USING SOCIAL MEDIA TO PROMOTE DEEP LEARNING AND INCREASE STUDENT ENGAGEMENT IN THE COLLEGE OF SCIENCE & ENGINEERING

Shazia Ahmed, Sarah Honeychurch

University of Glasgow
Learning and Teaching Centre
University of Glasgow
G12 8LB
shazia.ahmed@glasgow.ac.uk
sarah.honeychurch@glasgow.ac.uk

Abstract: Peer assisted learning (PAL) can be a useful aid to student success, but it can prove challenging to schedule face to face sessions at times when students can attend. This paper discusses the organisation and implementation of a virtual alternative: VPAL (virtual peer assisted learning). Support staff at the University of Glasgow use Facebook groups in order to implement VPAL in the College of Science and Engineering. This paper sets out our reasons for using Facebook groups before describing our model in some detail. We next give detailed examples of typical interactions and student feedback in order to show how our communities unfolded and surpassed our expectations. A discussion about why this model is a success follows, including a consideration about its continuing emergence. The paper concludes with a discussion of the sustainability and transferability of our model to other subject areas and institutions.

Keywords: Facebook, Social Media, Virtual Peer-Assisted Learning, PAL

1. Introduction

Students who engage in peer assisted learning (PAL) are more likely to be active learners who are motivated to engage in their own learning (Howe & Foot, 1988). However, attendance at face to face sessions can be disappointingly low (Love et al, 2013). This paper reports the results of an intervention designed to address this problem which we call VPAL (virtual peer assisted learning) and which we deliver by using Facebook groups. It begins by giving a very brief overview of the need for some sort of PAL to support our pre-honours students before setting out our model of VPAL in some detail. Next we provide examples of typical student conversations and student feedback about our model in order to demonstrate and explain how and why it continues to prove so successful. We then suggest that the communities which are evolving are richer by far than the traditional PAL they replace. We end with some remarks about the sustainability and transferability of our model.

2. Literature Review

Below is a short literature summarising our reasons for selecting Facebook groups for our model of VPAL.

2.1 Problems of traditional PAL

Love et al (2013) discuss problems with student attendance at face to face PAL sessions and reasons for this, and setting up Facebook groups was our attempt at a solution to those problems. Huijser

(2008) also highlights the fact that many students have other constraints upon their time, meaning that their social and academic contact can be very limited.

2.2 Students are already there

Clark (2012) provides seven reasons why Facebook is a "front runner" in uses of social media for learning, the top reason being that students are "already there". This is supported by the University of Glasgow's "digital natives" bi-annual survey of incoming first years, which found that more than 96% of students already have social networking profiles (Honeychurch & MacCluckie 2014). Likewise, Singh (2013) talks about the need to meet students in their "digital habitat" and Junco (2011) cites studies that show that anywhere between 85-99% of students have Facebook profiles.

2.3 Students can get support quickly

Nevin and O'Dell (2008) mention the fact that students are able to find support and reassurance quickly, and give examples of students interacting even when they are not able to travel to campus. We have numerous examples of these in our Facebook groups and discuss some of these in Love, Ahmed and Honeychurch (2013).

2.4 Engaging students and supporting learning

Junco (2011) draws on Astin's (1984) theory of student engagement, which is defined as: "the amount of physical and psychological energy that the student devotes to the academic experience". Junco cites research showing positive correlations between social networking use and student engagement in their studies (p164). Kuh (2009) distinguishes engagement in and out of class, and emphasises that both are important for student success. Our Facebook groups were initiated in order to promote out of class student engagement and our findings support those of Junco and Kuh (Love, Ahmed & Honeychurch 2013).

2.5 Learning communities

Dawson (2008) stresses the importance of a community to learners and uses the idea of social capital to analyse forum discussions to discover students' sense of community. Singh (2011) uses Facebook as a means of building communities, facilitating networking and team building between his students. Interestingly, Hsu et al (2011) found that Facebook was useful as a mechanism for people who have only just met to get to know each other.

2. 6 Lecturer presence intimidating

Students can feel intimidated by the presence of their lecturers. Singh (2013) found that this could inhibit students from posting to Facebook groups.

3. Background

The flexible College-entry system at the University of Glasgow results in the majority of first year students studying three subjects which will often span more than one College. Specialisation in their chosen subject takes place in the Honours years (third and fourth years). There are many advantages to this system such as the opportunity to study new subjects and/or to continue with subjects previously enjoyed. However, this also means that students often lack a sense of identity or belonging especially in earlier stages of University.

