


Please cite the Published Version

Kahn, P, Everington, L, Kelm, K, Reid, I  and Watkins, F (2017) Understanding student engagement in online learning environments: the role of reflexivity. Educational Technology Research and Development, 65 (1). pp. 203-218. ISSN 1042-1629

DOI: <https://doi.org/10.1007/s11423-016-9484-z>

Publisher: <https://link.springer.com/article/10.1007/s11423-016-9484-z>

Version: Accepted Version

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Understanding student engagement in online learning environments: the role of reflexivity

Peter Kahn¹ · Lucy Everington² · Kathleen Kelm³
Iain Reid⁴ · Francine Watkins⁵

Abstract It is important to develop understanding of what underpins the engagement of students in online learning environments. This article reports on a multiple case study that explored student engagement in a set of postgraduate degrees offered on a fully online basis. The study was based on a theorization of student engagement as the exercise of intentional human action, or agency. It identified ways in which tasks and social relations in the online learning environments triggered reflexivity on the part of students, with ‘reflexivity’ understood to mean the ordinary mental capacity to consider oneself in relation to one’s social setting. A different relationship between reflexivity and student engagement was in view than that identified by Margaret Archer with regard to reflexivity and social mobility. Rather than displaying one dominant mode of reflexivity, the students considered in the study were seen to draw on a range of modes. The engagement of these students in their learning was also seen to depend on the manner in which they engaged in reflexivity centred on the pursuit of shared goals, that is in collective reflexivity. Specific practices were seen to trigger constructive forms of collective reflexivity, while fractured and restricted forms of collective reflexivity were linked to student disengagement in relation to joint tasks. As well as adverting to the importance of collective reflexivity to learning, the study highlights scope for dissonance between the modes of reflexivity and practices favoured by an online learning environment and the reflexive profile of the student.

Keywords: Online learning, Reflexivity, Collective reflexivity, Realist social theory, Student engagement

¹ Centre for Lifelong Learning, University of Liverpool, 126 Mount Pleasant, Liverpool, UK

² University of Liverpool Management School, Chatham Street, Liverpool, UK

³ Laureate Online Education, Haarlerbergweg 23 C, 1101 CH Amsterdam Z.O., The Netherlands

⁴ The Business School, University of Huddersfield, Huddersfield, UK

⁵ Department of Public Health and Policy, University of Liverpool, Brownlow Street, Liverpool, UK

Introduction

A significant amount of research demonstrates that educational technology can usefully support the engagement of online learners. For example, the study by Chen et al. (2010), based on data linked to the National Survey of Student Engagement (NSSE) in the United States, argued that there is a positive relationship between the use of learning technology, student engagement and outcomes of learning. The term 'student engagement' refers in general terms to the effort and commitment that students give to their learning (Krause and Coates 2008), although NSSE specifically considers ways in which active and collaborative learning, the level of academic challenge, interaction between students and faculty, and a supportive campus environment all influence such engagement.

Specific uses of educational technology have been seen to positively influence student engagement. (Junco et al. 2011) provided evidence that the use of the social media tool Twitter can promote student engagement through enhanced communication and interpersonal connections between students. Heiberger and Harper (2008) argued that online social media can support engagement by helping students make online social connections. As students develop their online social relations, student engagement can be enhanced by online collaborative working as the review by Thurmond and Wambach (2004) demonstrated. Robinson and Hullinger (2008) also established how an online learning environment can incorporate asynchronous interactions between learners and tutors in order to engage learners. Such interactions were to be seen to create space for critical thinking and reflexivity; reflexivity itself may be taken to refer to the ordinary mental capacity to consider oneself in relation to one's social setting (Archer 2003). When considered in relation to online courses, student engagement might thus manifest itself in the calibre of the posts that students make on discussion boards or in the extent to which students maintain interpersonal relationships with others.

Research, however, also demonstrates that student engagement in online courses remains mixed. Retention for online courses is usually reported as significantly lower than on courses where instruction occurs face-to-face (Dietz-Uhler et al. 2007). Moore et al. (2003) suggested that one reason for this might be that commitment to learning online can be squeezed out by other priorities. It is well established that the frustrations stemming from technical difficulties with online learning environments can cause students to drop out or have reduced commitment to their studies (Jaggars 2014). Online learning environments also place challenges on the self-regulatory capacities of students, and students who have difficulties with self-regulation of their learning will face challenges in engaging as learners (Dabbagh and Kitsantas 2004). The move towards online learning, furthermore, has coincided with a shift towards a culture of mass higher education. Allen and Seaman (2011) established that around one-third of higher education students in the United States took at least one online course, and Bach et al. (2006) cited online learning as a key part of the massification of higher education. However, Trow (2006) argued that in social systems where higher education is now seen as effectively obligatory, there will be challenges in maintaining the motivation of students. As a whole, this picture supports the contention of Coates (2007) that we have a good understanding of ways in which specific forms of educational technology support engagement, but that we still know relatively little about how students engage in their learning when it is considered as a whole.

