ARTICLE

Embracing Dropouts in MOOCs: Exploring Potentials of Invisible Learners

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The objective of the paper is to examine how and what the non-completing participants of MOOCs learn. In this paper we term them *invisible learners*. The paper presents a qualitative study of learning activities and outcomes of invisible learners. The study consists of 11 interviews with MOOC participants and a survey answered by 51 participants. The results of the study show that invisible learners learn by 1) reading and watching, 2) following and being part of, 3) networking, 4) reflecting and 5) applying. Further, the study shows that the learning outcomes of the invisible learners can be described as 1) inspiration, 2) update, and 3) input for practice. Invisible learners show signs of self-governance by choosing what is relevant to them, and initiating their own learning activities in relation to their own practice. The paper concludes that there are educational potentials of the activities of invisible learners. The study shows that the course format may not be suitable for invisible learners that do not wish to do assignments and follow specific learning objectives. Rather, the educational potential is to provide invisible learners with relevant input to their own practices. To accommodate invisible learners, the challenge is to design courses that provide input and inspiration to learners' own practices without prescribing what they will learn.

Introduction

The objective of the paper is to examine how and what the non-completing participants – or what we term 'invisible learners' – learn in MOOCs (massive open online courses). These participants are often named 'the dropout group', or called lurkers, or inactive or disengaged students (Alexander and Fink, 2018). The largest group of MOOC participants drop out and do not complete the course, whereas a minority of the registered participants complete the courses (Jordan, 2014). This low completion rate is often highlighted as a major shortcoming of MOOCs, and much research has discussed how to increase the completion rates of MOOCs (Daniel, 2012; Clow, 2013; Simpson, 2013). However, a consequence of prioritising completion rates is discussed by Ho et al. (2015) who write:

> If we wished only to increase overall certification rates, one solution is simple: restrict access. Online browsers, online explorers, and teachers-as-learners would not benefit from such a policy. And MOOCs would lose their first two letters and much of their claim to innovation, instead becoming familiar, smaller, online courses (Ho et al., 2015, p. 33).

From the point of view of educational institutions, it is natural to focus on increasing completion rates in MOOCs. However, the point made by Ho et al. (2015) is that a strict focus on participants who complete a course, might overlook a group of participants that use the course content and activities in different ways. The focus of this paper is to examine those different ways of participating in and utilising MOOCs. To examine this group, the paper presents a study of a MOOC designed specifically for different levels of participation. The hypothesis of the paper is that within this group lies a potential for developing new educational formats that support new or unknown ways of learning and being educated. The results of the study lead to a discussion of the challenges of course formats that entail a certain form of active participation.

If education for all is the challenge, are courses the solution?

For many years, open education has aimed at educating people with no or limited access to the traditional educational system, as seen in the approach of The Open University in the UK. Within recent years, this aim has been extended by the advent of Open Educational Resources (OER) and Massive Open Online Courses (MOOCs). A key objective of these initiatives is to provide education for all (Caswell et al., 2008; Friesen, 2009; Wiley, 2008). Whereas the initial aim of educating people with no or limited access to traditional education entails a focus

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on a complex and heterogeneous target group, MOOCs imply a focus on a large, massive target group. Educating 'many' or educating 'the masses' has become a key objective, which marks a shift in focus. There is a difference between a focus on getting many students and a focus on reaching students with limited access to the educational system. The prior could entail going for the largest and most homogenous group, whereas the latter calls for flexibility towards different learner needs.

This focus on the many is evident from the fact that MOOCs are often measured through the number of course participants and the dropout rate. A study by Jordan (2014) showed that an average of 43,000 students enrol in a MOOC. The study also showed that on average 6.5% complete the course. This low level of completion is seen as a sign that MOOCs are not suitable for educating the many (Chen, 2014; Daniel, 2012; Clow, 2013). The high dropout rate indicates that students are left behind (Simpson, 2013). However, from the point of view of the objective of providing education for people with limited access to traditional education, the composition of the target group is of most interest. Jordan (2014) wrote that MOOCs may favour students who already have a degree. The majority of Coursera students already hold a degree, and students with limited study experience find it difficult to follow and complete MOOCs (Emanuel, 2013, cited in Jordan, 2014). This suggests that MOOCs primarily aim at a target group with prior experience of the traditional educational system. As Littlejohn et al (2016, p. 40) argue, a focus on progression, retention and completion rates overlooks potentially important "new forms of learning opportunities". Further, Littlejohn and Hood (2018) argue that there is a conception that completion of the course is the best way of participating in a MOOC. On the other hand, they argue that MOOCs differ from traditional courses by allowing for other ways of participating, and that this holds the potential for new ways of learning.