Six years ago PAL was introduced as retention initiative for level 1 and 2 students in Computing Science and Mathematics. Students were given the opportunity to work on course material with their classmates with senior students as facilitators. Although feedback for these sessions was very positive, attendance levels were very low.

There were several reasons for this:

1. As students study three subjects, the combination of lectures, tutorials and often laboratory sessions for very large classes means that there is no 'standard' timetable and so finding a time to suit students was very difficult;
2. Students have other responsibilities to juggle, for example, many have part-time jobs and have caring responsibilities etc. (See Love et al (2013) and Huijser (2008) for discussions about this point);
3. More than 40% of home students commute (Timmons, 2014) and after a long day of classes many will opt to go home particularly during the winter months when it's dark and cold;
4. The three subjects are often not equal in importance to students. For example, some students will have enrolled in Mathematics as their intending Honours subject; some will be pursuing it as a pre-requisite for another degree course such as Physics or Computing Science while others still may have chosen Mathematics to complete their curriculum, having no intention of continuing it beyond first year. Heavy workloads for other subjects may override any desire to attend a voluntary PAL session in Maths.

We decided to see whether Facebook groups would provide a viable alternative. We chose Facebook because we knew that most students already used Facebook regularly (Clark, 2012; Honeychurch & McCluckie, 2014; Singh, 2013; Junco 2011). The first two groups to be set up were level 1 Mathematics and Computing Science, which in a way were a continuation of the traditional PAL groups. The members of staff moderating these groups were the Maths Adviser (Shazia Ahmed) and the Retention Officer (Lorna Love, who is a Computing Scientist).The aim was to provide the students with a virtual and accessible space where they could talk to classmates, senior students and support staff: the thinking behind this being that it would be better for students to have a virtual space than have no space at all.

The following year two more subject-specific groups were introduced: Physics and Astronomy, and Engineering. Senior students were invited to join these groups and contribute to discussions, and many did so voluntarily. A Learning Technologist (Sarah Honeychurch) also offered to help moderate the groups. In the meantime, the existing groups were rolled over and renamed as second year groups. This process has continued over the last few years and we now have Facebook groups for students from first year through to fourth year.

4. Current Model

In the summer of 2013 we made the decision to implement Facebook groups across the whole of the College of Science and Engineering. We set up a Facebook group called "SLS Science and Engineering 2013-14 Entrants" (the "landing page") and then set up subject specific groups for each subject within the College, calling them "SLS Level 1 [subject name]", etc. Links to these latter groups were posted within the "landing page" group. With the help of the Recruitment Office, who contact each incoming student prior to induction with information about how to register and when induction sessions will be held, we contacted all of our potential members and invited them to join the "landing page" group. Once students joined they were encouraged to click on the links to their subject specific groups and join the ones for their subjects. We asked senior students to join any or all of these groups and many did. We and the senior students posted welcome messages, explained who we were, and seeded "introduce yourselves" threads.

This model proved to be a great success, so we decided to continue it for the next (2014-15) academic session. We "rolled over" the original subject specific groups and renamed them as "SLS Level 2 [subject name]", etc. and created a new "landing page group called "SLS Science and Engineering 2014-15 Entrants". We also created new level one subject specific groups called "Level 1 [subject name]" etc.. As the previous year, we again encouraged senior students to join the new groups and many did. Our plan is now to continue with this model, so that over the summer of 2015 we will again roll over the groups and set up new ones, so that eventually we will have groups for each of the four years. The diagram below sets out the structure of our VPAL groups (see Figure 1). In the sections following we provide detailed examples of student conversations and feedback about their experiences.

