# AN EXPLORATORY STUDY OF EMOTIONAL AFFORDANCE OF A MASSIVE OPEN ONLINE COURSE

*Jeremy C.Y. Cheng [jeremycheng@cuhk.edu.hk], The Chinese University of Hong Kong, Shatin, N.T., Hong Kong [www.cuhk.edu.hk]*

## Abstract

This exploratory study examines emotional affordance of a massive open online course (MOOC). Postings in a discussion forum of a MOOC in computer science are analysed following a research design informed by virtual ethnography. Emotional affordance is investigated, focusing on non-achievement emotions which are not directly linked to achievement activities or outcomes. The study identifies two non-achievement emotions in the MOOC. First, altruistic emotion evolves with the collaborative learning community and possibly compensates for teachers' minimal emotional intervention in a large, diverse class. Second, intergenerational emotional resonance is observed and this bears a key implication on managing age diversity for the future MOOCs.

**Keywords**: Emotional Affordance; MOOC; Non-achievement Emotion; Altruistic Emotion; Intergenerational Emotional Resonance

## Introduction

The role of emotion in online learning has attracted attention in the postmodern era (Koutropoulos et al., 2012; Zembylas, 2008; Zembylas & Vrasidas, 2004). The emergence of massive open online courses (MOOCs) has the potential to transform higher education by opening its door, theoretically, to all people with internet access (Dua, 2013). Little has been known about how the MOOCs afford emotions of a large number of students from different backgrounds in an online learning environment (OLE). This article investigates emotions in MOOCs through the lens of affordance. Emotional affordance of MOOCs is defined as properties which facilitate or inhibit an emotion-related process or behaviour as perceived by its users (Schutte et al., 2008).

The article first reviews literature in affordance and emotion in OLEs. Postings in a discussion forum of a MOOC in computer science offered by edX[1] are analysed following a research design informed by virtual ethnography. Emotional affordance of the MOOC is investigated, focusing on non-achievement emotions which are not directly linked to achievement activities or outcomes. Affordance of non-achievement emotions is discussed to paint a more complete picture of the emotional influence on teaching and learning in the MOOC.

The article contributes to educational theories and practices in several ways. First, it uses the theory of affordance to examine how emotions are afforded over a full semester, allowing observations of a wider range of non-achievement emotions in the MOOC. Second, it identifies altruistic emotions which express the desire and the behaviour to help other participants unconditionally. Altruistic emotion appears to be an emergent property of the MOOC as a space to co-construct knowledge and emotion by participants, which compensate for teachers' minimal intervention in participants' learning processes. Finally, intergenerational emotional resonance is identified as a phenomenon with participants coming from a wide age spectrum. A truly globalised MOOC has to be designed so that it can cater for this age diversity.


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## Emotional Affordance in Online Learning Environments

### *Affordance*

Gibson (1979) defined affordance of the environment as 'what it offers the animal, what it provides or furnishes, either for good or ill…' (p.127). Via affordance, Gibson (1979) attempted to bridge the gap between subjectivity and objectivity, and the physical and the psychical. In educational contexts, affordance is used to describe relationships between learners, teachers, and properties of an educational intervention (Zembylas & Vrasidas, 2004). Learning is 'distributed in some form between the technology, the learner and the context and there is nothing inherent in technology that automatically guarantees learning.' (John & Sutherland, 2005, p.407) In other words, a technology will not automatically afford specific learning outcomes.

Emotional affordance pertains to how emotion-related processes or behaviour of a user are elicited (or suppressed), expressed (or inhibited), perceived, and managed. The emotion can be self-directed or others-directed, towards specific academic tasks or the learning environment (Wosnitza & Volet, 2005). The affordance as a property of the learning environment is itself neutral but the actual emotional outcomes can be positive or negative, intended or unintended, depending on the learner characteristics and the learning context.

### *Emotion in OLEs*

Pekrun (2006) defined emotion as 'multi-component, coordinated processes of psychological subsystems including affective, cognitive, motivational, expressive, and peripheral physiological processes' (p.316). Emotion is highly context dependent and situated in nature (Graesser & D'Mello, 2012). The control-value theory of achievement emotions by Pekrun (2006) suggested that self-efficacy of participants in controlling learning outcomes, their perceived relevance of instruction, and their perceived value of learning tasks would influence arousal of achievement emotions in a face-to-face setting. Based on Pekrun's (2006) theory, Marchand and Guitierrez (2012) investigated whether these factors hold true in an OLE. In their multi-group path analyses, self-efficacy and perceived value of learning tasks remained robust predictors of achievement emotions across the online and the face-to-face settings. Yet perceived relevance of instruction was only able to predict negative but not positive achievement emotions amongst online learners, suggesting that an alternate mechanism might build positive emotions such as hope in the OLE (Marchand & Guitierrez, 2012).