A number of previous studies have examined the non-traditional forms of participation (Littlejohn and Hood, 2018). A study in Milligan et al. (2013) identified three types of learner engagement; active participation, passive participation, and lurking. Another study by Clow (2013) introduced the metaphor of 'funnel of participation' to describe the decline in student participation during the run of a course. A study of subpopulations of MOOC participants in Kizilcec et al. (2013) showed that completing a course is not the only viable way of participating in MOOCs. The study identified four prototypical types of learner engagement in MOOCs: learners completing, auditing, disengaging and sampling. A key finding in Kizilcec et al. (2013) was that there were satisfied participants within all four types. For example, the auditing participants generally expressed a high degree of satisfaction, although none of them completed the course. These results of Kizilcec et al. (2013) suggest that there are educative potentials within other levels of participation than completing MOOCs. A study by Littlejohn et al. (2016) showed that MOOCs attract a diverse range of learners, each with different motivations and prior experience. The study identified substantial differences between the learners' motivations and goals, which also shaped their

conceptualisation of the MOOC. Another recent study by Milligan and Littlejohn (2017) identified a range of different motivations among MOOC participants. Some were motivated by complementing their current university studies, whereas others were motivated by needs in their professional practice.

These prior studies point towards the potential of MOOCs in relation to independent learners who bring to the MOOC their own professional experiences and learning objectives (Littlejohn et al. 2016). To continue the line of argument in the quantitative studies presented above, this paper presents a qualitative study that aims to explore in depth the educative potentials of invisible learners, including different learning activities and outcomes. Based on the findings of Kizilcec et al. (2013), we hypothesise that these participants learn something through their participation in MOOCs.

Research questions

The empirical study aims to examine how invisible learners use MOOCs for learning. Based on the prior studies of MOOC learners, the study examines how and what the invisible learners learn in MOOCs. This leads us to the following research questions (RQ):

RQ1: How do invisible learners learn in MOOCs?
RQ2: What do invisible learners learn in MOOCs?

Invisible learners are participants who leave no traces in the course, meaning that they do not for instance hand in assignments or participate in discussions. They do leave traces 'behind the scenes' that can be tracked by data analysis, but these traces are not visible to the other course participants (nor, in this study below, to the teacher).

Study: An open online course for different levels of participation

The basis of the study was the design of a MOOC. The course was specifically designed for different levels of participation in order to study differences in learning activities and outcomes. The distinction in Kizilcec et al. (2013) between completing, auditing, disengaging and sampling was used as the basic inspiration for this. Further, the course was designed for a narrow, Danish target group, rather than aiming at a massive population of participants. The main objective was to attract a varied target group in terms of levels of participation and engagement – not to attract a massive target group. Thus, we prefer to use the term Open Online Course (OOC) and leave out the Massive in order to move the focus away from the number of participants. However, the course is designed as scalable and can accommodate a massive number of participants. Further, to allow for participation from the disengaged and non-completing, the course was open in a way that allowed everybody (including non-registered users) to access all course materials and also participate in written discussions.

The designed OOC was combined with part of an already existing master's course in *Digital learning contexts* (at Aarhus University, Denmark) with credits (20 ECTS) for enrolled students. The course was part of the master's

programme *ICT based educational design* within the field of educational technology. Part of this course (six weeks) was developed into an open online course, where the enrolled students participated on the same terms as external participants. This connection to an already existing course, was done to make sure that the course obtained a certain level of activity through the attendance of enrolled students. When designing for different levels of participation, it is accepted that not all students contribute actively to the course. In other words, it was legitimate to be an invisible student within the course. The enrolled students were given credit for participating in the OOC as one module in a longer and more comprehensive course, but otherwise they participated in the course on the same terms as the participants from outside of the university. Twenty-five students were enrolled in the ECTS course, and 165 external participants signed up for the OOC.

