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Social media for student learning: enhancing the student experience and promoting deep learning

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ABSTRACT: Traditional Peer Assisted Learning (PAL) was introduced as a retention-motivated initiative in the College of Science and Engineering 5 years ago. Despite a high level of interest from students, there were several practical barriers that prevented many students from attending these sessions. As an alternative, an online space for Virtual Peer Assisted Learning (VPAL) was trialed. VPAL was found to have not only all the benefits of traditional PAL but also more that had not been anticipated. In this paper we will discuss the practicalities involved and the design choices that had to be made. We will also showcase some anonymised examples of academic and social dialogue between peers and outline some of the unexpected advantages of using VPAL over traditional PAL.

1 Introduction

Our use of social networks to facilitate learning originates from work done during one of the authors' previous roles of improving student retention within the College of Science and Engineering. One initiative was the introduction of PAL for Level 1 Computing Science and Level 1 Mathematics. The students were given an opportunity to meet informally with their classmates to work on tutorial questions or supplemental material in the presence of supportive senior student facilitators. The feedback received from the attending students was overwhelmingly positive. They enjoyed the sessions and they felt that their overall performance at the end of the year was much improved. In terms of student retention, the classes ticked many boxes including 'time on task', 'a senior role model', 'a supportive environment', 'sense of belonging', 'easing transition into university life', and so on. The main problem to be addressed was that attendance figures were rather low.

Most students at our institution enter under a 'general faculty' system whereby they study three subjects in their first year and do not specialise in their chosen degree subject until their Honours years. Class sizes can be very large (for example, level 1 Maths has a class size of approximately 500) and for each of their three subjects there will be combinations of lectures, laboratory sessions, tutorials and workshops. This means that there is no 'standard timetable'. Finding a suitable time within the 9-5 day to schedule PAL, not to mention booking a room for a non-compulsory course, was impossible, so the sessions were run at 5pm. A large proportion of our students commute and many others have part-time jobs or caring responsibilities, and for these students staying on campus in the evening may not be a viable option.

An obvious reason for not staying late on campus after a long day of classes in Glasgow during Semester 1, with the onset of winter, is that students are tired and want to go home when it is dark and cold. Less obvious may be the issue of investing time, physical and emotional energy into attending PAL for one, and possibly more, subjects can be complex for a student who is studying three subjects, each of which will have deadlines and assignments looming. Unless the benefits of attending voluntary PAL are real and immediate, heavy workloads for other subjects may override any desire to physically attend PAL. Although the three subjects in first year are weighted equally, students do not necessarily view them as having the same level of importance. So, even for highly motivated students, the decision of whether to attend PAL is not a trivial one to make. Furthermore, anecdotal conversations with first year students who may be shy, nervous or introverted have indicated that although they may not enjoy - or may even dread - participating in tutorials with their new classmates, they go along because they know that attendance is not optional. Attending voluntary sessions is something that is harder for them to motivate themselves to do.

Being passionate about the benefits of peer learning, we were committed to providing this opportunity to all students by attempting to remove as many potential practical and emotional barriers as possible. At the Learning and Teaching Centre, we began to think more about using a semi-moderated online space for getting students together with the expectation that peer learning would occur organically. It was decided to use Facebook as the platform for VPAL for various reasons. We were encouraged by the statistics from our Digital Natives Survey 2011 and from several small-scale pilot studies that revealed that, of those incoming students surveyed, 97.6% had a Facebook account. We wanted to provide a space where the co-ordinators of the courses were not necessarily present in keeping with the format of a traditional PAL session, but unlike the set-up of the existing Virtual Learning Environment (Moodle) forum groups currently associated with each course. We also felt that the students would be more likely to engage with a technology that is fully integrated into their daily lives rather than an 'add-on' that is associated purely with their university life.

2 Structure of the Facebook groups

Before setting up social networks for academic purposes it is vital to have considered the following questions:

- a What exactly is the purpose of the group?
- b How private will the groups be? Will they be open, closed, secret, or private?
- c How will the groups be publicised?
- d What are the ground rules for posting in the group?
- e Who will moderate?
- f Who will be invited to join the group in addition to the student cohort?
- g What will happen at the end of the life-span of the group?