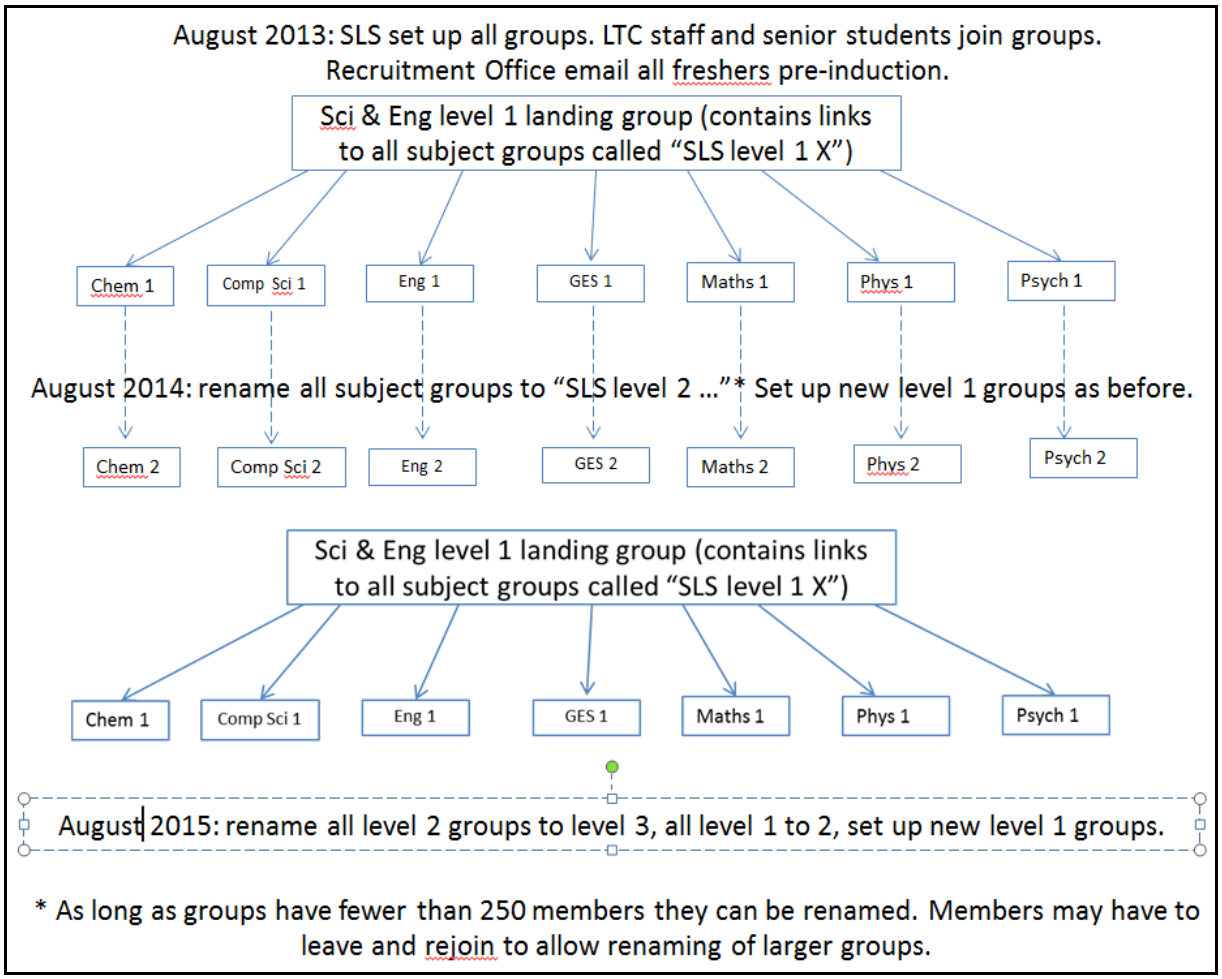


Figure 1: structure of Facebook groups in the College of Science and Engineering

5. Examples of student conversations

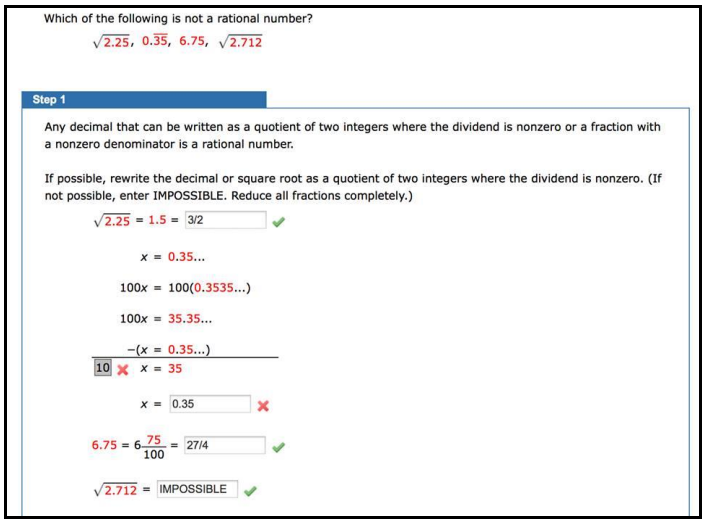
The Honours students use the groups mainly for sharing resources and other information such as organising the graduation ball. Students studying abroad for a year (Erasmus) use the group for keeping in touch with their classmates.