Research on engagement as it relates to the student experience, however, tends to focus on entire groupings of students with specific characteristics or within given institutional settings (Kuh and Hu 2001; Kuh 2009). This focus on groups of students is also apparent in research that seeks to account for patterns of engagement specific to ethnic minorities and low-income students (Harper and Quaye 2009). Yet it is clear that these perspectives only offer a partial explanation for student engagement because, as Kuh (2009) argued, “the variance within any group of students ... is almost always greater than between the groups”. If we are to gain a more comprehensive understanding of student engagement, it is important to consider how individual students determine their own engagement.

Agency and student engagement

Kahn (2014) argued that there are good grounds to theorise student engagement as the exercise of agency by students in relation to their learning, where agency is understood to refer to human intentional action. This approach to theorising student engagement allows one to consider how individual students determine their own actions, while also taking into account the structural setting within such action is conducted. Archer (2003), meanwhile, argued that the exercise of agency operates in a staged process. Agents are placed in particular structural settings that constrain and enable their actions. They configure their own concerns in relation to these settings, and then they establish both concrete courses of action and sustained practices. On the basis of this model, student engagement would involve the individual student taking forward concerns as a learner within a given setting, and then translating these concerns into one-off projects and on-going practices. This view of student engagement highlights how observable outcomes such as spending time on a task or establishing a study group with other students are both driven by the student and influenced by structural constraints.

Archer (2003) analysed how the pursuit of such projects and practices is underpinned by reflexivity, which she also referred to as internal deliberation. If one is looking to prioritise concerns, undertake projects or embed practices, then it is important to deliberate on the ways in which one’s concerns and activities relate to one’s social context. She explored the different ways in which individuals engage in this deliberation, identifying a set of distinctive modes of reflexivity. Communicative reflexives are those who characteristically share their deliberations with others before taking action. For instance, someone employing in communicative reflexivity as they consider whether or not to embark on a degree programme might share their concerns and ideas with a close friend before they make a decision. Autonomous reflexives are less likely to share their deliberations with others and instead typically have complete internal conversations with themselves, which then lead to action that is focused on performative achievement. A prospective student for whom autonomous reflexivity dominates might be inclined to look at comparative data relevant to several degree programmes in order to maximise his or her chances of achieving the desired outcome. Meta-reflexives are characteristically reflexive about their own reflexive deliberation. This may result, for instance, in a higher level of awareness about the social impact of their actions. A meta-reflexive might thus be more highly attuned to the social consequences of a decision to study. Finally, fractured reflexives undertake internal conversations that are typified by anxiety, leading to an absence of purposive action and to making decisions in an essentially passive way. A fractured reflexive might still choose to study for a degree, but he or she might be more likely to make the decision in a reactive fashion. Archer (2003, 2007) has contended on the basis of empirical research that one mode typically dominates an individual’s reflexive deliberations, even if an individual may also be able to deliberate in ways characteristic of other modes as well.

Archer (2007) demonstrated how the exercise of each mode of reflexive deliberation results in distinctive outcomes in relation to social mobility. Kahn (2014), furthermore, offered an initial theoretical exploration of ways in which reflexivity might influence the agency of learners. It is not to be expected that agency would be exercised in precisely the same way in two quite different settings. It is important to consider the extent to which Archer's conceptualisation of agency might apply in settings beyond those that pertain to social mobility.

In this paper we report on an empirical study that explored the reflexive basis for student engagement in a series of online learning environments. We focused on the following research question: "To what extent does Archer's model of agency explain the engagement of postgraduate students in online learning environments?" In order to address this question we used a multiple case study approach and interviewed individual students, treating each student as a separate case. We selected different disciplines as the basis for the multiple cases in order to develop our understanding of reflexivity in varied contexts. It is important to attend to such variation in case study research (Stake 2006), with Archer (2007) specifically emphasising the way in which different contexts have the potential to affect the exercise of reflexivity.

Method

Context and participants

We conducted our study with students taking online Masters degrees in three disciplines: Public Health, Management and Computer Science. The degrees form part of a suite of programmes at a research-intensive university within the United Kingdom, with the programmes offered to students across the world on a fully-online basis in collaboration with a partner organisation. The authors of this paper included one member of staff from each of these programmes, but at no point was the identity of the students revealed to these three researchers. Each degree programme was sub-divided into a set of separate courses or modules. We recruited participants via email from two modules on the Master of Science degrees in Management, briefing them in the email about the nature and purpose of the research. Students were similarly recruited from two modules in Computer Science, and from the dissertation module in Public Health. All students who volunteered were accepted onto the study, specifically giving their consent to the data collection entailed in the project. This resulted in 22 participants: 13 male and nine female students from ten different countries. Eight were from Management, eight from Public Health and six from Computer Science. This represented around 25 % of the students who were approached, with no incentives offered for participation in the study.