Currently, we have 6 active Facebook groups. These are as follows:

- 1 Level 1 Maths & Stats - 373 members
- 2 Level 2 Maths - 187 members
- 3 Level 1 Computing Science - 129 members
- 4 Level 2 Computing Science - 148 members

- 5 Level 1 Physics & Astronomy - 133 members
- 6 Level 1 Engineering Maths - 158 members

3 Types of conversation

3.1 Time-Critical conversations

Example 1

Student A: I am in urgent need of assistance my fellow mathers, i know it was asked before, but where is the OTC drill hall, and how do i get there? Where exactly is the math office and room 321E in the math building? Please explain in as much detail as possible; explain like i were a numpty. much appreciated.

Student B: OTC = B5 I thought you kids could all use the internet?!

Student A: well as i mentioned earlier, i am a numpty. i tried searching for it there, but didnt know what otc stood for. any idea about the math school office? thanks

Student B: Officer training Corp I think, it's just at the Botany gate entrance but you have to use the side door next to the Joseph Black building...

Maths office I'm not sure but I'm sure anyone in the building would help you!

Student C: is the maths office not just on the ground floor of the maths building? that's where i've had to go for stats/maths things a couple of times, you just turn left when you walk in

Example 2

Moderator: Update: "In view of the severe weather conditions, with very strong winds expected from 12 noon onwards, the University has decided to close with immediate effect. All staff and students are encouraged to return home as soon as possible."

Drop-ins today are cancelled (sorry...)

Tomorrow morning (Friday 9 December) drop-in will start at the earlier time of 9:15am.

I am off home now, but will be checking emails regularly.

Student D: Hope you get home safe and avoid the worst of "Hurricane *****" (as it is being referred to on twitter).

3.2 Collaborative learning

Student E: I'm a little (okay, a lot) rusty with trigonometric identities. I'm doing a practice skills test and it's hit me with this bad boy.

Let $f(u) = 2(u^2 - u^4)$. Find $f(\sin\theta)$.

So far I've got $2(\sin^2\theta - \sin^4\theta)$ but I don't know where to go from there. A cheeky hint would be appreciated! Thanks.

Moderator: Ok, cheeky hint coming up! Take $\sin^2\theta$ out as a common factor

Student E: Now I've got $\sin^2\theta(1+\cos 2\theta)$. Stuck again.
Is that even correct? After some more substitution I got $\frac{1}{2}\sin^2(2\theta)$

Student F: You made a mistake... Check the operator inside the brackets! The exact result is $\sin^2(2\theta)$

Student E: Actually, the answer I got was correct. It appears that you've made the mistake. ;]

Student F: We've got $2(\sin^2(\theta) - \sin^4(\theta))$. Factor out $\sin^2(\theta)$ and we've got $2\sin^2(\theta)(1-\sin^2(\theta))$ then we know that $1-\sin^2(\theta) = \cos^2(\theta)$ so, substituting we have $\Rightarrow 2(\sin^2(\theta))(\cos^2(\theta))$ so, we conclude with $\sin^2(2\theta)$.

Student E: That just made my eyes water. I can't make sense of it.

Student G: $2(\sin x)^2(\cos x)^2 = (2\sin x \cos x)(\sin x \cos x) = (\sin(2x))(\sin(2x)/2) = 1/2(\sin(2x))^2$

Student E: I think I know where you've gone wrong. $2\sin^2\theta\cos^2\theta \neq \sin^2(2\theta)$.

Student F: Yeah, I underestimated this question... And I did WRONG! lol.

Student E: Teamwork got us there in the end. Yeah!

3.3 Interactions between students

Student H: Hey everyone :) I've put myself forward to represent 1R, and the polls are now open, so it would be appreciated if you could go on moodle and vote for me!

Moderator: Tell us why we should vote for you!

Student H: Here goes then! ... Well Maths has always been my favourite subject, so if I was class rep there would be no doubt I would put all my effort into the job. I'm a really approachable character, and would have no problems meeting all the class and helping with any problems. I've been part of groups from the senior cabinet at school, to hosting a radio station at my local hospital, so I'm a team-player, but I'm not afraid to take leadership when it's needed. I really keen on representing all of you so vote for me!!

Student I: 'senior cabinet' sounds scary!

Student H: Haha, na not really. My school basically does this instead of head boy and head girl, there's like 5 people chosen for it :)

Moderator: it sounds impressive whatever it is!

3.4 Messages of support

Example 1

Student J: just to let everyone know i've withdrawn from uni for medical reasons and will be back after the summer, hope to see a few of you for a pint then, cheers.

Moderator 1: Awww sorry to hear that. We'll all still be here when you get back though! Take care.

