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MASSIVE OPEN ONLINE COURSES (MOOCS): A DEWEYAN CRITIQUE

by

DAVID T.L. GILLHAM

DISSERTATION

Submitted in fulfilment of the requirements for the degree

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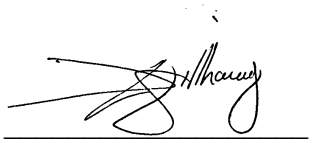
UNIVERSITY OF THE WITSWATERSRAND

Supervisor: Prof. Kai Horsthemke

MARCH 2016

Declaration

I, the undersigned, hereby declare that the work contained in this dissertation is my own original work. It is being submitted for the Degree of Masters of Education at the University of the Witwatersrand, Johannesburg. It has not previously in its entirety nor in part been submitted for any degree or examination in any other University.



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DTL Gillham

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I would like to thank my supervisor, Professor Kai Horsthemke, for his superb mentorship and guidance. I am incredibly appreciative of his patience, knowledge and belief in my ability. I would also like to thank the Wits Faculty of Education, who gave me the opportunity to learn and grow as much as I have through this M.Ed. Thank you is not enough for my parents, who have given me everything. Finally, to Caitlin, for all of her support. This thesis probably wouldn't have happened without her.

Abstract

"Free quality education for anyone, anywhere" (Khan, 2012:1) is the proclamation of Massive Open Online Courses (MOOCs) the world over. There can be no denying that such a proclamation is enticing and exciting. It seems to be intuitively correct that the technology and hyper connectivity that defines this postmodern era should also radically change the way in which education is conducted. In my research I seek to test the authenticity and strength of this claim. To do so I have 1) analysed a number of primary texts from the creators of various MOOCs in order to understand their pedagogy (andragogy); 2) synthesised a number of principles of education from two primary texts published by John Dewey in order to create a theoretical framework; and finally 3) utilised said framework to test the MOOCean conception of education. Throughout the research, I also appeal to multiple secondary sources that deal with certain important concepts and content from the most up-to-date perspectives possible.

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Executive Summary

"Free quality education for anyone, anywhere" (Khan, 2012:1) is the proclamation of Massive Open Online Courses (MOOCs) the world over. There can be no denying that such a proclamation is enticing and exciting. It seems to be intuitively correct that the technology and hyper connectivity that defines this postmodern era should also radically change the way in which education is conducted. In my research I seek to test the authenticity and strength of this claim. To do so I have 1) analysed a number of primary texts from the creators of various MOOCs in order to understand their pedagogy (andragogy); 2) synthesised a number of principles of education from two primary texts published by John Dewey in order to create a theoretical framework; and finally 3) utilised said framework to test the MOOCean conception of education. Throughout the research, I also appeal to multiple secondary sources that deal with certain important concepts and content from the most up-to-date perspectives possible.

Before I continue with this brief overview of my findings, something ought to be said about *why* I have chosen to use Dewey as the educational authority whom I appeal to, over any other educationalist in the past few centuries. I have three reasons. 1) The similarities of the project at hand: both Dewey and the MOOC founders share a vision of radically changing the way we conceive of and execute education; 2) the role of intellectual influence in human thought: it is a truism that all human knowledge, effort and success requires as a necessary condition the work of others as foundational. Consider the 'industry of academia' as a prime example of this: this very paper is dependent to a large degree on understanding the work of those who have come before me; I argue that due to the similarities in their project there is a causal relationship between Dewey and the MOOC founders, irrespective of whether they acknowledge this or accept this as true; and finally 3) the sheer philosophical strength of Dewey's thought. While searching for a theoretical framework to base my research in, I virtually stumbled across Dewey in a book by Hansen called *Ethical Visions of Education* (2007). After reading about his work, I decided to read his first Major Work *Democracy and Education* (1916). After a first inspective reading it became clear to me that Dewey's vision remains highly relevant and, for the most part, unrealised. His overarching vision, so well and methodically worked out in that treatise, deserves to be used and understood because of the *inherent strength* in the arguments themselves.

With this brief defence of my theoretical framework complete, I move on to the real body of this summary. From this point on, I will be discussing, in brief, my findings regarding MOOCean andragogy, the Deweyan principles of education, which I have synthesised, and finally my Deweyan critique of MOOCs, which gives this dissertation its title.

There are two kinds of MOOC's, separated by pedagogy (andragogy). The first is an xMOOC/ A-I Stanford type and the other is a cMOOC. (Rodriguez, 2012:12). xMOOCs, such as the Khan Academy rely heavily on video lectures (which can be re-watched, paused etc.) and a number of exercises that can be automatically marked. There is generally no relationship between the MOOC coordinator/facilitator and the student, and questions are asked and answered (by other students) in the comments section. cMOOCs have a different approach, focussing on free online resources and the connectivity made possible by social media. cMOOC's encourage students to work in collaboration and will often rely on peer-review for marking. xMOOCs work well for subjects with convergent answers (such as mathematics) while cMOOCs are better suited to divergent answers (such as philosophy). (Kreijins et al., 2003:338 and Westbrook, 2012:5).

While both x and cMOOCers argue for the varying merits of their platforms (self-paced vs. paced; strict adherence to course content vs. creative use of various media types; independent vs. collaborative work), both are concerned with the issue of motivating students to continue to take part in the courses they sign up for. This motivation takes the form of *gamification*. Gamification can be understood in two different ways: intrinsically (Gee, 2005: 4-11) and extrinsically (Glover, 2013:2000-2002). Intrinsic gamification uses gaming *principles* to make the work done more interesting, while not taking any of the focus away from what really matters: the work itself. Extrinsic gamification turns the work done into a game, making it fun to do, but taking the focus away from the meaning of the work itself. Through my research it has become apparent that xMOOCs tend to lean towards gamification as extrinsic motivation, while cMOOCs tend towards gamification as intrinsic motivation. This is an important finding, because of Dewey's principle of interest, as will become apparent shortly.

Both c- and xMOOCs use what is essentially an andragogical (adult education) approach. Anyone who wants to use a MOOC must do so of their own volition. In order to find the intrinsic motivation inherent in a cMOOC, a person must be a researcher, capable of knowledge

creation, sharing and collaboration. In addition to this, there are also the requisite soft skills that are required to engage in online education. From an xMOOC perspective, extrinsic motivation is required to help students engage *because* working alone and in a self-directed manner is at the heart of xMOOC andragogy.

Khan (2012) and Koller (2012) the founders of the Khan Academy and Coursera respectively, both argue that MOOCs can deliver free quality education for anyone anywhere through the online portal alone, but both also argue that MOOCs have a place in flipping the classroom. This is the idea that lectures can be done at home (through videos) and work can be done in class (instead of homework). This is a very interesting notion and seems to bring the best of both the c- and xMOOCs together. It allows students to work alone, and also together. It also allows the pacing of the curricula to be opened up either partially (Koller, 2012) or fully (Khan, 2012:39). However, the notion of flipped learning makes more sense from an xMOOC perspective, as a cMOOC would never need to be flipped: xMOOCs are essentially traditional courses done online and alone, whole cMOOC courses attempt to utilise new media in order to facilitate an entirely new kind of educational experience.

In sum of my findings regarding MOOCean pedagogy, there are different kinds of MOOCs, determined by the differentiated epistemic vantage points of the MOOC coordinators. xMOOCs are based on an objectivist/ instructionist perspective (Rodriguez, 2012:2 & Siemens, 2012) essentially scaling old pedagogies to work online, and thereby maintaining older pedagogical values. cMOOCs are based on a connectivist/ constructivist perspective (Rodriguez, 2012:3 & Ostashewski, 2015:1373) that places the student at the centre of the learning process by adopting pedagogies based in web 2.0 (Siemens, 2005:1). I have argued that both types of MOOCs are essentially andragogic and have also highlighted that the MOOC founders do see a place in the classroom for MOOCs - in flipping the classroom - but that such a place would, in my opinion, be better occupied by xMOOCs, rather than cMOOCs. Now that I have highlighted some of the key elements of MOOCean andragogy, I move on to the synthesis of Dewey's ideas about education into a working theoretical framework with which I can properly critique MOOCean andragogy.

To begin with, Dewey defines the purpose of education as what I term 'selective social evolution'. Thus the first principle of education is that it is the process by which we ***reproduce and reform society simultaneously*** (Dewey, 1916:9). Through the use of statements such as "since growth is the characteristic of life, education is all one with growing; it has no end

beyond itself" (Dewey, 1916:123), Dewey characterises himself as a growth theorist. This, therefore, is the second principle of education: ***education is a kind of growth***. However, he is not the kind of extreme growth theorist that Peters critiques (Hamm, 1989:68) when Peter's explains that growth theorists believe that merely because the potential for growth exists in a child/person, all of education's purpose is to allow this growth to happen. While Dewey (above) clearly does emphasise the importance of growth as education's proper activity, it is only the evolutionary aspect of `Dewey's thought. Dewey emphasises that, on the other hand, the selective element is equally as important as its evolutionary counterpart; *what and how* we teach our children (or people generally) matters. Indeed, in a later work entitled *Experience and Education* (1938), Dewey himself confronts these (extreme) growth theorists when he explicates the two principles of experience: continuity and interaction. These involve the ideas that 1) every experience impacts subsequent experiences and that 2) the interactions between internal (personal, social) and external conditions (others, the environment) must be regulated for maximal educational benefit, and that such regulation is one of the chief roles of the educator.

The next principle of education that Dewey highlights is directly related to the previous principle of growth. It is the principle of immaturity, which states that ***all children are immature and this immaturity is a form of formative power: the power for growth***. Dewey emphasizes this point in contrast with the 'preparation' model of education. While Dewey accepts that the purpose of education is to prepare children for an abstract future, he does not think that children are capable of understanding this notion. How could they, the future being simply so far away? To confuse the means of education (the stimulation of the immature powers of the child into growth) with the outcomes of formal education is the core reason that what is learnt in formal education often seems to be disconnected from what is actually needed later in life: the ability to adapt and learn in new situations; to continue to grow. On an abstract level it is the very power of immaturity that sustains education throughout the rest of our lives. Dewey wrote: "the result of the educative process is capacity for further education" (Dewey, 1916:150), but from the perspective of the principle of immaturity what this means is that to be properly educated is to have never given up our immature abilities to grow. Immaturity for Dewey is therefore a powerful, positive force. However, this does mean that there is always a level of dependence on others. In children this dependence is especially strong, while in adults it becomes weaker. Implicit within our dependence on others is the next principle of education. Up until this point Dewey's principles have discussed why education happens, and explicated

a conception for how that occurs on an organic level. The principle of indirect education gives us a stronger idea of the concrete manner in which education actually happens.

The principle of indirect education states that ***every environment and any communication that takes place within said environment is educational*** and furthermore ***that all education is always indirect.*** Understood within the context of the aforementioned principles of experience (continuity and interaction), which are taken from *Experience and Education,* and the principle of growth, all communication that takes place between students and other students, and between students and their teachers. Likewise, the environment such communication takes place in also matters. The principles of continuity and interaction require that all experiences impact the subsequent experiences had by an individual and therefore the quality of every experience is important. The role of a teacher therefore is to regulate the interactions that take place: to regulate what kind of communication is taking place, and to maintain the best possible environment for a given lesson. This point segues well into the final principle of education, which I'll be exploring in some detail. This principle deals with the nature of understanding and the importance of genuine interest.

The penultimate principle is that of reconstruction. Essentially, the principle states that

> education is a constant reorganizing or reconstructing of experience… It is that reconstruction or reorganization of experience which adds to the meaning of experience, and which increases ability to direct the course of subsequent experience. (Dewey, 1916:171-2)

It is this notion of reconstruction that inspired my definition of his overview of education: that of selective social *evolution*. After all, the survival of the fittest always requires that we pass on that which allows us to succeed, yet take on what is new and what is needed – to reorganise, to reconstruct. But such a reconstruction requires genuine interest on the part of the participants. Dewey writes that when

> [i]nterest means to attach some feature of seductiveness to material otherwise indifferent; to secure attention and effort by offering a bribe of pleasure" [and furthermore] "when material has to be made interesting, it signifies that as presented, it lacks connection with purposes and present power: or that if the connection be there, it is not perceived (Dewey, 1916:284).

In other words, experiences should always be inherently interesting. If they are not, they will not be properly educational. This principle, then, can be stated as: ***Education takes place through the reconstruction of our understanding that is facilitated through experiences that are genuinely interesting***.

Finally, the result of education is the fostering of powerful rational abilities, characterised by a certain set of mental capacities, as described by Gagné. This is called ***reflective thinking*** by Dewey, and it makes up the final educational principle. As the result of the educative process, it also facilitates further education and helps to characterise education as a cyclical process. This notion also influences the way in which we must consider the idea of 'quality education': it must be considered relatively and not definitively (In other words, the notion of what a 'quality education' is needs to be considered relative to the context in which it occurs, rather than against a definitive set of precise universal criteria such as pass rates and students marks/ averages for a given subject.

In sum of the above, the five principles of education that I have synthesised out of Dewey's *Democracy and Education* (1916), *Experience and Education* (1938) and *How We Think* (1996) are: 1) education is a kind of selective social evolution because of the essential nature of education; 2) growth, which takes place through the formative powers of 3) immaturity. This process happens through 4) communication and the environment, and is 5) a reconstruction of understanding and experience that requires genuine interest. This process culminates in the ability to think reflectively, and maximises certain cognitive capabilities, which allows for further education. The final task of this executive summary is to bring MOOCean andragogy within the framework of Deweyan educational principles in order to legitimately critique MOOCean andragogy.

In terms of their respective visions, I have found only similarities between the MOOC founders and Dewey regarding their ultimate goal: to create an experience based approach to education. But can their means, their andragogy, deliver on their vision? This is a simple question that has a complex answer. In Khan (2012), there are many references to the value education adds to the lives of people, that education isn't actually about "graduation rates and test scores. It's about what those things mean to the outcome of human lives. It's about potential realized or squandered, dignity enhanced or denied" (Khan, 2012:3). This focus on the impact of education on lives and society is an echoing of Dewey's overarching thought on the transformative and sustaining power of education, his ideas about selective social evolution.

Therefore, I can say that, at least in terms of a vision, the MOOC founders and Dewey do share common ground, and this point actually forms the basis for my justification for the use of Dewey's ideas as a theoretical framework.

The second principle is that of growth, and it is generally contrasted with procedural education. Education is much like the nutrients and the environment that sustain plants, while procedural education focuses on outcomes, with the means only a process that exists to accomplish certain ends. The growth model holds that the means *are* the ends. In this xMOOCs are clearly procedural, focusing on outcomes (and repetition in order to achieve the best outcomes) rather than understanding the importance of the said activities as intrinsically valuable. While xMOOCs fail this criterion, cMOOCs do not. This is because they focus on activities that have intrinsic value, such as communication, connection, and collaboration: acts that in and for themselves are valuable.

The third principle, the principle of immaturity, is violated by both x and cMOOCs. This is because they are essentially andragogic (as I have argued). Pedagogy always requires a guiding hand, a teacher, to help students grow. Most children are incapable of this of themselves; they are still radically immature. Dewey writes:

> The educator is responsible for knowledge when it comes to individuals and for a for knowledge of subject-matter that will enable activity ties to be selected which lend themselves to social organization… it is absurd to exclude the teacher from membership in the group. As the most mature member of the group he has a peculiar responsibility for the conduct of the interactions and intercommunications which are the very life of the group as a community. (Dewey, 1938:23)

The fourth principle, that of communication and environment, requires a nuanced approach. Once again xMOOCs fail, as they have one directional communication from the teacher, while feedback that might be provided often fails to meet Piagetian hierarchical criteria[1]. Furthermore, as xMOOC providers have no control over the physical environment their

[1]Space does not permit detailed engagement with this claim; see Schwartz, M. (2013). Khan Academy: The illusion of understanding. *Journal of Asynchronous Learning Networks*, *17*(4), 1–14.

students work in, they cannot claim to meet the criteria of a moderated, maximally educational environment either. cMOOCs do better in terms of communication (at least for adults, who are capable of the prerequisite soft skills), but again the environment is out of their control. While it is certainly true that MOOCs are in control of the digital environment, they have no control over the material circumstances students must deal with.

xMOOCs fail when examined in the light of the principle of reconstruction, as they have a procedural method which all too often fails to provide a proper grounding in a sensorimotor experience before moving on into representation and abstraction (Schwartz, 2013:3). They do not facilitate reconstruction (what Schwartz terms 'genuine understanding'; ibid.). They also fail to provide content that is genuinely interesting, relying instead on shallow, extrinsic based motivation in the form of basic gamification. Once again cMOOCs do comparatively better, allowing students to work creatively around problem and approach problems from many angles (ibid.) and also proving a deeper sense of intrinsic engagement due to the nature of the connectivist andragogy (Swan et al., 2014:1023).