The control-value theory of achievement emotions has, however, not considered the influence of non-achievement emotions which form an integral part of the learning experiences. These emotions are related to the non-academic or social side in the learning processes. For instance, pleasure in helping others in an online community may not directly improve academic results but might reinforce group membership (Terras & Rasmay, 2012). Being perceived as an in-group member may induce different learning incentives or strategies. Investigating non-achievement emotions in MOOC might thus provide a more complete understanding of the learning dynamics in the MOOC as a connectivist learning platform where interactions amongst participants are the pillar of knowledge creation (Koutropoulos et al., 2012).


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The theory of distance education by Holmberg (1989) was one of the earliest attempts to consider emotional affordance in OLEs. His theory was based on empathy, which might promote participants' motivation to learn and improve the learning outcomes. Holmberg (2003) further argued that such feelings of empathy would be strengthened by a more conversational approach of course design and delivery, allowing a 'friendly mediated interaction between students, tutors, counsellors, and other staff in the supporting organization' (p.82). Holmberg's theory focused more on the role of the representatives from the supporting organisations (i.e., the course providers) in creating a positive feeling of empathy and belonging. In MOOCs, however, such representatives might play a different, if not reduced, role given that a large number of participants might require attention. Instead, communication between participants might have a more powerful influence on the creation of empathy in MOOCs.

Garrison, Anderson, and Archer (2000) developed a community of inquiry (CoI) framework to examine collaborative learning in higher education. The framework could also be applied in online learning (Garrison & Arbaugh, 2007). Social, cognitive, and teaching presences are the three major elements in the CoI framework (Garrison et al., 2000). Social presence refers to the ability to project one's social and emotional self. Cognitive presence involves the ability of the user to construct meaning on the subject of inquiry. Teaching presence is the 'design, facilitation, and direction of cognitive and social processes for the purpose of realizing…learning outcomes.' (Garrison & Arbaugh, 2007, p.163) At a high level of social presence, creating a sense of puzzlement and directing instruction to foster discussion and meaning sharing would enhance the educational experience (Garrison & Arbaugh, 2007).

Although video technology has become more mature, most communications in the OLEs have still been in the text format. Understanding the textual nature of emotional expressions in the OLEs, Zembylas and Vrasidas (2004) theorized 'emotion as performative' where discourse analysis 'requires us to focus not only on what emotional utterances *mean*, but also on what they *do*' (p.110). Such a contextual understanding is easier within a small, intact group. As the class size grows and participant diversity increases, it may challenge how the MOOCs afford the mutual interpretation of meanings amongst participants, driving action from the emotional appeal.

Online learning has been regarded as a means of meeting students' diverse needs (Terras & Ramsay, 2012). These should include addressing individual differences in emotion which students encounter in the learning processes. MOOCs offer a set of environmental conditions including massive participation, open enrolment and attrition, and online delivery, which are different from traditional classroom learning. However, the mass production of cognitive experiences via MOOCs may not synchronise with the personalised emotional engagement in the learning processes. The reliance on textual communication heightens the need for emotional affordance in the MOOC. Establishing inter-subjectivity amongst a larger pool of students may need more effort and time if not different methods. How MOOCs afford massive but personalised, emotion-based learning experiences deserve our attention. Given these, two research questions guide this study:

1. How is emotion afforded by the MOOC?
2. What kinds of non-achievement emotions can the MOOC afford?


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## Methodology and methods

The overarching aim of this study was to explore the nature of emotional affordance of the MOOC. The research design was informed by virtual ethnography as a methodology to investigate socio-cultural events in online communities where the researcher 'participates, records, and narrates social events and opinions as they happen' (Mann, 2006, p.440). As a passive participant observer, I followed Mann's procedure to analyse the interaction transcripts in the discussion board of the MOOC. I unobtrusively compiled a primary record of the postings and began to look for interaction patterns, roles of participants and teachers, and event sequences. Dialogues were collected as 'data' from the discussion board to 'democratize the research' (Mann, 2006, p.441). I tried to discover and use systems of human relations to explain the findings.