Moderator 2: Sending good wishes your way! Don't hesitate to get in touch with us if we can help in any way.

Student K: We'll miss you bro ♥

Student L: Pm your num mate since I can't get it in person..

Example 2

Student M: Lol I'm well going to fail maths. Anyone else feeling the same? Or anyone wanting to make me feel better? That's my dreams of becoming a maths teacher dashed :L

Student N: I know through personal experience that it can all seem overwhelming, but try to understand the concepts and what's happening and then the method will come, it's not a race to see who is the most brilliant right away. You are obviously really interested in maths if you want to teach it, and that will always beat just being able to expertly regurgitate information. You'll get there

Moderator: Trig has a funny habit of being very difficult one minute and falling into place very nicely the next. The struggle right now will help you become a great teacher (trust me, I know these things!). And listen to Student 2 too, he's right.

Student M: Thanks :) I am just stressing because I have the infamous feeling of everyone is doing better than me and that I should be understanding more than I do already. I'm feeling a bit better now anyway I just had my usual little nervous breakdown today after I came out of my tutorial!

Moderator 2: I felt EXACTLY like that in Semester 1 when I was in first year. I came straight from fifth year at school and I don't think that helped my confidence. After Christmas things started to click into place - partly because it takes a wee while to get used to University maths and partly because I completely changed the way I studied! If you (or anyone else) would like to come to see me for a chat then please do not hesitate to email me and arrange a time. First Year IS hard work especially if you are seeing things for the first time (that maybe the Adv Higher and A Level people have done a bit of already). Students in later years just say it is easy because they forget!! I'm here if you want any support. Take care

Student M: Thank you! I feel a bit more at ease now. I just hope I get into the swing of it all!

3.5 Organising meetings / study groups

Example 1

Student N: Shout out to the guy I talked to after today's tutorial about sub entities who might be up for working together and to anyone in murano willing to unite forces and face the arch evil databases over the weekend.

Example 2

Student O: First off, best of luck to everyone in maths tomorrow. Second off, we have room 6A booked on Friday, from 1-4, for anyone as wants to join. I'll be there, Tom'll be there, Mary'll probably be there, so there's room for three more.

Student P: I'll probably skip along.

Student Q: I might be a tad late, but I'll hop along quick as I can.

Student O: Duly noted.

3.6 Current affairs

Student R: A nice article about the mighty glass and why we shouldn't be so enthusiastic about it yet. (Google Glass)

Student S: I especially like:

'So far, Google Glass is like that girl at school who you have a crush on, but have never spoken to. In your head you've built her up to be amazing, based purely on the fact that you want her to be amazing.'

Student T: Very similar to this (polaroid grey label glasses), that was unveiled 2 years ago . Although there wasn't a release date.

Student S: however I do see how google made a better product for an everyday use. I like both products

4 Benefits over traditional PAL

In many ways the conversations that have taken place in the Facebook groups have been exactly the type of dialogue that successful face-to-face PAL schemes hope to facilitate. By observing online peer

discussions over several years, however, we have become aware of a number of distinct advantages that peer learning within social networks have over and above traditional face-to-face PAL. An obvious advantage is that the virtual space persists over holiday and re-sit exam periods when traditional PAL would be geographically infeasible. We summarise here some of the less obvious advantages that we have become acquainted with.

4.1 Online conversations need not take place in real time

Students can observe a conversation and enter into dialogue at a time that suits them without feeling pressurised to respond immediately. This affords a window of time where the student can, for example, sit alone to concentrate and digest a conversation of an abstract nature. They may choose to go offline to do some mathematical working before participating fully in a discussion about finding a solution to a specific problem. We have also been told by students who do not have English as a first language that they appreciate the extra time afforded by the medium to understand the conversations and to construct their responses.

4.2 Conversations in VPAL extend to all group members

Face-to-face academic conversations between peers can be valuable not only for the students who are verbally contributing but also for those who are observing. In Facebook groups conversations are persistent and visible to all members. Students have intimated to us that they sometimes do not feel the need to respond to a post because by the time they have followed the dialogue any misunderstandings they have had have been cleared up. Often they acknowledge the earlier contributions in a particular thread by using the Facebook option of 'liking' a post. Conversely, in small group learning situations everyone who is physically present has to be involved in whatever topic is being discussed, irrespective of whether they have already mastered that topic or have a deep interest in learning more. Conversations deemed to be irrelevant or uninteresting in a Facebook group can easily be ignored completely or returned to when the need arises.