The study was separated into two phases. The first phase focused on an analysis of asynchronous discussion board postings, and the second phase consisted of individual interviews with a sub-group of eight students.

Instructional activities

Each of the modules in Management and Computer Science was 8-weeks long and used asynchronous discussion boards. One of the Computer Science modules incorporated a 5-week software-design group project. Meanwhile, students undertaking the dissertation in Public Health participated in a 2-week long dissertation preparation class, which also included asynchronous discussion boards. The nature of the discussion board questions varied depending on the module and the discipline. Students in Computer Science were required to respond to two discussion questions each week, and to contribute approximately four follow-on postings. On the Management modules, students were required to participate in one discussion question each week, and expected to contribute at least three follow-on responses. Participation in the discussion boards of the dissertation module in Public Health was not formally required, but directly supported work towards the dissertation. Clearly, one might anticipate a lower volume of postings from students in Public Health given the absence of a formal requirement to post.

It is helpful to offer examples of the types of discussion questions used. Students in the 'Software Engineering' module were asked:

Assume you have been placed in charge of a new mission-critical project. You are to put together your team(s). Determine the types of skills you would look for in perspective programmers and analysts to improve the dependability of the effort.

On the 'Economics of Oil, Gas and Energy' module students were asked to address the prospects for reducing global climate-changing emissions. In Public Health students were asked to discuss: "(i) Why are research ethics important? Exemplify your answer; (ii) what are the key issues to be aware of and address in relation to your own proposal?" In each case the question was intended to prompt open-ended discussion on the given topic, and to provide an opportunity for the students and the facilitator jointly to make sense of an issue.

Data collection and analysis: first phase

During the first phase of the study, the two researchers who were independent of the three programmes collected all of the discussion board postings completed on the modules by the participants. We developed a coding sheet to allow identification of occasions where students exercised agency, at least in relation to the activity evident on the discussion board. The coding sheet focused on concerns held by students, and on actions undertaken in response to identified concerns. The coding sheet identified eleven specific features of postings: Initial Concern (Identification of a concern or problem; acceptance of the concern or problem as warranting further exploration), Exploration (exchange of information without attempt to conclude, dismisses aspects of the problem; defends aspects of the problem), Integration (integrates a number of sources or ideas, builds on others' suggestions, extends others' ideas), Resolution (proposes a well-thought out solution, integrates further contributions into the solution, reaches agreement on the solution). We framed these features on the basis of the notion of cognitive presence introduced by Garrison et al. (1999) in their community of inquiry framework. We thus viewed the construction of understanding in a discussion posting as the pursuit of a project by a learner, helping to operationalise the conceptual model of agency from Archer (2003) within the setting of an online learning environment. Each discussion posting was analysed against this coding sheet, with the number of times that each specific feature was identified then tabulated

against each week of the given course and each student. We made use of this coding sheet to provide a broad indication of the extent to which the participants were pursuing learning projects. We further used the coding sheet to identify postings that might warrant exploration during the more detailed second phase of the study. We thus did not use the coding sheet as a formal (validated) tool to ascertain an objective indication of how actively a student was constructing understanding through the discussion boards.

Data collection and analysis: second phase

The second phase of the study involved an in-depth interview with each of the eight participants in the sub-group about their engagement in the relevant module and on their degree programme. These eight students were selected from amongst those who indicated a willingness to be interviewed in order to reflect variation between expressions of student engagement identified during the analysis in the first phase, as well as a balance of male and female students from different countries and disciplines. Such purposive sampling enabled us to ensure a diversity of cases, as appropriate to the search for insight in case study research (Stake 2006). Indeed, the use of a larger sample within the first phase of the study meant that it would be possible to preserve helpful variation within a more limited sample for the more detailed second phase of the study. Further consideration is given to the appropriateness of the sample size below, and further details of the participants are provided in Table 1. It is also worth noting that each of the participants was in the latter part of his or her degree. This meant that substantively disengaged students were less likely to have been included within the sub-group.

Each interview was conducted via Skype by one of the two researchers who had no direct role in any of the programmes, and lasted around 40 min. The interviews included generic questions focused on specific modules that the students had already completed. These questions were designed to explore the nature of any reflexivity that might have accompanied their studies, and they included the following:

- Were you aware of taking any time to pause and think about the tasks that that you had to do for your studies on this module, or what was involved in your studies, while you were accessing your class online or working towards an assignment? (If so) What encouraged you to take such time to think?
- Did you think about your studies on module X outside of the periods that you were actually online or working towards a specific assignment? (If so) Can you identify anything that would trigger this thinking beyond the immediate confines of your work on the module?

