

Directed Learning in Osteopathic Education: identifying and enhancing independent student learning

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Abstract

Using the work of others working in healthcare education as a foundation this project aimed to propose a model for the creation of self-directed learning (SDL) tools specifically suited to those training in manual healthcare and osteopathy. The institution was also interested to see if improved electronic learning opportunities had the potential to bring students together into one large collaborative learning community. Through a questionnaire study and focus groups the school found that while current students favour a wide variety of SDL practices, their activities are largely assessment-driven. Despite this learners want resources that will bridge the gap in experience between classroom and clinical education. It is proposed that this can be addressed through the use of forums to anonymously discuss real patient cases with the involvement of academic and clinic tutors and junior and senior students. Other suitable electronic SDL resources are also recommended.

Keywords: Self-Directed Learning, Osteopathy

Introduction

Since the establishment of blended e-learning as a pedagogical tool in higher education much has been written on how it can best be designed and integrated into a range of different topics and disciplines. Often the concentration is on supporting learning outside of the classroom. Using the work of others working in healthcare education as a foundation this project aims to propose a model for the creation of self-directed learning (SDL) tools specifically suited to those training in manual healthcare and osteopathy. Students training for manual healthcare vocations, like those in other clinical and health professions, need to develop life-long learning habits and all programmes of study in this area need to promote this.

Any UK Higher Education Institution (HEI) striving to deliver the best practice in educational opportunities has to employ electronic learning resources. In light of an increasingly computer literate student body and the changing nature of virtual communication such a provision needs to be constantly reviewed and modified. To ensure this on-going process keeps a definite focus on their specific learner community each institution needs a clear but flexible, stakeholder informed, policy. The British School of Osteopathy (BSO) is committed to its blended learning programme, but has not previously had this clear vision, leading to a piecemeal provision that has slowly evolved across the years, sometimes in an unfocused direction. This situation, potentially shared among other small HEIs, can be exacerbated by teams of mainly part-time tutors without the pedagogical expertise, time or inclination to support students' self-

directed learning in this manner but this cannot be allowed to hinder the progress required.

Success in other institutions has been found in the use of an incredible variety of materials from non-interactive tools. These range from lecture podcasts (Tempelhof, Garman, Langman & Adams, 2009) to highly immersive programmes such as those that manipulate avatars in virtual worlds (Conradi, Kavia, Burden, Rice, Woodham, Beaumont, Savin-Baden & Poulton, 2009). Resources always need to be engaging and ought to encourage active participation in a task. Online self-assessment quizzes, for example, can be popular with staff and students, often following directed tasks such as reading and summarising texts, labelling diagrams and conducting web searches (Smythe & Hughes, 2008). This also gives faculty opportunities to monitor learners' success and highlight gaps in knowledge during revision and independent learning activities (Tse & Lo, 2008) providing this is done with the students' knowledge.

Murad, Coto-Yglesias, Varkey, Prokop & Murad (2010) conducted a systematic review designed to determine the effectiveness of SDL in improving learning outcomes in health education. SDL was reported as most beneficial when dealing with content in the knowledge domain but it was also suggested that for it to be effective, students should be involved in identifying resources and choosing those that are most appropriate to their own individual learning styles. Tutors need to question how prescriptive they themselves are in the resources they provide (Murad *et al.*, 2010) and some evidence even suggests that tutors should have no role in the provision of resources at all, encouraging learners to generate and share their own support materials (Gill, Kitney, Kozan & Lewis, 2010).

Learner autonomy is clearly essential but there is a converse argument that independent study tools can be stronger if they are connected to and consolidated by class activities. Obviously this is not true SDL but simple models of independent activities feeding into weekly contact sessions have proved successful (Drake, 2007). Early adopters of e-learning have found that using this kind of model is popular with students as it allows them to access the knowledge at their own pace, highlighting gaps in their own knowledge prior to class discussions. There is even reasonable evidence to show that this computer assisted learning is more effective than traditional didactic delivery methods (Green, Weaver, Voegeli, Fitzsimmons, Knowles, Harrison & Shephard, 2006). Schools could benefit from consideration of how SDL tools can build on this.