Before I conclude, something must also be said about flipped learning. As can be noted from my above critique, xMOOCs tend to struggle as a purely online form of education, while as I note earlier, flipped learning seems to be a more viable option for xMOOCs as opposed to cMOOCs, which arguably have no need for the classroom. Therefore, the ideal situation might be to use xMOOCs in the classroom and cMOOCs online, and in this way deliver 'free world class education for anyone anywhere'. The problem with this is quite obvious. To bring cMOOCs to those who need them most would require a massive effort of will, to translate not only the knowledge, but also the context.

Finally, I do not think that even this 'solution', if it were possible, would be enough. For MOOCs to deliver 'free education for anyone anywhere', they would need to deliver it to *children and adults*. However, the guiding principle of MOOCean thought is essentially andragogic – made for adult use. Therefore, because xMOOCs fail to meet most of the Deweyan principles of education, and cMOOCs meet only a few, I conclude that MOOCs cannot deliver on the promise of free quality education for anyone anywhere in the world. At best, MOOCs can only facilitate partially free quality education (due to cost of access) for those who are already educated; free quality education to some people in some places.

Introduction

> *Formal education must change. It needs to be brought into closer alignment* with the world as it actually is*; into closer harmony with the way human beings actually learn and thrive…Nearly everything about our current system rewards passivity and conformity and discourages differentness and fresh thinking. For most of the conventional school day, kids just sit while teachers talk. Cloistered away with students their own age, they are deprived of the varying and often mind-stretching perspectives of kids both more and less advanced. They move in lockstep through rigid, balkanized curricula aimed less at deep learning than at the fulfilment of government mandates and creditable performance on standardized tests.* (Khan, 2012:11)

Khan's critique of current formal education is incisive, and may well be correct, but with the Khan Academy does he actually succeed in doing what he argues for when he says that education needs to be brought "*into closer harmony with the way human beings actually learn and thrive*" (ibid.)? This dissertation seeks to critique Massive Open Online Courses (MOOCs) through the lenses of a Deweyan theoretical framework. In doing so, I argue that Khans (above) assertion, while true, is not achieved by his preferred solution, MOOCs.

Much of this project is spent synthesising a Deweyan framework, which I then utilise to critique the MOOCean andragogy laid out in this initial chapter. It is important that the reader understands that although I make the (bold) claim that my critique is true from this particular perspective, I do not make the claim that these findings necessarily apply when considering MOOCs from any other theoretical perspective. In using a Deweyan perspective to critique MOOCs, I gain a certain degree of clarity, but arguably also lose the perspective of other theories. But what is it about MOOCs that I am actually critiquing? As this is a philosophical critique, I am analysing a pivotal statement used as the MOOCean banner head. The problem statement might be articulated as follows: 'Can MOOCs deliver on the promise of *free quality education to everyone everywhere*?' I approach the question from the position of conceptual analysis, focussing on the issues of philosophical rather than practical import, although the practical elements (of access) are certainly important to the conclusions of this dissertation.

Chapter 1 is a discussion of the interrelated pedagogy and andragogy proposed by the MOOC founders in pure online learning, and flipped learning. In chapter 2 I discuss and critique Dewey's philosophy of education in order to create a theoretical framework. Finally, in chapter 3 I critique MOOCs (utilising the Deweyan theoretical framework that I synthesise in chapter 2) and argue that they cannot deliver on Dewey's vision for education, and therefore on their own dream of equal quality education for everyone everywhere.

1) MOOCs: A Description

I) Online Education

MOOCs provide free access to educational courses created by some of the best and most prestigious universities in the world. That the content be created by the best universities in the world is not, however, a necessary criterion for the website to be a MOOC. The Khan Academy, for instance, has been built up from the very bottom by one man, Salman Khan, who acts as the lecturer in most of the mathematics syllabus and who has created the vast majority of content on the website. Thus MOOCs must only fulfil the basic criteria of being free to access, and providing educational content, in the form of some kind of course. The KA[2] basically represents an entire K12 mathematics syllabus (primary through secondary), while many of the courses on MOOCs like Coursera are stand-alone modules, akin to what might be covered in a single semester at a university. Other courses, such as those provided by salyor.org allow students to partake in full degree-type programmes, from first to final year (tertiary). This is not to say that adults cannot benefit immensely from following the Khan syllabus, but rather to emphasise the claim that online education, and its blended offspring, can cater for all educational needs of both young children and adults alike. In fact, MOOCs purport to have the goal of providing a *free world class education to everyone everywhere*.

Given the digital context of the 21st century, this seems to be the perfect solution to the global problems of inequality and poverty (and more specifically the challenges faced with regard to accessing quality education in much of the world), and all through the use of the very technologies which have defined the modern era, those instruments of globalisation: The Internet and mobile technology. These websites have attracted millions of users worldwide, and have become a force unto themselves. To understand them properly, the underlying assumptions that have served to justify their existence and use *need to be placed under a philosophical microscope*. In the spirit of John Dewey's pragmatic thought, a spirit that sustains this paper, I endeavour to uncover the true significance of MOOCs, on a conceptual level. To do so, a description of what current MOOC andragogy, according to the founders of MOOC education themselves, is given.

[2]Henceforth, KA will be used to abbreiviate 'Khan Academy'

The first of these can be simply understood as the modern version of distance learning. Online education provides free video lessons, free practice opportunities, and a space for participants to communicate with one another, through forums or comment sections related to the video lecture. This is the basic vision of online education, one that places all of the responsibility for the learning on the student. In other words, this kind of learning is a kind of andragogy – education undertaken by adults, who have learnt how to learn, and learn for their own sake. Perhaps parents might enforce the use of such education upon children, but this is a contingent fact, one that changes with every instance of use, primarily because of the nature of individuality and circumstance. Thus, to say parents may do this or that to coerce their children into using MOOCs is ad hoc and contingent on the main fact of online learning as primarily andragogic by nature. Indeed, Khan emphatically states that: "Andragogy - self-directed learning with the teacher as guide rather than director—may be more appropriate for everyone" (Khan, 2012:176).

Khan claims that the "Khan Academy, (is) an institution serious about delivering a free education to anyone, anywhere" (Khan, 2012:1). In contrast with the paid, old classroom model that he claims is "a fundamentally passive way of learning" (ibid.) his new model of education seeks to be an "*active* processing of information" (ibid.). So not only can online education drastically reduce costs, but better yet, it can provide a fundamentally better education for students, one that is fully active. Khan's motives are deeply human. In an age where the only worthwhile outcome of education seems to be the achievement of a certificate, Khan claims that education is about more, that it is about education for education's sake – learning to learn: education isn't actually about "graduation rates and test scores. It's about what those things mean to the outcome of human lives. It's about potential realized or squandered, dignity enhanced or denied" (Khan, 2012:3). The consequences of education are far-reaching and potent. But I do not think that a treatise on the value of education is at this point necessary; these and similar arguments have been made for such a long time as to have become truisms. The questions that really matter now are: What is education, and how is it best achieved? Khan's response to the first has already been given here: it is the realisation of human potential. To the second, Khan proposes two strains of thought. I have briefly outlined the first of these strains of thought above, while the second now follows.

Online learning provides everything a person may need to educate him-/herself in a certain discipline, and the only thing required to do so is an Internet connection and a digital device, such as a desktop, mobile phone, or tablet. I have characterised this model as andragogic, but before I can move on to a further discussion of the second pedagogy (flipped/blended learning), some further remarks regarding online education are necessary in order to fully flesh out this form of learning.

Faced with the problem of how to motivate children to do the online work, the founders of the MOOCs have opted for the carrot over the stick. This is because the stick requires parents to coerce their children into doing the work; something that I have already noted is contingent and ad hoc. The carrot in question is *gamification*. Modern gaming (computer gaming) has utilised this principle to great effect, so much so that the method has become popular with insurance companies, airlines and major shopping outlets alike (and this list is certainly not exhaustive). The idea is relatively simple: reward users with 'levels'. As they use the service more they gain 'levels', ranking up, and unlocking in-service rewards. In the above-mentioned examples, Discovery Health (an insurance company) has their Vitality programme, where users can crank up to from bronze to platinum level, rewarding them with greater and greater discounts on selected services. The same is true of many other companies, who utilise loyalty programmes to incentivise use. The MOOCs use similar principles, advocated by both Annant Agarwal (2013), founder of EdX, and by Khan (2011) in separate interviews. With a MOOC such as the Khan Academy, this principle is utilised to make children (and adults) continue through the syllabus, with further progression unlocking badges, avatars and levels, and helping the student to feel a sense of *progression and achievement.* I deal with this concept more thoroughly in section III of this chapter.

Because of the andragogic nature of online education, one thing that becomes possible is a more open approach to pacing. Khan advocates a radical form of pacing, allowing students to move completely at their own pace, and claims that "lessons should be paced to the individual student's needs, not to some arbitrary calendar" (Khan, 2012:21), while Daphney Koller, co-founder of Coursera, opts for a more closed pacing, arguing that courses should

> start on a given day and then the students would watch videos on a weekly basis and do homework assignments and these would be real homework assignments for real grade with a real deadline. (Koller, 2012)

The reason given by Koller is that this is how the real world operates. Certainly, it would be desirable if we could all do our work at our own pace, but in the work place, deadlines are a reality. If education's purpose is to prepare students for adult life, then learning to meet deadlines is certainly good training for that time. But is education's purpose to prepare us for the future? This is partially the case, according to Khan (2012), who poses a revealing set of questions:

> Will their potential be squandered or channelled in dangerous directions because they weren't given the tools or the opportunity to grow the economic pie? Will real democracy fail to gain a foothold because of bad schools and a corrupt or broken system? (Khan, 2012:4)

Education on this view is a preparation for the future. The real difference between the two views discussed above is this: should preparation be direct or indirect? Must we specifically train people to become adults, with direct tuition for things they may need, or shall we train them in other ways, to learn how to learn? Koller's answer seems to be the former, while Khan's is the latter. This is seen when considering Khan's overall view of education: education as *understanding of the connection between fundamental concepts*, not only within certain disciplines but between them as well (Khan, 2012). "Learning involves… the gradually deepening comprehension of a vast web of concepts and ideas" (Khan, 2012:52). Furthermore, Khan believes that,

> the breaking up of concepts… has profound and even crucial consequences for how deeply students learn and how well they remember. It is the connections among concepts—or the lack of connections— that separate the students who memorize a formula for an exam only to forget it the next month and the students who internalize the concepts and are able to apply them when they need them a decade later. (Khan, 2012:50)

Khan's claim then, in sum, is that a MOOC education allows us to show the connections between concepts, and this is how education best takes place, because this is how we think.

Another element of online education, advocated by Koller (2012), Khan (2012), Ng (2013), and Agarwal (2013), is that of collaborative learning. Khan writes, "The lectures are gravy; the real meat of the learning occurs when peers are learning and teaching one another alongside the teacher" (Khan, 2012:116), while Koller claims that, according to student testimonials, utilising online forums (the kind attached to the video lectures) "they [the students] got to interact with each other in many ways that were deeper than they did in the context of the physical classroom" (Koller, 2012). Presumably, a 'deeper' interaction is one that has more potent ramifications for learning, the kind described above by Khan as 'connection based'. Andrew Ng (2013), the other co-founder of Coursera, elaborates on other ways to bring students together to collaborate, utilising Google hangouts to allow students to chat face to face in groups, even though they are separated geographically. Ostashewski (2015) argues that teacher involvement and innovation in MOOCs can be seen through the use of 1) video lectures; 2) translation and bilingual courses; and 3) peer support, or crowd-sourced activities (Ostashewski, 2015:1372-3), while Marcus (2013) sums up the role of the teacher and their attendant pedagogy from a MOOCean perspective as follows:

> Typically, students enrolled in a MOOC watch video lectures – often sliced into digestible 10- or 15-minute segments – and interact with instructors and fellow participants in online forums. Some MOOCs require students to take online tests or quizzes with multiple-choice answers that can be graded automatically, while others require students to complete peer-reviewed assignments. Some MOOCs use a combination of these assessments. (Marcus, 2013:1)

But what kind of education, specifically, do the MOOC founders have in mind? Khan argues for a mastery-based system, one that makes certain that students fully grasp a concept before they move on. He writes that students achieving "80 or 90% is okay, but I wanted them to work on things until they could get ten right answers in a row." (Khan, 2012:137). To have mastered a concept for Khan means to be able to reproduce the result 100% of the time. This certainly is an interesting goal. But it also involves a procedural understanding of mastery, one that focuses on outcomes, not the process. The process in such a conception is one of repetition and practice. But merely repeating an exercise until one has 'mastered' it is not the same thing as understanding the relevance of the exercise in the manner that Dewey describes, that is, reconstruction.

This kind of thinking around 'mastery' makes a fatal assumption, in my view. It requires that knowledge be 'tiered'. I master a certain tier of knowledge, and then move on to the next, more difficult level. But although it is possible to map out, say, mathematics (at least at first) in this manner, other kinds of knowledge cannot be treated in this way. For instance, to write a Master's thesis, I must have, in a comparative sense, 'mastered' essay writing. I understand how I ought to go about constructing the essay and my arguments, utilising a theoretical framework that I am simultaneously developing. My undergraduate self-had, comparatively, 'mastered' essay writing, when measured against relevantly similar skills of my pre-matriculant self. My future self will have mastered essay writing compared to my current self. And so, can it be said that at any point I had 'mastered' essay writing? Surely not in the same sense as one might master addition. When applied to varying forms of knowledge, this static, tiered approach to mastery learning fails.

This fact means that MOOCs will require varying and interesting techniques in order to teach the multiplicity of subjects currently understood to be a part of standard education as described by Hirst (Hamm, 1989:68), if mastery is the overarching goal. These include Pure Mathematics, Empirical Science, History and Humanities, Aesthetics, Morals, Philosophy, and Religion. An update of these general forms might also take into account physical conditioning through exercise, and practical skills around computer literacy. It is quite obvious that whatever mastery learning means when applied to mathematics, it certainly has very different meanings when applied to these other forms.

But perhaps the intention behind mastery learning is more important than the necessarily varying manner in which it will be applied as a pedagogical criterion. This is because mastery learning advocates understanding (the connections between concepts), and it is that very understanding that is the proper outcome of education. Khan writes:

> It is the connections among concepts—or the lack of connections— that separate the students who memorize a formula for an exam only to forget it the next month and the students who internalize the concepts and are able to apply them when they need them a decade later (Khan, 2012:50).

It is here clear that mastery learning is conceived of as true understanding, but when the method of reaching mastery is simply recitation (as is the case with the Khan Academy), then mastery

becomes procedural, not growth-like, and therefore fails in its objective. What is genuine understanding? What does it require? In answering this question, I focus on the work of Schwartz (2013) and his article, *Khan Academy: The Illusion of Understanding.*

According to Schwartz, genuine understanding has five key principles: it is hierarchical; is created through direct experience; requires stabilising practice; requires formative feedback; and is *always* context-sensitive (Schwartz, 2013:3). These need to be discussed in brief, if their implications for MOOCean pedagogy are to be fully explicated. Schwartz appeals to Piaget in arguing that all understanding is hierarchical, that "[e]ach new achievement within the hierarchy becomes the foundation for the next more complex, more integrated coordination of earlier achievements" (ibid.). The hierarchy consists (in order of the initial to the latter levels of progression) of sensorimotor skills, representation and abstraction. This perspective informs every principle of understanding (in much the same way as sensorimotor understanding is necessary for representational and, finally, abstract understanding).

In sum, online education claims to be cost effective, and a medium that allows for quality education to be accessed by a larger audience (it is scalable). Khan claims that

> [the Internet can make education far, far more accessible, so knowledge and opportunity can be more broadly and equitably shared. Quality education need not be dependent on showplace campuses. There is no economic reason that students everywhere could not have access to the same lessons as Bill Gates's kids (Khan, 2012:12).

It promotes the view of all learners as simply young adults, and thereby an andragogic view of how education ought to be achieved: by promoting personal responsibility and thereby active learning. As Khan phrases it:

> We learn, first of all, by deciding to learn, by committing to learning. This commitment allows, in turn, for concentration. Concentration pertains not only to the immediate task at hand but also to all the many associations that surround it. All of these processes are active and deeply personal; all involve the acceptance of responsibility (Khan, 2012:44).

MOOCs also promote collaborative learning as necessary for their andragogy in the online format to be achieved, alongside the notion that nothing less than mastery learning is sufficient for quality education. The importance of understanding through mastery learning, through seeing the connections, is advocated as a pedagogical (anagogical) end of MOOC education.

Finally, there is no real agreement between MOOC creators regarding pacing, with Khan opting for a completely open pacing, and the likes of Koller advocating a (partially) closed form of pacing. Khan's argument is that closed pacing doesn't allow for mastery learning, while Koller's argument is that deadlines are a part of adult life, and so training students to cope with this pressure makes sense. I think that Khan's argument is more persuasive, as the individual nature and learning styles of students need to be taken into account. That said, an education that generally follows an open pacing, but that also introduces paced projects, with deadlines, could overcome this problem.