Table 1 Profile for the interviewed participants (Note: names provided are pseudonyms.)

Participant	Programme	Gender	Location (by region)
Bassey	Management	Male	Africa
Okedi	Management	Male	Africa
Kwame	Management	Male	Africa
Rutger	Computer science	Male	Europe
Philippa	Computer science	Female	Europe
Daniel	Public health	Male	North America
Yamin	Public health	Female	Asia
Liam	Public health	Male	North America

Additional questions were grounded in the analysis of the students' discussion postings from the first phase, helping to ensure that the interviews did not rely entirely on what participants could recall (Hsieh and Shannon 2005). For instance, after reminding a student of a particular posting (or set of postings) that he or she had made, the student was asked to elaborate as follows: "Do you remember making this posting? Could you say a little more about how it felt or what you were thinking about as you made the posting?" This enabled us to probe the experience of students in relation to specific occasions where we had seen evidence of the pursuit of a learning project.

We primarily employed theoretical coding (Flick 2014) in order to identify a hierarchy of categories that matched the theoretical constructs around agency noted above from Archer (2003) and Kahn (2014), employing the qualitative data analysis software, Nvivo, to assist in recording and managing the resulting categories. Consensus coding was employed during data analysis of the interview data (as also for the analysis of the discussion board postings), with one researcher conducting an initial phase of coding and the lead researcher determining a final version (Saldana 2012). Significant attention was devoted to ensuring that both coders had a common understanding of the given theoretical categories, in order to enhance reliability. Possible interpretations of theoretical categories were discussed, to establish a consensus between the researchers in formulating categories and assigning data to a given category. This built on the mutual understanding that was developed alongside the interview process, with interviews again conducted by both researchers. Emerging findings from the analysis were discussed with the team as a whole. Saldana (2012) argued that it is reasonable for coding teams to dispense with quantitative measures in establishing the reliability of coding in favour of such dialogical approaches.

Ashwin (2012), however, argued that it is essential to go beyond simply identifying theory within a data set, and that it is important for data analysis to provide a basis for challenging any initial theory. We also employed a data-driven approach to coding that involved more open comparisons of data and codes (Flick 2014), in seeking to generate counter examples that might suggest a need for revisions in the initial theoretical stance. Robson (2011) indicated that it is important to find ways to develop potential alternative explanations in qualitative research. The small sample size employed in the study is justified in part on the basis of this drive towards generating counter examples in order to develop an existing theory. Finally, we also more briefly considered students as separate cases, identifying patterns in their reflexivity as a whole and contrasting these patterns with the thematic analysis. On this count, the reflexivity manifested by each individual is of interest in its own right, even for a relatively limited number of individuals. One is thus also able to ascertain how well the reflexivity manifested by each subject relates to the initial theoretical stance.

Results: student engagement in their online learning environments

The first phase of the study was essentially designed in order to pave the way for the second phase. We thus report only briefly on the first-phase results and focus on data from the students who were subsequently interviewed. Table 2 provides a summary of the participation on the discussion boards demonstrated by the interview sub-group, as tabulated against the four main sub-divisions of our coding sheet. In overall terms, scrutiny of the table suggests that these participants were meeting basic expectations, and that they were pursuing projects as learners through the online discussion boards. Our main interest,

Table 2 Summary details for postings on discussion boards for the interview sub-group

Participant	Total postings	Initial concern	Exploration	Integration	Resolution
Bassey	61	7	25	70	1
Kwame	66	18	52	86	7
Okedi	55	13	25	77	1
Rutger	185	32	98	160	2
Philippa	147	39	15	104	3
Daniel	7	7	7	13	0
Yamin	5	0	6	7	0
Liam	4	3	3	10	0

Column 2 presents the total number of postings for each student. Columns 3-6 present the number of occasions where a feature of cognitive presence was identified within a posting under the given category

though, was in developing an understanding of the basis for the engagement of these students in their learning. Unless otherwise indicated, the findings that follow are exclusively based on the interview data.

The agency of the learner under given structural constraints

The students who were interviewed cited a range of concerns about their studies. We identified concerns that were linked to how best to carry out a required task on 18 occasions, while concerns that pertained to the utility of their studies and tasks for employment were identified on 13 occasions. The range of concerns manifested by students within the interviews thus went beyond those focused on the construction of understanding when posting on a discussion board. Students made explicit connections between the tasks they carried out in the module, and activity that they would then be able to undertake in their employment. Bassey, for example, said: “I realised, actually, I know nothing about energy management, but realised the need for my company.” Archer (2007) suggested that such employment-related concerns are characteristic of autonomous reflexivity, focused as this mode of reflexivity is on one’s own performances in society. All of the students who were interviewed manifested at least some concerns that were typical of autonomous reflexives.

