The DEVELOPING COUNTRIES Case Studies

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1. Introduction

Welcome to this instructor guide for exploring the impact of technologies on developing countries, where we have all our advice and suggestions as to how to deliver lecturers on this topic. Our key belief in developing this content is that you know how best to deliver the important information; we can supply the content to you, but you will find the best way to teach it, in a manner than suits your teaching style. And because of that, we have designed the content to be as flexible as possible, with multiple documents that can be put together in multiple ways, depending on what suits you.

This document presents two fictionalized case studies, that focus on data collection from users in developing countries. The case studies are designed to serve as a way to improve computer science students' ability at consequence scanning – a way to consider the potential consequences - intended and unintended -of a new technological product or service on people and communities.

These case studies have been developed specifically as teaching tools; each is based on a synthesis of several real cases, and are designed to generate detailed and diverse discussions by student groups about the ethics of these scenarios. To highlight the fictitious nature of the case studies, fictional placenames and company names are very often used to underscore the fact that these case studies are fictional.

2. Case Study Delivery

The two case studies can be delivered individually and work well as good lessons, but when used together they provide an interesting contrast, as the first one focuses on how new technologies can result in divisions between a nation and external agencies, whereas the second case study explores how new technology can create internal divisions within a nation, and particularly how historical and cultural factors can play an important role in people's perspectives on technology, and its impact. Our hope is that when the students see the stresses that technology can cause in developing countries can be both external and internal, they will appreciate the range of ethical challenges that technology can bring about.

Each of the two case study comprises a detailed narrative with set of questions, or "Talking Points", that you can ask the students to explore. We also have a general checksheet that can be used by students to evaluate scenarios involving the development of new digital products and services. The checksheet has a range of prompts in it, and we would encourage you to remove, add, or change any of those prompts to suit your own students.

The two case studies are best delivered as *take-home activities* where the students have time to read and reflect on the case studies, and think about the questions, and have time to frame their answers. They can also be delivered as part of a tutorial where the students can discuss the key points in groups, which can be exciting for them.

3. Case Study 1: The Online Avalanche in Ishmaelia

3.1. Case Study 1 Summary

- Ishmaelia is a developing country in East Africa where social media, search engines, or subscription television services have recently become very popular.
- These services are being provided mainly by a consortium of international companies, predominantly founded and based in the United States of America.
- The consortium is providing a lot of the technological infrastructure, as well as working with national agencies to digitise a lot of important cultural artefacts. They are also harvesting all of the data that is being generated by the people of Ishmaelia when they interact with these services (with is worth billions of dollars).
- The government of Ishmaelia have been unsuccessfully trying to encourage the development of indigenous technology companies by providing taxation breaks and small state grants.
- The Ishmaelian Digital Rights Activitsm Group (IDRAG) are a group who are concerned with these developments, and are trying to highlight these injustices, and they have been working with the few successful indigenous technology companies to develop alternative services using Open Source Software as foundation for development.
- The Consortium is creating a suite of educational services that they will make freely available to primary and secondary schools, including a rich collection of free educational content (including free textbooks) that is localised to national needs.

3.2.   Case Study 1 Lecturer Notes

1. Please note that this case study have been developed specifically as teaching tool; it is based on a synthesis of several real cases, and is designed to generate detailed and diverse discussions by student groups about the ethics of this scenarios.
2. "Ishmaelia" is a fictional African country created by Evelyn Waugh for his 1938 novel "Scoop"
3. "The Consortium" is based on the sort of mega-corporations you see in the work of science fiction writer Philip K .Dick, and on the movies based on his work such as "Blade Runner" and "Total Recall"
4. It would be useful to ask the students to explore the reality the interactions of large technology companies in developing countries, for example to look at *The Big Five Tech Giants*, also called "FAAMG", who are Facebook, Amazon, Apple, Microsoft, and Google.
5. Ultimately the goal of this discussion is to allow the students to reflect on their general ethical position, i.e.;
    a. Deontology: This means that a student believes there are general principles that distinguish right and wrong.
    b. Virtue Ethics: This means that a student believes that the actions are not as important as the morality of the people performing them.
    c. Utilitarianism: This means that a student believes that the outcomes of an action are the most important thing ("*the ends justify the means*").
    d. A combination of any of the above.

3.3. Case Study 1 Talking Points

1. In this the Consortium have created the majority of Internet infrastructure in Ishmaelia, don't they have the right to refuse indigenous technology companies access to it? Why?
2. If the people of Ishmaelia are no longer supporting their own local media, should the government intervene to stop their existing media being bought up by the Consortium? Why?
3. When accessing the Consortium's services, the Terms & Conditions clearly state that all of the data generated, as well as other contextual data, is being copied to Consortium servers, what they are doing is clearly legal, but is it ethical? Why?
4. IDRAG has been working with the few successful indigenous technology companies to develop alternative services, and they call on the government to provide them with substantial funding to complete this project, if you were the official who had the decision-making power in this scenario, would you fund this initiative? Why?
5. IDRAG are arguing that the new educational services are simply a way of Ethics Washing, as well as a way of collecting more data about people (starting at a younger age), and this new service is also getting children accustomed to the Consortium' specific software so that they will be more likely to use this type of software in the future. IDRAG call on the government to stop this rollout. If you are the official in charge of making this decision, will you stop the rollout or not? Why?