The study was built on a computer science course[2] offered by edX, which lasted for 14 weeks in 2012. The course targeted participants with limited programming background. It was estimated to enrol over 12,000 participants and about 6,600 participants attempted the final examination (i.e., an attrition rate of around 45%). Students could pace their own learning, although they must submit the assignments (known as problem sets or psets) and sit for the examinations (two mid-terms and one final examination) by the specified time[3]. Finger exercises associated with key learning points were offered to allow students chances to practise.

The technology used in the course was asynchronous in nature. The platform included the following tools:

- **Courseware**: Small chunks of pre-recorded videos tailored for online delivery[4] were uploaded. Underneath each video or the assignment, an icon was linked to the discussion board.
- **Course Info**: A platform for staff to announce administrative issues to students.
- **Discussion**:[5] A platform where students can post written messages or graphics. The messages could cover a specific lecture or problem set or relate to the overall course arrangements.
- **Wiki**: A learning space where students posted learning resources such as course notes, Python syntax[6], and additional resources.
- **Progress**: This recorded students' scores in all assessments so that students could monitor their own progress through the course.

Only postings in the discussion board were analysed. Postings in another collaborative learning space, the wiki, were not examined as the contents were heavily technical, focusing on computer programming and with little hint of emotional expressions. To identify non-achievement emotions, I reviewed postings related to lectures and problem sets in Weeks 1, 2, 7, 8, 13, 14 and the course end period. This sampling was purposive, covering sessions delivered by three different lecturers in the course. Two weeks of postings by each lecturer were examined to avoid opportunistic bias. The periods also represented the start, the middle, and the end of the course. This provided a necessary understanding of the emotion as the course progressed.

I re-read all transcripts to identify repeated expressions of non-achievement emotions. Highly refined themes were drawn if the non-achievement emotions were presented in at least three threads. For the non-achievement emotions reported, at least ten replies were observed in each thread. This showed that the non-achievement emotions were extracted from active discussions shared by various participants instead of from isolated discussions. Dialogues were selected as 'data' if they could fully reflect the emotions. To strengthen the validity of the argument, two


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external raters who were doctoral candidates in education were consulted and they agreed that the selected dialogues largely converged to the identified non-achievement emotions.

To give an overview of the emotions afforded in the MOOC, forum postings of two selected lectures in each of the above weeks were analysed. This narrowing allowed gathering of frequency data in a MOOC course with an overwhelming number of postings. The selected lectures contained videos of a similar length of about 10 minutes. As no problem set was assigned in Weeks 13 and 14, to maintain a fair comparison between different course phases, postings related to the problem sets were excluded in this general analysis. Emotional items were analysed in three main dimensions: (a) the emotional component as classified by Pekrun (2006) the item carried (i.e., affective, cognitive, motivational, expressive, and peripheral physiological), (b) the emotional outcome (i.e., positive versus negative), and (c) the nature of emotion (i.e., achievement versus non-achievement oriented). In case of uncertainty, the external raters would first independently make a judgment. If their judgments were different, they would negotiate the final classification. The items would be discarded in case a consensus could not be reached between the two raters.

The analysis of the interaction transcripts in the board allows a non-intrusive way to understand emotion in the learning processes (Wosnitza & Volet, 2005). The current analysis has however several limitations. First, no public announcement was made on my role as a researcher and informed consent was not acquired in the use of data originally not for research purposes. To minimise the impact, great care was taken to ensure the anonymity of the participants and all identifying information was removed (Esposito, 2012). I also did not contribute to postings that might stir others' extreme emotions. While the postings were made only available to registered participants, those who posted a message would not be able to know the identities of all people in the course. The unconditional openness to unknown participants might mitigate the need for informed consent (e.g., Koutropoulos et al., 2012). Second, as the primary investigator, I could not fully escape from the observer bias, potentially falling prey to the halo effect (Mann, 2006). Third, issues of social desirability applied where extreme emotion expressions out of the social norms might not be afforded (Wosnitza & Volet, 2005, p.453).

## Data and analysis

The discussion board afforded textual emotional expressions. It afforded postings in most languages but the vast majority of the postings were made in English[7]. The asynchronous platform allowed participants to express their emotions when they wanted to. All emotional expressions were public and recorded. Participants could think before drafting and publishing their responses. The authoring participants could not know whether other online participants were responding and whether other participants had read the message. Inter-subjectivity or inter-textuality could not be observed unless other participants responded by a post. Contributions were made anonymously for participating individuals. Participants theoretically needed to wait for responses especially if the target participants came from an opposite time zone.