These concerns typical of autonomous reflexives were taken forward by students as they progressed specific one-off actions and established practices. The tasks required of students on the modules provided a significant focus for their interview responses, with the following tasks referred to on 174 occasions: completing an initial discussion question posting, follow on postings, dissertation proposal, ethics application, dissertation, group project or other assignment. In many instances, it was at least implicitly clear that the task was accompanied by autonomous reflexivity on the part of the student. For instance, in describing how he went about programming, Rutger indicated that he had learnt over a long period of time to build process models in his own mind:

I was, like, 15 or 16 years old, making programs and trying to figure out how things were working, and this was quite challenging to see how things are working; and I probably still do that today.

In this example, we see that uncertainties associated with programming acted as triggers for autonomous reflexivity. Okedi spoke of the difficulty of a simulation task to optimise feedstock, production, supplies and market prices, indicating: “But I got through it and it was challenging but it just needed some sitting down and getting to understand it.” An implicit link to autonomous reflexivity was also evident in relation to sub-tasks that students formulated for themselves in carrying out the required tasks. The sub-tasks ‘searching for literature,’ ‘reading,’ ‘formulating ideas’ and ‘drafting’ were identified in the interview responses on 62 occasions. Such sub-tasks are essential before a student can go on to display cognitive presence within an online discussion forum. The need for sub-tasks was closely related to the complexity or openness of the overall tasks. For instance, Rutger indicated:

I think one of the great things about this type of study is that you are quite free because of the open discussion questions and, although you have to answer the question, you still have the option in the follow ups to research it in the direction that you want.

There is scope for students to choose their lines of enquiry on the basis of the utility to their employment, for instance. Furthermore, it was clear in 25 of these 62 occasions that the exercise of the sub-task had become an ongoing practice for the student.

Concerns that were categorised as typical of meta-reflexivity were identified on 35 occasions, with the most prevalent of these concerns related to the improvement of one’s own learning in relation to regularly-undertaken tasks. For example, Philippa indicated:

I found that thinking about what I was going to post and posting three or four fairly meaty posts for each discussion question worked better for me than some of the other students that were posting a lot, but less in each post. That was a conscious decision; it worked better for me to think about it.

While the emphasis here was not on the social impact of the students’ actions, such reflexive deliberation is nonetheless itself focused on the reflexivity that is associated with carrying out required tasks. Furthermore, uncertainty was seen to be a factor in 23 of the identified meta-reflexive concerns, linked by the participants to tasks that were perceived as challenging. Schön (1987), indeed, argued that ill-defined problems provide an ongoing reason for professionals to engage in continuous learning in relation to their practice. Archer (2007) suggested that uncertainty may serve to extend the exercise of meta-reflexivity. Given that uncertainty is an inherent element of learning, it is not surprising that Haynie et al. (2010) similarly indicated that metacognitive awareness increases with higher perceived levels of novelty. The tasks that Herrington et al. (2003) highlighted as important to student engagement in the online learning environment also incorporated significant levels of uncertainty for the student. More limited attention was given by the participants to how their studies might enable them to make a contribution to society.

All but one of the students (Bassey) demonstrated some concerns that were typical of communicative reflexives, with 37 instances identified across the transcripts. These included concerns that related to rapport with others and to interactions with others as a basis for making discussions postings or for completing other tasks. For instance, Philippa indicated that overlap between her work and the programme allowed her to talk over discussion questions with colleagues before making a posting. Okedi described how he sought help from a fellow student from his own country and industry: “I just asked him. I said, ‘I’m having some problems getting a book’, and he was able to help me.” We have

seen that communicative reflexives characteristically share their deliberations with others before taking action.

The main features of Archer's model of agency are thus apparent in the analysis of these students' experiences. The concerns and actions of the students were influenced by their structural settings, as they took responsibility for progressing inherently challenging tasks alongside others. These students configured concerns that pertained to required tasks, and produced specific courses of action and sustained practices on the basis of reflexive deliberations.

Beyond dominant modes of reflexivity

Archer (2007) suggested that individuals can be characterised by a single dominant mode of reflexivity. In our account, however, we have seen several characteristic modes of reflexivity in play for the same agent. If we consider the reflexive profile of our participants, each student exhibited concerns typical of autonomous and meta-reflexives, and all but one manifested communicative reflexivity. Philippa, for instance, provided balanced indications of all the modes of reflexivity that support purposive personal and mutual action. Yamin demonstrated indications of all the modes of reflexivity, although she offered strong indications of autonomous reflexivity in comparison to the other modes. Bassey was the only participant not to offer any specific evidence of communicative reflexivity during his interview.