4.3 Provision of a more level playing field

To a certain extent, students can choose how to present themselves to their peers online. Facebook regulations require users to use their real name and their gender. Although not essential, the majority of users use a photograph that is easily recognisable. Beyond that users create their own online persona sharing as much or as little as they choose through their 'Likes' and their 'Education', 'Hometown', and so on. It could be argued that everyone is on a more level playing field in Facebook groups than in a campus situation. Furthermore, in traditional group learning settings, conversations tend to be instigated or dominated by the extroverted and the self-assured students. In this sense VPAL can seem a safer and more comfortable place for shy students to begin to assert themselves in academic conversations.

4.4 Constant availability and access

Online groups are available twenty four hours a day, seven days a week, throughout term time and holidays. Constant access means that whenever a group member would like to discuss a

misunderstanding with, for example, a concept presented in a lecture, they can initiate discussion immediately rather than waiting until the next scheduled PAL session. In cumulative, step-wise learning subjects such as Mathematics, it is vital for students to get any misunderstandings or confusion cleared up as soon as possible.

4.5 Collaborative learning and co-creation of knowledge

Collaborative learning and co-creation of knowledge can take place in traditional PAL but the number of participants will always be limited. We have observed members using the Facebook groups to launch collaborative documents that they co-create, such as compiled revision notes, using tools such as Google Docs. This appears to be a natural extension of VPAL that would be more difficult to engineer through the medium of PAL. The opportunity to be a co-creator extends to all members of the group rather than those present at one particular PAL session.

4.6 Developing written communication skills

Face-to-face academic dialogue amongst peers often involves a lot of wavy hand gestures, pointing and a lot of 'you know what I mean'-type statements. This interaction has its place but being forced to articulate oneself clearly and precisely, particularly in a scientific or mathematical subject, is excellent training in terms of scientific writing. It also helps to build the skills required to ask lecturers unambiguous questions using the correct vocabulary. Our observations have shown that vague questions asked in the groups have had a much lower response rate than questions that are clearly worded. Equally clearly-worded responses are 'liked' by more users. It is important for students to use the correct terminology and vocabulary specific to the subject in question and posting queries on Facebook gives them good practise in expressing themselves accurately and sensibly.

4.7 The role of a facilitator in VPAL

The role of a facilitator in VPAL is less about administration and more about academic scaffolding. A small number of senior students have volunteered to facilitate some of our groups. These individuals contribute to discussions as and when they are available, and are not required to carry out the administrative tasks that need to be completed in a PAL session such as preparation for sessions, attendance monitoring, etc. It is important to note that although their presence is valuable and appreciated by all, a lack of senior student members has not prevented other groups from functioning successfully, unlike a traditional PAL session which would be rendered obsolete without a facilitator.

4.8 Online interaction does not mean isolation

Traditional PAL, when successful, gets students together in person and can scaffold academic and social peer relationships. A potential concern from colleagues regarding the use of virtual platforms for peer interaction was the idea that we should encourage students to interact in person rather than being physically isolated, sitting alone in front of a computer. However, a very large number of students are not actually using Facebook solely at home. They make use of group membership even while on campus, and an increasingly large number utilise mobile devices such as smart phones and tablets, so there is

no suggestion that VPAL engagement correlates with social isolation. Indeed, building on the historical findings of one of our number as a retention officer that 'real world' connections can be hard to establish as a first year student once the fresher period is over, even if PAL had been provided, so these virtual connections would be better than no connections at all.

In any case we have been pleased to observe that connections that began online often became real life networks. We have witnessed students using the groups to arrange meetings for various purposes, such as forming study groups, arranging transport to the Observatory (Astronomy students) and social events. Anecdotally we know that there are students who are more likely to instigate conversations with others in a large lecture hall if they have already interacted online.

To deal with the very large class sizes, many courses are split into several smaller classes. This means that for many students it is entirely possible to go through the whole of first year without meeting anyone outside your tutorial group who are studying the same subject combinations. In the social networks it is possible to see faces and names of all group members; therefore a much larger pool of potential friends and contacts becomes available.

5 Future plans

For the next academic session, we plan to continue with existing groups and create new ones for the incoming cohort. In addition, we are in the process of creating groups for students who have accepted unconditional offers at Glasgow University. This will serve as a medium to welcome new students and provide pre-arrival social and academic information.