The course design was inspired by the notion of a community of inquiry (Garrison, 2016) and revolved around the principle of participants being actively engaged with the subject matter through activities focused on experiments and discourse. This was done by having the participants investigate a practice through observations, analysing data, writing blog posts that conveyed their findings to each other, commenting on each other's blog posts and finally reflecting on the process in common spaces both synchronously and asynchronously. Further, participants would read course literature, blog posts and comments, and watch videos.

The OOC design of this study focused on making possible a plethora of activities for the participants. The OOC was designed around the students' inquiry into the impact of various educational technologies on educational practices. The course allowed for a range of student activities:

- *Collaborating*, activities were designed to be carried out in collaboration with others.
- *Producing*, which involved recording and editing video, capturing pictures or composing text and more often than not the final products were combinations of different modalities.
- *Reflecting*, which would manifest itself in comments on blog posts that the students published.
- *Discussing*, primarily in groups, where the participants had to come to terms with each other's ideas and thoughts while *producing*, but also in long commentary threads attached to blog posts, where reflections could spark a discussion on a particular part of the subject matter.
- *Commenting*, primarily in the form of comments on blog posts.
- *Viewing and reading*, which entailed watching videos and reading course literature, blog posts and comments.

To accommodate different levels of participation, the institutional Learning Management Systems (LMS) Blackboard and common MOOC platforms such as Coursera and edX were not chosen, because they require login or registration to participate. Instead, the OOC was designed with a WordPress Content Management System (CMS) (https://open-tdm.au.dk/dl/) as a unifying hub, that connected different other services that were applied in the course. The technological setup included: WordPress, Google Suite for Education, Facebook group, YouTube Live/Hangout on Air, Todaysmeet and Twitter. This led to a customised solution, rather than a 'one-size-fits-all' platform, that was inspired by the concept of media ecology (McLuhan, 1964; Ito et al., 2009; Baym, 2015).

Methodology

The empirical study is a qualitative study aiming at in-depth analysis of learning activities and outcomes of invisible learners. The research design is a mixed-method approach combining interviews with a survey (Tashakkori and Teddlie, 2010). The study consists of 11 interviews with selected OOC participants, and a survey answered by 51 participants.

A survey to all participants of the open online course was performed after completion of the course. The objective of the survey was to provide a broad overview of:

- which activities the learners had participated in
- how much they had participated and
- what they had achieved from the different activities.

This study is inspired by Kizilcec et al. (2013), but to supplement their study, the current study was not based on identifying student completion, dropout or disengagement, but rather on mapping what activities the students participated in.

Specifically, the OOC was designed for the following activities, from which the participants could choose: write blog posts, comment on blogs, read literature, watch teacher videos, work on assignments, and read blog posts. These activities formed the basis of the survey, which examined the students' participation and learning outcome of each activity. To examine students' participation in these different activities, the questionnaire in **Table 1** was distributed.

Based on the two research questions (RQ1 and RQ2), an interview guide for the interviews with MOOC participants was developed (see **Table 2**). The questionnaire also contained three questions with open text answers. These are included in **Table 2**.

The 11 interviewees were chosen in order to represent a variation in course participants. Thus, the aim was to pick interviewees from the different categories of participation identified from the survey. Based on activities on the blog (both posts and comments), the Facebook group and in Google Drive, students with different levels of participation were chosen and contacted by email.

The analysis of interviews was performed as a thematic analysis (Braun and Clarke, 2006; Guest et al., 2011), which also included analysis of the written answers to the open questions from the survey. Only answers from the 23 invisible students in the survey were included in the analysis. The analysis was inspired by Braun and Clarke's (2006) six basic steps for thematic analysis:

(1) familiarisation with the data
(2) generating initial codes

Table 1: Questions in the questionnaire. (The questionnaire also contained background questions on age, gender, educational background, residence, and job status).

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1. How will you describe your overall working effort in the course?