A total of 2,752 items were recorded, with almost 40% of the items coming from the middle of the course. About 30% of the items were recorded both at the beginning and towards the end of the course. The items covered the affective, cognitive, motivational, and expressive components of emotion (see Table 1 for the distribution of these emotional components and Table 2 for examples of each component). Over half of the items carried an expressive component, indicating that the participants expressed their emotions by using emoticons to mimic their facial expressions or by using words to mimic their voices. Over one-fifth of the items contracted the use of affective vocabulary which stated one's feeling. The peripheral physiological component of emotion, controlled by the autonomic nervous system responsible for unconscious bodily


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responses (such as sweating), could neither be observed nor inferred, pointing to a potential restriction in the multi-modality affordance in the MOOC.

Table 1: Item distribution according to the emotional component represented

| **Emotional Component** | **Course Progress (As a percentage of the total number of classified items)** | | | |
|---|---|---|---|---|
| | **Weeks 1 & 2 Start** | **Weeks 7 & 8 Middle** | **Weeks 13 & 14 End** | **Total*** |
| Affective | 264 (9.61%) | 245 (8.92%) | 116 (4.22%) | 625 (22.75%) |
| Cognitive | 81 (2.95%) | 140 (5.10%) | 110 (4.00%) | 331 (12.05%) |
| Motivational | 67 (2.44%) | 78 (2.84%) | 83 (3.02%) | 228 (8.30%) |
| Expressive | 397 (14.45%) | 613 (22.32%) | 553 (20.13%) | 1,563 (56.90%) |
| Total | 809 (29.45%) | 1,076 (39.17%) | 862 (31.38%) | 2,747 (100.00%) |

* 5 items were discarded.

Table 2: Examples of the afforded emotional components

| **Emotional Component** | **Definition** | **Examples (bold words indicating the relevant phrases)** |
|---|---|---|
| Affective | Description of feelings | Subject: **I feel stupid** This thread is closed.<br>Student A: I totally thought it was asking the probability of picking 3 balls of the same color in any order…Duh! |
| Cognitive | Recognition of psychological status | Subject: **Very difficult time** started for me...<br>Student B: I got ZERO from this lecture... What is need of that, why to use, where to use? Why should I learn it... :(<br>B: BBb |
| Motivational | Willingness to participate | Subject: Quick classes<br>Student C: We have to learn to program with classes fast and precise or **we are in trouble**, right?<br>[sic: other student responses removed]<br>Student D: If this is indeed the reasoning, **'fail as early as possible' may really demotivate a few students**...:O) |
| Expressive | Direct expression of the emotion | Subject: Funny note (**hahaha**)<br>Student E: Reducing it down to some really larger sequence of primitive operations, this is going to be a serious pain in some parts of the anatomy.<br>Student F: I am really enjoying this professor so far, I laughed at this statement as well…<br>Student G: **haha**. me too :) its funny! **:D** |

Both positive and negative emotions were involved (see Table 3). Positive emotions (about 72% of the items) were expressed more often than negative emotions (about 28% of the items). While this might speak of the positive learning experience of the participants, it might also point to the possibility that the MOOC platform could have a reduced affordance for negative emotions.


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Table 3: Item distribution according to the emotional outcomes

| Emotional Outcome | Course Progress (As a percentage of the total number of classified items) | | | |
|---|---|---|---|---|
| | Weeks 1 & 2 Start | Weeks 7 & 8 Middle | Weeks 13 & 14 End | Total* |
| Positive | 586 (21.36%) | 701 (25.55%) | 694 (25.29%) | 1,981 (72.19%) |
| Negative | 223 (8.13%) | 374 (13.63%) | 166 (6.05%) | 763 (27.81%) |
| Total | 809 (29.48%) | 1,075 (39.18%) | 860 (31.34%) | 2,744 (100.00%) |

* Eight items were discarded.

Slightly more items were associated with non-achievement emotions (about 53%) than achievement emotions (about 47%). Non-achievement emotions appeared more frequently at the beginning of the course and they were more for the purpose of socialisation (see Table 4). Achievement emotions became more salient as the course continued and various assessments were launched. Other than socialisation, two major non-achievement emotions were identified, namely (a) altruistic emotion and (b) intergenerational emotion, following an extended search for repeated themes. These non-achievement emotions played a vital role in the learning journey of participants, which are discussed in details in the *Discussion* section.