Of course, SDL work is not only suited to the early stages of knowledge learning. Adult learners are best motivated to acquire new information when they can apply it to

daily work (Zebrack, Mitchel, Davids & Simpson, 2005) and in the case of medical practitioners this applies to questions of patient care. The majority of clinical learning comes in the latter stages of a course when students are able to adopt independent learning habits. When linked with the fact that SDL is arguably more effective in advanced learners (Murad *et al.*, 2010) with preparedness for SDL developing over time (Malta, Dimeo & Carey, 2010), it becomes easy to assert that it is potentially in the clinic not the classroom where the purest form of SDL can occur.

The strongest consolidation of anatomy, physiology and pathology knowledge in any medical course tends to be when students are required to apply it in the clinical setting, not when they need it to pass exams. Research has shown that nursing students have reported feeling inadequately prepared in pathophysiology and pharmacology for the role they are expected to play in the clinical environment (Tse & Lo, 2008) but this is something that anyone who teaches in a clinical setting will recognise. It is in placements that medical students generally adopt the specific academic practices that will turn them into life-long learners. It is the experiences of dealing with patients that prompt reflection (Shershneva, Slotnick & Mejicano, 2005) and motivate learners to diagnose their learning needs, self-directing their search for knowledge. Schools need to provide resources that facilitating early acquisition of information but also support students in this clinical consolidation of knowledge. They may well be the same materials used to support more junior learners but they need to be designed in a way that reflects student needs at all stages of the course.

The British School of Osteopathy is setting out to develop a portfolio of SDL resources that reflects and builds on the independent study tasks given to support classwork. Modelling these activities in the early years of the course should allow students to work in similar ways later on with greater autonomy, formulating their own specific SDL learning goals. Once SDL habits are established a wider range of materials can be provided, granting students more choice and encouraging the development of lifelong learning skills. The content of the resources the school provides and the SDL it promotes will have a focus on anatomy, physiology and pathology knowledge, but this will be for both exam revision and practical application in clinic. To exclusively concentrate on materials of this nature though fails to recognise that manual healthcare students have specific needs that sometimes differ from other medical trainees and the question of what these differences are, along with that of which activities osteopathy students engage with, were the key research questions of this project. The institution was also interested to see if improved electronic learning opportunities had the potential to bring part time and full time students, and junior and senior students together into one large collaborative learning community.

Data collection methods

The initial phase of the research was designed to gather quantitative data on students SDL preferences and motivations. A questionnaire was designed and piloted before distribution. Each of the 453 students enrolled on the two Integrated Masters Degree courses at the British School of Osteopathy were invited to complete paper questionnaires. 236 were completed and this response rate of 52 per cent was within the targeted parameters. Questionnaires were not discountable once submitted as they were anonymous. The questionnaire provided a definition of SDL resources as anything that enabled students to advance their learning outside of the classroom, included Learning Resource Packs and e-learning tools as well as books and anatomical models. Participants had a list of typical SDL tools and were asked to select the three that they considered the most valuable. They were then asked to say which three from the same list they would most like to see developed. This was intended to ascertain which of the current SDL resources were being used and which might be more popular if they were improved. Students were then given a selection of reasons for engaging in SDL and a list of areas of learning in which they might like more resources to be available, again with three to be selected. Most of the remainder of the questionnaire related to participants' independent learning habits.

The results of the surveys fed into the formation of further questions to be explored in focus groups. Students were recruited for these groups via email invitations sent to student forums and two groups were held with six participants from mixed stages of the course. Each group included at least one student from each of the four years of the full time course. It was not possible to include current part time students for logistical reasons but both groups included at least one participant who had previously studied part time on the school's mixed pathway. The data from the interviews was processed using transcript content analysis with a member of university staff external to the project team checking for inter-rater reliability and agreement. An additional focus group was conducted with teaching staff. While this was not included as part of the content analysis points from the discussion will be referenced within the research analysis.

Data collection methods went through ethical approval.

Analysis

The tables shown in Figure 1 and Figure 2 illustrate the students' responses to question 1. and 2. on the questionnaire. The scale represents the total of participants who selected each option as one of their three preferences. Interactive resources cover any electronic tool, including assimilative information handling and adaptive activities. Online chat refers to forums. It is clear (in Figure 1) that while a full variety of resources are used there is a preference for text heavy, hard copy materials. Despite this participants have (Figure 2) reported an interest in a wider area of

resources being developed for future use. Learners are similarly supportive of there being SDL materials to support an extensive range of study areas (Figure 3). There is still the most interest in tools that can support knowledge learning but there is some enthusiasm for other clinically relevant material. This is not borne out by

what students are reporting as their key motivations for independent learning (Figure 4) which is still predominantly assessment driven. This suggests a need to prompt students toward the development of the life-long learning habits they will need as professional manual therapists, led by patients and not examinations.

