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# Critical Discussion of the Impact of Technology in Society

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## Comments

Developed for the Digital Environments course in the School of Library & Information Science

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# DIGITAL ENVIRONMENTS

## A SYLLABUS FOR CRITICAL DISCUSSION OF THE IMPACT OF TECHNOLOGY IN SOCIETY

Digital and networked resources and learning spaces can enable us to collaborate, participate, produce, and share. However, their use and ubiquity also raises complex issues about the impact of technology on individuals, culture, and society, and how those issues should be addressed.

For example Crockett, Jukes and Churches (2011) write

*“[T]he digital world has fundamentally and irrevocably altered the way things get done. This is the case not just for business, but also for many aspects of our lives*

...

*We live in the dynamic world of InfoWhelm, where content is growing exponentially in both quantity and complexity. In this shifting landscape ... [I]nformation is in constant flux and readily available. In this new digital reality, the application of higher-order thinking and independent cognitive skills in the context of real-world, real-life, and real-time tasks is of critical importance.”<sup>1</sup>*

They assert that two types of skills – cognitive intelligence (including creativity, abstract reasoning and problem solving) and emotional intelligence (including self-awareness and social awareness), are the foundational skills for success in today’s world. This is reflected in the required skill set sought in many advertisements for professional positions of communications, problem solving, and teamwork skills.

In an academic setting it can be particularly challenging to understand and navigate the increasingly networked and digital world around us, to manage ourselves in that world, and recognize and deal with the challenges it presents, from the mundane to the complex.

I designed a course kit to explore how we can recognize and respond to the impact of digital environments on a personal and societal level, including, but not limited to, the concepts of DIY & hacking. The DIY ethic provides one way of fostering the skill set needed to meet the challenges of digital environments. These challenges emanate from the ways that digital environments have become embedded in many of our lives, such that they not only impact, but shape our world and function as an extension of our selves. Existing in this symbiotic-cyborg state is not without its consequences. Particularly in the developed world technology often causes us to overlook simple approaches to problem solving, leads to feature fatigue, and

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<sup>1</sup> Crockett, L, Jukes, I and Churches, A. 2011. *21<sup>st</sup> Century Fluencies for the Digital Age*. Kelowna, BC: 21<sup>st</sup> Century Fluency Project, page 4, page 3.

exacerbates the digital divide. This also plays out on a global scale with advances in technology often creating barriers to the delivery of knowledge and services. In addition, the impact of digital information on shaping and preserving cultural history, has not been fully explored.

## **AUDIENCE**

The course is designed to form part of an undergraduate seminar, being one weekly session over 10 weeks. An undergraduate seminar presents a particular opportunity to raise the level of students' digital literacy. Whether fresh out of high school, or middle aged workforce returnees, the vast majority of undergraduates use digitally networked technology in their everyday lives, whether it's social media, or work email. However, because these technologies are so integrated in their and our lives, exploration of the issues raised by their use is often absent. College and University undergraduate education, is an ideal time to create awareness of and explore the structures and systems of privilege and bias embedded within or created by digital environments, and to realize the limitations and opportunities afforded by these structures and systems.

However, the course can easily be adapted for elementary or high school students, with the teacher leading more of the discussion. At the elementary school level the projector/viewer can be built with the help of parents, and the journaling can be modified. This project can also teach the science behind light behavior, and magnification.

## **PEDAGOGY**

The main project of the course is a DIY build of a microfilm projector/viewer. This project is used as a lens to discuss the following core concepts:

- A. Humans and technology
- B. Access to knowledge and other types of access
- C. Information in Context
- D. Simplicity and Permanence/Obsolescence
- E. The concept of the hack

The course objectives build on these core concepts to enable students to recognize, comprehend, analyze and synthesize the issues presented. These are:

1. Recognize how technology affects individuals.
2. Identify how technology can create barriers to access to knowledge, and other types of barriers.

3. Understand the role that context plays in the knowledge ecosystem and in representing cultural history.
4. Explore different ways that low technology or simple solutions can be successful in resolving critical problems.
5. Critically discuss the benefits and disadvantages of DIY/hacking in a consumer driven, digital and networked society, and in low technology societies.

The kit will contain the materials necessary to build a low cost microfilm projector/viewer, a syllabus for students, and additional information for teachers. The kit will address the core concepts in the following manner:

### ***Syllabus***

Weeks 1-3 review the use of microfilm and compare it to the use of digitization as a preservation strategy. Access, permanence v obsolescence, and information in context feature during these weeks, and frame discussions on the impact of technology on societies. Week 3 features a case study of the Kinkajou Portable library – a low cost microfilm projector/viewer used to deliver literacy classes in rural Mali.