Given the complexity of the structural demands on these students, it is perhaps not surprising that we were not able to identify dominant modes of reflexivity for our participants. It was clear, furthermore, that significant overlap was present between specific concerns: nine of the meta-reflexive concerns were also included in other categories, with the same true for 11 communicative reflexive concerns and 14 autonomous reflexive concerns.

The overlap in characteristic modes of reflexivity for the same subjects mirrors that in a recent study by Kahn (2013) that focused on developments in tutors' practices. Similarities are also present with the study by Porpora and Shumar (2010), which saw overlap in subjects between communicative reflexivity, and either autonomous or meta-reflexivity.

Reflexivity underpinning the attainment of shared goals

Archer (2003) also gave consideration to intentional action that entailed individuals joining together in order to articulate and promote mutual interests, terming this corporate agency. However, this was treated on a largely separate basis to the agency that was seen to influence social mobility. In our case, though, many of the concerns, projects and practices exhibited by the students could be characterised by the extent to which they were mutually held or pursued.

We identified 42 occasions when the sub-group students spoke of concerns that were specifically shared with others, and in which a shared goal was at stake. For instance, Rutger recounted one occasion as follows where this mutuality was in evidence: "I had a discussion with a person and they really followed what I was doing and he was provoking me and I was answering showing my side, and getting further and further." The shared goals either pertained to the development of mutual insight or to the completion of a group project. We can characterise this as an instance of collective reflexivity (Donati and Archer 2015), something that occurs when two or more parties each deliberate about the emergent effects of their relationship.

The development of mutual insight through an online discussion board represents a project that is shared by the learners. It was apparent that such projects were underpinned by a range of social practices. We were able to identify 73 instances within the transcripts of specific social practices relevant to this mutual learning, with each of the participants manifesting at least one such practice. Table 3 shows the categories developed to characterise the social practices that were employed by the participants on an ongoing basis as they sought to achieve shared goals. A student might be drawn into participate in a particular learning activity, if they are invited to contribute, challenged or encouraged. The most commonly applied strategy was to seek to identify common interests. For instance, Daniel mentioned that if discussion question postings were contextualised within a region or culture that he felt was not relevant to his own professional setting, he would try to add a posting offering a perspective that specifically sought to shift the discussion as a whole onto territory that aligned more directly with her own interests. The nature of the discipline of public health meant that the deliberate exercise of such a practice was required if mutual insight was to emerge. Students had complete freedom in relation to which posts they

Table 3 Social practices that directly support the development of mutual understanding, as referred to by students within the interviews

Social practice	f	Comment	Selected quotation
Invitation	6	Incorporating into discussion posting one or more open questions that invite a response	I think at the beginning I wasn't asking that many questions, either. I had my answer and I wasn't asking a question to get a follow up on my answer again. (Rutger)
Provocation	18	Provoking others in order to build mutual understanding	I guess the first thing that I do is challenge someone else's idea but the end product can often lead to the exact opposite where it can change in my mind. (Daniel)
Identifying a common interest	29	Drawing out each other's interests, through mutual self-disclosure or selectivity in the postings to which one responds	I try to bring my own experiences, as there will be some variations on this as people are in different countries and will have had different experiences. (Okedi)
Reaching out	3	Reaching out to students who receive fewer responses from others to their postings	I just look at students who are less engaging in the class showing that I can also appreciate their posts. This is how I engage with the classroom. (Yamin)
Defending	10	Bringing additional insight to bear in support of one's case	On some occasions I felt like I had to defend my previous answer but I'd hoped that I had done that by providing extra evidence rather than being argumentative. (Philippa)
Encouragement	7	Provides a stimulus to further research	When people like what you write then they watch out for the next posting, and that works for me, because I get compliments and then want to do more research. (Kwame)

Column 2 presents the frequency count (f) for occurrences of the given social practice

responded to with follow up posts, allowing them to discuss interests of theirs that overlapped with those of other students.

The practices are intrinsically linked to uncertainty in that the responses of others cannot be straightforwardly known in advance. Daniel, for instance, could not tell at the outset if he would be able to move discussion onto his desired territory; if the discussion did not shift he would leave it. Such uncertainty helps to ensure that a reflexive dimension remains important in the execution of the practices, with collective reflexivity thus manifesting itself as an integral feature in each case. The genesis of these social practices is also of interest. For instance, it might have been the case that students first began to employ particular practices after seeing them modeled by a tutor. Consideration of such issues, though, lies beyond the scope of this study.