Options:

· I have followed the entire course

· I have followed parts of the course

· I stopped completely before the course ended

· I did not start the course and I have not followed it

2. How will you describe your overall participation in the course?

Options:

· I have done all the assignments, read and commented on the blog

· I have done some of the assignments, read and commented on the blog

· I have read and commented on the blog

· I have read the blog

· None of the above

· Other: _____

3. How much have you participated in the following activities in the course?

Scale:

To a very large extent (4 points)

To a considerable extent (3 points)

To some extent (2 points)

To a lesser extent (1 point)

Not at all (0 points)

· Written blog posts

· Commenting on blog

· Read the literature

· Watched the teacher videos

· Worked on assignments

· Read blog posts

4. To what extent have you learned from participation in the following activities in the course?

Scale:

To a very large extent (4 points)

To a considerable extent (3 points)

To some extent (2 points)

To a lesser extent (1 point)

Not at all (0 points)

· Written blog posts

· Commenting on blog

· Read the literature

· Watched the teacher videos

· Worked on assignments

· Read blog posts

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(3) searching for themes
(4) reviewing themes
(5) defining and naming and
(6) producing a report.

In the first step, the interviews were listened to and an initial deductive analysis was performed based on the second and third research question respectively. Quotations related to the research questions were transcribed.

Table 2: Questions for interviews and questionnaire.

Theme	Questions
Forms of participation (RQ1)	*Interview questions*
	Why did you want to participate in the MOOC?
	How have you been working in the MOOC?
	Can you describe how you have participated in the MOOC?
	What kind of 'environment' have you participated in?
Use forms and learning outcome (RQ2)	*Interview questions*
	What have you achieved from participating in the course?
	What elements of the course have you found useful?
	Questionnaire questions
	Describe your outcomes from participating in (parts of) the course
	How has course been relevant to your own daily practice (work, studies, etc.)?
	If possible, provide an example of how you have used something from the course in your own daily practice
Communication between learners (RQ1)	*Interview questions*
	What is your experience of the academic communication and interaction between participants (on the blog)?
	How will you describe your communication with the enrolled students?
	What is your experience with group work in the course?
	How have you collaborated in your group?
Enhancement of qualifications (RQ2)	*Interview questions*
	What was your purpose or motive for participating in the course?
	How do you keep up to date within your professional area?
	How do you enhance your qualifications?

In the second step, an inductive coding of transcripts was performed. This analysis searched for specific codes within the two research questions, i.e. coding of 'how' and 'what'. In the third step, the collected codes were analysed to gather them into themes. In the fourth and fifth step, the codes within each of the themes were reviewed and provided with names that encapsulate the meaning of the codes. The final step of reporting is this paper.

Participants and ethical considerations

Of the 165 registered participants, 51 filled in the questionnaire. Their average age is 46 years. In the group, 66.7% are female (n = 34) and 33.3% are male (n = 17). Most of the participants have a former degree; 33.3% have a professional or university bachelor (n = 17), 37.3% (n = 19) a master's degree and 25.5% (n = 13) a different higher education degree. The majority, 82.4% (n = 42), have a full-time job. To a large extent, the majority of the participants would be the typical target group for continuing education.

As the study collects personal data, it is important to clarify our ethical considerations. As Ess (2007) states, confidentiality is especially relevant in studies of sensitive issues. In the current study, there are no sensitive issues under investigation. However, we have maintained total anonymity for all informants. In the interviews, all interviewees were informed that the data would be handled anonymously. Further, the questionnaire does not collect names or other personally identifiable data.

Results

The results from the survey and interviews are presented below.

Identifying invisible learners

Forty of the 51 respondents of the survey started the course, whereas the remaining 11 never started the course and did not participate. Those 11 respondents are not included in the results presented below, because they had no interaction with the course or course materials.

The answers to the question 'How will you describe your overall working effort in the course?' showed that:

- 3.9% (n = 2) completed all course activities
- 27.5% (n = 14) participated in parts of the course
- 47.1% (n = 24) stopped before the course ended, and
- 21.6% (n = 11) did not start the course.

This pattern is very similar to other MOOCs: the vast majority do not complete the course.

The answers to the question 'How will you describe your overall participation in the course?' provided details to the use patterns of the participants:

· 2% (n = 1) state that they have done all the assignments, read and commented on the blog
· 13.7% (n = 7) have done some of the assignments, read and commented on the blog
· 7.8% (n = 4) have read and commented on the blog
· whereas the largest group of 45.1% (n = 23) have read the blog.