In concluding this discussion of online education, let us consider this quote from Khan (2012), who succinctly argues for the value of online education, claiming that the benefits it offers over traditional education (the kind that is used all over the world, based on what he calls the 'Prussian Model'[3]) are that it is cost effective, educationally effective, and more akin to the way people actually learn:

> Internet-based learning has advantages not only for reviewing particular lessons, but for forging a deeper and more durable understanding of the associations *between* lessons. On the Internet we are not constrained by classroom walls, bells that dictate when a class is over, or state-mandated curricula. A topic can be covered in multiple ways through many different lenses across many superficially different subject areas (Khan, 2012:57).

[3]Khan claims that the Prussians invented all current orthodoxies in standard education, including 'primary' and 'high' school, the length of a school day, the division of subjects, that education should be tax-supported, that it should begin and end at a certain age, and finally that the state should decide what the curricula ought to be. Khan goes further, claiming that this kind of education's primary purpose was "not to produce independent thinkers, but to churn out loyal and tractable citizens who would learn the value of submitting to the authority of parents, teachers, church, and, ultimately, king" (Khan, 2012:75). Prussian education was a tool of oppression, incommensurable with selective social evolution, because it only perpetuates the status quo; it does not produce students capable of challenging it.

The last part of this quote also indicates that, at least for Khan, the subject matter covered in a standard curriculum are only superficially different, that is, their similarities are greater than their differences; he is against the artificial 'silo-ing' of knowledge. Khan's claim is that education is really about 'showing the connections', not only between concepts within a given subject, but between subjects holistically. This emphasis on the importance of 'showing the connections' is similar to Dewey's thought around reconstruction (see chapter two, V).

II) Blended/Flipped Education

Much of what has been covered thus far remains applicable in this section but some further elaboration is required. Blended/flipped education uses the online elements not as the sole basis for the achievement of educational outcomes, but as a part of a method of reform in current educational institutions. Flipping/blending the classroom uses the online lectures described above as the 'homework' children and students are prescribed, with class (physical) time used to do active project based, collaborative work. Instead of classes used for lectures, they become a highly interactive platform. Khan claims this pedagogical change can "humanise" (Khan, 2011) the classroom.

> Lectures at home—or, for that matter, on the bus, in the park, or interspersed with the in-class exercises—were also more productive. This kind of independent, on-demand learning was a much more active process than in-class lectures (Khan, 2012:116).

There are two possible interpretations of this model of education. The pedagogic interpretation is essentially 'Prussian education 2.0'. It is an optimisation of current educational pedagogies, and places less responsibility on the students. This is because it maintains a closed pacing model. Students still move at roughly the same pace. Certain lectures must be watched in a given time frame, and students must then come to class to participate in whatever activities have been planned for them by their teacher. Koller supports this pedagogic interpretation of blended/flipped when she claims that it is important for students to participate in a "real course experience" (Khan, 2012) that has "real deadlines" (ibid.). What she is claiming is that Prussian education 2.0 is good, and that pacing should be closed.

The other model is andragogic because it opens up pacing, thereby requiring students to take responsibility for when and where they participate in the online resources, *to take responsibility for their own learning*. This view does complicate the educational experience to a degree, in that the current set up of schools would have to be completely rethought. If every student comes to class doing different work how would a teacher cope with so many different focuses? Both Khan (2012) and Agarwal (2012) urge us to "reimagine" education in order to overcome this problem. Khan's vision in particular is interesting, and although the following quotation is

rather lengthy, it is compelling and insightful, giving us a substantial sense of his vision and project.

> I believe that the school of the future should be built around an updated version of the one-room schoolhouse. Kids of different ages should mix. Without the tyranny of the broadcast lecture and the one-size-fits-all curriculum, there is no reason this can't be done. With self-paced learning established as the basic model, there's no reason to lump kids by age, still less to 'track' them based on perceived potential. The older or more advanced students become allies of the teacher by mentoring and tutoring the kids who are behind. Younger students benefit by having a range of role models, big brothers and big sisters. Older kids sharpen and refine their understanding of concepts in the act of explaining them to younger kids. No one is just a student; everyone is a teacher as well, worthy of the respect that goes with that. And the schoolroom, rather than being an artificial cloister shut off from the rest of life, comes to more closely resemble the world beyond its walls—and therefore to better prepare students to function and to flourish in that world (Khan, 2012:194).

Khan here makes a strong argument for a number of things that need to be briefly discussed. He is particularly against the notion of 'tracking' students; the idea that students should be grouped together depending on their academic performance, because tracking "…creepily recalls *Aldous Huxley's Brave New World* and completely ignores the wonderful variety and nuance that distinguish human intelligence, imagination, and talent" (Khan, 2012:64). In contrast to 'traditional education', Khan promotes learning about responsibility in an active manner, students being given responsibility as mentors, promoting compassion. While it may be argued that there is no direct correlation between learning responsibility actively (in general) and becoming compassionate, it is not true that there is no such necessity implicit in learning responsibility (specifically) through *mentorship*. Implicit within the notion of mentorship is a caring element; a person must care for another, proverbially *see something in them*, in order to truly mentor them. Mentorship *always* aims at support, at growth of the mentee and also in the mentor (in the way that a giver of a gift freely given often feels they receive a gift in exchange – the gift of the giver.) Mentors and their mentees grow simultaneously, and at the heart of

mentorship is compassion. According to the Online Etymology Dictionary[4], the root of the word compassion is the Latin word *compati*, which translates to 'to feel pity'. However, the parts of the word are intriguing. *Com* means 'together' and *pati* means 'to suffer'. In *Great expectations* Dickens wrote that "suffering has been stronger than all other teaching, and has taught me to understand what your heart used to be. I have been bent and broken, but - I hope - into a better shape" (Dickens 1881:534). Now, while it may be true that mentorship doesn't always include suffering, the mentee is in need of a mentor precisely because she is dealing with something that is difficult for her. She is new to the field or activity, and is in need of the kind of guidance that only someone who has been through it before *and* who cares about her well-being can provide: a mentor. The mentor will care about the mentee because he will have been through the same trials as her. He will see in her, aspects of himself. And if all goes well, they will suffer through the process together, and come out the other side, both significantly changed by the experience.

The notion that the schoolroom should also represent the outside world is also noteworthy for the Deweyan critique to come. One of the more confusing elements in the quote regards the nature of the one-size-fits-all curriculum. Here, Khan denounces this, while the Khan academy as it currently exists represents just this. Although such a curriculum would still be used to guide education, the idea is that students are capable of deviating from it significantly, in the same way as students do at a tertiary level. Most coursework degrees, for instance, have a thesis element, allowing students to pursue interests other than the prescribed work. A one-room schoolhouse as described above does appear to be a plausible solution to the problems created by an open paced model. But there is a final element that needs to be considered that has as yet not been properly approached. With an open paced model, how will teachers keep track of their students?

One of the powerful tools offered by an online platform is that of instant, real time feedback. In the following quotes, two separate, but related points are made. The first is that real time feedback from students can improve the interactions between teachers and students, and between peers. This first point than can be seen as a benefit on a micro level of education, in making a direct difference to every instance of in-class educational communication

[4]See http://www.etymonline.com/index.php?term=compassion&allowed_in_frame=0

> By letting the teacher know who needed her attention most. Even better, a student who had already mastered a particular concept could be paired with one who was struggling. Or two students, stuck in the same place, could work together to get past their common hurdle (Khan, 2012:145).

The second quote focuses on a macro level, on a data driven focus, driven by the student's interactions with and within the online system.

> You can collect every click, every homework submission, every forum post from tens of thousands of students. So you can turn the study of human learning from the hypothesis-driven mode to the data-driven mode, a transformation that, for example, has revolutionized biology. You can use these data to understand fundamental questions like, what are good learning strategies that are effective versus ones that are not? And in the context of particular courses, you can ask questions like, what are some of the misconceptions that are more common and how do we help students fix them? (Koller, 2012).

Finally, it is worth noting that the founders of the MOOCs still hold that blended learning is a better educational alternative to online education. Ng phrases the issue quite succinctly:

> The real value of attending a great university isn't just the content, content is increasingly free on the web anyway. The real value of attending a university is the interactions with the professors, the interactions with other students and with the flipped classroom we are creating much more time in the classroom for these interactions and these rich discussions which I think is why students come to our campuses (Ng: 2013)

In making this claim Ng points out something that may prove to be problematic for online education: that it fails to properly facilitate the kind of genuine communication that is necessary to achieve quality education in its full sense; that is, not simply gaining knowledge, but meeting others, making connections, growing completely not only intellectually, but as a caring being. After all, as famously expressed in the African principle of *ubuntu*, *Umuntungumuntungabantu - A person is a person through other persons*, or *I am because we are*. If education is the means

by which we create the best people possible, then that education needs to develop those people holistically, including not only their cognitive/intellectual capacities, but their creative and caring capacities as well.

To conclude this section of the chapter, blended/flipped education offers two new ways of thinking about education. Both are radical reimagining's of formal education. They vary in terms of the important notion of pacing. The pedagogic interpretation of blended/flipped education maintains a closed pacing, and is thereby simply a new version of the same kind of education as has been conducted for the past century at least, or what I have here called Prussian education 2.0. The second is andragogic, radically opening up pacing, and placing the larger weight of the responsibility for education upon the student. Both of these rely upon the online platform to deliver the course content, utilising the information provided by them to improve educational practice on a both a micro and macro level.

III) cMOOCs, xMOOCs and Gamification

Canadians George Siemens and Stephen Downes pioneered the first Massive Open Online Course (MOOC) in 2008 (Bousquet, 2012:1), and since that time MOOCs have seen a massive boom in uptake. They have the potential to make a significant impact on the educational space, and therefore they deserve to be taken seriously. There are in actuality two different kinds of MOOCs: an xMOOC or AI-Stanford type and a cMOOC (Rodriguez, 2012:12). Rodriguez defines xMOOC pedagogy as "a set of videos, some online interactive exercises, and tests... The learner works by himself with the material" (ibid.). A good example of an xMOOC is the Khan Academy (KA). This xMOOC primarily focuses on a comprehensive curriculum in mathematics, from basics through to applied mathematics. However, the KA does offer a number of other courses, which are in many ways more akin to a cMOOC. Good examples of cMOOCs are many of the courses offered on Coursera, but again, some of the MOOCs offered through this website are more akin to xMOOCs. McCauley et al. describe cMOOC pedagogy as involving

> The connectivity of social networking, the facilitation of an acknowledged expert in a field of study, and a collection of freely accessible online resources. Perhaps most importantly, however, a MOOC builds on the active engagement of several hundred to several thousand "students" who self-organize their participation according to learning goals, prior knowledge and skills, and common interests. (McAuley, et al., 2010:4)

Simply put, the difference between an x- and a cMOOC lie in the epistemological differences and thereby pedagogical approaches of the course coordinator. Swan et al. (2014) contrast these two epistemic starting points as either objectivist or constructivist. The differences between the two are relatively stark, with xMOOCs using the objectivist stance on education resulting in a pedagogy that is teacher centred; incorporates convergent answer types; is simply structured; is committed to offering instant feedback – thanks to automation; and is individual work focused. cMOOCs on the other hand, which use constructivist pedagogies, tend to represent the converse of all of these. Kreijins et al. (2003) Simply put then, the difference between an x- and a cMOOC is the epistemological differences and thereby pedagogical approaches of the course coordinator. Swan et al. (2014) contrast these two epistemic starting points as either objectivist or constructivist. The differences between the two are relatively stark, with

xMOOCs using the objectivist stance on education resulting in a pedagogy that is teacher centred; incorporates convergent answer types; is simply structured; is committed to offering instant feedback – thanks to automation; and is individual work focused. cMOOCs on the other hand, which use constructivist pedagogies, tend to represent the converse of all of these. Kreijins et al. (2003) and Westbrook (2012) have argued that through the use of a facilitated socialization framework, the use of discussion boards, forums and effective information exchange and joint knowledge creation, cMOOC pedagogy is a superior option as it helps to motivate students. Khan (2012), in turn, argues that 'one-on-one' video sessions are superior, since they allow students to move at their own pace and to deal with the lessons in their own way, making xMOOC pedagogy superior. Both sides of the debate are clearly concerned with the issue of 'motivation'; with cMOOCers arguing that increased collaboration and socialization increases motivation, while xMOOCers argue that, where intrinsic motivation fails, extrinsic motivation will suffice.

The solution that is proffered for both extrinsic and intrinsic motivation is the notion of gamification. This may seem confusing, but the reason the same concept is used for both is not because the same concept of gamification can be used to solve both problems, but rather because there are different notions of precisely what gamification *is*. Citing Csikszentmihalyi (1990), Schwartz and Sadler (2001) claim that intrinsic motivation is similar to the mental state known as 'flow' "in which the sense of time compresses, focus and concentration increases, and distractions disappear. The experience is also similar to what individuals experience when playing certain video games" (Schwartz and Sadler, 2001:8). Gamification can be defined as "the use of video game elements (rather than full-fledged games) to improve user experience and user engagement in non-game services and applications" (Deterding et al., 2011:2).

The problem with this definition, however, is in the interpretation of it. On a surface level gamification might mean 1) goal focused activities – win criteria; 2) reward mechanisms – leader boards, prizes and achievements; and 3) progress tracking – levelling up, stat tracking (Glover, 2013:2000-02). These are all essentially extrinsic motivation factors. They motivate students to do work for reasons not necessarily related to the work itself. On a deeper level, gamification might be understood not in terms of gaming outcomes but rather in terms of gaming experiences. These might include 1) commitment to a new identity; 2) interaction with others; 3) production and not merely consumption (of knowledge); 4) risk taking; 5) customization (of curricula); 6) agency; 7) well-ordered problems (like levels); 8) challenge

and consolidation (of skills); 9) just-in-time or on-demand information; 10) situated meanings (context matters); and a number of others, such as 11) performance before competence (Gee, 2005:4-11).

From what I have described above, and through my personal experience of x- and cMOOCs, it is clear to me that gamification-as-extrinsic motivation is a key element of xMOOC pedagogy (i.e. Khan Academy) while cMOOCs (i.e. Coursera) rely more heavily on gamification-as-intrinsic motivation.

IV) MOOCs: Considering Various Objections

> *Yes, Internet technology is fundamentally changing how we communicate and do business with each other. But while all this technology might be novel, it hasn't transformed the role of either power or wealth in the world (Keen, 2015:222.*

Before I conclude this brief account of the MOOCean project, it is important to consider a number of objections to said project. In this section I consider three main objections: 1) Keen's claim that the modern manifestation of the Internet and, in particular, MOOCs, seek to create monopolies. These disenfranchise traditional enterprises, and create unemployment and inequality; 2) McKenzie's claim that instead of creating education for everyone everywhere, MOOCs are only being utilised by a privileged minority, and that they therefore do not achieve what they claim to intend to do; and 3) my own critique, that the prerequisite access to Internet literacy and the means to reliably access the Internet are not free, which undermines the goals of the MOOCean project.

In his book *The Internet Is Not the Answer* (2015) Keen argues that the Internet, and the way it has been shaped by the digital economy, have come to represent a threat to employment, and thereby global society. Keen writes towards the end of the book that "The Internet is generally excellent for consumers. But it's much more problematic for citizens" (Keen, 2015: 232). Keen's focus is primarily on major organisations like Google, Amazon, Facebook, Airbnb, YouTube and Uber. These companies have all come to dominate the Internet and thereby the world, in a way that was inconceivable before the Internet. They represent a trend towards a '1%, winner takes all economy', argues Keen.

> *The winner-take-all economy is a euphemism for a market that tends toward monopoly—and that's exactly what Amazon, with its tighter and tighter control of online commerce, is becoming… Amazon, in spite of its undoubted convenience, reliability, and great value, is actually having a disturbingly negative impact on the broader economy…Rather than promoting economic fairness, it is a central reason for the growing gulf between rich and poor and the hollowing out of the middle class. Rather than making us wealthier, the distributed capitalism of the new networked economy is making most of us poorer. Rather than generating more jobs, this digital disruption is a principal cause of our structural unemployment crisis. Rather than*

> *creating more competition, it has created immensely powerful new monopolists like Google and Amazon. Its cultural ramifications are equally chilling* (Keen. 2015: 57, 8).

This same winner-takes-all position can be applied, in Keen's view, to MOOCs. From this perspective, the MOOCean project of free quality education for everyone everywhere is seen in a more sinister light. Rather than creating equality, it is seen as something that seeks to destroy opposition. After all, what need would people have for traditional educational institutions if, eventually, MOOCs might do the same job, but free of charge? While such an occurrence might be good for the MOOC founders and owners, it would not be desirable for the staff of traditional educational institutions who will be out of work.