Table 4: Item distribution according to the emotional orientation

| Emotional Orientation | Course Progress (As a percentage of the total number of classified items) | | | |
|---|---|---|---|---|
| | Weeks 1 & 2 Start | Weeks 7 & 8 Middle | Weeks 13 & 14 End | Total* |
| Achievement | 186 (6.78%) | 634 (23.12%) | 466 (16.99%) | 1,286 (46.90%) |
| Non-achievement | 621 (22.65%) | 440 (16.05%) | 395 (14.41%) | 1,456 (53.10%) |
| Total | 807 (29.43%) | 1,074 (39.17%) | 861 (31.40%) | 2,742 (100.00%) |

* Ten items were discarded.

## Discussion

### *Emotional affordance of the MOOC*

A rich portfolio of emotions was identified in the discussion postings. Participants posted their 'emotion talk' (Zembylas, 2008) where they made a specific intent to talk about their emotions related to their MOOC experience or the subject. While positive, expressive emotions represented a major emotional type in this MOOC, emotions were dynamic and evolved with the course. Behind the frequency statistics, emotions were deepened and shared as the participants built rapport facing the stiff learning curve together. At the very beginning, postings were relatively social in nature, making self-introduction and getting to know who was in the group. Many postings were also related to administrative issues such as video downloads or subtitle problems. Non-achievement emotions were more frequent in this phase, accelerating the socialisation process amongst participants. As the course moved on, participants needed to complete various assessments and the postings became more technical in nature. Long strings of Python syntax occurred; requests for code checking appeared more often. The learning space gradually became more shared, with knowledge created by participants in the problem-solving process. Achievement emotions became more salient. All these echoed with the development model of a learning community (Salmon, 2004). These evolving dimensions are summarized in Table 5.


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Table 5: Evolving emotions and relevant dimensions

| **Dimension** | **Course Progress** | | |
|---|---|---|---|
| | **Start** | **Middle** | **End** |
| Emotions | Swallow; single; individual | ⟷ | Deep; multiple; shared |
| Content | Socialisation; Administrative enquiries | ⟷ | High-order thinking; Technical issues |
| Learning space | Individual | ⟷ | Shared |

Part of the emotional affordance of the discussion board was described by one of the course-end postings:

> *"…In my opinion the forum is one of the most valuable 'tools' of this course, with prompt responses and reactions to the all the doubts and questions posted. I could feel the shared social pleasure that David Ascher talked about. Thanks a lot to all those great contributors for the amazing job done here…"*

The 'social pleasure' related to learning Python in a collaborative learning community (Wosnitza & Volet, 2005). The board afforded creation of such a community; learners co-constructed knowledge using Python as a shared programming language. They shared common learning tasks and the affiliated emotions. Going through the puzzles together, they also derived a deep level of satisfaction from the communal understanding. Mastery of Python became a social identity. The discussion board also provided a chance to revitalize social presence of participants after watching the asynchronous videos by the lecturers (Borup et al., 2012). The board became a psychological artefact (Vygotsky, 1978) which mediated both knowledge construction and students' social presence. The board afforded creation and distribution of knowledge and emotion in a connectivist manner.

While both positive and negative emotions were observed, extreme negative emotions appeared to be smothered. Only one very negative message was recorded in all the postings analysed:

Subject: I give up!!!! I am stuck to death in this problem set....I am dropping out, I feel I am not making progress

Student H: Yes! I was fooled when they stated this was an entry level course....Entry level for undergraduate/freshmen students in computer science or computer engineering...This is not python for dummies...The staff is not providing inputs of great help...This is the last message I got from them...The rudeness is certainly scrappable. [sic: a couple of following messages were deleted.]

Student J: I feel the same…I somehow lost my momentum. But for the first 4 PS I was always passing before the deadline and even before the extended deadline. The midterm exam was also discouraging. :("

The 'last message' Student H referred to was a personal email. The first channel for expressing dissatisfaction or seeking help was often more private (Angelaki & Mavroidis, 2013). Students might not want to openly disclose their extreme negative emotions. A case in point was that the bad record of Student H in another online course had been located by other discussion board members. Participants expressing extreme negative emotions might be 'punished' by other participants (whose practice might be questionable). No one amongst the 150 and more responses supported Student H except Student J. Those who dropped out from the course may however share a moderated feeling, similar to that of Student H. Those who carried strong feelings like Student H but without disclosure may want to save face or be socially acceptable in


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the 'elite' world. As suggested by Koutropoulos et al. (2012), they might simply leave the MOOC without leaving any written remarks.