The level of activity for each participant was calculated by giving points (from 0 to 4) for the answers to the question 'How much have you participated in the following activities in the course?' Participants were then sorted by their total level of activity, which was calculated by adding up the points for participation in each activity. The sorting showed a large variation in student activities (ranging from 1 to 32 participation points) and no obvious patterns of participation. There is a general tendency that participants who engage in many activities also spend much time within each activity.

To identify invisible learners, the different activities were termed either visible or invisible as follows: write blog posts (visible), comment on blog (visible), read literature (invisible), watch teacher videos (invisible), work on assignments (invisible), read blog posts (invisible).

Obviously, it is straightforward to detect if a participant has written a blog post or a comment, this is something that is easily identified; thus, these activities are termed as visible. On the other hand, it is not possible to directly register if the participants read the prescribed literature, watched the videos or worked on the assignments (without handing in), hence these activities are regarded as invisible activities.

All participants were sorted by degree of visibility by calculating the percentage of each participant's 'visible' and 'invisible' activities: 17 participants engaged in visible activities, whereas 23 participants only engaged in activities invisible to the teacher and the other participants. Looking only at the 23 invisible participants, we can see that they primarily watched videos, read the course literature and read the blog posts written by the visible participants. Invisible participants were generally less active than the visible participants.

What is most relevant to this study is to look into the experienced learning outcome of the participants. A weighted average level of the experienced learning outcome was calculated for each participant by giving points (from 0 to 4) to the answers to the question 'To what extent have you learned from participation in the following activities in the course?' The weighted average level of learning outcome only includes the activities that the participants were active in. In **Table 3** the participants are sorted by their weighted average learning outcome. Although in general, the visible participants reported having experienced the highest learning outcome, several of the invisible participants experienced a relatively high learning outcome, in spite of their limited participation.

The survey results show both a varied level and a varied degree of participation among the participants. Most of the invisible learners have watched videos, read blog posts and course literature. These results from the survey bring us to the research questions of how and what invisible learners learn in MOOCs, which are primarily answered by an analysis of the interviews.

How do invisible learners learn in MOOCs?
As described above, invisible learners are defined as invisible, when they leave no visible traces in the course. Often, they are characterised as lurkers, followers, samplers, etc., and often there is a conception that the lurkers should participate rather than lurk (Sun et al., 2014). However, the question here is, how participants learn, and what they do within the course. How do the invisible learners describe their own learning and learning activities? From the coding from RQ1, the following concepts describing learner activities emerged:

1) reading and watching
2) following and being part of
3) networking
4) reflecting and
5) applying.

Below, the concepts are unfolded with examples from the interviews. (All names of interviewees have been changed to fictional names).

1) Reading and watching
Both from the interviews and the survey, it is evident that the invisible learners are primarily participating by reading the course literature, watching teacher videos and reading the blog posts written by the visible participants. It is important to note that some of the invisible learners have taken part in the entire course and are not dropouts as such.

> I have seen all that I possibly could. And I have browsed the course literature. (John)

2) Following and being part of
The invisible learners, however, have not only sampled or collected from the course materials that are relevant to them, and then left the course. Rather, they have been following the course from the sideline. Several of the invisible learners state that they have followed the course together or alongside with the active participants. The invisible learners have followed the process and progression of the course and the discussions between the active participants.

> You knew that you could always go in and take a look at things and read, and new things would appear. (Susan)

> I did it [took the course] to connect with the activities and see what happened and acquire knowledge about these things. Maybe to get updated, when I knew that I would not do the assignments. (Peter)

Table 3: Participation sorted by level of learning outcome for visible (white) and invisible (grey) participants.