MOOCs are supposed to be about bringing free quality education to the masses. With Internet access becoming more easily available, especially in developing countries, surely there should be a massive demand for MOOCs? Not so, according to one study, which examined 400,000 Coursera students and found that most people who enrolled were "employed, degree-holding men" (McKenzie, 2014). As McKenzie, a technology writer, points out:

> *More than 400,000 Coursera students were surveyed in this study, and of the 34,700 or so respondents: a strong majority (83 percent) held two- or four-year degrees and nearly half (44 percent) held advanced degrees. In Brazil, Russia, India, China, and South Africa, where only 6 percent of the population has earned a college degree, nearly 80 percent of Coursera students are college graduates and from the wealthiest echelons of society* (emphasis added).

McKenzie adds, 'If anything, this shows that MOOCs are widening the educational divide, not levelling the playing field, as some have claimed' (Ibid.).

From Keen's perspective, MOOCS are one way in which the neoliberal ideology can continue to expand. Neoliberalism can be understood as

> the values, structures and processes of private sector management are imposed upon the public sector; key elements include a shift from professional to executive power, a focus on 'performance' as measured by quantitative targets, and the widespread use of financial incentives. Meanwhile, the purpose of the university has changed from the education of the elites in business, politics, culture and the professions to the

> provision of marketable skills and research outputs to the 'knowledge economy' (Radice, 2013: 408).

Or, more simply, the application of "four process of the political economy of capitalism: privatisation, deregulation, financialising and globalisation" (Ibid) to all elements of modern western society, including private and public institutions and social and private relations in some cases. This means that the neoliberal ideology can be understood as one which seeks to place people in competition with one another: neoliberalism has a positive correlation with individuality in that it always propagates individualism. In this world view, the individual is celebrated above all else, and defeating others in this competition is always the goal. MOOCs, from Keens perspective, are at once products of this ideology and at the same time further it. For instance, they are private institutions; which have very little in common by way of regulation (there are no 'best practices for all MOOCs'); they are mostly (with the exception of the Khan Academy) financially driven institutions (using advertising or paid certification to make a profit) and; as they are internet based they are a key component of the notion of globalisation. But, as McLuhan stated with insight "the medium is the message" (1964). As MOOCs have been shaped by neoliberalism, and MOOCS are the medium for the education, any education that occurs through the use of them will be in turn be shaped by neoliberalism.

An entire thesis might be dedicated to this thought alone, but for now, a few logical conclusions are worth noting. If MOOCs are instruments for the spread of Neoliberalism, then the reason behind 'free quality education for everyone everywhere' is not the eradication of poverty and an attempt to combat global social injustice. Instead, it is the very opposite: it is to further these. This is because neoliberalism *requires* inequality: in competition there must be losers. In emphasising individualism, neoliberals wash their hands of both creating and sustaining global social injustice and inequality (if they were honest they would celebrate these as triumphs). As private institutions, MOOCs can ignore the facts of the 'initial state of inequality' that deprives the people who need education the most of access to their platforms. In requiring paid certification for course completion they deprive poor people of one of the most important elements of a modern education, as it is the certificate that allows people to compete in the 'knowledge economy'. And as instruments of globalisation, they bring the cycle full circle and continue to expand neoliberal ideals to anyone who is capable of taking their courses. Therefore, various

MOOCS aim to become the winner who takes all within their own sector of the economy, and at the same time empower others to do the same in their own lives and careers. In this way they are products of neoliberalism and at the same time further its ends.

While this critique may be true in some instances, I also think that it tends to simplify the situation too strongly. Not all MOOCs are the same: they have been created by different people for different reasons. They have differing pedagogy and andragogy. They have different views about group work and communication. They also have differing views on financialisation. This brief discussion of neoliberalism has merit because of its relationship to Keens critique, but any further discussion would take me to far afield of the purpose of this thesis, which is ultimately a Deweyan Critique of MOOCs (and not a neoliberal critique, which would impact MOOCs by connection).

Education is of course one of the most effective ways in which we promote social justice and fight inequality. The Internet is certainly a powerful tool, and does seem to offer incredible scalability and access to information. However, it requires certain capabilities and a degree of material wealth to be properly utilised, capabilities which must be learnt as part of an education. But MOOCs are a problematic response to this problem, as they put us in a catch 22 situation. In order to access MOOCs, learners need the prerequisite capabilities and material wealth. However, these are the very things that these people lack in the first place. While it is no inherent shortcoming of the MOOCean project that the world is characterised by extreme inequality, the promise to provide free quality education to everyone, everywhere amounts to preciously little if most of the people who need it cannot access said educational content and experiences. Given the state of modern technology, the easiest part of 'free quality education for everyone everywhere' is the distribution and dissemination of MOOC-like courses. The true challenge lies in overcoming the 'initial state of inequality', which is the starting predicament of so many people. MOOCs need to be guided by a greater effort to contribute to this challenge if the founders are serious about their project.

In sum, then, it is possible that MOOCs are not as altruistically inspired as they might seem at first sight. They may be simply more internet based companies seeking to become monopolies. Furthermore, current MOOC enrolment points to the very opposite of free education for everyone everywhere – namely to free education for those who are already privileged enough to have an education and a job. Finally, if the MOOCean project is to

be successful, and if it is serious about free quality education for everyone everywhere, it needs to take on the project of defeating global poverty in a more concerted manner.

V) Concluding Remarks

MOOC education is not homogenous, and so any attempt to provide a uni-dimensional, 'umbrella' account is likely to fail. Nevertheless, MOOC education shares the collective objective of *free quality education for everyone everywhere.* Therefore, they must be critiqued in this light. Can they provide such an education? In the above sections, I have teased out certain overarching criterion for both online and blended education. These include a focus on *mastery learning*, the importance of *communication* in the learning process, and the consideration that education is, from a MOOCean's perspective, essentially *andragogic*. This last point is due to the responsibility placed on the individual to engage with the MOOC out of personal interest. In order to sustain said interest, MOOCs have utilised *gamification.* MOOC founders differ in their opinion on *pacing,* with both open and closed pacing offered as the ideal.

I have argued that although MOOCs are generally andragogic, when a closed pacing model is used, they take on certain pedagogic characteristics, as a closed model *reduces* the responsibility placed upon the student. There are also a number of potential issues regarding the MOOCean project outside of what Dewey might find problematic, including MOOCs furthering educational and economic inequality, and the catch 22-like problem created by the initial state of inequality faced by so many people.

The MOOC founders also tend to agree that blended/flipped education is superior to online education. This is, in my view, problematic for their overall project. For their mission statement to remain true in this circumstance, online education, whatever its status *vis-à-vis* its blended/flipped counterpart, still needs to be able to facilitate *quality education*. But is this possible, when the thing that apparently separates the two is the quality of communication and interaction that physical contact facilitates? Are they not, in accepting that blended education is superior, undermining their entire project, by admitting that the quality of the *communication* in an online format is fundamentally inferior? The importance of this last-mentioned critique is made salient in the final chapter of this research, the Deweyan critique of MOOCs.

2) Dewey: A Description

> *The result of the educative process is a capacity for further education.* (Dewey, 1916:150)

This section outlines a number of principles of education, synthesised from Dewey's *Democracy and Education*. In this book Dewey laid out his vision for educational reform, something he identified as being important one hundred years ago. The proof is in the pudding, and one hundred years later the need for educational reform has become glaringly apparent, and the fact that MOOCs exist at all is evidence of this. As with all great thinkers, Dewey was ahead of his time. Educational reform has truly begun with the radical reimagining of education outlined in the previous section. The Internet and digital technology have enabled this reimagining, but what would Dewey think of these new educational methodologies? In the time since he wrote that seminal work, what has academia contributed too, for and against his thoughts? Is Dewey's thought still relevant?

Before I begin outlining his theory, something ought to be said about *why* I have chosen Dewey's thought to critique MOOCs. The first reason is that his project was very similar to the likes of Khan. Both Khan and Dewey aim to shift the way we think about and do education. Khan writes:

> Formal education must change. It needs to be brought into closer alignment with the world as it actually is; into closer harmony with the way human beings actually learn and thrive… Nearly everything about our current system rewards passivity and conformity and discourages differentness and fresh thinking. For most of the conventional school day, kids just sit while teachers talk. Cloistered away with students their own age, they are deprived of the varying and often mind-stretching perspectives of kids both more and less advanced. They move in lockstep through rigid, balkanized curricula aimed less at deep learning than at the fulfilment of government mandates and creditable performance on standardized tests (Khan, 2012:11).

Dewey's writings contain many similar statements:

> The philosophy is eloquent about the duty of the teacher in instructing pupils; it is almost silent regarding his privilege of learning. It emphasizes the influence of intellectual environment upon the mind; it slurs over the fact that the environment involves a personal sharing in common experiences. It exaggerates beyond reason the possibilities of consciously formulated and used methods, and underestimates the role of vital, unconscious, attitudes. It insists upon the old, the past, and passes lightly over the operation of the genuinely novel and unforeseeable. It takes, in brief, everything educational into account save its essence, -- vital energy seeking opportunity for effective exercise (Dewey, 1916: 161).

In the above quote Dewey is describing Herbart's (1906) philosophy, which (considering its age) bears remarkable similarity to current educational thought. Dewey's project (as I will show) is a rejection of standardised educational practice as *the whole of education*. For Dewey, standardising education made sense from a practical perspective, but experience, context, communication and environment remain the key elements of educational practice. Regardless of this, the first reason I have used Dewey as a means to critique MOOCs is that in essence they share the same project of educational reform and renewal. Both Khan and Dewey propose educational projects that are based in experience. Khan writes:

> As a practical matter, our conventional classroom model does not generally allow for these customized reviews and retests, still less for *moving beyond memorization to experience the concepts through open-ended, creative projects* (Khan, 2012: 82; italics added).

Dewey makes similar remarks in his book *Experience and Education* (1938), when he argues for a theory of experience as the basis of experienced based education (such as his own).

The second reason I have used Dewey's thought for this purpose has to do with role of his intellectual influence in human thought, Dewey's contribution in revolutionizing the way we think about education. Regardless of whether or not the MOOC founders are willing to acknowledge it, they, like the rest of us, are standing on the shoulders of the likes of Dewey,

whose thought continues to reverberate through our collective conscious; ideas proliferate and are disseminated through culture, and can be subconsciously learnt, especially when those ideas are as profound as those that Dewey offered. In his article *John Dewey: A Pioneer in Educational Philosophy* Devendorf (2003) writes "John Dewey (1859 - 1952) has made, arguably, the most significant contribution to the development of educational thinking in the twentieth century" (Devendorf 2003:2) through ideas like "…that active learning would help people develop the ability and motivation to think critically about the world around them." (Devendorf 2003:7), an idea articulated so many times by the MOOCean authors I deal with in this paper. Great thinkers influence those who follow them, whether or not those who follow realise (or even acknowledge) those origins. When considered in conjunction with my first reason for utilising Dewey for this project, the similarities in their projects, it makes sense to draw on Dewey from a historical perspective. Perhaps the reason so much of MOOCean thought is so similar to that of Dewey's is that his thought continues to echo down through history. In the same way that most people know that the earth is locked in an orbit around the sun, while many of those same people remain unaware of who originally discovered this fact, I argue that Dewey's thought has in some way influenced the likes of Khan, even if they are unaware of the very possibility.

My previous two points, that 1) the MOOC founders and Dewey share a similar project of experience based education and that 2) Dewey's thought has influenced the MOOC founders regardless of whether or not they are aware of this, are arguably valid. However, they are not the best reasons that I have for using Dewey's thought in order to critique MOOCean andragogy. My third and final reason has to do with the sheer *strength* of Dewey's thought. I have left this point for last, as the only way to properly show this strength is a proper philosophical analysis, such as the one that I embark on in this chapter.

Dewey's philosophy of education takes its start in what he considers to be the purpose of education, what I call 'selective social evolution'. The philosophy itself might best be termed an 'organic, experience based' conception of education. He emphasises the importance of communication, experience, environment, retrospection, interest, goals and aims. He utilises the term 'reconstruction' to convey his meaning in full: education as that process by which we renew ourselves, the means by which we *grow*.

Before I begin laying down the principles I have synthesised, it is important to understand just what education is, according to Dewey. Dewey argues that education is the "renewal of life" (Dewey, 1916:9). To understand this properly, consider the following description of 'life':

> We look for an account of social antecedents; a description of early surroundings, of the conditions and occupation of the family; of the chief episodes in the development of character; of signal struggles and achievements; of the individual's hopes, tastes, joys and sufferings… 'Life' covers customs, institutions, beliefs, victories and defeats, recreations and occupations (Ibid.).

Education is therefore the "means of this social continuity of life" (Ibid.) Education allows for society to continue, and to improve. This is in actuality the first principle that I have identified. I would like to note here that the order in which I present the principles of education (which now follow) is not a particular order of importance, but rather a manner that achieves what I consider to be the best logical flow. The principle of communication is no less important than that of selective social evolution, even though it is presented much later.

I) Selective Social Evolution

> *On one hand, there is the contrast between the immaturity of the new-born members of the group -- its future sole representatives -- and the maturity of the adult members who possess the knowledge and customs of the group. On the other hand, there is the necessity that these immature members be not merely physically preserved in adequate numbers, but that they be initiated into the interests, purposes, information, skill, and practices of the mature members: otherwise the group will cease its characteristic life (Dewey, 1916:11).*

I term this 'selective social evolution' for a few reasons. Firstly, the process is, for Dewey, akin to the biological process of evolution (ibid). But it is also intentional, or selective. To qualify this, however, although education is intentional, it is still indirect. Yet, this is another principle, one that I return to shortly (see IV). For now, it is enough to understand that the activity called education is not in fact educational if it does not reproduce and reform society simultaneously. Regarding its selective nature, Dewey claims, "this renewal is not automatic. Unless pains are taken to see that genuine and thorough transmission takes place, the most civilized group will relapse into barbarism and then into savagery" (Ibid.). Thus education, for Dewey, is the means of intentional social evolution as described. But could he be wrong about this? Is it possible that education is nothing like growth?

R.S. Peters, in defining his notion of education as initiation, takes issue with growth theorists such as Dewey. The criticism is essentially that once the ideas of 'self-realisation through experience' and 'the importance of genuine interest' (all of which I highlight as salient in Dewey's theory through this chapter) become "procedural principles" (Peters, 2012:60), the importance of such things as curriculum can be ignored to the point that they are not used at all. Peters writes:

> The main defect of this view… is that they (growth theorists) evaded the other feature stressed by traditional teachers, that education involves the intentional transmission of worthwhile content (Ibid.).

This critique is acceptable against growth theorists who over-extend their logic, by assuming that everything children require for an education is innate. This conception of education conflates the notion of growth with *nature*, claiming that, given time, the child will grow, and that growth constitutes education. Dewey is *not* a growth theorist in this sense. He does emphasise the natural growth of children as important, but understands that growth does not happen in a vacuum. It happens in an environment: in simple terms, nurture matters. Consider the following analogy: a child is born with functioning eyes, but is locked in a dark room for her formative years. She emerges later in life, but is blind. She had the innate capacity for sight, as all children have the innate capacity for education, but without the proper stimulus (environment – nurture), in this simple case light, growth does not occur. For the extreme growth theorist, there is no need for such things as curricula. Rather, children are expected to simply self-realise through their innate drive to do so. This is not Dewey's position. Furthermore, extreme growth theory, as one might call it, assumes that there is no difference between children and adults, that children have the ability to make rational decisions about their own self-realisation in the same way as adults do, but - as I will argue in a later section of this chapter (III) - that is simply untrue.

In *Experience and Education* (1938) Dewey confronts these very 'growth theorists', those educationalists who claim to be 'progressive', and challenges the same claim that Peters deals with in the above quote. Dewey accepts that growth is indeed the major goal of education, however he argues that it is achieved through experience. He goes further than this, detailing a theory of experience that utilises to principles of experience which are to be applied to any given experience by the educator in order to achieve said growth. These include the principles of continuity and interaction (Dewey, 1938:16). The principle of continuity states that

> we live from birth to death in a world of persons and things which in large measure is what it is because of what has been done and transmitted from previous human activities. (Dewey, 1938:15)

Or, put differently:

> Every experience enacted and undergone modifies the one who acts and undergoes, while this modification affects, whether we wish it or not, the quality of subsequent experiences. (Dewey, 1938:12)

The principle of interaction, on the other hand, states that the interaction between external conditions (the environment and social context) and the internal conditions (predispositions, mental and emotional dispositions, and memories of previous experience) of experience both need to be regulated properly for maximally beneficial educational outcomes. It is the business of educators to take into account both principles of experience in order to achieve the ultimate educational goal of what I have termed selective social evolution.

In sum, Dewey's conception of growth is related to a much larger overall conception of education as the means by which what I have termed 'selective social evolution' occurs. This conception of education allows for initiation into the activities of adulthood, while at the same time allows for social change. It does this by focusing on what Peters terms the "manner" (ibid.) of education, instead of the matter. It does not ignore that matter (else education would happen in an imaginary vacuum), but it does demand that the educational experience of the unique individual be taken very seriously. In this way, education becomes the mechanism for simultaneous social persistence and change, i.e. for growth.