Further case studies are the focus of Weeks 3 – 8 (Week 7 is a semester break week), with each case study focusing on particular technological projects and the issues they raise, their impact, success or failure. The case studies focus on the core concepts of simplicity, the concept of the hack, access to knowledge and other types of access, and on course objectives 1, 2, 4 and 5.

Weekly topics, reading material and reflection questions are included to stimulate critical thinking about

- Making for solving problems;
- How technology affects our lives; and
- How technology influences culture and society

The class is structured to maximize student engagement – after a brief introduction by the professor, students are asked to do a 5 minute fast write response on the topic and reflection questions, then work in groups to share their responses and craft a single response for each group. Each group then shares their response and the process in formulating it with the class, then the professor uses any remaining time to wrap up the discussion.

### ***Assignments***

Student assignments are designed to further develop sensitivity to the core concepts and course objectives. A 5 week journaling project focuses on Humans and Technology and the recognition of how technology impacts individuals. Students are split into 4 groups and asked to carry out the journaling project in each of the 4

modes below over weeks 2-5. For week 6 each student will pick a mode of their choice and explain their choice in the journal.

Mode 1 - read all course materials digitally, and keep digital journals

Mode 2 - read all course materials digitally, and keep paper journals

Mode 3 - print off all course materials for reading (except for video links), but keep digital journals

Mode 4 - print off all course materials for reading (except for video links), and keep paper journals

The journal should reflect comprehension and analysis of how technology affects individuals.

During week 6 the groups re-organize to share information on their experiences, then reform to work on a 1000 word reflective essay on the process of research and writing in analog v digital format, which is to be submitted as the mid-term project at the end of Week 7. The paper should demonstrate analysis and synthesis of the course material, core concepts and course objectives.

The final project is to build a microfilm projector/viewer and present it to the class with a discussion of the core concepts and course objectives. In building this project, students are encouraged to think about why someone would (a) want to hack, or (b) need to hack. This in turn should lead them to thinking critically about discourses of power, privilege, and need, as well as how technology can create barriers, and how humans can craft creative solutions or ways of addressing these issues. The presentation should show that the student is able to create a solution, how the student has applied the lessons from the course, and that the student can critically evaluate the issues raised throughout the semester.

Taken together, the assignments build a skill set of creativity, collaboration and communication.

## **REFLECTIONS**

Technologies replicate and embody structures, including structures of power, privilege, and values from the physical world. However, humans can craft creative solutions to address issues created by technological and other resource barriers. Two examples stand out.

- Stanford whirligig project,
- Zimbabwe Friendship Bench 'Grandmothers' project

The Stanford whirligig project is used to explore the question of what equality (e.g. equal access to medical care) look like in a digital age. 'Inspired by a whirligig toy, Stanford bioengineers develop a 20-cent, hand-powered blood centrifuge'-

<http://news.stanford.edu/2017/01/10/whirligig-toy-bioengineers-develop-20-cent-hand-powered-blood-centrifuge/>

Zimbabwe's Friendship Bench 'Grandmothers' project illustrates the principle of 'no-tech' solutions :

[https://www.washingtonpost.com/news/inspired-life/wp/2017/04/19/access-to-mental-health-care-is-a-worsening-problem-these-grandmothers-in-africa-have-a-simple-solution/?utm\\_term=.22ba08606014](https://www.washingtonpost.com/news/inspired-life/wp/2017/04/19/access-to-mental-health-care-is-a-worsening-problem-these-grandmothers-in-africa-have-a-simple-solution/?utm_term=.22ba08606014)

What this demonstrates is that creative thinking and problem solving, which is often touted as a 21<sup>st</sup> Century Skill (e.g. Crockett et al terms this 'Solution Fluency') but the truth is humans have been generating creative solutions for problems for decades e.g. fire, the invention of the wheel. The current buzzwords "Artisans, Craftsmen, Hackers, DIY'ers, Makers" are different ways of expressing the idea that when faced with a problem, humans can solve it. This is a human skill – not a 21<sup>st</sup> Century skill. Perhaps why it is being touted as such is that we have entered an era where other skills fade in importance to this one. Might we actually still be in the Digital Stone Age and are now being tasked with inventing a wheel of our own to deal with 21<sup>st</sup> Century problems presented by a digitally networked society?