Challenges in establishing constructive forms of collective reflexivity

The pattern of reflexivity exhibited by the students can be differentiated from that identified by Archer (2003) in one further regard. Fractured reflexivity represents a mode of reflexivity that Archer (2003) argued does not easily allow one to exercise agency. This includes forms of mental life that are best described by a substantive absence of reflexivity, which Archer characterised as near-non reflexivity.

Participants exhibited concerns on 19 occasions that we identified as typical of fractured reflexives, in which concerns were focused on frustrations rather than on constructive ways forward. Clear variation between our participants was evident, as only four of the eight participants offered indications of such reflexivity, although this did partly reflect the structural constraints in place within the different disciplines. What is of most interest, though, is that the fractured reflexivity occurred above all in relation to the pursuit of mutual objectives, especially those centred on specific tasks where students felt their control was limited. For instance, students in Public Health needed to secure approval from others in order to progress their research, whether a dissertation advisor, an ethics committee or a workplace manager, within a given time frame. As Yamin said:

Well, during the first 2 months of the research module; yes, it's when developing the research question and while waiting for the local ethical approval. Those are the real things that I have to face and during that time I was really frustrated because I hadn't decided yet in which country I have to do the research.

Particular challenges were also faced by the Computer Science students when conducting the group project, partly given an absence of similar tasks at earlier points in the degree. Philippa remarked on the frustrations entailed in collaborating with others when everyone had different preferences about when to study, something accentuated by living in different time zones. It was also the case that fractured reflexivity was evident in relation to discussion postings, although of a more tempered nature. Kwame, for instance, expressed some 'nervousness' in relation to postings when discussions related to problems in his own country. We characterise this as a fractured collective reflexivity.

Kahn (2014) drew attention to a potential role for a restricted reflexivity that involves students taking what might be termed short cuts in their completion of required tasks. By contrast he suggested that reflexivity which crosses various characteristic modes may have a tendency to be extended in time. Flann (2010), meanwhile, argued that reflexivity can be restricted when one person dominates another. Participants in our study reported ways in which the pursuit of joint concerns was limited by practices that worked against mutual understanding, as when someone dismissed the views of another without recourse to

argument; expected the tutor to indicate the way forward; or looked to divide a group project into separate tasks to minimize interactions. Such practices specifically restrict the occurrence of collective reflexivity. In relation to the group projects, for instance, Rutger was keen to ensure that each person in the group made a significant contribution to the joint output, although he stated that this concern was not shared by every group member:

Sometimes you end up in a group with others who aren't as motivated or aren't as engaged and then it can be tough to get responses and you need to be patient till the end of the week until they post what they have been doing.

This suggests restrictions on both the social practices that related to the joint activity (e.g. on exchanging or discussing work) and on collective reflexivity prior to the end of the week. It is finally also worth noting that collective reflexivity can be limited in terms of who is drawn in. For example, it may have been the case that Bassey's pattern of collective reflexivity was restricted in these terms.

In conclusion, we have identified ways in which fractured and restricted collective reflexivity constrained or weakened the capacity of the participants to pursue projects as learners. This contrasts with a focus on forms of fractured reflexivity that pertained simply to individuals in Archer (2003). We can contrast the nature of the engagement linked to fractured and restricted collective reflexivity with the engagement that emerged in our earlier analysis of the collective reflexivity within the previous section. In this latter case, the exercise of collective reflexivity was directly linked to the agency that resulted in learning. A difference is apparent in the extent to which these students were able to exercise agency when displaying these different expressions of reflexivity in situations where mutual objectives are in play.

The relationship between reflexivity and student engagement

It is apparent that a different relationship between reflexivity and student engagement is in view than that identified by Archer (2003) between reflexivity and social mobility. Archer (2003) saw the exercise of autonomous reflexivity leading to upward social mobility. Communicative reflexivity entailed a renunciation of social mobility in favour of a way of life centred on one's family and friends, while meta-reflexivity ensured that a greater value was placed on things other than one's own social status.

By contrast, the reflexivity exhibited by the students in this study was seen in part as a response to the structural constraints that were in place in their settings. Students did not manifest dominant modes of reflexivity, but exercised several characteristic modes of reflexivity concurrently. It may be the case that students who are unable to establish such a varied pattern of reflexivity will be more likely to drop out at an early stage in their studies. There are limitations in our account here, given that the methodology employed resulted in general terms in the selection of participants who were engaged rather than disengaged.

The exercise of collective reflexivity was also seen to be an important feature of the students' reflexivity. This contrasts with the substantive absence of such reflexivity in the account given by Archer (2003) in relation to concerns and actions affecting patterns of social mobility. Mutual insight was seen to be established where the students exhibited social practices and underpinning collective reflexivity, while engagement was weak when students found themselves unable to display constructive forms of collective reflexivity in support of tasks that required interaction with others.

