CS6460: Assignment 4

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Abstract— In this assignment, following qualifier questions, I have focused on 3 major topics within Educational Technology: '*Equity of Access to Online Education'*, '*produce educational content*' and '*Access to quality online education'*. My specific qualifier questions overlap with research & content track.

QUALIFIER QUESTIONS:

1. What are the major concerns and considerations you have encountered in the literature regarding 'equity of access to online education'?
2. Which viewpoint do you find yourself most aligned with when considering 'how to produce educational content'?
3. What are the major roadblocks and challenges to accessing quality online education?

I) BACKGROUND

In previous assignment 1 to 3, my primary focus was to explore Educational technology platforms, access to information as a right & learning content design with special focus on YouTube as an EdTech facilitator.
In this assignment, I have summarized pros, cons, challenges & roadblocks about above 3 qualifier questions.
Based on my research, it is found that a single metrics cannot be used to evaluate an online course quality rather there is a need to design a multi-dimensional evaluation criterion to quantify an MOOC course quality.
Additionally, I have explained critical design principles of an online course with special focus on peer learning and community building besides learning content itself.
To explain my research findings on equity of access to online education, I have focused on most recent academic literature (since 2017) to build & support my analysis, instead of relying on older literature because a lot of technological advancement has been done in recent years in entire world.

II) RESEARCH EXPLANING QUALIFIER QUESTIONS

Fact: 42% of the world's population does not have access to the internet (Statista, 2019).

MOOC Design Principals & Quality:

Before understanding major roadblock and challenges to accessing quality online education it is important understand what 'quality' means in online education and study literature around how to produce a 'good' educational content?
The overall goal is to quantify 'quality of online course' so that quality of Online course & learning can be improved in general.
Reiterating the words of Macleod et al. (2015) "when one designs any course, one has to have some learner cohort in mind".
A MOOC quality survey should be designed targeting at MOOC learners, designers, facilitators and providers. The quality features of a good MOOC should take into account the general design principles and good pedagogical practices (Bali, 2014; Daradoumis, Bassi, Xhafa, & Caballe, 2013).
The 'dropout rate' is the typical 'quality' measure of traditional online education courses. But it's not the right evaluation metric for MOOC as it's adopted from face-to-face formal learning experiences (Onah, Sinclair & Boyatt, 2014). Learners intentions and goals should be investigated, and new evaluation metrics should be designed.
Findings showed that most MOOC designers and learners do not share similar intentions and goals. To design a quality online course, several different quality indicators must be thought through: Learning path design, definition of success factors, accessibility, defined goals, content, user experiences, interactivity, pedagogy, etc.
It has been found that MOOC designers underestimate their instructional design and the MOOC quality whereas the facilitators seem to slightly overestimate the effectiveness of their facilitation in the MOOC as they feel responsible for the MOOC facilitation and therefore tend to indicate a more positive rating.
Pedagogical design & learning activities are main areas of defining MOOC quality. Pedagogical Design: Content, learning objectives and learners' profile are found to be critical determinants of MOOC quality. Learning Activity: Interaction, feedback & assessment are found to be critical determinant of MOOC quality.
Let's focus on high Dropout rate metric of MOOC specifically:
The average completion rate for MOOC is 13% (Onah, Sinclair, Boycatt 2014).
Hence it is important to study MOOC attrition from different perspective.

As noted by Kolowick: "massive open online courses have gained renown among academics for their impressive enrolment figures and, conversely, their unimpressive completion rates". Understanding factors leading to attrition, it can be prevented or can be reduced, which will improve dropout rates. Hence it is critical to study dropout rate metrics before designing an Online course.
Shorter courses have higher completion rates; small courses (with up to 200 enrolments) are much more likely to have a completion rate of over 20% than larger courses; MOOCs rely on peer grading only have often had very low completion rates.
Some of the major reasons for dropout are:

1. No real intention to complete:
    a. Due to free & open access nature of the online courses & novelty of medium, a lot of casual-recreational-learners enroll in the course 'out of curiosity' with no real intention to participate fully & gain knowledge. This will result in a higher dropout rate.
2. Lack of time:
    a. MOOCs are 'one size fits all' format. Learning material are appropriate for some, takes more or less time to other learners to mater.
    b. Hence, students who fully intend to complete the course may fail to do so because they are unable to devote necessary time to study
3. Course difficulty & lack of support:
    a. Insufficient mathematical skills are noted in relation to the Duke Bioelectricity MOOC course
    b. Student blogs often refer to the inadequacy of peer support and lack of instructors when topics become difficult.
4. Lack of digital skills or learning skills:
    a. Online learning requires high level of autonomy and depends on users being able to work with technologies and format used
    b. Conole, G. (2013), points to learners' confusion and frustration as a reason for high dropout rates
5. Bad Experience:
    a. Variety of bad experiences cause high dropout rate like inappropriate behavior of peers in forums, lack of focus and coordination in forums, depletion of study groups sue to attrition, poor quality and incorrect learning materials, technical problems in MOOC platform
6. Peer Review issues:
    a. Peer grading may require more work on the student's part. Due to lack of training of grading process, this may result unhappiness in some learners.

b. Some participants have been disheartened by bad practice discovered through peer review, for example, by unhelpful or dismissive comments on their work, lack of response

Activity in discussion forums is often used as a measure of MOOC users' participation [Hmelo-Silver, C.E. and Barrows, H.S. , (2006)]. Failure to interact or to submit attempt at activities at key stages) can be strong indicators of future dropout [Hmelo-Silver, C.E., Rose, C.P., and Levy, J. (2014)]. In such cases, strategic intervention by teacher, mentors would be appropriate. 'Lack of support' has critical influence on dropout rate.

Equity of access to online education:

Computer-mediated communication can be considered a new mode of information (Poster, 1990), or a "fourth revolution in the means of production of knowledge" (Harnad, 1991, p. 39), following the three prior revolutions of language, writing, and print.

It is widely believed that effective deployment and use of technology in schools can help compensate for unequal access to technologies in the home environment and thus help bridge educational and social gaps.

Specifically, in 2020, due to COVID, entire world has to adapt distance teaching & learning. Teachers must design an inclusive learning environment. Not all students will have same technical infrastructure. Some student might have to share internet bandwidth with other family members and all public resources are being shut for safety reasons. Some might be using mobile devices which runs on limited data plans. In those time, survey students about their needs & well-being. Teachers must revisit course goals, materials, methods & assessments and make sure they are accessible to everyone.

Digital equity not only includes access to hardware, software & connectivity to the internet but also meaningful, high-quality content and ability create, share & exchange knowledge.

Digital equity is a condition in which all individuals and communities have the information technology capacity needed for full participation in our society, democracy and economy.

As mentioned previously, 42% of the world's population does not have access to internet. This can be for a number of reasons, including poor investment in information and communication technology infrastructure in a particular country or different government spending priorities.

Disturbingly, it may be because of Internet censorship in that country as there are still a number of countries where this remains an issue including Vietnam, Bahrain, China, Syria, and Iran (Reporters without Borders, 2012).