II) Growth

As noted in the previous section, Dewey thinks of education primarily as a form of growth, and thereby as the means of selective social evolution. This is in contrast with a process model of education, which Dewey claims defeats its own ends by focusing on the outcome and not the journey. In this section I detail precisely what Dewey means by education as growth.

> In directing the activities of the young, society determines its own future in determining that of the young. Since the young at a given time will at some later date compose the society of that period, the latter's nature will largely turn upon the direction children's activities were given at an earlier period. This cumulative movement of action toward a later result is what is meant by growth. (Dewey, 1916:95)

In both the growth and preparation models of education, the outcome is important. In the latter, however, the *ends* are seen to justify the means, while in the former it is the *means* that are important, that 'cumulative movement of action' that Dewey mentions here. Dewey offers some key insights regarding why it is the means that is truly important. He states,

> Our tendency to take immaturity as mere lack, and growth as something, which fills up the gap between the immature and the mature is due to regarding childhood comparatively, instead of intrinsically. We treat it simply as a privation because we are measuring it by adulthood as a fixed standard… This fixes attention upon what the child has not, and will not have till he becomes a man (Dewey, 1916:97).

Immaturity is not then a negative trait, not something that children lack and that they must come to have. This is to view immaturity in a top down manner, from an adult's perspective. Understanding immaturity as simply an earlier stage of growth is to understand that immaturity is a positive force, "the power to grow" (ibid.). It is positive because education is something done, not to students, but *by* them. It is a personal experience, not an external one. So growth is not an outcome, it is an active, lived, and cumulative experience.

In the previous section, I dealt briefly with the two principles of experience (I discuss them in more detail in section V of this chapter). Growth is, problematically, not necessarily a positive force. Something might grow twisted and deformed, or a person might 'grow' to become a 'bad' person. Consider the following quote briefly:

> Growth, or growing as developing, not only physically but intellectually and morally, is one exemplification of the principle of continuity. The objection made is that growth might take many different directions: a man, for example, who starts out on a career of burglary may grow in that direction, and by practice may grow into a highly expert burglar. Hence it is argued that "growth" is not enough; we must also specify the direction in which growth takes place, the end towards which it tends. (Dewey, 1938:13)

Dewey uses this example to highlight the fact the role of the educator, as a guide who relies on her own *maturity*, in order to facilitate the positive force of the immature under her guidance. The educator must act as a regulator of experience, understanding and applying the principles of continuity and interaction of experience. This leads me now into a discussion of the formative positive powers of immaturity. Once the principle of continuity has been properly grasped, it becomes apparent that immaturity is a necessary condition, and one that allows for growth in the first place.

III) Immaturity

It is worth noting as a starting point that a better term for what Dewey means might well be something like 'juniority' or 'youthfulness'. This is because Dewey understands the term in a positive light. It is not (for Dewey) a mere lack or negation of maturity, but a formative power, the fertile soil and nutrients that education requires in order to help children grow. This said, the principle of immaturity states that children are not young adults. To view them as such is to conceive of an acorn as simply a young version of a tree, when in fact it is no such thing; it is an acorn. This particular simile is appropriate as Dewey himself utilises the notion of education as growth, as I outlined in the previous section.

> In fact, the human young are so immature that if they were left to themselves without the guidance and succour of others, they could not acquire the rudimentary abilities necessary for physical existence. The young of human beings compare so poorly in original efficiency with the young of many of the lower animals, that even the powers needed for physical sustentation have to be acquired under tuition. How much more, then, is this the case with respect to all the technological, artistic, scientific, and moral achievements of humanity! The most civilized group will relapse into barbarism and then into savagery. (Dewey, 1916:14)

Dewey here highlights the necessity of education for selective social evolution, basing his argument on the helplessness of human young, arguing that the immature are "beings who are born not only unaware of, but quite indifferent to, the aims and habits of the social group have to be rendered cognizant of them and actively interested" (ibid.). In other words, the immature are nothing like their adult counterparts; to be immature is to be fundamentally different from an adult. This may seem a truism, but the importance of this principle is not that adults are different from children, it is in the manner in which they are different: adults, who have been educated, have *learnt how to learn*; to intentionally learn essentially anything, as Dewey phrases it, "the result of the educative process is capacity for further education" (Dewey, 1916:150).

This conception fits in well with Dewey's evolution-influenced ideas of education, because learning how to learn means that the modern human being is qualified, first and foremost, to adapt. In contrast with this is the idea that education's purpose is to create professionals, people

qualified for a certain job. Dewey claims that although the latter may be a pedagogically sound outcome, an important outcome certainly, it should not be the primary focus of education. This is because:

> It is not of course a question whether education should prepare for the future. If education is growth, it must progressively realize present possibilities, and thus make individuals better fitted to cope with later requirements. Growing is not something which is completed in odd moments; it is a continuous leading into the future. (Dewey, 1916:124)

Dewey clearly states above that for the primary purpose of education to be learning to learn, education must be considered as *growth* and not as a *process of preparation for an abstract future*. Dewey speaks out very strongly against the principle of education as preparation, claiming that

> Children proverbially live in the present; that is not only a fact not to be evaded, but it is an excellence. The future just as future lacks urgency and body. To get ready for something, one knows not what nor why, is to throw away the leverage that exists, and to seek for motive power in a vague chance … This principle fails most just where it thinks it is succeeding – in getting a preparation for the future. (Ibid.)

Because education as preparation is constantly focussing on an abstract future, remote in space-time from the present, maintaining interest and relevance for the immature student who has yet to become a product of education (an adult) sacrifices the most important element of education, the power of present experience to educate. A number of other principles have been mentioned in this passage, including education as growth and the power of the environment and its attendant experience (in the present) as well as the importance of interest for the education of the immature. These last two I deal with in more detail in sections IV and V.

Finally, Dewey outlines a further two principles of immaturity, both of which depend on the understanding of education as growth. The first of the two components of the principle of immaturity, through the lens of education as growth, is dependence. Dependence is not merely to be carried, impotently, forever. Dependence is always "accompanied by growth in ability,

not by an ever increasing lapse into parasitism, [which] suggests that it is already something constructive" (Dewey, 1916:97). In sum of this point, Dewey writes:

> From a social standpoint, dependence denotes a power rather than a weakness; it involves interdependence. There is always a danger that increased personal independence will decrease the social capacity of an individual. In making him more self-reliant, it may make him more self-sufficient; it may lead to aloofness and indifference. It often makes an individual so insensitive in his relations to others as to develop an illusion of being really able to stand and act alone – an unnamed form of insanity which is responsible for a large part of the remediable suffering of the world. (Dewey, 1916:100)

Dependence of the young on adults for education is a good thing because it develops empathy and caring, those human tendencies responsible for social cohesion, support and upliftment, and removing this dependence too early might well be highly problematic, as Dewey here claims. I foresee that this point will work in contradiction to Khan's thoughts on an andragogy for children, but this kind of conversation I leave to the final section of this paper.

The final point that Dewey makes in considering immaturity, and its inherently positive nature, concerns its second component, that of plasticity.

> The specific adaptability of an immature creature for growth constitutes his plasticity. This is something quite different from the plasticity of putty or wax. It is not a capacity to take on change of form in accord with external pressure… It is essentially the ability to learn from experience; the power to retain from one experience something which is of avail in coping with the difficulties of a later situation. (Dewey, 1916:101)

Plasticity, then, is the ability to adapt, based upon what has been experienced and thereby learnt. The idea of plasticity, learning from experience, seeing the connections between passive and active experience (outlined in V), *is* the educational process. Moreover, the immature have this trait in abundance. Therefore, immaturity is a positive force. Immaturity is constituted by dependence and plasticity, both understood in a positive manner, and dependent on the notion of education as growth for context. The immature are dependent on others for experience (and

this itself highlights the importance of yet another principle of education, *the environment*; see VI) and then their propensity for growth is based upon their individual plasticity; their ability to learn and adapt from their dependent experience. So immaturity here is understood as a complex and inter-related concept, denoting the impact of others and the importance of individual ability. This is why Dewey's theory of growth is much more reminiscent of 'selective social evolution' instead of 'pure growth theory' as I argued in I.

IV) Indirect Education: Communication and the Environment

> *Society not only continues to exist by transmission, by communication, but it may fairly be said to exist in transmission, in communication…not only is social life identical with communication, but all communication (and hence all genuine social life) is educative. (Dewey, 1916:16)*

This principle holds that all communication is effectively educational. But what does Dewey mean by communication? Is there a difference in terms of the level of educational value depending on the medium and quality of that communication? The answer to the second question is a resounding yes, while the first requires a more complex answer. A passing 'hello' in the street, which is certainly communication, is of much less (educational) importance than, say, reading a book like Huxley's *Brave New World*, and experiencing the impact of that great mind. It is clear that although there may be some small educational value in all communication, not all communication is born equal. In helping us understand the first question, Dewey writes,

> To be a recipient of a communication is to have an enlarged and changed experience. One shares in what another has thought and felt and in so far, meagrely or amply, has his own attitude modified. Nor is the one who communicates left unaffected. (Dewey, 1916:18)

This quotation illustrates quite clearly why there are different degrees of quality, and why communication is itself educative: communication affects all parties involved. In an educative sense, this means that both those who are trying to communicate, and those who are communicated with are part of an educational process (one of growth). This point can be well illustrated by considering Paulo Freire's famous dictum, "Education must begin with the solution of the teacher-student contradiction by reconciling the poles of the contradiction so that both are simultaneously teachers and students" (Freire, 2007:35) The fortified notions of 'teacher' and 'student', as currently used in formal education, systemically block the kind of communication that is required for such a reconciliation. In sustaining these artificial boundaries to an extreme, teachers never truly communicate with their students, and vice versa. Furthermore, when students are made to sit silently in class and 'learn', they are denied the communicative power that flows from interacting with their peers and the teacher in a more

natural way. Even when students are given freedom to communicate more freely in a classroom, that communication must be vital for the student for it to be properly educative: it must be relevant for the student. I discuss this further in the following section, when considering the ideal of *interest*.

But what does communication actually require? For Dewey, the answer is, as always, pragmatic. Communication is only communication when it is *vital*, situated in a student's *life* (and of course, the teacher's upon whom the student *is dependent*). Dewey writes:

> Any social arrangement that remains vitally social, or vitally shared, is educative to those who participate in it. Only when it becomes cast in a mould and runs in a routine way does it lose its educative power. (Dewey, 1916:19)

Communication, understood as that vital interaction between persons, which is *always* educational in some manner, is the *means*, mentioned in the sections on growth and immaturity. But communication of this manner does not happen in a vacuum. It happens in an environment of some kind. Dewey's final statement in the quote above notes the importance of fluid educational environments (to stimulate diverse communication) and educational content.

The environment for people denotes not simply the physical environment, although it does take this into account, but the social environment as well. It is for this reason that I take communication and the environment to constitute a single principle. Communication is the means of selective social evolution, and thereby all education. Communication always happens in *an environment*.

> (The) social environment forms the mental and emotional disposition of behaviour in individuals by engaging them in activities that arouse and strengthen certain impulses, that have certain purposes and entail certain consequences. (Dewey, 1916:42)

The formation of these dispositions allows for further education. They are formative, allowing further education to occur. Dewey writes:

> The main texture of disposition is formed, independently of schooling, by such influences. What conscious, deliberate teaching can do is at most to free the capacities thus formed for fuller exercise, to purge them of some of their grossness, and to furnish objects which make their activity more productive of meaning. (Dewey, 1916:44)

And furthermore:

> A primary responsibility of educators is that they not only be aware of the general principle of the shaping of actual experience by environing conditions, but that they also recognize in the concrete what surroundings are conducive to having experiences that lead to growth. Above all, they should know how to utilize the surroundings, physical and social, that exist so as to extract from them all that they have to contribute to building up experiences that are worthwhile. (Dewey, 1938:15)

It is thus clear that, for Dewey, education is achieved through experience; that experience consists of enriching communication with others and interaction with the (internal and external) environment.

Therefore, when considering a formal educational environment, such an environment should be especially geared towards the kind of vital interaction as described hitherto. Dewey is quite clear that (as mentioned in the discussion of Peter's critique in I) it is not so much what is taught but how it is taught that is important. Is it taught in a vitally communicative way, a way that is actually relevant to the life of the student? In focusing on making what is taught vital, and thereby truly communicative, those foundational dispositions are brought to bear through dealing with problems that are relevant for the student's lived experience. In qualification, this is in direct relation to the education of children, not adults, with the distinction understood as described in the section on immaturity.

If the most important elements of education, especially for the immature, are the development of these thinking and feeling dispositions, which happens through the medium of the social environment, then education is essentially indirect. It happens 1) as a product of communication and 2) through an environment. An education is not 'given' by a teacher, and 'got' by a student; rather, it is experienced through vital communication. Furthermore, this

model of ‘indirect education’ contradicts ‘the banking model of education’ made explicit by Freire. Students are not vessels to be filled with knowledge, but people in need of growth. Freire (1921) famously argued that to treat students in this way was to disempower them, and to thereby remove the vitality from the educative experience. It alienated the students from the work. Their ‘education’ was the means by which they were oppressed. If, instead, the educational environment is incapable of this focus on vital communication, or worse, actively seeks to prohibit it, then it can be considered an-educational, or even, as in the second case, anti-educational.

V) Reconstruction, Interest, and Experience

> *The sound principle that the objectives of learning are in the future and its immediate materials are in present experience can be carried into effect only in the degree that present experience is stretched, as it were, backward. It can expand into the future only as it is also enlarged to take in the past. (Dewey, 1938:34)*

In this final section, I conclude with Dewey's thoughts on the manner in which education takes place. To begin with, consider the following quotation, on the nature of an aim. In it, Dewey highlights that an aim requires some notion of the ends, or the purpose of the activity. He also, typically, highlights the importance of the individual as invested in the activity, as being *interested* in the activity.

> To talk about an educational aim when approximately each act of a pupil is dictated by the teacher, when the only order in the sequence of his acts is that which comes from the assignment of lessons and the giving of directions by another, is to talk nonsense. It is equally fatal to an aim to permit capricious or discontinuous action in the name of spontaneous self-expression. An aim implies an orderly and ordered activity, one in which the order consists in the progressive completing of a process. Given an activity having a time span and cumulative growth within the time succession, an aim means foresight in advance of the end or possible termination. (Dewey, 1916:229)

The principle of selective social evolution is at work in the above, with Dewey walking the line between 'the child' and 'the curriculum'. In order to make sense of this, a brief survey of Dewey's conceptual analysis of the term 'goal' is necessary. Essentially, Dewey breaks down the concept of a goal into 'aims', 'means' and 'ends'. The aim is the guiding principle of the goal, the means are the actions perpetuated in or to achieve the goal, and the ends are the outcome of the goal. If the goal as a whole is 'selective social evolution', then the aim is the more concrete ideas about how this might be achieved, including ideas around which curricula to use, what the environment should be - in short, ideas around how the education should happen; educational guiding principles.

The means are simply the carrying out of these aims. It is very important that the aims are flexible enough to allow for the necessary variation that is inevitable with the varying character of students. Finally, the ends are the achievement of the aims, through the means. This might be recognised with a certificate, but the certificate is certainly not the end. The end is what that education means for the student, and should be in line with the ultimate goal, selective social evolution. All three of these facets of a goal *are* the goal. They cannot be understood in isolation, but nor can the idea of a 'goal' make sense without them. In order to achieve the goal of selective social evolution, various aims must guide flexible means, in order to achieve certain ends. The aim is the development of the individual child; the means include the use of various pedagogical techniques of vital communication and experience (to be detailed briefly later in this chapter) and the use of curricula; while the ends are the achievement of the aims: the development of a child into an adult, capable of selective social evolution. Achieving a certificate may well be *an* end of the educational process of growth, but it is not *the* end of Deweyan education.

Dewey continues from this point, detailing three criteria for an aim to be an aim (conceptually speaking) (Dewey, 1916; 234). These include that (a) the aim must be based in an outgrowth of the environment at hand, logically attached to the experience of those participating in a lived sense; (b) aims are not set in stone, and act as a guide to action. They must therefore be flexible, to deal with the myriad of problems that will arise (that may never have been thought of before the action has begun). This criterion further reflects Dewey's concern with grounding education in reality, his pragmatism; and lastly (c) aims must represent a freeing of activities. Aims must be relevant to the situation at hand, flexible, and must not be confused with simply the achievement of the ends of the aim, because they are both elements of a goal, and have different roles to play. Ends are essentially an *achievement* of the goal, while the aims are ideas that guide the activity in order to achieve these.

