal arts and technical education is undeniable. Technical studies should be strengthened by liberal arts education and vice versa. Technical fields like medicine and engineering can benefit from studies of ethics and other added social dimension.

Ideally, a successful education system should not only produce a viable workforce, but develop character. The question remains as to what the desired characteristics are. What are the characteristics of a workforce that will take a country forward? Is it technical skills alone?

The ideal individuals and the ideal workforce need to possess empathy, compassion, integrity. These individuals would also have problem solving skills, have minds which can reason and analyse critically, flexibility in providing solutions to issues that can emerge from the 4th IR. These individuals should possess a strong sense of justice, and strong communication and language skills (Penprase, 2018, p. 220).

According to Lewis (2018), "(o)ne source for the recent surge of interest in liberal education is the sense that the relatively narrow, technical education that has predominated Asian universities does not prepare students well for the complexity of the modern world and economy" (p. 26). Success in examinations may or may not translate into success in life; which begs the question – what is success in life? Different people will have different definitions. To me, it is being a respected and happy person in a society. Being respected translates to having a job that one is suited in and that pays well enough for one to live reasonably comfortably and respectfully, and being happy in working on that job, being well-adjusted in a society, and more importantly, in a global society. Socrates said: "The unexamined life is not worth living". It is indeed, not a life of examination but an examined life that we should strive for. Our curriculum needs to develop students with ethical stand, who are fully aware of the impact of technologies on humans and societies. We should strive to develop a curriculum which is not only relevant but more importantly, responsible.

It is the social responsibility of every university to ensure that students learn to be human first, and not to be robotic. The underlying concern and priority of any educational curriculum is to shape better people, people who have been educated holistically.

3. Research Questions

What does it take for Liberal Arts programme to succeed? What are the hurdles?

4. Purpose of the Study

This paper discusses the importance of Liberal Arts programme in institutions of higher learning. It cautions that for a Liberal Arts program to succeed, we need to look squarely at the main hurdles and address them honestly. Otherwise, it remains a half-hearted attempt at introducing yet another new program with no added value; shifting the same old items around as in trying to window dress an outdated retail outlet.

5. Research Methods

References to existing materials and visit to YALE NUS Singapore. Analysis of articles.

6. Findings

The danger in any Asian society is the stigma placed on the word 'liberal'. To the Asian mind, it suggests freedom, which leads to various vices and undesirable elements and behaviour in the largely Asian society which still frowns on promiscuity, sex out of wedlock and different sexual orientation.

In spite of that, but precisely BECAUSE of that, liberal arts education is needed. Prejudices against people who are different could be confronted and addressed in an opened manner, through discussion and debates instead of resolving to hate crimes against people just because they are different. Differences could be agreed upon in matured dialogues without fear. Our young people need to be trained to voice their opinions in matured manner, to be considerate of others who have different views. Most of all, they need to learn to appreciate and respect differences instead of insisting on only one path as the right path. In *Green is the Colour*, a novel by Fernando (1993) which seeks to suggest ways to resolve differences in the multi-cultural society of Malaysia, the character of Lebai Hanafiah says "There are so many who want to force you to follow the right path. Each one's right path is the only one. I am tired of seeing the folly spread in the name of such right paths. I fear those who seek to come between me and love for all humanity. They are the source of hate and destruction" (p. 116). "Love for ALL humanity" should be the main driving force behind all endeavors of any new national education programmes; not love for one's own religion, ideology or beliefs.

6.1. Lecturers' Mind-sets

For any Liberal Arts program to be successful in shaping young people's minds, there needs to be an overhaul of lecturer's mind-sets. Mind-sets that are territorial, that insists that his/her field is paramount

and is more important than other fields should be addressed. Mind-sets that insists that only one religion/teaching/ideology is the only one to be followed and is superior above all else is a threat to the very essence of having a liberal arts education in the first place. Minds that condemn people's behaviours, sexual orientation and dressing, beliefs that are opposed to one's own are minds that should not be teaching liberal arts program.

6.2. Support of the Local Community

The support of the local community is important too; local community in the form of university lecturers, students and people at the top management. In openly discussing controversial matters, some may accidentally cross invisible barriers. Is the university community willing to support and defend the "offenders"?

6.3. Injection of Global Ideas and Culture

Foreign students need to be attracted to the programme to enrol. A liberal arts programme is not deemed liberal arts without a certain percentage of injection of global ideas and culture. A liberal arts programme that caters only to one nationality is lacking in global perspectives.

6.4. Learning and teaching Methods

Another pertinent point I would like to make here is that for any liberal arts program to succeed in fulfilling the objectives I have listed above, the METHODS of teaching and learning is to me, more important than the content itself. Lecturers are mere facilitators, their role should be to help and guide students towards the resources that they can go through in order to be more informed before they form their opinions. The role of facilitators should be to elicit information and opinions, to coordinate the ways the lessons are learnt. Refraining from injecting one's opinion and influencing the way a discussion goes should be a skill that every lecturer in the Liberal Arts program master. Lecturers need to be re-schooled to be facilitators, no matter how great they think their opinions and level of knowledge are. This requires humility, restraint, patience and open-mindedness. Teaching with compassion towards differences is what every educator needs to learn.

7. Conclusion

Education in the 4th IR and post 4th IR need to emphasize the interconnected and interdependence of the physical, chemical, biological, social, political and economic dimensions of any issue and problem (Zarkasyi, Mahmudi, Saifulloh, & Anwar, 2019). Besides, the appreciation of the fine arts need to be nurtured, in order to create human beings who are balanced and happy, who are capable of self-expression through enjoyment of poetry, songs, dances, drama and other cultural activities. After all, while we create and work with robots, we do not want to become robots ourselves.

7.1. Awareness and sensitivity of the government, policy makers, educators and top management

Awareness and sensitivity of the government, policy makers, educators and top management of a university is essential towards creating a liberal arts program culture. Any education ministry and top management of universities who are concerned about student numbers and KPI ought to also tune themselves to be concerned with students' quality in terms of character, happiness index, and citizenship; that is the ability to adjust well in a multicultural society and the ability to think and act as a global citizen.

Student numbers and KPI can fluctuate, their values can change over time and their impact to the society may not be immediately significant. However, the impact of training competent young people with not only the necessary knowledge but who are equipped with the desired skills and characteristics should and must consistently be the number one priority of every higher education programme.

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