The pre-Honours students use the groups more for getting to know each other, exchanging information and discussing work. Senior students reply with hints to the questions posted in the groups, in particular the seniors offer the juniors advice on how to use WebAssign, the online system used by the School for submitting weekly assignments.

Some examples of typical posts are listed below.

5.1 Where have I gone wrong?

Student A: Is anyone doing the web assign assessment for Maths 1R? if so can someone tell me what I did wrong here or even how to do it. Thanks.

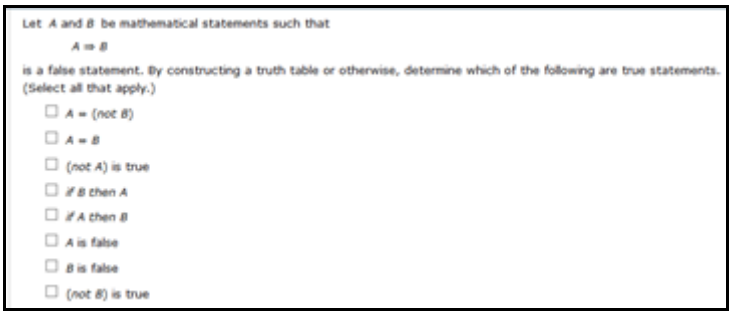


Student B: Well I couldn't understand that X part as well, so I just skipped it. If you keep trying your percentage of the answer will lower every time, so I would leave that answer in that situation, it's just 2 mistakes on many answers.
Anyways you are on a Facebook group managed by some professors of the University and you are looking for the answers...
Senior Student: and since x = 35/99 the box you put 10 in should be 99
Student C: exactly
SA: You are subtracting the two lines directly above the first mistake so you should have 99x = 35 which is why x=35/99. Does this make sense?
Student A: I didn't know that the percentage kept lowering every time you submit, I'll remember that for next time. Also I though the page was for everyone to help each other with their problems regarding maths... And thanks Shazia I think I understand it now.
Student D: The first one is 99 since x = 0.35... so 99x = 35. The 2nd one wants you to write x or 0.35353535353535... as a fraction, so from the one above that you have:99x = 35
x = 35/99
So the answer is 35/99
Senior Student: also as a sidenote, there is a maths group here [*link*]
Student A: [*Student D*] how does x = 0.35... Make the first answer 99? That's the part I have trouble understanding.
SA: It's ok to discuss work and help each other. But having an expectation of getting answers only (not the case here!) isn't great! The point is to learn
Student D: [*Student A*] Because you have a text box right in front of the x, so the question is, what multiplied by x gives you 35. With the answer typed in it just reads 99x = 35, which is correct since x = 0.35...
SA: As [*Senior Student*] pointed out, would you like to use the maths group for these conversations next time? There are lots of non-maths students in this group to whom this won't be relevant.
Student A: Yes I'll use the maths group next time, thanks.
SA: Great! Are you happy with this question?
Student A: Sort of. I still don't really understand why the first part where I had placed 10 should be 99
Senior Student: If we go line by line you have 100x= 35.35353535...
then -x (where x= 0.35353535...) and so 100x - x = 99x
and 35.35355 - 0.35353535 = 35
Student A: Thank you [*Senior Student*] I finally got it
SA: You start with x=0.3535.... Call this equation 1. Then multiply both sides by 100 and get 100x= 35.3535.... Call this eqn 2. Now take away eqn 1 from eqn 2 and you have eliminated the recurring decimal
Senior Student: no problem, its sort of a weird layout
SA: I am clearly very slow at typing!
Senior Student: yeah see i got that it was using simultaneous equations but i thought because it doesn't label them it just looks confusing especially the way the spacing of the lines changes
Senior Student: you're allowed to be slow at typing, you're much better at maths than me (and knitting!)

SA: Maybe knitting, but maths... I think you've zoomed ahead!
And I agree about the layout.
Student E: *Shazia Ahmed* where would I find you at University? any room that in case we need help to pop in with our questions or?
SA: *Student E*, you can make appointments on moodle.gla.ac.uk/slsmaths or come to drop-in sessions. I'm based in the Reading Room btw.

5.2 Ask for hints

Student F: Can anyone help me with this one?



