Distance Learning Will Enable Climate Refugees to Avoid Falling into the Social Risk Trap

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Abstract This chapter describes how distance learning can help climate refugees protect themselves against the social risk that results from restrictions on their right to education. This documentary analysis is predominantly theoretical, and its general aim it to present a documentary corpus to facilitate classification of climate refugees in terms of their ICT competence. The specific aim is to provide keys for the design of educational programs that can closely match the competences of the individual refugee. This is the novelty and originality of this chapter. The refugee has traditionally been treated as an element within a group to which common educational methodologies are applied. This chapter treats each refugee as an individual according to their ICT skills, so each one will require a specific type of education.

Keywords Distance learning · Manifestations of social risk · Climate refugees E-book · Streaming · Moocs

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Introduction

The *climate refugee* does not legally exist (Fernández 2015). This assertion is based on the 1951 Convention Relating to the Status of Refugees, a document that provides the basis for the legal action applicable to refugees but which does not include climate change as possible cause for bestowing refugee status.

Setting aside the limitations of international law, practitioners in sociology, social pedagogy, social education and collective ethics consider these environmental migrants to be a population at social risk, for two reasons: first, these persons do not have their basic needs covered in their country of origin; second, they cannot exercise their social rights (to employment, social protection, housing, education, health and a healthy environment and adequate nutrition…) in the country they abandon as a consequence of climate change (Lebrero Baena and Quicios García 2010).

In Europe, Sweden and Finland in particular have aided refugees but without conferring refugee status (Sola Pardell 2012; Sweden's Immigration Law 2005). Both countries have endeavoured to cover *climate refugees'* basic needs.

Once basic needs are satisfied, the climate refugee can only abandon a state of social risk by being able to exercise the social rights mentioned earlier. Access to education is one of those rights; and if it were not for distance education, the climate refugee would have to give up this right on abandoning the country of origin.

Distance education is a teaching methodology characterized by the mediated didactic dialogue between teachers at one institution and students situated in a different space, enabling the latter to learn independently or in groups (García Aretio 2014). In the 21st century, this mediated dialogue now knows no frontiers as it can be developed through any kind of electronic device connected to a data network, thus facilitating ubiquitous and on-the-move learning (Vázquez-Cano and Sevillano 2015).

The climate refugee can take advantage of the potential of u-learning to continue with the study plan he/she was following in the country of origin even though they are now situated in another country. They only need a smartphone; all the rest can be provided by distance learning institutions (Pascual 2013).

It makes it much easier for the climate refugee who has/her basic needs accounted for, and who can access education, to integrate in the society of the country of origin; they can maintain their network of close contacts from their native country, continue with their study plan from the country of origin, follow the study plan drawn up in the country that has accepted them, develop the habit of continuous and permanent education and cease to be a member of a collective at risk or fall into the social risk trap (Quicios García 2013; Lebrero Baena and Quicios García 2011).

Manifestations of Social Risk Among Climate Refugees

Incessant deterioration of the environment in the country they inhabit, or an imminent climate catastrophe are usually the causes that lead environmental refugees to lose contact with the reference coordinates of their lives.

These situations place the climate refugee under enormous stress, and leave them vulnerable to emotional problems (Navarro-Lashayas 2014), or to the worsening of a psychosocial disturbance particular to the migrant population, known as the Ulysses Syndrome (Achotegui 2012a; Ayala García 2014; Young 2014); stress also arises from culture shock (Oberg 1960), and there is also the phenomenon of acculturation stress (Sánchez and Jaramillo 2014).

All these pathologies have their roots in shattered hopes and an imbalance between expectation and reality. These conditions manifest themselves in organic symptoms that are somatic and range from depression and confusion to anxiety (Achotegui 2012b). All these symptoms can be treated with medication, but these ailments do not improve because they are not illnesses, rather they are symptoms of illnesses. The climate refugee is manifesting in organic symptoms the consequences of conditions of extreme pressure under which they had to leave their places of origin (Sola Pardell 2012).

International law could revise the 1951 Convention Relating to the Status of Refugees. By adding climate change as a cause that impels a migrant to abandon a territory, the displaced migrant who is forced to leave his/her country because of a natural disaster resulting from climate change could then acquire the status of refugee and thus reduce his/her exposure to social risk. If this were to happen, the climate refugee would suffer less from stress by being able to reconnect with their close social contacts through services on digital mobile, or fixed, devices (chats, Skype, WhatsApp, online leisure websites…) (Aparici 2011).