No	Tutoring	Literature	Videos	Assignments	Blog posts	Read blog	Commenting	Level of participation	Visible	Level of learning outcome
1	×	×	×	×	×	×	×	24	Yes	4.00
33	×	×	×	×	×	×	×	32	Yes	3.92
9	×	×	×	×		×	×	14	Yes	3.71
35	×	×	×	×	×	×	×	24	Yes	3.42
12	×	×	×	×	×	×	×	17	Yes	3.10
15		×	×			×		10	No	2.60
34	×	×	×	×	×	×	×	30	Yes	2.55
26		×	×			×		7	No	2.50
20	×	×	×			×		7	No	2.50
10	×	×	×	×	×	×	×	13	Yes	2.43
39				×				4	No	2.33
19		×	×	×		×		7	No	2.33
8	×	×	×	×		×	×	17	Yes	2.22
36	×	×	×	×	×	×	×	16	Yes	2.00
27	×	×	×	×	×	×	×	8	Yes	2.00
32	×	×	×			×		8	No	2.00
28	×	×	×	×		×		11	No	2.00
37	×	×	×	×	×	×	×	22	Yes	1.75
38		×	×	×	×	×	×	20	Yes	1.71
17	×	×	×			×		7	No	1.71
7		×				×		5	No	1.67
21	×	×	×	×		×		11	No	1.67
30	×		×	×	×	×		6	Yes	1.60
23		×	×			×		5	No	1.60
13	×	×	×	×	×	×	×	12	Yes	1.50
40		×						1	No	1.50
24		×	×			×		6	No	1.50
25		×	×	×		×		5	No	1.43
16	×	×	×			×		4	No	1.40
18		×	×	×		×		9	No	1.40
2		×	×			×		5	No	1.38
11	×	×	×		×	×	×	6	Yes	1.33
14		×	×			×		4	No	1.29
5	×	×	×			×	×	5	Yes	1.00
22		×				×		2	No	1.00
6						×	×	2	Yes	0.00
4								0	No	0.00
3		×						1	No	0.00
29		×	×			×		4	No	0.00
31	×	×				×		4	No	0.00

It has been an educational course where it was OK to be a wallflower, because that is what I have been. And I have received valuable learning from the sidelines. (John)

Some of the invisible learners describe that they experienced a sense of being part of something; they felt they were part of the course activities or a kind of community by following the course – although they were not visible and actively engaged. Several participants mention the course as a 'digital community'.

When I had a few minutes, I would go to the blog and read, and I would follow the Facebook group, whenever there were updates. (Laura)

I have been lurking and found inspiration on the blog. The Facebook group, I think, offers a community. (John)

To be able to find like-minded. (Laura)

I thought that I could be together with someone who speaks within the same discipline as me and who shares my interests. (Ron)

An important point to draw from this is that the invisible learners have not only experienced the course as a collection of static resources for them to collect and sample. Rather, they have experienced being a part of the process of the course by following the activities of the visible students.

3) Networking
Several invisible learners mention that they participate in the course to expand their network. They wish to get access to and get to know other people within their area of interest. They seek opportunities to discuss professional matters with people within their field of interest. This means that their activities are similar to going to a conference.

That thing about engaging in and developing your network and connecting with other people. (Laura)

To connect with people whom I share an interest with. (Susan)

For me it is difficult to find inspiration that many places. To be inspired and have networks and those things. (Susan)

Such networking activities do not necessarily provide the participants with new knowledge during the course, but they can help them build a stronger network within their field of interest.

4) Reflecting
In addition to networking and establishing social relations, the invisible learners also use the course as a space or forum for reflection on their own knowledge and their own practices. They wish to "test" and "pro-voke" their own understandings and conceptions in relation to opinions of others, and they use the course and the visible participants as a mirror for their own understandings.

To learn about other people's opinions about the things that you are involved in, and that you have a very specific opinion about. (Laura)

Then it is nice to learn from people with the newest theoretical knowledge within the area, who can provide something new and who can also sort of provoke us a little bit. (Susan)

Especially the tools that were used caused me to reflect on opportunities for using them in my own practice, or whether I should consider other similar tools. (from questionnaire)

I have used my experience from several of my own courses as a horizon for both theory and cases from the course content. (from questionnaire)

5) Applying
From both the survey and the interviews, some of the invisible learners state that they have applied knowledge or concepts from the course in their own practice. This shows that the invisible learners are far from inactive, just because they do not answer the assignments. They are reading, thinking, reflecting and not least *applying* things in practice. However, they have moved some of their learning activities outside of the course and into their own practices and professions. These activities are not visible within the course and are not mentioned anywhere.