## *Affording non-achievement emotions*

The MOOC created a learning space for knowledge-emotion sharing. The space was not only occupied by achievement-oriented emotions but also some non-achievement emotions. The two major non-achievement emotions identified, (a) altruistic emotion and (b) intergenerational emotion, had a significant value in the learning process of MOOC participants.

### *Emergence of altruistic emotion*

Participants demonstrated strong emotions towards helping others while no material benefits could be gained. People indicated their wish and their excitement to become a community teaching assistant (CTA), a new role that has emerged in the MOOC community:

Student K: Can we apply for Community TA for the next offering of the course[8]
CTA: Don't call us we'll call you ;)
Student L: Hollywood style of working... :D
CTA: I guess that yes :)

The CTA, a student himself/herself, carried the extra responsibility to administer the board and moderate forum discussions. The CTA would not receive extra credits or be paid for the service. Participants were glad if they could give back to the community. Another expression of altruistic emotion happened when one of the participants indicated that he/she will retake the course simply to 'help others gain great knowledge.' The expectation on altruistic behaviour grew stronger via repeated occurrence of these written messages. Altruistic behaviour formed part of the social norm in the co-learning space. Violation of such a norm might trigger a negative emotional bounce-back like the following:

Subject: well, what's your total score?
Student M: problem sets full
finger exercises full
mid term 1 = 100%
mid term 2 = 100%
final exam = 100%
total = 100%
Student N: Excellent results! It's a pity that you're never around in the discussion forum, sharing your knowledge and helping out others, though. But well done and congratulations!

These dialogues suggested that altruistic behaviour gradually transformed from an individual act to a group norm. Such a transformation may be explained in terms of the affordance of the discussion board as a knowledge-emotion production platform. Co-creation of knowledge was closely entwined with emotional bonding in the community (Terras & Ramsay, 2012). The connectivist model heavily depended on mutual trust and reciprocity amongst participants (Baytiyeh & Pfaffman, 2010). To form a close group, each member had to contribute in turn. In a short physical class, such a reciprocity relationship might not be obvious; participants might take advantage of others and leave the group. In a full-semester online course, the helping requests were written and made public. The helping behaviour (whether it was the provision of actual solutions or psychological comfort) was also 'recorded'. Re-paying such favours was deemed necessary, contributing to the richness in altruistic emotions.


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While the lecturers should have been salient helping figures (e.g., Holmberg, 1989), they could not attend to academic questions or emotional issues of all participants. A new mechanism would be needed to sustain the emotional needs in the MOOC. Altruism offered a possible and critical avenue for raising the emotional support in learning. Altruistic emotions became more distributed, abundant, and explicit in the community. It is interesting to note that course governance and moderation practices did not play an explicit role in soliciting the altruistic emotion to form a meaningful educational experience (Garrison & Arbaugh, 2007). Further investigation might be useful in advising instructional practices conducive to sustaining helping behaviour.

### *Intergenerational emotional resonance*

Another non-achievement emotion identified was intergenerational emotion. It refers to emotion recognizing different practices across generations. The board afforded chances for multi-generational members to share their experiences. It accommodated participants from different generations, opened a chance for intergenerational communication, and pooled their wisdom in a shared platform. One of the examples is as follows[9]:

| | |
|---|---|
| Subject: | Coming home |
| Student O: | I actually went to ABC [sic: name of the course provider] and took the equivalent of this course 50 years ago. Computers were relatively new then…In this course then they gave more background on the actual computer instructions, and a lot of the problems had to been written in assembler code and punched onto cards…I got hooked on programming and have been spent my professional life programming. So for me, taking this course is like coming home. I can attest that this online education accurately conveys the ABC experience. It is challenging, yet supportive, and very rewarding. It is never easy, but if you preserver, it will change your life. |
| Student P: | This is SO impressive! |
| Student Q: | Fantastic! What epic time! You were the real heroes. Thank you for sharing your invaluable experience with us. |
| Student R: | That's excellent! I can relate a little, I have a similar feeling, I graduated from ABC almost 25 years ago and took Course A in Scheme from Prof. X who if I read right is in on Course B on edX! |

The senior generation, Students O and R, shared their learning experience when they first entered universities, expressing their joy on the memory recollection. The junior generation, Students P and Q, showed their appreciation towards the achievements of the senior generation despite their not having good facilities or technologies in their era. Such discussions might appear to be negligible and not contribute to the learning objectives. However, the personal disclosure (e.g., age and education background) and the collective memories might advance collaborative learning. This sharpened the social presence of participants by generating a real self-image in the MOOC (Garrison & Arbaugh, 2007). Participants became readier to read others' mental states and establish inter-subjectivity, thereby enhancing the discourse quality (Crook, 2011; Wosnitza & Volet, 2005). Participants could also negotiate meaning more easily with the understanding of the life horizons of different individuals.