Student G: yeah, I have no idea as well
Student H: Stuck on that too
Senior Student: http://www.millersville.edu/.../truth.../truth-tables13.png
This above is a table about implication operations. T is True, F is False. And implication itself can be described as "if first statement, then second statement". If you're having trouble understanding why the table is the way it is, then http://www.millersville.edu/.../truth.../truth-tables.html has an explanation under the image linked earlier in this reply (scroll down a bit until you find the implication truth table)
To do the exercise, first try to determine whether statements A and B are true/false - this may be impossible as well, but the table should help you decide (i won't be giving answers). Also, equivalence relation (the arrow pointing to both sides) is basically implication in both sides. And it works like this:
"A is equivalent to B" holds true if and only if both statements have the same value (i.e. "A is false and B is false" or "A is true and B is true")

5.3 How do I format this?

Student 1: How is it you put the answers for Q1-4 in? I tried a couple of different ways and it wouldn't accept any
Student 2: So do we know what format it wants?
Student 3: Comma separated list if it's for the WebAssign questions. So like: 1, e^(2pi/4), e^(3pi/12)
I just made those numbers up but that's how they want it.
Student 1: ah ok, I wasn't sure if it wanted a+bi, exponential or polar form

5.4 Student Maths Society (MacSoc)

Senior Student: **HELP ROOM**
MacSoc have recruited 3rd and 4th year volunteers again this semester to help you with your studies! The Maths and Stats Help Room for 1st and 2nd years will be open this afternoon 5-6pm in the Boyd Orr, room 409. Come along with any questions you have!

6. Student Feedback

Feedback from group members has been extremely positive. As well as comments in the Facebook groups and in conversations with us and other staff, we solicited anonymous feedback by setting up a Moodle Feedback activity.

The students found the groups to be a quick and efficient way of finding out information. They pointed out that as soon as they posted a question on the group, either a fellow student or a member of staff would reply very quickly. In fact, some students felt they found using Facebook "much easier than using Moodle and not a chore to check".

Students found asking questions on the Facebook groups "less intimidating" and felt that the questions being asked were useful for others too. It made them realise that others are facing similar issues and difficulties and it made them feel "less stupid". The students have said that the live discussions that take place in the groups are very useful; they learn a lot and that "it's like being in a tutorial".
Other comments have included "it builds a sense of community", "it's easy and informal to interact with other students especially if not living in halls" and one student pointed out that the alerts pulled him back in to academic conversations when he was procrastinating elsewhere on Facebook.

It has been very gratifying to have students describe the groups as being "invaluable" and have said:

> Keep going with these Facebook groups and try as hard as possible to get EVERYONE in the group as early as possible in first year. In my experience as a student who travels in, it helps feel a part of the University. Without the Facebook groups I would feel a lot more isolated and probably at lot less engaged. Keep it up!!

Students are also appreciative of staff input, saying

> I feel that the facebook pages are well-managed/curated by the university staff - there to help when we need it yet able to stand back when we're having a mild moan and I'm glad that we have them.

7. Discussion

We began using Facebook as we believed that students would find it easy to engage in an environment they were familiar with, and this has proved to be the case. However, this model has also exceeded all of our expectations. VPAL has proved to be more valuable than traditional PAL not just allowing students to support each other, but also in increasing levels of engagement and the feeling of belonging. Our model of inviting students to join our Facebook groups prior to physically arriving on campus has allowed supportive communities to develop quickly. Research suggested to us that Facebook can be a useful mechanism for new acquaintances to get to know each other (Hsu, et al, 2011; Singh, 2011), and our experience has shown that to be so for our communities. Early posts in the groups are typically "getting to know" posts - finding out where things are (on campus and online) and what needs to be done and students tell us that having these discussions available via Facebook helps to ease the transition into HE.

As time progresses these Facebook groups have developed into learning communities, with students able to get help and reassurance without the need to travel onto campus or wait for long periods of time before getting answers (see Nevin and O'Dell, 2008 on this point). They are also able to ask questions in these semi formal groups that they might feel uncomfortable asking of their lecturers, because they feel that they are too trivial to merit an academic response. For example, many of the conversations in the junior groups are about the need to articulate questions clearly and use correct terminology in order to correctly submit work. It is also imperative, in order to elicit a useful response, that they do this when posting to the group. Importantly, we think, we are not academic staff in the subject areas of these Facebook groups, so students are far less concerned about asking us "stupid" questions. Conversations on Facebook are not time limited, so that students are able to engage when they have free time rather than needing to stick to a rigid timetable. Non-native English students can take all the time they need to phrase their questions and understand the answers given.

