

# Nikolaos Basmatzidis

## Assignment A1: Essay on AI, Social impact, and ethics

Mention that the paragraphs starting and ending with // are the integrated suggestions from the review of my peer student.

**Overview:** This essay focuses on ICT as well as AI solutions for development, the social impact they have, and the importance of ethics are explained. One use case example is presented alongside with the obstacles and the ICT risks. The mitigation of ICT/AI for the use case is described, how the positive results can be considered sustainable as well as the implications of ICT/AI in education.

### Introduction

It is an undeniable truth that technology has made a vast progress over the past years. It is moving full speed ahead and it is increasing more and more rapidly in every field. Regarding Computer Science field, the improvements that have been made, have dramatically changed people's lives and with the help of Artificial Intelligence (AI) even more. AI is a field that brings innovative solutions to ease the difficulties or cover needs which are difficult to be achieved since in many circumstances it requires human intervention, but it is not always possible.

All the technological improvements coupled with the solutions that they bring, are meant for the common good [1]. This is based on ethics code and some examples are i) ACM Code of Ethics and Professional Conduct [2]: "1.1 Contribute to society and human well-being. This principle regarding the quality of life of all human beings confirms the obligation to protect fundamental human rights and to respect the diversity of all cultures." ii) Asilomar Principles [3]: "23) Common Good: Superintelligence should only be developed in the service of widely shared ethical ideals, and for the benefit of all humanity rather than one state or organization. 14) Shared Benefit: AI technologies should benefit and empower as many people as possible." "15) Shared Prosperity: The economic prosperity created by AI should be shared broadly, to benefit all of humanity." Subsequently, based on ethics code, not only developed countries but also remote and rural regions living in poor conditions and are still unconnected from the rest of the world ought to benefit from. These rural regions are the so-called Global South.

### ICT4D in Global South

One example of Global South among the many situations where rural areas are facing serious problems as well as difficulties in their daily life is in Malaysia, in Sarawak at the village Kampung Kuap [4]. The involved stakeholders are the inhabitants of the village, mainly the school community, the children, and their parents. They are lacking personal computers and let alone, internet connectivity. Their financial condition is allowing them only to have internet via their mobile phones, and the connectivity might not always be reliable. They can only make use of a PC and have fast internet only at the village's telecenter. Regarding the ongoing situation with the pandemic of covid-19, schools are currently closed. Even though children in towns can go to tuition classes or pay for the online tuition, this is not the case in this village

since their parents cannot afford to pay for the online tuition, nor can the children attend the tuition classes at the telecenter as there is a limitation to 5 kids due to covid-19 restrictions. As a resulting consequence, children at Kampung Kuap village do not have access to education and are falling behind in knowledge. With regards to that, their interest is finding solutions so that children can keep up with the tuition which is happening in towns or by online means for those who can afford it. In addition, it would be of interest an ICT solution for younger students that could help them diminish their difficulties in math's as well as in reading and writing in their native language.

### **Obstacles & Risks**

Regarding the obstacles in the education use case for Kampung Kuap village [4], internet connectivity and PC facilities are not available, due to covid-19 regulations schools are closed and there is a limitation number up to 5 individuals in the village's telecenter. Due to the fact that technology that drives AI is rooted in the privileged hands of the Northern regions, Global South is at risk from many forms of biases or discrimination since its solutions might not correspond to their local contexts [5]. Therefore, before one can suggest or apply ICT solutions for development, it is essential to first understand what indigenous knowledge is, take into account the local contexts coupled with the available resources, on the grounds that what may implies in developed countries is not always the case in Global South. The risks start when people do not have any training on ICT/AI ethics for education and on ethics for rural communities in general. The foreseeable adverse consequences are that in the systems they are about to build, there will be biases and stakeholders might be discriminated. It might not be intentionally, but without having the knowledge in approaching rural communities, mistakes are about to occur, and the impacts related to these innovations will negatively affect these communities.

### **Mitigation**

If AI education is in the infancy stage of development, then AI ethics education is barely an embryo [6]. The way some universities are training students to be the next AI experts though, is not only valuable to universities but also to industry and government [6]. Subsequently, it is important that universities coupled with educational organizations critically train their students to consider the potential implications when using any technology. In that way, they will understand that considering ethical together with social consequences, is essential practice, and inevitably they going to consider them in the systems they build. [6] Therefore, with these important practices or even with training starting in elementary or in high schools, only then these problems may be mitigated completely. And this is because education plays one of the most vital roles on how individual's consciousness is formed with morals and values. Even after understanding the role of the ethics in AI education coupled with ethics in general, one needs to be too cautious not to disrespect anyone. In that way, the outcome will not create ramifications, but instead it will have a positive impact towards society.

After taking into consideration the things mentioned above, only then some positive results can occur, and positively help the stakeholders for the education use case overcome their problems. One solution from one aspect of the problem, regarding the difficulties in reading and writing in their native language could be a mobile game application which can trace the

alphabets step by step for the students. A tutorial and hands-on practice on how to draw the alphabet letters correctly will be included. There will also be a feature of the alphabet letters to come with sound pronunciation. As a result, the students will learn how to write the letters and memorize the pronunciation of the alphabet well. The students can use the application anytime and anywhere without worrying about the internet connection since it will be offline.