The presence of such an intergenerational emotional affordance in the MOOC may help develop the future MOOC community under the shadow of a global aging population. People from different age horizons took quite different orientations in the course, possibly echoing their life stage. As a truly globalised MOOC, age diversity would be a foreseeable issue, in terms of the cognitive challenge and the pedagogical design. Looking at the bright side, the diversity could be transformed into a valuable resource. Yet if the generational gap were not well handled, it could


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have created conflicts in the learning communities if age-diverse groups need to collaborate on the assignments. The challenge is especially critical as most MOOC participants may choose not to reveal their ages, which are more transparent in the traditional classroom. It was pleasant to learn that different generations in the current study resonated in their emotion production via the MOOC.

## Conclusion

This study has explored the emotional affordance of the MOOC. Non-achievement emotions represented a critical portion of the emotions expressed by the participants. The MOOC afforded emotion expressed in visual modalities especially in the text format, which mimicked the facial expressions or voices related to the emotion or directly described one's feeling. It did not, however, afford the peripheral physiological component of emotion. Both positive and negative emotions were observed while extreme negative emotions were suppressed due to the social desirability concern. Emotion evolved with the course, apparently coupling with the formation of a collaborative learning community. Emotion becomes more salient, more verbal, and more public in the MOOC. It also becomes more shared and distributed. Through the mediation of the discussion board, both knowledge and emotion were created by the community. The study identified two non-achievement emotions in the MOOC. First, altruistic emotion evolved with the collaborative learning community and possibly compensated for teachers' minimal emotional intervention in a large, diverse class. Second, intergenerational emotional resonance was observed and this bore a key implication on managing age diversity for the future MOOCs. Learning and teaching have an emotional underpinning (Hargreaves, 1998). A holistic understanding of the emotional affordance would definitely help build massive but personalised, emotion-based learning experiences with MOOCs.

### References

1. Angelaki, C. and Mavroidis, I. (2013). Communication and social presence: The impact on adult learners' emotion in distance learning. In *European Journal of Open, Distance, and e-Learning, 16(1)*, (pp. 78-93). http://www.eurodl.org/?p=archives&year=2013&halfyear=1&article=563
2. Baytiyeh, H. and Pfaffman, J. (2010). Volunteers in Wikipedia: Why the community matters. In *Educational Technology & Society, 13(2)*, (pp. 128-140).
3. Borup, J.; West, R.E. and Graham, C.R. (2012). Improving online social presence through asynchronous video. In *Internet and Higher Education, 15(5)*, (pp. 195-203).
4. Crook, C. (2011). Versions of computer supported collaborating in higher education. In S. Ludvigsen, A. Lund, I. Rasmussen, & R. Säljö (eds.), *Learning across sites: New tools, infrastructures and practices*, (pp. 156-171). Abingdon, Oxon: Routledge.
5. Dua, A. (2013). *College for all.* Voices on Society: The art and science of delivery. Retrieved from the World Wide Web on 11 August 2013 at http://voices.mckinseyonsociety.com/college-for-all/
6. EdX. (2013). *About edX*. Retrieved from the World Wide Web on 16 February 2013 at https://www.edx.org/about-us
7. Esposito, A. (2012). Research ethics in emerging forms of online learning: Issues arisen from a hypothetical study on a MOOC. In *Electronic Journal of e-Learning, 10(3)*, (pp. 315-325).
8. Garrison, D.R.; Anderson, T. and Archer, W. (2000). Critical inquiry in a text-based environment: Computer conferencing in higher education. In *Internet and Higher Education, 2(2-3)*, (pp. 87-105).