These principles applied to education require certain commitments from educators. For instance, "an educational aim must be founded upon the intrinsic activities and needs (including original instincts and acquired habits) of the given individual to be educated" (Dewey, 1916:243). Education needs to be tailored to the individual being educated. This has the profound consequence that for Dewey, education and the means by which it is delivered, cannot be mass-produced. Dewey writes,

> The fallacy consists in supposing that we can begin with ready-made subject matter of arithmetic, or geography, or whatever, irrespective of some direct personal experience of a situation. (Dewey, 1916:343)

Furthermore, educational aims must sustain valuable activities, and not only aim at some ends, certification for instance. The certificate as an end is fine, as long as it is understood that the means of achieving it is actually what might be considered 'the education' and is in fact more valuable than the ends, the certificate. This is the goal that millions of South African high school students strive for, a matric pass with university entrance. But has the means of their education actually ever mattered to them? The entire focus of their education has been on the ends, the certificate, and so I doubt it. Dewey claims that "in education, the currency of these externally imposed aims is responsible for the emphasis put upon the notion of preparation for a remote future and for rendering the work of both teacher and pupil mechanical and slavish" (Dewey, 1916:249). When the ends become the entirety of the goal, and that goal is the 'perpetration for a remote future' characterised in simply the achievement of a certificate for its own sake, then what has occurred has not been properly educative.

Education as growth and selective social evolution require that education be acknowledged as valuable in its own right. The goal of education may well be a preparation for the remote future, but that aim must then facilitate an organic (for the individual) experience, and if the only emphasis is on ends – the achievement of a certificate for instance, instead of the present moment, the experience, then whatever occurs, even if it is education (because all communication is, if only in an attenuated sense, education) it will be shallow and lack meaning for the individual.

In this section thus far much has been said about the nature of aims, and this would not have been possible without considering briefly the importance of experience and personal salient interest for educational aims to be realised. This said, both of these deserve a moment of deeper reflection. Implied in the need for an aim to be tailored to the individual undergoing an educational experience is the importance of the individual's personal interest in what is going on. Dewey writes disparagingly of interest when

> Interest means to attach some feature of seductiveness to material otherwise indifferent; to secure attention and effort by offering a bribe of pleasure ….

> [Furthermore,] when material has to be made interesting, it signifies that as presented, it lacks connection with purposes and present power: or that if the connection be there, it is not perceived. (Dewey, 1916:284, 286)

This is perhaps the greatest challenge in Dewey's philosophy. How does an educator relate everything they wish to teach to the life of the individual in such a way that it is of actual interest to them? Adults are of course capable of doing this for themselves, but obviously children are not. The answer is that the educator has to have an intimate knowledge of the student's life experience and personality. The educator has to know the student intimately.

> There is incumbent upon the teacher who links education and actual experience together a more serious and a harder business. He must be aware of the potentialities for leading students into new fields which belong to experiences already had, and must use this knowledge as his criterion for selection and arrangement of the conditions that influence their present experience. (Dewey, 1938:33)

For Dewey, education *is* the actual experience and not merely the outcome. This is why Dewey claimed that education is mostly an indirect process. Education is about developing the dispositions of the child, and this happens mostly "without conscious intent, as the young gradually partake of the activities of the various groups to which they may belong" (Dewey 1916:55). Education doesn't only happen in schools; it is a constant act of growth, of reconstruction. Dewey states that

> The ideal of growth results in the conception that education is a constant reorganizing or reconstructing of experience… It is that reconstruction or reorganization of experience which adds to the meaning of experience, and which increases ability to direct the course of subsequent experience. (Dewey 1916:171)

There is a fundamental connection, for Dewey, between experience and the educative process. This connection leads to the inevitable conclusion that for schooling to be truly educative, it needs to facilitate a multiplicity of experiences. It is clear that, for Dewey, the school ought to be a reflection of the greater society that it is a part of. It needs to partake in the greater activities and interests of its community, and therefore prepare its students for the greater world that they

are entering. That preparation may well be a *target*, but before someone can hit a target, they must experience the hardships of practice and dedication, the thrill of success and the disappointment of failure. The goal is merely a guiding principle, to facilitate the experience, which is the catalyst for growth through reconstruction.

But what precisely does Dewey mean by 'reconstruction'? As highlighted above, the notion of reconstruction needs to be understood in the light of experience. What is it that we are reconstructing in this light? We are reconstructing ourselves, our views of the world, our knowledge and beliefs; we are constantly learning through our experience and thereby growing. Dewey explains that experience is essentially both an active and a passive process. Actively, in that we do things; we experience; we *do* experiences. Passively, in that experiences happen to us. *Reconstruction happens when we draw the connections between these two forms of experience.* This is why an education cannot be 'given' or 'got'. To give an education would be purely passive (from the student's perspective, nothing is required but that they achieve the educational ends stipulated to them; there is no requirement that what is taught in this instance be vital and of interest to the student), while to get one would be purely active (the student must take all initiative and educate themselves, and according to the principle of *immaturity,* adults may well be capable of this, but children are not). But these alone are powerless, and ultimately "the measure of the value of an experience lies in the perception of relationships or continuities to which it leads up" (Dewey 1916:314).

It is for this reason that Dewey denounced rigidity in school experiences. Making children sit still and silent, copy notes and memorise formulae involves essentially passive experiences. Even though the students act in some manner to accomplish these 'goals' they do not draw out the important connections between these two things, let alone manage true interest, as the experience (since it *is* that still) is never related to the child's actual life. Rather, schooling becomes a certain kind of rote activity, one with rules and regulations far removed from the child's life. Is it then any wonder that those children grow up and bemoan the 'education they received', because they 'learnt nothing at school'?

Recently, a musician by the name of *Boyinaband* released a song entitled '#Dontstayinschool'. To date, the song has over 2 million views on YouTube. Here is a sample of the lyrics:

> I wasn't taught how to get a job but I can remember dissecting a frog. I wasn't taught how to pay tax but I know loads about Shakespeare's classics. I was never taught how to vote they devoted that time to defining isotopes. I wasn't taught how to look after my health but mitochondria are the powerhouse of the cell. Never spent a lesson on current events instead I studied The Old American West. I was never taught what laws there are. I was never taught what laws there are. Let me repeat – I was not taught the laws for the country I live in, but I know how Henry the VIII killed his women. Divorced beheaded died, divorced beheaded survived glad that's in my head instead of financial advice... (Boyinaband, 2014)

Dewey echoes these sentiments when he writes, more than three-quarters of a century earlier:

> Almost everyone has had occasion to look back upon his school days and wonder what has become of the knowledge he was supposed to have amassed during his years of schooling, and why it is that the technical skills he acquired have to be learned over again in changed form in order to stand him in good stead. (Dewey, 1938:19)

The schooling experiences of this person were never in any way related for them to the greater world they are a part of. They were simply things they had to do, transmitted to them with expectations of success. Reconstruction never happened, because the experiences were irrelevant to the life experience of the student. There was never any organic interest in the things taught, mostly because the connections, the relevance, of the passive and active experiences of the student were never made clear. Indeed, that this *is* the educational process was never made clear to them.

> Now "preparation" is a treacherous idea. In a certain sense every experience should do something to prepare a person for later experiences of a deeper and more expansive quality. That is the very meaning of growth, continuity, reconstruction of experience. But it is a mistake to suppose that the mere acquisition of a certain amount of arithmetic, geography, history, etc., which is taught and studied because it may be useful at some time in the future, has this effect, and it is a mistake to suppose that acquisition of skills in reading and figuring will automatically

> constitute preparation for their right and effective use under conditions very unlike those in which they were acquired. (Dewey, 1938:19)

It is not the case that learning Biology, English literature, History, and the other traditional subjects is pointless, but when these are pursued for the sake of preparation for an arbitrary future and extraneous goals, pursued for entrance into university, or future work, and not done for the present, because they matter *now*, then they cannot have educational value: reconstruction will not have occurred.

VI) Quality Education and Reflective Thinking

Reflective thoughts always… "Aim at knowledge, at belief about facts or in truths" (Dewey, 1997:1)

Before I consider a number of possible problems with the Deweyan theory thus far discussed, it is important to attempt to deal with the question of quality education. In particular, what is quality education? How is it different from education in general, and from poor education specifically? In order to do so, I draw upon the principles of education I have already dealt with in this section, but also make use of another text by Dewey, *How We Think* (1997). I do so in order to make the argument that the sixth principle of education, *reflective thinking*, allows for a cyclical view of education that is commensurable with a conception of 'quality education' as a relative continuum instead of a fixed metric. Furthermore, I consider five cognitive capabilities that are developed by education according to Gagné in order to supplement my definition of 'quality education'. It is important to deal with the question of quality education as the MOOCean project claims that is seeks to deliver not just education, but quality education, to everyone everywhere.

In this chapter I have thus far described the principles necessary for that activity to be called an education. These principles are not simple, nor are they easily quantified. They are in some ways deliberately general, so that they can be used to consider the process of education in its entirety, for all people. It is a process of selective social evolution, which happens organically as a process of growth when acting upon the positive force of immaturity inherent in every person. It happens as much through the direct efforts of teachers as it does on the basis of the lived experience of the environment and the communication had with peers. It is a kind of reconstruction, a constant transformation of the self that is best facilitated through genuine interest.

'Quality' understood within the context of the principles of education should therefore be understood as a continuum: *The education is better or worse depending on how well it manages to allow for all the necessary conditions of a Deweyan conception of education to be present.* This is a relative definition of 'quality' education. Quality needs to be understood *within* the context of the activity taking place. Rather than comparing the quality of the education to external metrics or other educational experiences, the quality of the education needs to be

understood as an interpretation of the degree to which the principles of education as discussed thus far, have been successfully applied and achieved in the current educational experience in question. Education, from a Deweyan perspective, is about enriching lives. Therefore, in asking 'how well does the formal act of education (schooling) facilitate the various principles of education thus far described?', we are really asking, 'what is the *quality* of the education?' Rather than simple metrics that claim that students who 'pass' with a certain grade, or some other such consideration, have been achieved and therefore a 'quality education' has been had, this approach to the notion of 'quality' education asks about the lived experience of the student. While simple metrics are tempting, and can be powerful, they tend to describe basic outcomes, such as the proficiency with which a student can perform various activities. What is more important however is, for instance, finding ways to make content interesting and relevant; in successfully nurturing the positive force for growth; and achieving abilities of reflective thinking to name a few of the principles I have discussed.

As a Deweyan education is primarily about the experience, and the way in which it transforms us and allows us to transform the world around us, while at the same time maintaining and developing what has come before (lived history), metrics, no matter how sophisticated, will fail to capture the potency of what a 'quality education' actually entails for any given person. For instance, while we may claim (dubiously) that we can describe 'love' as a series of chemical reactions, can we do the same regarding 'being in love'? And if we can, does that equation, that metric, really tell us anything of value? In the same sense, education, as an experience, needs to be understood in terms of an experiential continuum.

Granted, said metrics do have their place in educational discourse. The reader will note that a discussion of these kinds of metrics has been conspicuously missing from the discussion of education up until this point. Perhaps a simple way to consider the difference between that kind of approach and the one thus far described is to think about strategy and tactics. A strategy is about big consideration: the plan. Tactics on the other hand are the ways in which the plan might be best achieved. Dewey's conception of education as encompassed by the principles of education is strategic. Before considering which metrics an educationalist would want to employ, that educationalist would need to consider which tactics they wish to employ. Once they have done so, the correct metrics would be apparent. My focus has been on a conceptual analysis of the (strategic) approach that Dewey takes when considering education. A discussion

of the (tactical) metrics based consideration is unfortunately beyond the brief of the present thesis.

As I am not dealing with the concept of 'quality' from a metrics based perspective 'quality education' needs to be interpreted on a case to case basis*, as the degree to which an educative experience succeeds in achieving and taking into consideration the various principles of a Dewyan education* which I have thus far described. There is no one way of achieving quality education and there is no single standard or metric, nor even a combination of standards and metrics, that can be appealed to in order to claim that a quality education has been achieved. Rather, quality education, from a Deweyan perspective, is as varied as are people. There are guiding principles to help us achieve a higher quality of education, but these are not quantitative, and they need to be interpreted by educationalists as they see fit. They exist as a framework, a strategy. The day to day process of teaching and learning (the tactics) will be, of necessity, extremely diverse. This is because every educative experience will be different; the people taking part are different; and the socio-cultural-economic-linguistic backgrounds of the students vary as widely as the schooling systems the students take part in do.

But what are the results of this educative process, and how does considering the notion of 'quality' as a continuum help us? The outcome of education, as stated earlier, is the ability and propensity to seek out further education. But implicit in this is the notion of rationality. A developed ability to reason critically, creatively and compassionately is the true outcome of education, stated in its most general form. In *How We Think* (1997) Dewey lays out a number of possible ways in which we can understand the notion of rationality. Dewey refers to the ideal form of rationality as "reflective thinking" (Dewey, 1997:3). Here the notion of quality education has its natural aim. If the means has already been described, the outcome, a developed sense of rationality, has not been dealt with in any real sense other than perhaps incidentally. A quality education as a continuum would take into account *not only* the degree to which the principles of education thus far described succeed, *but also* the degree to which that process succeeds in beginning anew.

Dewey defines reflective thinking as an

> active, persistent, and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it, and the further conclusions to which it tends, constitutes reflective thought. (Dewey, 1997:2)

He states furthermore that

> Reflection involves not simply a sequence of ideas, but a consequence—a consecutive ordering in such a way that each determines the next as its proper outcome, while each in turn leans back on its predecessors. The successive portions of the reflective thought grow out of one another and support one another; they do not come and go in a medley. Each phase is a step from something to something—technically speaking, it is a term of thought. Each term leaves a deposit which is utilized in the next term. The stream or flow becomes a train, chain, or thread. (Dewey, 1997:1)

This description of thinking as a continual process is perfectly commensurable with Dewey's ideas about education being a kind of reconstruction, and helps to explain how that reconstruction occurs. Reconstruction is a process that utilises, first and foremost, what already exists (in the mind of a person). It utilises new information, but that information is always processed in the context of the pre-existing knowledge a person has. The acceptance of the causal nature of our thinking; that thoughts lead to conclusions/consequences and that these then become the basis for new thoughts and so on, is important to understanding specifically how reconstruction happens. It is also important to note that this process is deliberate and active. Reflective thinking, introspection, requires an effort of will. It does not happen of its own accord: people need to be educated to do so

Dewey highlights the difference between reflective and unreflective thought eloquently when he writes that

> In some cases, a belief is accepted with slight or almost no attempt to state the grounds that support it. In other cases, the ground or basis for a belief is deliberately sought and its adequacy to support the belief examined… such (unreflective) thoughts grow up unconsciously and without reference to the attainment of correct belief. They are picked up—we know not how. From obscure sources and by unnoticed channels they insinuate themselves into acceptance and become unconsciously a part of our mental furniture. Tradition, instruction, imitation—all of which depend upon authority in some form, or appeal to our own advantage, or fall in with a strong passion—are responsible for them.

> Such thoughts are prejudices, that is, prejudgments, not judgments proper that rest upon a survey of evidence. (Dewey, 1997:2)

Here Dewey alludes to the power of indirect education and the environment in influencing how we learn about so many of the things that come to justify our beliefs and knowledge. He also highlights the difference between reflective and unreflective thinking. While both utilise the same basic reasoning process (utilising pre-existing 'knowledge' to justify higher order claims) a reflective thinker takes the time and effort to consider those initial premises; the foundation of their belief. The distinction, then, is not in our ability to reason, but in the degree of introspection *actively taken*. What grounds do we have for the claims we make; the things we say; what we believe to be true? What are the justifications for the way we behave? Dewey articulates this as follows:

> Reflection thus implies that something is believed in (or disbelieved in), not on its own direct account, but through something else which stands as witness, evidence, proof, voucher, warrant; that is, as ground of belief. (Dewey, 1997:3)

Quality education from a Deweyan perspective takes into account both the means and the end of an educative process. The final principle of education can be understood as the outcome of a Deweyan education: *reflective thinking.* Furthermore, this outcome of the initial process of education is also important as a mechanism in achieving Dewey's claim that the outcome of education is the propensity to seek out further education. The five initial principles of education result in the sixth, to varying degrees (depending on the individual). However, it is the nature of reflective thinking, in seeking further justification, that we turn to further education. In this way, reflective thinking is what starts the cycle once again, facilitating the continuation of the cycle of the educative process. This process also mirrors Dewey's principle of Growth, as all life grows, and all life is cyclical. As natural beings, it therefore makes sense that the process by which we learn more about the world, education, follows a similar cyclical pattern.

That education is therefore a cyclical process from a Deweyan perspective has important implications with regard to the idea of quality understood as a continuum, as opposed to a metric. It means that striving for a quality education from an early age, indeed, from the first moment of education, is important. As we continually reconstruct ourselves, we do take in new information from the outside world but that information is interpreted in the context of our own

circumstances. If all of the six principles of education have not been taken into account from an early age, the process of our education can be stunted. However, this stunting need not be permanent. Because education is cyclical, individuals will have many opportunities to continue to grow throughout their lives. This said, some individuals will gain an advantage over others, based on the quality of their initial education, which means that early childhood education is some of the most important that we ever receive.