Conclusions

We have seen in this study how a set of online learning environments triggered reflexivity as students sought to establish concrete courses of action and sustained practices, in the face of uncertainty and complexity. The model of agency developed by Archer (2003) suggested that agents configure their own concerns in given settings, and then produce specific courses of action and sustained practices on the basis of reflexive deliberations. This present study suggests that Archer's model does help to explain how the interviewed students engaged in their learning. Archer (2003), however, further argued that subjects display one dominant mode of reflexivity, at least when agency is considered in relation to social mobility.

In our study, though, the participants were seen to draw on both a range of modes and on the collective reflexivity required to progress shared goals. The varied demands of the required tasks and the associated social relations was evidently a factor in this. The engagement of these students in their learning involved establishing a pattern of reflexivity that typically incorporated all of the constructive modes of reflexivity identified by Archer (2003). It also entailed the students in exhibiting constructive forms of collective reflexivity. In this, overlap was evident between collective reflexivity and associated social practices, such as provoking or encouraging someone else in a discussion, sharing progress on a joint project, and so on. We identified two specific forms of collective reflexivity that were linked to student disengagement in relation to joint tasks, and these can be contrasted with the development of mutual insight that resulted from the exercise of collective reflexivity in relation to the discussion boards. If a student is unable to establish such a varied and constructive pattern of reflexivity, then the demands of a learning environment may become difficult to sustain and the student may be more likely to leave the programme.

There is a range of implications for practice from our findings. Learning environments frame specific tasks and social relations, and thus expect particular profiles of reflexivity. Our study concerned learners who had already adjusted to the reflexive demands of many aspects of their learning environments. However, as new demands were included some students found it challenging to deliberate in ways that would help them to pursue concrete ways forward. In the context of a Masters degree, for instance, additional demands are added when a dissertation is undertaken. The dissertation is typically significantly extended in time in comparison to other tasks in a Masters degree, and in the case of the students considered here involved interactions with others that were not within the students' control. There is scope for dissonance between a student's reflexive profile and the demands of their learning environment. Such dissonance could be addressed through targeted interventions. For instance, the social practices that were seen in this study to support the development of mutual insight within asynchronous online discussions could be specifically promoted to students. Facilitators, meanwhile, could support students in developing and making use of these practices, and in drawing their attention to the reflexivity that underpins them.

In extending this research, one particularly interesting area concerns the balance between habit and reflexivity in learning. In outlining a theory of practice, Bourdieu (1977) claimed that an individual's capacity to undertake intentional action is determined by dispositions that arise from long-standing participation in a social grouping. Our study considered student engagement in online classes in relation both to tasks that they had frequently encountered in their studies and to tasks that they had only recently encountered.

However, even in relation to familiar tasks, this study has demonstrated that learning can be shaped through reflexivity. This was apparent, for instance, in the reflexive basis for the generation of mutual insight during online discussion

It is essential that we continue to develop higher education in ways that promote effective forms of student engagement. This is particularly important in relation to learning that is supported online, given the challenges associated with retention in online courses. We have demonstrated that it is helpful to take into account the role that reflexivity plays in student engagement. Consideration of the role that reflexivity plays in student engagement means that we are able to consider students as individuals in their own right, while also taking into account the structural influences.

Acknowledgments The authors acknowledge the joint funding that was provided for this project from both the university at which the study was conducted and the partner organisation.

Compliance with ethical standards

Ethical approval Ethical approval was provided through the relevant university ethics sub-committee.

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Peter Kahn is Director of Studies for the Doctor of Education (EdD) programme at the University of Liverpool. His research focuses on the study of higher education, taking in such areas as online learning, professional education and collaborative working.

Lucy Everington has recently completed a PhD in the area of Operations Management at the University of Liverpool Management School.

Kathleen Kelm is Director of Faculty Development at Laureate Online Education, and an Honorary Senior Lecturer at the University of Liverpool. She has research interests that include uncovering effective practice in using Web and mobile technologies to provide an enhanced online graduate student.

Iain Reid is a Senior Lecturer in Operations Management at the Business School at the University of Huddersfield. His research primarily centres around Supply Chain Risk Management, Knowledge Transfer in Engineer-to-Order, theorising the process of Project Management and the 'Learning-Doing' gap.

Francine Watkins is a Senior Lecturer in Public Health at the University of Liverpool Department of Public Health and Policy, where she is Director of MPH Programmes. As a qualitative researcher she has worked on a number of research projects looking at hard to reach groups and their access to healthcare and the impact of marginalisation on the health of people living in rural areas.