When we began to extend the amount of Facebook groups we were concerned that our workload might increase. However, we have found that it takes far less time than we thought. The more senior groups rarely need our input, and the senior students are more adept at helping the junior students than we are. In addition, there are often times when the Maths Adviser replies to a post by one person and that post is then liked by many students. This makes this type of interaction far more efficient and effective than the face to face one-to-one appointments that are also offered.

As well as being scaleable, this model is truly sustainable because our group members are immersed from the beginning of their studies into a supportive culture - they begin by being helped by students senior to them, and in their turn they grow into senior students who are naturally supportive of those junior to them. Our model is also transferable - there is nothing unique to our student populations that would prohibit other subject areas or institutions adopting our model, and we have already discussed the viability of our model to other interested subject areas. We are happy to advise anybody who approaches us.

8. Conclusion

We hope that this paper leaves you as convinced as we are about the importance of peer assisted learning to student engagement and the superiority of VPAL to traditional face to face sessions. The learning communities which emerge as these groups develop have exceeded our expectations without overburdening either of us with demands upon our time.

References

Astin, A. (1984). Student involvement: a developmental theory for higher education. *Journal of College Student Personnel*, 25(4), 297–308

Clark, D. (Jan 18 2012). 7 reasons why Facebook is front runner in social media learning. DONALD CLARK PLAN B WHAT IS PLAN B? NOT PLAN A! http://donaldclarkplanb.blogspot.co.uk/2012/01/7-reasons-why-facebook-is-front-runner.html

Dawson, S. (2008). A study of the relationship between student social networks and sense of community. *Educational Technology and Society.* 11 (3) 224-238

Foot,H. & Howe,C. (1998). "The psychoeducational basis of peer-assisted learning" ch.2, pp.27-43 in Topping,K. & Ehly,S. (eds.) *Peer-assisted learning.* LEA, Mahwah, NJ.

Honeychurch, S. & McCluckie, B (2014). First Year Student Use of Technology and their Expectations of Technology Use in their Courses. University of Glasgow. Available at: http://www.gla.ac.uk/media/media_334936_en.pdf

Huijser, H. (2008). Exploring the educational potential of social networking sites: The fine line between exploiting opportunities and unwelcome imposition. Stud Learn Eval Innovat Dev 5(3):45–54.

Hsu, C-W., Wang, Ching-Chan., & Tai, Yi-Ting (2011). The closer the relationship, the more the interaction on facebook? Investigating the case of Taiwan users. Cyberpsychology, Behavior and Social Networking 14 (7-8) 476-476

Junco, R. (2011). The relationship between frequency of Facebook use, participation in Facebook activities, and student engagement. In: *Computers & Education* 58 pp 162–171

Kuh, G. D. (2009). What student affairs professionals need to know about student engagement. *Journal of College Student Development*, 50(6), 683–706

Love, L., Ahmed, S. & Honeychurch, S. (2013.) Social media for student learning: enhancing the student experience and promoting deep learning. *Enhancement and Innovation in Education*, 11-13 Jun 2013, Glasgow, UK. Available at http://eprints.gla.ac.uk/86117/

Nevin, P. & Odell, A. (2008). Virtual Learning Communities and Continuous Classrooms. Proceedings of the *Student Mobility and ICT: Can E-LEARNING overcome barriers of Life-Long learning? Conference*, Maastricht University, Holland. Available at: https://www.researchgate.net/publication/230851919_Student_Mobility_and_ICT_Can_ICT_overcome_the_barriers_to_Life-long_learning

Singh, L. (2013). Guided Assessment or Open Discourse: A Comparative Analysis of Students Interaction on Facebook Groups. *Turkish Online Journal of Distance Education-TOJDE* 14 (1) Available at: https://tojde.anadolu.edu.tr/tojde50/articles/article_3.htm

Singh, L., & Gaffar, K. (2011). Using social software to support computer science education: A case of using Facebook Groups. *E-journal of the Caribbean Academy of Sciences (CAS),* 5 (1), pp.1-12. Available from http://ojs.mona.uwi.edu/index.php/cas/article/viewFile/2188/2260

Timmons, L. (2014) The uncritical commute:The impact of students' living situations while at university Student Dissertation. Available at: http://www.psy.gla.ac.uk/~steve/localed/docs/LukeTimmons.pdf

Acknowledgements: To Lorna Love, for starting all of this off.