The Relation Between Climate Refugees and ICT

Climate refugees have one characteristic in common. They have all been forced to abandon their countries of origin due to a natural disaster caused by climate change. This collective is formed of people of all ages, social classes, levels of education and technological competence. This heterogeneity thus obliges distance education institutions to accommodate their strategies to the characteristics presented by each individual climate refugee seeking to resume education in their new country of residence.

Climate refugees include students considered to be *pseudo-analogical*, who use ICT following the logic, structure and utility of the educational resources in place before the digitalization of content. Such students are able to design their own study model and professional development model largely ignoring the influence of new

media tools. They are mere consumers of online knowledge (Sevillano García et al. 2016; Aguaded and Sánchez 2013; Villalustre 2013; Khan 2012).

Climate refugees also include digital migrants and students who are network visitors. These are groups of passive users who do not participate in media; they are *old learners*, people who taught themselves from non-digital sources because they have not been able to achieve a sufficient level of multimodal or multimedia literacy (Avello Martínez et al. 2017; González García 2013).

These two collectives are joined by climate refugees who are *new learners*, new millennials, students of the "instant message generation" and the "Net generation", digital natives, digital and technological literates, resident students and media prosumers (García-Ruiz et al. 2014; Ferrés et al. 2012).

These new learners are characterized by being highly adept at multitasking; they do not think in a linear way and their styles of learning are many and varied (OECD 2008). They form part of a generation that thinks and learns interactively (Ramos et al. 2010). They can generate content as individuals, and show greater control and creative capacity than the *old learners.* The *new learners* have a stronger sense of identity and their own attributes (Siemens 2006). They are autonomous and independent in their learning styles, combing through sources and resources in order to find new content that they can mix and match.

The *new learners* design their learning strategies not by searching out specific blocks of data (McLester 2007) but by exploring, consulting and synthesizing knowledge rather than assimilating content from one single source of validated knowledge as represented by a book or a professor expounding at a conference (Dede 2005). Evidently, each type of learner is going to request a different type of e-learning generation, which distance education has to acknowledge and maintain synchronically active. We now analyse each of these types (Cabero 2013).

The Different e-Learning Generations

The first generation of e-learning constitutes adapting printed material to the web format. This is done on Web 1.0, a static, one-direction network managed and maintained by programmers remote from the teacher and student who uses it. Web 1.0 is a network of knowledge and information, a network of documents that is very useful for presenting in a theoretical way the conceptual bases of any discipline. It is also very useful for analogical students, the old learners, climate refugees who use technologies exclusively for e-learning, or for those who only want to learn on their first-generation speed digital mobile devices.

On Web 1.0, students learn from an expositional teaching methodology, in which master classes are given along with material provided by technological companies. The professor continues to be the specialist who transmits the knowledge to the students. This is not attendance-based but mediated, and this web format is ideal for climate refugees regardless of their technological skills. They can keep in contact with people from their own country, acquire essential knowledge about

their host country and can continue learning from the study plan developed in the country they have had to abandon (Huesca González and Agudo 2013).

The second e-learning generation is about finding the best virtual campus (platforms and managers) for learning, while the third generation follows a model supported on collaboration and flexibility. This third generation of e-learning is the one used by climate refugees who are empowered as prosumers, and the aim is for the students to generate knowledge in conjunction with others and access material from different devices. The second and third e-learning generations use Web 2.0, Web 3.0 and even Web 4.0.

Web 2.0 is a learning and communication platform that acts as a meeting place for teachers and students, and for students to communicate among themselves. Its features are collaboration and collective knowledge. Web 2.0 synthesizes the three levels required for knowledge generation: open access to data, the interactive transformation of data into information and creative knowledge collaboration. It includes blogs, RSS, wikis, mashups, tagging, folksonomy and tag clouds.

In Web 2.0, the teacher is the guide who facilitates learning by helping students to discover knowledge. He/she is the person who redirects the learning if the student is unable to obtain that knowledge alone. The teacher does not just transmit knowledge but conducts the generation of the knowledge made by the user on the web.

Web 3.0, or the semantic web, aims to link, integrate and analyse various data sets in order to obtain a new flow of information. On Web 3.0, the teacher is just one more piece in the collaboratively constituted learning jigsaw puzzle. The teacher orients the construction of knowledge, accompanies the student in the production of knowledge and provides the resources needed for its construction. This is the most complex of the webs in use but also the most versatile. Web 3.0 has improved accessibility, mobility, and the potential for simulation, creativity and innovation. This is the web that is responsible for powering globalization (De Castro 2012).