4. Case Study 2: Mobile Mania in Qumran

4.1. Case Study 2 Summary

- Qumran is a developing country in the Middle East, that was historically part of the British Empire, and was a British protectorate until the late 1970s. As a consequence of these historical ties, most of the population have some proficiency in the English language.
- Qumran has seen an explosion in the use of smartphones in the past seven years. The country hasn't got a significant landline infrastructure, but with the advent of affordable Wifi and smartphones, internet usage is growing rapidly.
- These services are very popular with the younger adults, but everyone in Qumran agrees that having access to the internet means people can keep in touch with others.
- The younger adults appreciate the educational benefits of Internet usage, as well as for online shopping, to access government services, and social media.
- The older adults also like having internet access, but are concerned that it is responsible for the erosion of the Qumrani culture, where younger people are eschewing traditional dress, customs and values. They are also worried about the data being collected by these services.
- Most adults believe that the Internet will be crucial for the future growth of the Qumrani economy, and because of this, the government have decided to develop a comprehensive Computer Growth Policy, which includes the development of online government services.

4.2.   Case Study 2 Lecturer Notes

1. Please note that this case study have been developed specifically as teaching tool; it is based on a synthesis of several real cases, and is designed to generate detailed and diverse discussions by student groups about the ethics of this scenarios.
2. "Qumran" is a fiction Middle Eastern country created by Antony Jay and Jonathan Lynn for their 1982 episode of "Yes Minister" entitled "The Moral Dimension"
3. Although the national survey is fictionalized, it is partially based on the 2015 Pew Research Center international survey that looked at the impact of technology across forty developing countries.
4. Elements of the history of Qumran presented in the case study are based on the histories of Papua New Guinea and the British Solomon Islands.
5. Ultimately the goal of this discussion is to allow the students to reflect on their general ethical position, i.e.;
    a. Deontology: This means that a student believes there are general principles that distinguish right and wrong.
    b. Virtue Ethics: This means that a student believes that the actions are not as important as the morality of the people performing them.
    c. Utilitarianism: This means that a student believes that the outcomes of an action are the most important thing ("*the ends justify the means*").
    d. A combination of any of the above.

4.3. Case Study 2 Talking Points

1. Do the older adults in the survey have a reason to be concerned about the use of Internet access by younger adults who seem to be rejecting traditional Qumrani culture (particularly given the historical context)? Why?
2. Do the older adults in the survey have a reason to be concerned about the use of Internet access by children who have access to such a wide range of uncensored content? Why?
3. Do you agree with the statement "*personal data is a fair exchange for access to these important services*"? Why or why not?
4. Do you think that children who undertake illicit activities online such as digital piracy end up undertaking illicit or immoral activities in the real world? Why?
5. Do you think the Qumrani government is making the right choice by attempting to attract multinational technology companies? Why?

5. Teaching and Assessment Approaches

5.1. Take-Home Activity

As we suggested above, we think the best way to deliver this content is as a *Take-Home Activity*, where the students have time to reflect upon the content, however, there are many other ways to use this content.

5.2. Newspaper Articles

Another possible activity you could do with this content, is to ask the students to write a newspaper article that summarises the key point of the article, or perhaps to write a pair of articles, from each of the two main perspectives represented in the two case studies. So for the first case study to write articles from the point-of-view of the Consortium, and the Ishmaelian Digital Rights Activitsm Group (IDRAG), and for the second case study to write articles from the point-of-view of the younger adults and the older adults.

5.3. Debating

If you have a nice group of students, a debate can be a lot of fun. You could divide the class in half and work together to develop arguments for each of the two main perspectives represented in the two case studies. So again, for the first case study to debate from the point-of-view of the Consortium, and the Ishmaelian Digital Rights Activitsm Group (IDRAG), and for the second case study to debate from the point-of-view of the younger adults and the older adults. When creating debates, it's important to set a clear topic for debate and assign contrasting viewpoints to individuals or groups, and make sure you give the students one or two weeks to research the topic from their assigned viewpoints in preparation for the debate. As a follow up, you could ask the students to write a short essay based on the debate.

5.4. Mindmaps

A nice, simple activity could be to get the students to create a MindMap (or Spider Diagram) that represents the key points of the case study for them. The great thing about doing this is that you can then get the students in pairs or small groups to share their diagrams with each other, and to look at how different people view the same issues.

5.5. Grant Application

This activity applies to both case studies, it might be fun to get a real grant application form (modify it as necessary) and ask the students to fill out the form. For the first case study they could fill out the form as it they are a small indigenous technology company working with IDRAG, applying for funding to develop alternative, native social media platforms. Similarly, for the second case study the students would be a native technology company applying to the Qumrani government's Computer Growth Policy funding to develop the online government services.

5.6. Posters

This activity applies to both case studies, it might be fun to get the students to create a poster (or infographic) that advertises the services of IDRAG for the first case study, and advertises the Qumrani government's Computer Growth Policy for the second case study.