A quality education from a Deweyan perspective would therefore become a cyclical, self-sustaining process, done by individuals for their own betterment, and would take into account the six principles of education thus far explicated. Quality needs to be understood as spectrum or continuum, and not as a definitive standard. However, something needs to be said about the capabilities that will be developed through the educative process, as they will give us a stronger idea of what the outcome of 'quality education' might be. These capabilities have been eloquently articulated by Gagné in his *The Conditions of Learning* (1970). Gagné has been highly influential as an Instructional Designer, and has helped shape the way in which modern andragogy (in particular) is done. That said, his thought is certainly applicable to pedagogy as well.

I have, at various points of this thesis, talked about the essential 'critical, creative and caring (compassionate)' capabilities that education needs to develop. The five principles I am about to discuss flesh these out and make them amenable to theoretical use. There are five general kinds of 'intellectual' or perhaps 'cognitive' capabilities. These include declarative knowledge; procedural knowledge; motor skills; attitudes and; cognitive strategies. What follows is a brief discussion of each and a synthesis of this thought with the previous work from Dewey to create a comprehensive definition of 'quality education'.

Gagné writes that verbal information,

> Also known as declarative knowledge, verbal information is 'knowing that'. Facts, names or labels, and organized bodies of knowledge are subcategories of verbal information. We know that a person has acquired verbal information when he or she is able to *state, tell, or describe something*… 'performance' of verbal information does not require the learner to apply or change the information, simply to recall it. (Gagné, 1970: 31)

Declarative knowledge is therefore the simplest form of knowledge, the kind that we can acquire by rote. It can certainly be useful but it does not require higher order thinking to achieve. That said, it is one of the capabilities that needs to be developed through the educative process.

> Also known as procedural knowledge, intellectual skills are the capabilities that allow us to interact with the environment using symbols. Intellectual skills can be characterized as 'knowing how'. A central attribute of intellectual-skill learning is that the capabilities are generalised to novel situations. (Gagné, 1970: 32)

Procedural knowledge, which might be phrased as 'common sense' is therefore an intellectual skill which gives us the ability to extend our knowledge base to new situations and to draw reasonable conclusions. A simple way to understand it is to consider Artificial Intelligence (AI). Thus far AI research has been unable to replicate procedural knowledge in computers. AI research has so far been able to create machines that are capable of performing specific tasks faster and more thoroughly than any human can. However, these AI systems cannot take the 'knowledge' they have gained and apply it to seemingly unconnected fields of thought. While common sense may be common, it isn't particularly simple to explain or understand, but a quality education must develop a strong capability for procedural knowledge for it to be a quality education.

The next kind of cognitive capability that needs to be developed by an education are motor skills. "These capabilities require physical movements that are executed with accuracy, smoothness, and timing" (Gagné, 1970: 33). These motor skills are learnt by example and honed through practice.

The penultimate cognitive capacities are the various attitudes we develop towards people, institutions and activities. They are important because they form the basis for our interactions with the aforementioned people, institutions and activities, and can determine the course that these interactions run. Gagné writes that attitudes

> are generally believed to be composed of cognitive (belief), affective (emotional), and behavioural (action) components. While attitudes have traditionally been thought of as internal states rather than overt behaviours, we emphasize the behavioural

> component, or the tendency of attitudes to influence overt behaviour choices. It is through direct observation that we know that attitudes exist, and in the workplace we are concerned mostly with behaviour rather than internal states. (Gagné, 1970: 33)

Attitudes, which are so important for how we interact with others, are developed through our experiences during our education. Alongside the cyclical nature of a Deweyan education this capability offers us a strong justification for making certain that formative education, in particular, is a positive experience for the child.

The final cognitive capability I will briefly consider is what Gagné terms 'cognitive strategies'.

> Also called strategic knowledge, (they) enable individuals to manage their own thinking and learning processes. In a sense, cognitive strategies are more general that the other four categories of learned capabilities, because they can be used to regulate learning of the other four types. (Gagné, 1970: 34)

This final cognitive capability represents the highest order of knowledge and thinking, and it provides a perfect explanation for how and why "the result of the educative process is a capacity for further education" (Dewey, 1916:150). Cognitive strategies allow us to have self-discipline or to cope in high stress situations. They are too varied and complex to give an exhaustive account of, and I do not believe that such an account would be especially useful at this juncture. What is important at this point is to understand that the development of cognitive strategies is an especially important element of a quality education, as they will govern our thinking and actions and provide the basis for the achievement of further education.

In sum, an educative process must achieve all six of the principles of education discussed in this chapter, as well as develop the five cognitive capabilities as articulated by Gagné. The degree to which these are achieved successfully, and in comparison, to the rest of the population, locally and globally, determines whether or not said education can be described as a 'quality education'. It is worth noting, simply, that *an education* as described above is enough to meet such metrics as the capabilities approach to social justice requires. There are still too many people with no education, let alone quality education, for the issue of quality to be of too much concern. Indeed, if every person on earth could have an education such as I have described in this thesis, the world would be a considerably more hospitable place.

VII) Considering Various Objections

Before I continue with the concluding remarks of this chapter, it is worth considering a number of possible problems, in order to test the veracity of that theory before it is used to critique the MOOCean project. These objections including claims from Berkson (1958) that Dewey's theory was both overly naturalistic and individualistic, which causes Dewey to "slight moral values, since values are derived from historical traditions and communal living and not from the individual" (Miller, 1958; 133) and a short response to this, utilising the work of Miller (1958) as a pivot to do so. I also consider Simich and Tilman's (1978) article *Radicalism vs. Liberalism: C. Wright Mills's Critique of John Dewey's Ideas*, in which Mills makes similar claims to those of Berkson. Finally, I consider another possible objection of my own design; that in being so general, these principles of education leave too much room for re-interpretation and fail to guide us properly in terms of the concrete work of schooling: the best practice of teaching and learning (pedagogy and andragogy).

Berkson utilised a dualist metaphysics in critiquing Dewey, which forms the two prongs of his attack. In approaching education from the position that I have called 'selective social evolution', Berkson claims that Dewey is a 'reductionist', that he reduces human development to a biological level and, in doing so, ignores the complex manner in which the social and natural parts of any human being combine and are influenced by the educational process. My own arguments, made in sections I-IV of this chapter, have dealt with the significant and complex relationship of the 'natural and social' elements of human nature. As I have shown, for Dewey a large amount of how education takes place is through indirect education, through communication. As the social environment is so pivotal in the development of a person, the principle of indirect education alone is enough to cast serious doubt on the notion that Dewey reduces education to a biological level.

Indeed, that his notion of Growth is tempered by the social - what I have termed the 'formative power of immaturity' - lends credence to the nuanced vison of Dewey in considering both the natural and the social. Finally, the very idea of education being a kind of selective *social evolution* shows Berkson's rhetoric to be fallacious. Granted, Dewey never referred to his philosophy of education by this name, but as I argue in section I of this chapter, it is perhaps the most succinct way *to do so*. Indeed, if Dewey was trying to reduce human nature down to the biological, what need would we have of education, which is after all a social activity? As

I put it earlier, education's purpose is to reproduce and reform *society* simultaneously. While Dewey was influenced by the theory of evolution, this is hardly detrimental, as that theory has proven to be one of the most influential and powerful theories in modern science. If anything, Dewey is more interested in the social element of human nature, as so many of the principles I have outlined above attest to. This leads to Berkson's secondary critique of Dewey: that the social element of his philosophy is overly individualistic.

Berkson's claims in this sense are that the individual component of his philosophy is "dominant" while the social is "recessive" (Berkson, 1958). Berkson makes this claim while considering Dewey's concept of the social. He claims that Dewey's concept of the social is limited to "interactions between individuals and does not deal with community and ideals" (Miller, 1958: 135). There are two strains of attack here that need to be dealt with: that Dewey's concept of the social fails to consider the community at large; and that he fails to deal with moral development as such. I think it is important to dispel the notion that, because Dewey emphasises communication so strongly in his philosophy, he is therefore an 'individualist'. As I point out in section IV, communication is only one, albeit essential, part of *indirect education*. The other part is the *environment*, not simply the physical space, but the social space as well. We do not communicate with each other in a vacuum; we communicate within a social space, and this social environment is one of the most important elements of an education. Therefore, the idea that Dewey does not take the social community into account when considering interactions between individuals is simply incorrect and an unfair charge. Miller writes, in further substantiation of this refutation, that:

> We know that Dewey considered the concept of interaction, or communication as he preferred to call it, a cardinal principle of his philosophy, and a major theme in his writings on education is the significance of communication *in society* (italics added for emphasis) and in the teaching-learning process (Ibid.)

In an attempt to show how important, the social is for moral development of moral character, Berkson (1958) writes that:

> The development of moral character requires more than social participation; it demands involvement in the problems of the community, and identification with its destiny.

However, Dewey is fully aware of this. This explains statements as the following:

> On one hand, there is the contrast between the immaturity of the new-born members of the group -- its future sole representatives -- and the maturity of the adult members who possess the knowledge and customs of the group. On the other hand, there is the necessity that these immature members be not merely physically preserved in adequate numbers, but that they be initiated into the interests, purposes, information, skill, and practices of the mature members: otherwise the group will cease its characteristic life. (Dewey, 1916:11)

In this passage, while not specifically promulgating any ideology, Dewey considers the importance of selective social evolution. Implicit within this is the importance of the moral character of its members. Dewey is more than aware of the role that the community plays in education and, more specifically, of the development of moral character through the social environment. But unlike Berkson, Dewey is not interested in prescribing specific ideals that ought to be followed and inculcated in students. His philosophy is sufficiently general to leave room for interpretation by different cultures, with different norms, while at the same time it is sufficiently specific to yield guiding principles for a comprehensive educational programme. Therefore, Berkson's charge is a strawman argument. He holds Dewey against specific ideals and argues that Dewey does not deal with them. But Dewey's philosophy is not made to pander to a specific world view. Furthermore, if an educationalist wanted to teach "humanistic" values within a Deweyan framework, they would be able to.

Similarly, Mills, who is analysed by Simich and Tilman in their article *Radicalism vs. Liberalism: C. Wright Mills' Critique of John Dewey's Ideas*, argues that Dewey reduces the social to the natural and, in so doing, fails to consider the emergent power of the social.

> Mills believed that Dewey's explanation of human behaviour was overly biological because his sequence of adjustment was a simplistic, mechanical one of organism-environment-adaptation. Mills contended that urbanized existence was virtually independent of biological factors, for explanation of action is cultural, not biological. In Dewey, on the other hand, physical characteristics were set against mental characteristics while inadequate attention was given to cultural factors. Mills argued

> that Dewey's psychology thus failed to take adequate account of the fact that in the evolution of cultural conduct from organic behaviour there is genuine novelty and irreducible qualitative differentiation. Thus, behavioural patterns are culturally fostered and cannot be reduced to biology and physiology. (Simich & Tilman, 1978: 415)

Simply put, in being overly biological in his metaphors and basic theory, Dewey purportedly fails to realise that social behaviour 'cannot be reduced to biology and physiology'. This is a strong argument and in some ways parallels Berkson's claims that Dewey's conception of human nature reduces the natural because of his evolutionary and naturalistic position. As with Berkson, I think that this argument is neither applicable nor fair. Dewey clearly attempts to bring the social and the biological together, but never in a reductive fashion. In always considering both, he does not pretend that they are the same thing. Nor would Dewey deny that human culture is quite unique, in its combination of defining traits. Many higher order mammals have community, family, culture, tool use, and perhaps even language. Therefore, while human culture is unique and has developed outside of the 'natural world', many animals have, to varying degrees, displayed many of the characteristics of 'culture' and they have developed these completely in the natural world. If culture can be developed by varying species independently of one another (for instance dolphin vs human society, language and culture) then the claim that Dewey is a 'reductionist' is simply mistaken. Instead, Dewey might be a visionary for his time: able to see the interlinking ways in which the social and the natural parts of human nature support and complement each other and were developing not despite, but because of each other.

The final argument I would like to consider is one I have already alluded to and which takes a different stance. So far, I have considered conceptual critiques of Dewey's assumptions about human nature from Berkson and Mills. Now I would like to consider a simpler, yet equally important critique of Dewey's philosophy: that it is too general and therefore difficult to apply. This is an important issue as Dewey's philosophy is supposed to be pragmatic and therefore applicable and useful in any number of ways.

It might be pointed out that Dewey does not give us concrete direction on what to teach children or adults and when to do so, that the 'nitty-gritty' of education, the day to day work of a teacher, considerations of curricula and extra-curricular activities, have been conspicuously absent from

this thesis. The problem with this charge is the underlying misunderstanding of the purpose of the philosophy of education and this thesis. This thesis, and Dewey's philosophy, provides a strategic outline for quality education: it is concerned with different considerations than the specifics of any given educational practice. In this way it can be used to consider MOOCean andragogy, as well as any number of schooling practices, precisely because of this general nature. The six general principles of education, with their various sub points, provide a framework in which the standard considerations of teaching and learning, in any number of socio-economic and varied environments, may occur. This makes these principles both useful and powerful. In the final chapter of this thesis I make use of these principles in critiquing the MOOCean mission statement, but the same framework could be used in similar ways to critique any number of educational practices.

Dewey's philosophy is therefore neither a reduction to the biological, nor is it overly individualistic. It is also not overly simple. I have argued that it is nuanced and powerful, and can provide a framework (as I have sought to demonstrate in this thesis) for the critique of numerous educational practices, in this case specifically of the MOOCean project of free quality education for everyone everywhere.

VIII) Concluding Remarks

In this thesis, I attempt to synthesise, in five sections, a number of key themes that run through Dewey's philosophy of education into educational criteria with which I critique MOOCs in the final section of this dissertation. In this final section I summarise these (in the same spirit and style that Dewey himself wrote in *Democracy and Education*) to help the reader understand them collectively. This is important because Dewey's philosophy was a unified theory of education, not simply a collection of varying criteria, as might appear to be the case because of the methodology I have used.

I began with what I termed *selective social evolution*. This is the idea that education is the means by which societies change and perpetuate themselves. The next principle was *Growth*, that all education is an organic reconstruction of experience. Following this, I detailed Dewey's ideas around the formative positive power of *immaturity*. This led naturally into a final discussion around the implications of his thought regarding *indirect education*, which happens through the *environment*, *communication*, *reconstruction*, *interest* and *experience.*

Dewey's philosophy of education is pragmatic. He seeks to make education in practice an activity that has the true power not only to perpetuate current societal norms, values and working conditions, but also to change these. It is for this reason that I use his theory as a benchmark with which to critique the latest trend in education, Massive Open Online Courses.

All this said, there are a few issues of contention in Dewey's philosophy that need to be addressed, all of which fall under the general heading of 'practical'. These include the problem that, because he begins his discussion of education with the general nature of education, what I have termed *selective social evolution*, his framework is simply too general. If education encompasses all of these various activities, what is *not* education? But this is a false critique of Dewey. He does not advocate a philosophy of 'anything goes' in education. He realises that part of the process of selective social evolution is the need to induct the immature into a given society. Therefore, he accepts that careful decisions ought to be made regarding the selection of 'learning material'.

> It is a ground for legitimate criticism, however, when the ongoing movement of progressive education fails to recognize that the problem of selection and organization - subject matter for study and learning is fundamental. Improvisation that takes advantage of special occasions prevents teaching and learning from being stereotyped and dead. But the basic material of study cannot be picked up in a cursory manner. Occasions that are not and cannot be foreseen are bound to arise wherever there is intellectual freedom. They should be utilized. But there is a decided difference between using them in the development of a continuing line of activity and trusting to them to provide the chief material of learning. (Dewey, 1938:34)

His challenge to the educator is to make every activity matter for the individual. This leads, of course, the next point of critique of his thought. How, the critic might ask, should the educator make the many, and often very difficult, concepts dealt with in traditional schooling, relevant to the individual child? The answer is that educators need to be especially ingenious, knowledgeable, and empathetic. They must know their students intimately and utilise every available resource to make the experience, environment and communication as enriching as possible, in order to help foster genuine interest.

3) A Deweyan Critique of MOOCs

In the previous chapters I have outlined the andragogical strategies of both the online and blended approaches taken by MOOCs, and synthesised a Deweyan theoretical framework with which to critique it. In this chapter, I attempt that critique. In doing so, I ask, 'Do MOOCs conform to the Deweyan criteria which I have synthesised?'