Web 4.0, or the symbiotic web, views the future of the Net as a symbiotic interaction between humans and machines to produce more potent interfaces, such as mind-controlled interfaces. Web 4.0 will be open, intelligent and adaptive in terms of reading digital content. The role of the teacher in Web 4.0 is not yet clearly defined. Web 3.0, the semantic web, and Web 4.0, the symbiotic and ubiquitous web, are interrelated (Pascual 2013).

Climate refugees can include people who have been taught via traditional analogical teaching or e-learning (using technology for learning), m-learning (access to learning services via mobile devices), t-learning (learning interactively via television), or u-learning (learning anywhere and at any time via any type of digital device). U-learning, as a ubiquitous setting, integrates both e-learning and m-learning as the user can access traditional content and more up-to-date content formats via digital mobile devices (Rodrigo and Castro 2013).

U-learning will adapt the materials to the ICT skills of the least competent climate refugees, in other words, to the pseudo-analogical students. This is a basic measure to ensure that no climate refugee is denied the opportunity of receiving an

education via the distance learning methodology. The more competent climate refugees can enrich the material provided by acting as prosumers, or media prosumers, offering the work they have produced to less-skilled students. This action helps fulfil several objectives:

- To consolidate the learning of the material provided
- To learn to transmit the knowledge acquired
- To form a sense of comradeship
- To establish a support network among environmental refugees
- To maintain contact with the territory they were forced to abandon
- To preserve the language, customs and traditions of the country of origin

In short, the objective of distance learning is to prevent the emergence of digital divides among the climate refugees who study using this educational methodology, as well as to establish resilient relationships among them. These two strong points can prevent other social risk situations from arising.

Didactic Material for the Different e-Learning Generations

The e-Book

Distance education classifies the book in print version as auxiliary material, a physical support condemned to extinction since 1971, when Michael Hart conceived of the e-book, the electronic book, the digital book or cyberbook (Vassiliou and Rowley 2008). Since the birth of the e-book, distance education has gradually adapted its information hardware but its didactic strategy determining how information is transmitted is largely unchanged, in other words the e-book is only the electronic version of the printed version. The e-book is the digitalized version of a book that enables it to be viewed on a specific electronic device or in a specific digital format (García Orosa and López García 2016).

The electronic devices used to read e-books are many and various, ranging from table-top computers to the e-reader or e-book reader, as well as the tablet, smartphone, laptop or netbook. All such hardware needs software apps like MOBI, DjVu and others in order for e-book content. The use of this hardware and software have advantages and disadvantages for this type of learning format, the advantages being:

They enable the location of specific data in the texts via the *search* command. This tool optimizes reading time and allows for a selective search for information in the text.

- It enables the reader to make notes and underline text without damaging the document
- It is space-saving
- It saves on paper and ink

- It provides access to other e-books via Internet
- E-books can be acquired by online purchase
- It is less wearing on the eyesight

Disadvantages include potential copyright infringement. It can lead to a new type of digital divide by obliging users to have specific hardware and software to access e-books. There is the initial outlay to purchase the hardware device and the software apps needed for e-reading. Another possible drawback is the damage to the environment caused by the generation of electronic junk in the renewal of devices.

Setting aside the pros and cons of the e-book, in their most basic formats these devices are suitable for those refugees who are pseudo-analogical because as students they only consume knowledge from the Net via first-generation speed digital mobile devices with access to Web 1.0, which is a static, instructional and one-directional web.

In distance education accessed by Web 2.0 and later versions, other types of devices are available, such as the smart book, or digital book. These enable the user to access digital libraries and empower the reader to construct knowledge via the data found in the documents the student can access via the smart book. In other words, the smart book is a door through which the reader can pass in order to access other books to which they are redirected. Using the smart book means the student can create knowledge autonomously, and this type of material is of particular interest to new learners, to prosumers and media prosumers as well as to Web 2.0, 3.0 and 4.0 users.

Those climate refugees with greater ICT competence will be able to generate e-books in their own native languages. Such materials are an important contribution and by this action, distance learning can boost students' capabilities in their native languages. It also enables their culture to be extended to all ICT users, and helps maintain emotional stability and reciprocal affective relationships among persons forced to become environmental refugees due to climate change.

Streaming

Some climate refugees have acquired higher levels of technological expertise and need more enriched material. These refugees can teach themselves by ubiquitous learning and can create knowledge collaboratively. Streaming, or online reading, might be the ideal tool for such people as it means users can profit from the huge quantity of information available to anyone, anywhere and at any time (García-Peñalvo and Seoane Pardo 2015).