I have used some of the models from the course to assess my own professional tasks. (from questionnaire)

I have used Powtoon in my own teaching. The pupils were asked to use the tool. (from questionnaire)

I have experimented with this in my own webinar. (from questionnaire)

The invisible learners may be disengaged in the course activities, but they are engaged in learning activities related to their own practices. They have as a background their own knowledge, thoughts, practice, etc. The 'tasks' or 'assignments' of the invisible learners are, so to speak, defined by the participants, not by the course. To sum up, the learning activities of invisible learners show many signs of independent or self-regulated learning, as highlighted by Littlejohn et al. (2016). The invisible learners do not wish to take part in traditional course activities with fixed assignments. They prefer to use and draw in their own practice, and they wish to be able to choose for themselves what is relevant and what can be left out – both content and activities.

What do invisible learners learn in MOOCs?

The following concepts describe experienced learning outcomes that emerged from the coding (from RQ2) of the interview transcripts:

1) inspiration
2) update
3) input for practice.

Common to all interviews with invisible participants is a finding that they are not clear about what they intend to learn at the outset. As one participant stated:

> I wonder if I haven't learned exactly what I should. I was just not aware of what it was, that I was supposed to learn. (John)

1) Inspiration

Although the course has clear learning objectives and themes, many of the invisible learners state that they have not participated in the course to learn the specific subject matter of the course. Rather, their intention is to be inspired by the content and the activities. Related to the networking activities described above, for some of the invisible learners, their activities resemble going to a conference. They have not joined the course to realise set learning goals, but are instead, looking for new ideas and new perspectives that can possibly change their understanding and conception of the field and of their own practice.

> To learn that extra, that you cannot just google. (Laura)

> It is difficult for me to find inspiration that many places. To be inspired and have a network. (Susan)

> I primarily use it [the course] as inspiration and new knowledge. I think it is nice to be able to be present without having to be actively participating. (John)

> The texts that I have read, have provided me with some new perspectives, that I will continue working with. (from questionnaire)

Using the course to get inspired means that the participants are not necessarily interested in learning what the course intends them to learn. For instance, in some of the interviews, the participants state that they have no intentions of doing the assignments. This means that the learning objectives are defined by the invisible learners themselves.

2) Update

In the interviews, several of the invisible learners state that they wish to get updated within their area of expertise. They want to know what is new within their area, to know what it is that they do not know, and to know what they should know more about. It is a matter of knowing what is happening within their field and their profession. It is not necessarily something that they need to act upon at the moment, instead it is a kind of background knowledge.

> It is about being updated all the time. (Peter)

> Perhaps be brought up to date, when I knew that I was not going to complete and do the assignments. (Peter)

3) Input for practice

It is characteristic of the invisible learners in the interviews that they are filtering the course content on basis of what is relevant to their professional practice. Some of them are specifically looking for applicable knowledge.

> When you enter the course from the outside, you are connecting it to your own practice. You consider how you can use it here and now. My experience was that the enrolled students had to go through the curriculum. Maybe their focus was a bit different. (Ron)

> I have considered how I can use a Learning Management System to collaborate with the students. (from questionnaire)

To sum up, it is important to note that the invisible learners did not learn what was intended by the course. They were not looking for the specific course content, and it was somewhat unclear to the invisible learners what they were actually looking for. They took part in the course to get inspiration and input and to be updated. Nonetheless, they did learn something that was relevant and meaningful to them.

Discussion: The educative potentials of invisible learners?

As was intended by the course design, it can be argued that the developed MOOC established a community of inquiry between the visible learners, i.e. the group of participants who did the assignments, contributed with blog posts and participated in discussions. A community of inquiry is described as a closed group (Dron and Anderson, 2014). The course established an environment where the participants explored their ideas, provided mutual support and gave each other constructive feedback, which are distinctive features of a community of inquiry (Garrison, 2016).