// As a future scope, the mobile application will introduce AI techniques for more detailed evaluation of children's progress and identifying their strengths and weaknesses. In that sense, the teacher will not be required to interact with the students that often. However, even though this might tackle the current problem, it might strengthen the social isolation issue as the teacher's interaction with the students will be decreased even more. //

### **Sustainability**

The topic of sustainability is missing from the AI ethics guidelines. [6] The environmental impact of computing is not only a significant but also an underdiscussed topic within computing in general [6]; Taking into consideration that the computing power is necessary for future AI applications, the environmental impacts of AI are likely to be of increasing importance as we move forward. [6] However, on the grounds that the topic of sustainability is indeed vital, before explaining how the positive results from the game application solution can be considered sustainable, let us see what sustainability is. There is no universally agreed definition of sustainability though. In fact, there are many different viewpoints on this concept and on how it can be achieved. However, the most familiar sustainability definition was presented in the Brundtland World Commission report (1987). The term was defined as "the development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs" [7]. With regards to that definition, the educational application if can be practically implemented by the students it meets the requirements of sustainability. This will be acknowledged once the game will be used by the children and within a period of time, feedback provided by their teachers is about to reveal whether the game succeeded in diminishing the difficulties or not. In cases where the game is successful, the game application will have actually succeeded its goal, and thus, can be called sustainable.

// From development's perspective, the game will be lightweight, its power requirements will be low and will run without consuming much battery. Since it can be played offline meaning that it is not dependent on the internet, the children won't need to visit the telecenter to use the computers. Learning with the use of this app will be much more sustainable and environment-friendly as compared to learning in the telecenter. Even after the pandemic, when the schools reopen, learning through this app can reduce the working hours of the schools which can save a lot of electricity and resources for the school boards. Thus app-based learning will obviously be more environment-friendly and would help in creating more sustainable societies in the future. //

### **Implications**

Undoubtedly, ICT has affected people's lives and it is now part of our everyday routine. Subsequently, it can have both positive and negative impact on education as well. Regarding the positive aspects, ICT can enhance the modes of communication, and can make it possible for tuition to be fully successful with online means and independent learning platforms. For instance, during the pandemic of covid-19, tuition was shifted completely online. ICT can also result in better teaching and learning methods as teachers can make the teaching better with ICT tools, images, videos or graphics while delivering their lessons. In that way, students will

also be more motivated as it will be a more attractive method for them as well as more enjoyable. Furthermore, critical thinking is being developed by students since having various sources with different points of view on a particular subject, they can have a more complete view. Another positive point of ICT is the multiculturalism. One very interesting advantage is that there are not time barriers, as ICT allows asynchronous communication and individuals having different cultures can interact with one another.

On the other hand, concerning the negative aspects, computers together with the internet are replacing the conventional education curriculums, which are risks to the traditional books and handwriting methods. There is also no real face to face interaction with tutors and students which can enhance the social isolation problem. In addition, with too many sources available on the internet, students can be misled as well as be misguided and what might be considered to be helpful, is turned to be harmful. Furthermore, the risks of cyber-attacks and hacks of personal data are too many with the use of ICT. One other negative aspect of ICT is that it might cause high levels of addiction. For instance, various ICT tools meant for educational purposes might be used in a wrong way and also cause distractions. Lastly, the ICT is not accessible everywhere since there are many regions across the globe which are yet to be connected with technological advances.

There are many more positives as well as negatives aspects of the ICT in education. For the use case in Sarawak at the village Kampung Kuap though, the positive ones outweigh the negative and the development of ICT can help in mitigating their problems.

## **Conclusion**

When all is said and done, ICT technologies with innovative solutions can have both positive and negative impacts even when applied for Western communities as well as in rural communities in Global South. Most importantly therefore, it needs to be respectful towards everybody and without biases. Schools, universities, and educational organizations need to train students regarding ethics in order to avoid ethical and social consequences. Essentially, all ICT development solutions will be to benefit society as well as have a positive impact towards humanism.

## **References**

- [1] AI for the Common Good?! Pitfalls, challenges, and ethics pen-testing  
[AI for the Common Good?! Pitfalls, challenges, and ethics pen-testing \(oclc.org\)](https://oclc.org)
- [2] ACM Code of Ethics and Professional Conduct, 1992,  
<https://www.acm.org/about-acm/acm-code-of-ethics-and-professional-conduct>
- [3] Asilomar AI Principles, Future of Life Institute, 2017,  
<https://futureoflife.org/ai-principles>
- [4] ICT4D in the field course, Use case Sarawak  
<https://canvas.vu.nl/courses/52603/files/folder/Use%20cases%20Sarawak?preview=3775620>

[5] AI and the Global South: Designing for Other Worlds

[AI and the Global South: Designing for Other Worlds - Oxford Handbooks \(oclc.org\)](#)

[6] More Than "If Time Allows": The Role of Ethics in AI Education

[More Than "If Time Allows" | Proceedings of the AAI/ACM Conference on AI, Ethics, and Society \(oclc.org\)](#)

[7] What Is Sustainability?

[\(PDF\) What Is Sustainability? \(researchgate.net\)](#)