In terms of their respective visions, I have found only similarities between the MOOC founders and Dewey regarding their ultimate goal: to create an experience based approach to education. But can their means, their andragogy, deliver on their vision? This is a simple question, with a complex answer. I begin and end this chapter with a focus on simply the vision – selective social evolution. In Khan, there are many references to the value education adds to the lives of people, that education isn't actually about "graduation rates and test scores. It's about what those things mean to the outcome of human lives. It's about potential realized or squandered, dignity enhanced or denied." (Khan, 2012:3) This focus on the impact of education on lives and society is an echoing of Dewey's overarching thought on the transformative and sustaining power of education. Koller also argues for a greater purpose of education, and its implications for the lived experience of individuals by referring to

> Plutarch, who said that 'The mind is not a vessel that needs filling, but wood that needs igniting'. And maybe we should spend less time at universities filling our students' minds with content by lecturing at them, and more time igniting their creativity, their imagination and their problem-solving skills by actually talking with them. (Koller, 2012)

Koller goes further in this line of reasoning, drawing out three implications for what free quality education for everyone could do. These include: education as a fundamental human right "where anyone around the world with the *ability and the motivation* could get the skills that they need to make a better life for themselves, their families and their communities" (ibid.; italics added); it could enable lifelong learning; and it could enable a wave of innovation that would inevitably drive progress. In other words, education achieves dignity, allows for betterment, and results in progress. But can MOOC education, in both its online and blended forms, achieve this vision? The investigation is too nuanced to give a simple one-line answer,

and as this is Dewey's ultimate project, I hope that the entire section to follow will serve as that answer. That said, I do offer a succinct summary of my findings at the very end of this chapter, in my *concluding remarks*.

The next principle is growth, and it is closely related to the first principle, selective social evolution, and the following principle, immaturity. Indeed, it acts as a bridging concept between the two and beyond, and the other principles of experience, communication, environment, and reconstruction are simply logical extensions of this simple albeit core principle. The most essential element of this principle is that education is not a procedure; it is not something defined by its goals; so much as it is a cumulative process. Consider two plants planted in two different pots. One is planted in moist, nutrient rich soil, the other in something altogether drier and less fertile. The latter plant may survive, but to do so will be difficult, and its quality of life will be greatly diminished. It will probably be stunted and never reach its full plant potential. Conversely, the first plant, with on-going care will thrive and grow to its maximum potential. Education as the mechanism for growth, growth of the individual, growth of society, is what this principle is about.

Importantly, this view of growth is not so extreme as to imagine that everything a person needs can be self-realized if only the perfect environment is provided. This is because although people grow, we are not plants. We are social beings, far more complex in our potential for growth-needs than mere plants. Because of these needs, such as an induction into the greater societies we are born into, schooling is necessary, and therefore certain procedural elements such as curricula. These are to be understood as a tool, a means, to facilitate growth, and not as ends in themselves.

The Khan Academy is a good starting point for this discussion, because in practice, it is completely procedural. It represents an entire mathematical curriculum, built in a procedural form to fit the standard American K12 syllabus. This is in some sense ironic, as Khan himself claims to be "anti-one-size-fits-all-education" (Khan 2012:227), while simultaneously creating an entire system that represents just this. Indeed, the premise of a website that can provide an entire mathematics curriculum for preschool to university for the *entire world's population* has implicit in it this very principle. How can it be otherwise when the idea is to create an equal educational solution for everyone everywhere? In scaling mathematics lessons to this degree, the process has become procedural: the only purpose to completing one element is to allow

students to move on to the next element, and so the cycle continues. In its purely online form it is procedural in nature. By the end of the process, all students will have 'mastered' the content. For Khan, this means achieving 100% consistently. He writes, "80 or 90% is okay, but I wanted them to work on things until they could get ten right answers in a row" (Khan 2012:137). Khan claims that education needs to be revolutionised, brought into closer harmony with the way we actually live and learn, and yet he fails to depart from the traditional learning material. The greater problem here, however, is not that he fails to depart from traditional educational materials, but rather how they must of necessity be used. I am referring to the role (or lack thereof) of the educator in a MOOCean context. Yet, before I address this issue, another problem with the very idea of mastery learning needs to be raised and dealt with. In doing so, certain problems, perhaps inherent in the MOOCean format itself, are made implicit.

In Chapter 1, I made mention of Hirst's theory of forms of knowledge in order to raise issue with the idea of mastery learning. My issue is not that we ought to strive for mastery in learning, although this is perhaps a most worthwhile goal. Rather, the problem is that the criteria of mastery are difficult to define when considering ethical, linguistic, and artistic knowledge. In fact, I would go so far as to say that if 'mastery' is the only indication of success, then these fields of thought are doomed from the onset. No master philosopher can espouse a theory of ethics that cannot be contested (as the entire history of philosophy bears witness to); no musician is so good that they have no need to stop practicing; no essayist so brilliant that we might give them 100%. But in all these cases, it is certainly worth noting that mastery is an ideal worth striving for (even when, like an ideal, it can never be achieved). Nevertheless, there is certainly a practical difference between an ideal and a goal.

Pedagogically speaking, the implications are drastic. From the mathematical perspective, mastery learning as a goal allows us to quantify student progress, while from an ethical/artistic/linguistic perspective, mastery learning as an ideal serve's to sustain the endeavour; driving us to greater heights. Herein lies the problem, for surely mathematics can be driven by the same ideal, making it a 'better' subject? While ethics, art and language mastery cannot truly be achieved, let alone quantified, mathematics *can* (through the assessment of correct answers - while the former forms of knowledge lack the truth criterion), thus making it a superior subject. But this conclusion is absurd. While mathematics is certainly a worthwhile educational pursuit, with many 'real world' applications, it cannot be said to be more important than ethics (which teaches human beings how to live and how to coexist with each other), or

linguistics (which helps us to express ourselves), or art (which allows us to celebrate, mourn, protest, comment, and so much more). Therefore, if mathematics is not a 'superior' form of knowledge to aesthetics, ethics and linguistics, then the criteria by which we reached this conclusion must be false. Mastery learning as an ideal ought to inspire us, but as a criterion of success it is misleading and can only be applied within a small range of the existing forms of knowledge.

Perhaps one of the greatest problems for MOOCean education, from a Deweyan perspective, is the absence of an immediate, *present* teacher. Dewey articulates this importance at many points in his writing, but perhaps he does so best in *Experience and Education*, when he writes about the relationship of members in community to social control.

> The primary source of social control resides in the very nature of the work done as a social enterprise in which all individuals have an opportunity to contribute and to which all feel a responsibility. Most children are naturally "sociable." Isolation is even more irksome to them than to adults. A genuine community life has its ground in this natural sociability. But community life does not organize itself in an enduring way purely spontaneously. It requires thought and planning ahead. *The educator is responsible for a knowledge of individuals and for a knowledge of subject-matter that will enable activity ties to be selected which lend themselves to social organization,* an organization in which all individuals have an opportunity to contribute something, and in which the activities in which all participate are the chief carrier of control… The principle that development of experience comes about through interaction means that education is essentially a social process. This quality is realized in the degree in which individuals form a community group. *It is absurd to exclude the teacher from membership in the group. As the most mature member of the group he has a peculiar responsibility for the conduct of the interactions and intercommunications which are the very life of the group as a community*. (Dewey, 1938:22-25; italics added)

Dewey's argument is complex and needs some explanation. Members of groups will hold each other to account, especially when members are *interested* and when they have a genuine stake in the group and its activities. But since young members are immature, they do not know what experiences are best. They must be guided. This is the role of the educator: through a proper

understanding of the criteria of experience (continuity and interaction), educators can select course work and help students through the material. The educator is an intimate and important member of the educational process. While a MOOC like the KA certainly has control over the continuity of the mathematical experience, this is really only true of the *external* element of the interaction that takes place (the external material being their website). But because the Khan Academy cannot *know* its students (it isn't a person or 'cognizer'), it does not and cannot know their personal context, their history, and their understanding; their *internal experience*. This is partially why I argue, in what follows, that because of its essentially andragogic nature, MOOCs are only suitable for adults and cannot thereby fulfil their mandate of equal quality education for everyone everywhere. Without an adult to regulate the content, so that it may be brought into the context of the student's life, the content will remain essentially meaningless, just another exercise to be done. But before I argue this point, there are a few concepts that need to be dealt with first.

A prominent feature of procedural education, according to Dewey, is its reliance on false incentives to help students through the material. The material lacks direct and useful relationships to the world the student inhabits, or at least that relationship has not been made clear. This relates directly to Dewey's principle of *interest*. The MOOC founders have appealed to *gamification* in order to maintain students' interest, but this is precisely a false incentive, one that Dewey argues against. This critique is levelled fairly against both forms of MOOC education and can be employed as a critique of formal education as such.

Although it may constitute an effective psychological strategy, gamification doesn't reward students in anything that matters. Instead it offers bribes by way of positive reinforcement. The true reward of education is the ability for further education; education is valuable for its own sake, and because it facilitates selective social evolution. The personal growth that occurs can have no reward greater than itself; no certificate, badge or level can compete. A further indicator of the procedural nature of education in MOOCean education is the focus on master based learning. This is not to say that this is an inherently bad learning goal. Mastery needs to be understood not in terms of its outcomes, but through the experience of achieving the goal, in accordance with Dewey's thoughts on goals and aims. Because a student is a master of algebra this does not mean he can utilise this knowledge in a meaningful manner. Testable educational outcomes do not equate to the true meaning of mastery: knowledge that is relevant and useful for the individual, which can facilitate selective social evolution.

But this problem, the problem of interest, speaks to a deeper truth in Dewey's thought, one that poses problems for the vision of MOOC education on a fundamental level. In order to produce a system of education that can deliver a free, quality education for everyone everywhere, MOOCs have to rely primarily on their content; their curricula. But education is not about these things primarily. Primarily, education is in and about the *experience of education*.

For MOOCs to deliver on their vision, they must facilitate an exceptional educational experience for every student. The experience is dependent on so many other contingent factors. Billions of the world's population lives below the minimal threshold of capabilities: how can they have a good educational experience when they live in abject poverty, suffer under the yolk of despotic regimes, theocratic tyranny and more lately severe migrant crises engulfing vast swathes of the Middle East, North Africa and Europe? Simply put, experience, unlike information, cannot be mass-produced. It needs to be specifically undergone, *had*, by the individuals involved. According to the principle of *immaturity*, children are incapable of choosing their interests in accordance with educational practice; the work must be *made relevant* for them, and an educator, a person who knows the child, her context and her history, must do this. Children are not simply incomplete or deficient adults, as the MOOCean andragogy suggests. If children were merely incomplete/deficient adults, the MOOCean problems of *interest* would be solved, because adults can make information relevant (interesting) for themselves – they have become capable of further education.

There is a problem with claiming that the central difference between children and adults is the education they receive or have received, and therefore the respective capability to further educate oneself. The implication that if an adult has not received formal education, then they are not fully adult is seemingly nonsensical. Because education goes beyond formal schooling, lack of such formal or institutional education does not imply that the adult in question is uneducated, and so this problem is solved with a broadening of the conception of education.

The one kind of environment MOOCs may claim as under their control are their websites. In the most general sense a virtual space is an environment, and should therefore be eligible to provide the 'right' kind of experience. Dewey makes provision for this when he writes that "a book or a letter may institute a more intimate association between human beings separated thousands of miles from each other than exists between dwellers under the same roof" (Dewey,

1916:16). The problem is that the experience in this instance is personal – between two or more people, a shared understanding, and intimate. But MOOCs offer one-sided communication. Everyone watches the same video; everyone enters into the same one-way communication from the video to oneself. Dewey clarifies this for us, stating,

> Any social arrangement that remains vitally social, or vitally shared, is educative to those who participate in it. Only when it becomes cast in a mould and runs in a routine way does it lose its educative power. (Dewey, 1916: 19)

This is a crucial statement. In researching MOOCs, I have personally interacted with a number of varying techniques. Some, like the Khan Academy, rely heavily on the kind of procedural education described in the quote above. Others are much more interactive, using virtual spaces to create a space for discussion, such as Padlet.com. These spaces allow students to communicate with each other and the lecturers involved in novel, vital ways. This said, the course was made for adults, and so was appropriately andragogic. It is therefore possible to facilitate vital communication and environments, at least for adults, online. But if the experience a MOOC provides is homogeneous and undifferentiated and utilises false incentives to maintain 'interest', such as the Khan Academy, it cannot achieve this.

MOOCs used in a blended fashion might very well 'humanise' the classroom: this would allow for teachers and students to engage in the vital communication and experience that is necessary for Deweyan education. But, as argued earlier, this is contingent upon many other factors outside of the schooling sphere. Schools are part of a greater society, and the children who attend them from a plethora of backgrounds. Therefore, delivering a 'world class education for everyone everywhere' firstly requires an equalling of society as a whole, a bettering of the life conditions of the people who attend the schools, and even with this achieved, it requires exceptional teachers. Too many contingent factors are at play for MOOCs to deliver on their dream through blended education. The same critique is true of online education, and so MOOCs must fall back on the purely online environment. Indeed, Norman et al. (2015) found that MOOCs benefit only the few who don't need them, as opposed to the billions who do. They write:

> A statistical analysis found that individuals from poor countries were indeed in a small minority in this course, but that they were of a similar education level as their

> counterparts in rich countries. This suggests that they were… representative of the advantaged members of their societies. (Norman et al., 2015:156)

Furthermore, and problematically, adults, or maturing children, and *not* 'immature' children best use the virtual space. This is because tools such as Padlet.com (mentioned above) require students to provide knowledge for group consumption and discussion. Students are required to 'go forth' and find information, to research and understand what it is they are researching. Computer, literacy and numeracy skills are required to engage in this kind of format. This is to put the cart before the horse, for these are the very things children are being taught to do at a formative age: they are still immature.

Finally, can the MOOCean project foster reflective thinking? If it cannot, then its goal of quality education is unattainable, which ultimately threatens to render the project pointless. The reader will recall that I argued a good measure of said reflective thinking is in Gagné's well considered theory regarding the various cognitive capabilities that must be developed. In particular I want to focus on attitudes and cognitive strategies. Both constitute challenges for MOOCs, for a number of reasons. Both are created and fostered by the communication and interactions we have with others: our experience of living with others. As I have already argued, MOOCs have no power over the lived environments of their students, and the pseudo-environment of the online space cannot be used as a fully-fledged substitute for the real world.

The MOOCean solution to this problem is to ignore it. Once again, MOOCs place all responsibility for educational outcomes on students. This is a naïve and facile view of the process of education, and takes for granted that the very purpose of education, which is to enable people to be fully capable of further education. Children have a natural sense of curiosity, true, but this is not the same thing as self-discipline (a cognitive strategy) or a passion for learning, say, maths (an attitude). Such cognitive strategies and attitudes need meaningful, deeply rooted educational experiences to develop. These can be achieved in an online environment, but almost certainly not by children or those who have not had the benefit of a 'quality education' to begin with. It is perhaps no wonder, then, that the majority of learners enrolled in MOOCs tend to be the well-educated elite: they already have had the benefit of a quality education that is the prerequisite to seek out the kind of further education that is available through MOOCs.

MOOCs *can* facilitate education for *adults,* who can either a) make the work relevant for themselves or b) engage in courses specifically designed with them (adults) in mind, because they are already mature and therefore capable of further, meaningfully self-directed education. Children are, however, incapable of such measures, and such attempts as have been made by the Khan Academy tend to turn education into a *procedure*, relying heavily on gamification as an incentive for continuation through the work. MOOCs have no choice but to do so, because their courses do not facilitate the vital communication and experience required for the education of the immature. MOOCs are capable of facilitating education for adults, and adults are defined (in a Deweyan sense) as being adults by virtue of their ability, and indeed propensity, for further education. Although MOOCs can facilitate education for adults, and this is nothing to be scoffed at, it does not mean that MOOCs can facilitate education for *everyone*, especially children. This is because the virtual space has certain requirements for engagement: a basic education, including literacy at the very least, as well as the inclination for research based work, let alone certain affordances, such as Internet access. Therefore, MOOCean education may deliver 'free education for *some* people (mostly wealthy, already educated adults) in *some places* (mostly the developed world)' (Norman et al., 2015:155).

4) Conclusion

I have outlined MOOC andragogy, its vision, its often-procedural nature, and its reliance on gamification. MOOC andragogy contradicts the principle of immaturity and experience. MOOC visions are in harmony with Dewey's selective social evolution, but the procedural nature of MOOC education is incompatible with the latter, at least for children. This is primarily because interest, experience and environment cannot be mass-produced, and are instead contingent on the lived experience of individuals.

MOOCs have no control over these important contingent factors, which directly impact on the *quality* of the education undertaken. Therefore, the MOOCean dream of a quality education for everyone everywhere shall remain a dream until the greater social evils that plague global societies are solved. Problematically, many of these problems are best solved through education. We find ourselves within a self-fulfilling prophecy, and so it is no wonder that the MOOCean dream has sprung into existence. Nevertheless, MOOCs cannot deliver on that dream, regardless of good intentions. There is no simple way of solving these problems. What is required, rather, is systemic change that must happen on a local level, through and by the people themselves. The MOOCean dream is admirable, but it suffers a number of arguably insurmountable conceptual and empirical problems. Therefore, MOOCs will remain at best a useful educational resource, but are unlikely ever to deliver on the bold vision they claim as their banner.

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