Streaming combines the features of ubiquitous learning with the advantages of e-books, and enables the user to produce and disseminate information in such a way that learning becomes permanent and in space and time. Until streaming becomes the predominant learning format, new students can access education via MOOCs (massive open online course).

MOOCs

New learners surf the Net in search of content with an attitude that is collaborative, connective and heterarchical. They search for and then post learning material that is free, in large quantity and totally accessible. MOOCs are the teaching material that fits well with these conditions. According to Vázquez-Cano (2013:48):

> *Current learning scenarios in higher education are oriented towards a new format that combines three basic principles: cost-free, large-scale and ubiquitous. These three principles are evident in MOOCs, and the development of such courses opens up a new concept of education and training. This type of new learning macro-scenarios has its roots in the philosophy of the "open learning movement" based on four fundamental ideas: redistribute, remake, review and reuse.*

MOOCs are courses that offer (Osuna Acedo 2014; Vázquez et al. 2013a, 2013b):

- Massive online access, free for all those interested in a subject that does not require class attendance or official certification for having completed the course.
- Open and free access. To do a MOOC, the student does not need to have prior qualifications certifying a certain level of knowledge of the subject.
- Learning that takes place entirely online. This channel of communication crosses all barriers of space and time.
- Synchronous and asynchronous interaction between teachers and students or among the students themselves via chats, forums, videoconferences…
- No certificate for having done the course, neither does it charge fees. The learning action is assessed and accredited as knowledge acquired.
- Designed with an emphasis on the audiovisual. Written texts are only used as support material.
- Activities which are programmed, planned, documented, sequenced, tutor-assessed and certified.
- A variety of methodologies such as autonomous, collaborative and participative learning.
- Material that is free and which can be openly accessed.
- Minimal teacher intervention.

The teacher develops a different task for each MOOC modality and for each of its phases. At one point, the teacher could adopt the role of leader, or connector, depending on the type of student he/she is dealing with. So, the role of the teacher determines whether the MOOC is classified as xMOOC or cMOOC (Cabero Almenara et al. 2014).

The MOOCs in which teachers take on a leadership role are xMOOCs, and are focused mainly on pseudo-analogical students and old learners. Here the teacher continues to transmit knowledge in a one-directional way. These xMOOCs pursue the philosophy of Web 1.0 and the first-generation e-books. The logic behind xMOOC teaching is that the student carries out activities proposed by the teacher in virtual scenarios. Nothing more. The student does not produce knowledge in collaboration with other students (Moya López 2014).

The xMOOCs respond to a schematic that is "one to many", or at most "one to one". They offer content via platforms on which students can view videos and post exercises they have completed. These are then assessed by course colleagues, and correction is sometimes but not always overseen by the teacher. In xMOOCs, if exams are set, they are in multiple-choice format, with the items chosen according to the content of the course videos and the practical work carried out by the students in the e-exercises proposed by the teacher (Zapata-Ros 2015).

The advantages of xMOOCs are that they try to provide a personalized form of learning by allowing each student to progress at his/her own pace. They generate learning groups in which each colleague learns from another, and they correct each other's work under teacher supervision. These courses develop technological or mediated competences (Bartolomé-Pina and Steffens 2015).

On the other hand, cMOOCs, which are connectivist in nature, are more oriented to new learners, prosumers and media prosumers. Here, all students produce knowledge in a horizontal way under the schematic of "many to many" and "many to one". In other words, this type of MOOC is similar to the way learning takes place on the social networks and in personal learning settings. They develop a type of collaborative learning based on contact and the interaction of all the course participants. The role of the teacher is to construct the learning community and to be just one more piece in the collaborative jigsaw who participates in the co-creation of learning that is collegiate in style. MOOCs are basic for the social construction of learning acquired in virtual settings (Chiappe-Laverde et al. 2015).

Not all MOOCs fit into these two rigid categories, and there are those that overlap both. For example tMOOCs, or eclectic MOOCs, are a version of MOOCs that specialize in the resolution of different types of tasks and activities that increase in complexity and which allow the student to advance on the course, or not, depending on the progress achieved (Drake et al. 2015).

Other types of MOOC cover up to eight different modalities (Torres and Gago 2014):

- TransferMOOCs. These courses previously existed in different MOOC formats.
- MadeMOOCs are more innovative than xMOOCs and cMOOCs. MadeMOOCs make effective use of video and interactive material, which are well produced and of a superior quality to that available on older MOOCs.
- SynchMOOCs are courses with fixed start and end dates, which would seem to contradict the early philosophy of this learning modality.
- AdaptativeMOOCs. These courses provide personalized learning experiences based on dynamic assessment and the use of huge quantities of data gathered on the courses. They represent the MOOCs' learning analytics version.
- GroupMOOCs are courses that focus on the collaboration that takes place between small groups.
- ConnectivistMOOCs are courses that emphasise the connection that can be established within a network of participants.
- MiniMOOCs. These courses are much more limited in scope than traditional MOOC courses.