On the other hand, however, it cannot be claimed that the invisible learners have been part of a community of inquiry within the course. From the interviews and the survey, it is evident that the invisible learners are in some ways attached to the course in the sense that they are following the activities of the course, but without active engagement and inquiry into the course. Rather than a community of inquiry, and in the words of Dron and Anderson (2014), the social form that the invisible learners take part in can be described as a 'set'. A set is a social form made up by people with shared attributes and the artifacts they produce (Dron and Anderson, 2014,

pp. 77–78). This is especially evident in the interviewees' statements about 'following and being part of something'. Thus, the set includes all participants in the MOOC, both visible and invisible learners. Dron and Anderson (2014) describe the certain kind of relation that exists between participants in a set: 'Sometimes we do not know people in any meaningful way, so "network" is too strong a word for our engagement, and sometimes we are not members of shared groups, yet people can make a big difference to our learning'. (Dron and Anderson, 2014, p. 165). This describes very well the relations of the invisible learners to other participants.

The concept of set describes a framework for the attachment of the invisible learners to the course, but it does not describe the activities of the invisible learners themselves. In a sense, the invisible learners show traditional 'lurker' behaviour. However, from the analysis above, the 'apply' and 'input for practice' categories in particular indicate that the invisible learners are not simply inactive lurkers following course activities from the sideline. They have used input from the OOC within their own practices and for their own purposes. The invisible learners are active, but not within the course. Whereas the inquiry of the visible learners takes place through assignments and is visible through the blog posts, the interviews provide examples of inquiry among the invisible learners, but this inquiry takes place outside the course context. The findings from the interviews show that they plan learning activities of their own outside the course. This suggests that the invisible learners have inquired into other practices than the one provided within the course.

This means that the course has provided input to other practices than the one defined by the course itself. From this, one could conclude that the invisible students do not need a course to complete, but rather materials to be inspired by. However, it is important to note that the invisible learners have been following course activities that come from the visible learners. During the course, the visible learners produce a large amount of content related to the shared attribute of the set. They do this by engaging in the assignments, producing blog posts, commenting and participating in the overall discourse. These open and easily accessible online activities are the ones that attract the invisible learners and keep them returning to the course.

The findings of the presented study show that the course format is not entirely suitable for the invisible learners who do not wish to do assignments and follow specific learning objectives, but are rather seeking input to their own practice. However, the findings also show that a course can set an important and meaningful frame for the activities of the invisible learners. The role of the course is to provide a narrative and a 'knowledge community', that on one hand keeps the invisible learners interested, and on the other hand provides meaningful input that the invisible learners can bring into their own practices.

Conclusion

The study has shown that invisible learners do not act in the way that was intended by the course, and that they do not necessarily learn what is prescribed by the course. The invisible learners show signs of independence and self-governance in the sense that they filter and choose what is relevant to them. This both relates to course activities and course content. Furthermore, and most notably, the invisible learners initiate their own learning activities, which are not part of the course but are meaningful in relation to their own professional practice.

The presented study shows that there are educational potentials in the activities of invisible learners. The educative potential of invisible learners is not necessarily to get them to complete courses, but rather to provide them with relevant input to their own practices. The invisible learners are able to transform course content and activities into their own contexts and acquire knowledge of relevance to them. Although the invisible learners may not complete a course, it turns out that the course is an important hub for sharing learning artifacts and thoughts related to a shared set of attributes. This underlines the importance of public access to the learning artifacts produced by the visible learners. To return to the relationship between the visible and invisible learners, the presented study indicates that an *open* community of inquiry can support learning activities of apparently inactive and disengaged participants, who instead of following the course engage in self-governed inquiry outside the community of inquiry and within contexts of their own choosing.

The results of the study call for a focus on invisible learners. Rather than getting this group of learners to complete courses, this study suggests that we should design educational formats that support their self-governed learning activities. A consequence of this is also to include reflections on the invisible target group when designing such educational formats, especially given that not all learners possess the ability to self-govern their learning activities. A mainstay of the invisible learners in the presented study was that they were self-governed due to their high level of previous education.

The study raises a number of questions for MOOC designers, including: If invisible learners learn as described above, how do we design educational formats that accommodate these ways of learning? More specifically, how can course design support the development of inspiration, networking and reflecting in relation to an individual's own practice, etc.? How can we design courses that provide input and inspiration to learners' own practices without prescribing what they will learn?

Competing Interests

The authors have no competing interests to declare.

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