ISSN 1027-5207

9. Garrison, D.R. and Arbaugh, J.B. (2007). Researching the community of inquiry framework: Review, issues, and future directions. In *Internet and Higher Education, 10(3)*, (pp. 157-172).
10. Gibson, J.J. (1979). *An ecological approach to visual perception.* Boston, MA: Houghton Mifflin.
11. Graesser, A.C. and D'Mello, S. (2012). Emotions during the learning of difficult material. In *Psychology of Learning and Motivation, 57*, (pp. 183-225).
12. Hargreaves, A. (1998). The emotional practice of teaching. In *Teaching and Teacher Education, 14(8)*, (pp. 835-854).
13. Holmberg, B. (1989). *Theory and practice of distance education.* New York, NY: Routledge.
14. Holmberg, B. (2003). A theory of distance education based on empathy. In M. Moore & W. Anderson (eds.), *Handbook of Distance Education,* (pp. 79-86). Mahwah, N.J.: L. Erlbaum Associates.
15. John, P. and Sutherland, R. (2005). Affordance, opportunity and the pedagogical implications of ICT. In *Educational Review, 57(4)*, (pp. 405-413).
16. Koutropoulos, A.; Gallagher, M.S.; Abajian, S.C.; Waard, I.; Hogue, R.J.; Keskin, N. and Rodriguez, C.O. (2012). Emotive vocabulary in MOOCs: Context & participant retention. In *European Journal of Open, Distance and e-Learning, 15(1).* Retrieved from the World Wide Web on 13 July 2013 at http://www.eurodl.org/?p=archives&year=2012&halfyear=1&article=507
17. Mann, B. (2006). Virtual ethnography and discourse analysis. In B. Mann (ed.), *Selected styles in web-based research,* (pp.439-455). Hershey, PA: Information Science Publishing.
18. Marchand, G.C. and Gutierrez, A.P. (2012). The role of emotion in the learning process: Comparisons between online and face-to-face learning settings. In *Internet and Higher Education, 15(5)*, (pp. 150-160).
19. Pekrun, R. (2006). The control-value theory of achievement emotions: Assumptions, corollaries, and implications for educational research and practice. In *Educational Psychology Review, 18(4)*, (pp. 315-341).
20. Salmon, G. (2004). *E-moderating, the key to teaching and learning online.* London: Kogan Page.
21. Schutte, N.S.; Malouff, J.N.; Price, I.; Walter, S.; Burke, G.; Wilkinson, K. (2008). Person-situation interaction in adaptive emotional functioning. In *Current Psychology, 27(2)*, (pp. 102-111).
22. Terras, M.M. and Ramsay, J. (2012). The five central psychological challenges facing effective mobile learning. In *British Journal of Educational Technology, 43(5)*, (pp. 820-832).
23. Vygotsky, L.S. (1978). *Mind in society: The Development of Higher Psychological Processes.* M. Cole, V. John-Steiner, S. Scribner, & E. Souberman (Eds.). Cambridge, MA: Harvard University Press.
24. Wosnitza, M. and Volet, S. (2005). Origin, direction and impact of emotions in social online learning. In *Learning and Instruction, 15(5)*, (pp. 449-464).
25. Zembylas, M. (2008). Adult learners' emotions in online learning. In *Distance Learning, 29(1)*, (pp. 71-87).
26. Zembylas, M. and Vrasidas, C. (2004). Emotion, Reason, and Information and Communication Technologies in Education: Some issues in a post-emotional society. In *E-learning, 1(1)*, (pp. 105-127).


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[1] EdX is a not-for-profit enterprise founded by Harvard University and the Massachusetts Institute of Technology for web-based learning.
[2] The course presents distinctive features. First, it attracted a large pool of students of different ages, cultures, and nations (EdX, 2013). Its global reach made it an ideal case in point to investigate the diversity issues in emotion. Second, the large class size stressed the apparently competing objectives of mass production and personalisation of online learning experiences. Third, the high level of difficulty of the course, especially for those programming illiterate, encouraged the expression of emotions. All these were conducive to the investigations of online emotional affordance.
[3] Submissions for assignments, examinations, and finger exercises were made directly through the edX platform.
[4] The videos were not replicas of the traditional classroom lectures. Most of the videos lasted for about three to five minutes to grasp participants' attention. Slides were downloadable in pdf format. They were specially tailored to match with the finger exercises.
[5] Participants had another unofficial forum outside the edX discussion board. Yet this forum was far less active than the edX one. An initial analysis of the forum postings showed that the flow was small and there appeared no substantial variations in the way participants expressed their emotions. Given these, I did not analyse the postings in that forum.
[6] Python is a programming language heavily used in the course.
[7] A group of participants coming from Spain or the Latin America had few specific threads in Spanish.
[8] The course title was removed for the confidentiality purpose.
[9] The name of the course provider, relevant course titles, and the name of a professor were disguised for the confidentiality purpose.


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