As Willems and Bossu (2012) have noted, the language of instruction and the relationship to context and localization of content all play roles. Hence, digital content must be designed in localized language for linguistically diverse people to not affect their learning.
Because of the uneven access to digital technologies and connectivity, educational inequities can persist (Selwyn, 2016).
Massive Open Online Courses (MOOCs) are often characterized as remedies to educational disparities related to social class.
Before getting into online education, disparity & access to information, it is worth checking if access to less or more information makes any difference in outcome of an experiment.
In "Equity in access? The number of the books available in grade 1, 3 and 5 classroom libraries" literature, Hodges, Wright, Roberts & Coleman, (2019) found that classroom libraries can provide children with necessary access to print, but access alone does little to explain differences between states in standardized (reading) test scores.
Additionally, it is found that, more books lead to more opportunities for student choice and selection; thus, disparities in access to classroom libraries are concerning even without final outcomes.
This paper provides looks both sides of 'information access' coin & emphasize a great learning that, even if there is not significant difference in outcomes & information access, it is critical to increase information access to everyone as it is predictive of future individual success.
In "Do MOOCs Contribute to Student Equity and Social Inclusion? A Systematic Review 2014–18.", Lambert, (2018), mentioned that the hope of MOOC & free online courses is to bring the best education in the world to the most remote corners of the planet (Pappano "The Year of the MOOC" (Pappano, 2012, p. 2)) but there are few challenges that needs attention.
The potential opportunity for serving socio-economically disadvantaged learners have energized and motivated a range of educational institutions around the world to design and implement 'local' programs with more equitable educational opportunities. This indicates an equalizing effect between online education & equity of access using learnings by local institutions across world.
Additionally, learner support options like phone, email or digital facilitation for online education were found important to the success to help social inclusion & student equity.
Organizations and educators with passion to increase learning participation have designed free-to-all online MOOC programs with particular disadvantaged communities and cohorts in mind. These efforts have led the adoption of MOOC platforms and similar technologies in more developmental, supportive and equitable ways.

To find a solution to educational and societal inequality, some attention & further research is required in course (inclusive) design & pedagogy techniques. Some of the recommendations are, contemporary approaches to Content and Language Integrated Learning (CLIL); partnerships with equity group communities in the development, delivery and promotion of courses; cross-disciplinary design collaborations to develop courses; programs to address gender and indigenous inequality; and the tracking of equity group cohorts within 'open to all' untargeted programs to ensure not only the access, but progression and success of diverse learners.

MOOC & free online courses have stimulated the idea of learning across globe and institutions are adopting to the technologies, style & course design to fit MOCC format, which is great to equalize online education & equity of access between all gender, race, socioeconomic status & geographic regions. By incorporation localization to learning content, course promotions & building solutions around course completion will increase overall success of learning around the world.

In "Participation in Higher Education in Australia: Equity and Access", Ryan & Cardak, (2009), found that, in Australia, based on university entrance examinations scores, low SES (Socioeconomic status) students are as likely to attend university as high SES students but possession and the quality of ENTER scores (eligibility) rises with SES. This indicates that educational policy should rectify this situation by lowering university tuition charges to students from lower socioeconomic background. Without right policies, there gap between education & equity of access will increase for university education format.

Also, it is found that students with a greater entrance examination score are equally likely to attend university irrespective of their SES. The students with lower socio-economic background are proved to be a low performer by year 9. It is found that improving early educational outcomes, particularly through primary school and early high school years is likely to improve university entrance scores and eligibility, thus helping address the socioeconomic imbalance.

Thus, the socioeconomic imbalance among higher education participants can be solved by providing MOOC & free online courses among early education of lower socioeconomic students.

In "Democratizing Education? Examining Access and Usage Patterns in Massive Open Online Courses", Hansen & Reich, (2015), it is found that MOOC & online learning can exacerbate rather than reduce disparities in educational outcomes related to socioeconomic status. The study shows that, students from high affluent socioeconomic areas within United States tend to complete more MOOC courses & get certificates. Also, students with previous STEM background are more successful in completing online courses. Freely available learning technologies can offer broad social benefits, but educators and policymakers should not

assume that the underserved or disadvantaged society class will be the main beneficiaries. A lot of targeted innovation is still required & essential towards the students from lower socioeconomic background.
Based on all literature, it is clear that online education & MOOC brings many benefits to society by solving the fundamental issue of education & content democratization. Also, it helps widen education across globe. Along with benefits of online education spread, the issue of information access equity arises, which can potentially be solved by targeted research & customized solutions built for learners from lower socioeconomic background. The right policies & targeted support will close the gap in access & education.

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