Conole (2013) started with 12 dimensions to classify MOOCs into an indeterminate number of categories depending on the dimensions considered. These 12 dimensions are: entry level requirement, scale of participation (massification), use of multimedia, use of communication, extent of collaboration with other participants, type of learning (centred on the needs of the student or, teacher-focused and more structured), level of the quality guarantee, promotion of auto-reflexive processes, level of assessment, formal/informal nature, autonomy and diversity.

Regardless of the categories into which they fall, MOOCs are endowed with both strengths and weaknesses. MOOCs' educational strengths are: the adaptability of methodologies to the characteristics of the online society, the redefinition of roles, the use of assessment strategies that confer an active role on students, flexibility and adaptability of the academic courses on offer, cooperation between teachers and students on the MOOC, open access to a wide range of learning that is international in scope and the development of technological tools to support the teaching-learning process (Valverde Berrocoso 2014).

The educational weaknesses evident in MOOCs are (Valverde Berrocoso 2014): the preponderance of teaching methodologies based on outmoded educational theories; the presentation of "educational innovations" that are nothing of the kind; the standardization of knowledge, that is, applying the same content and activities to all students; the lack of a universal design for learning, in other words, the absence of differentiated educational attention; a lack of knowledge of the development and evolution of e-learning; the devaluation of the teaching function in the teaching-learning processes, namely in assessment and tutoring; the partial and self-interested perspective of the "open education" concept; the predominance of economic considerations over pedagogical experimentation and research in education; the requirement that students have a certain level of digital competence and they are, to a greater extent, independent learners.

As with all the educational instruments that endure over time, it is evident that the advantages outweigh the weaknesses, which enables them to remain relevant and in active progression.

MOOCs are the most versatile distance-learning tool for climate refugees, and this is evident in the number of MOOCs built for refugees. The Kiron University, a German online non-profit university, invites refugees to access their online courses from anywhere in the world free of charge. It does not require refugees to present proof of academic qualifications, as it is well aware of the problems refugees have in getting hold of such documentation.

> "Kiron University, or "the international university for refugees", has some of the most internationally eminent professors on its roster, thanks to its MOOCs. Refugee students can start university courses even before they obtain legal status in Germany. The reality of the new technologies and the emergence of the collaborative consumer in the world of education put them within reach of a whole series of master classes from universities such as Harvard, Stanford or Yale.
>
> …/…In their first year, the students can try out material to see which course they want to study. In the second year, they must choose between one of the five degree courses on offer,

> and in the third and final year the students attend classes at one of the 15 partner universities (in Germany and abroad) in order to complete their degrees.
>
> …/…The founders' long-term aim is to enable refugees to have access to university degree courses. It is estimated that there are around eight million young refugees worldwide". (El País 2015).

A second example of MOOCs aimed specifically at refugees can be found in work carried out by psychologist Barbara Moser-Mercer, of the University of Geneva. This professor has used MOOCs to educate refugees residing in camps in Kenya and Somalia, and successfully adapted the MOOC format to conditions on the ground. With Internet access almost impossible, she took with her course material, videos and exams downloaded onto pen drives in order to be able to replicate courses on the few computers available at United Nations departments in the camps (Moreno 2014).

Another use of MOOCs for refugees can be seen on virtual platforms such as Coursera, edX and Kiron, which offer MOOCs on Setting Up a Business, Programing and Commercial Activity, through "MOOC Camps" aimed at 60 countries worldwide such as the Democratic Republic of the Congo, Kenya, Lebanon and Jordan, countries that host large numbers of refugees (Martínez 2016).

As can be seen, MOOCs are the most versatile distance-learning tool for protecting climate refugees from the social risk inherent in not being able to exercise their right to education. MOOCs can provide education to anyone with a mobile device anywhere in the world.

Conclusion

Distance education is the ideal methodology for enabling climate refugees to avoid slipping into the social risk trap, as they will be able to exercise their right to access education and no longer have their educational needs unmet. The great advantage of distance education is, first, its capacity to adapt its learning materials to the technological competences of each student; second, it allows students to learn at their own pace and to follow their own learning styles; third, it opens up a range of educational possibilities that match the aspirations of each and every user and their motivation to educate themselves through u-learning.

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