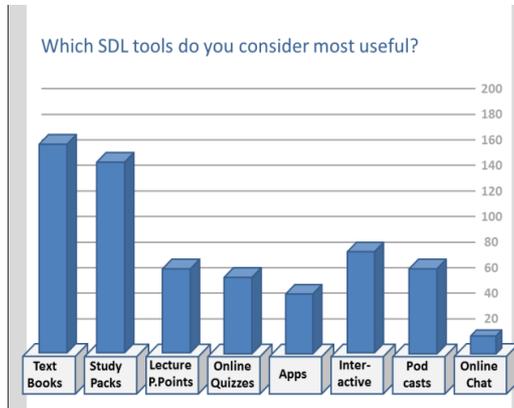


Figure 1

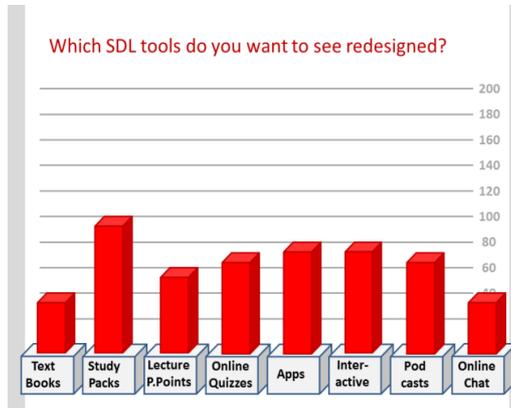


Figure 2

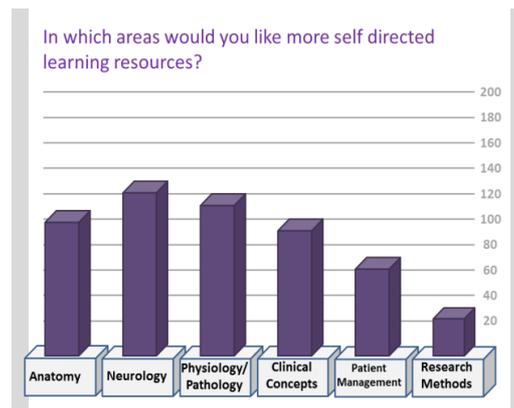


Figure 3

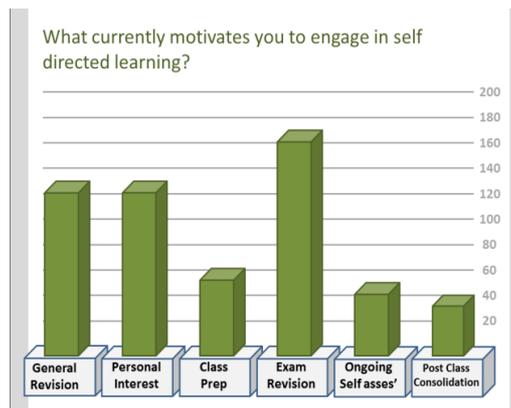


Figure 4

The focus groups were designed to explore the attitudes behind this data and the points raised were categorised into the following four areas:

- The resources of most specific benefit to osteopathy students
- How knowledge is used in the clinical environment
- Faculty and student involvement in creating resources
- Prescriptive and class activity linked resources.

The resources of most specific benefit to osteopathy students

Students were not asked directly how they thought SDL resources could be tailored to manual healthcare students but were instead asked what additional resources they most wanted.

The first area focussed on was NMS, an area of study related to the neuromuscular skeletal system. Osteopaths need an extensive understanding of the

mechanics behind this as well as a wide knowledge of the possible causes of dysfunction. Participants spoke of the need for improved resources here as this is an area of human biology that is not adequately covered by the usual reference sources:

NMS is the one of the biggest pieces of information that we will take from here, it's so vitally important for us to have that because of what happens in osteopathy. Nothing is written down, we find there are limited resources.

This is osteopathy, if it's pathophysiology or physiology or anything like that, that information is out there, we can get our fingers on that in two seconds, we have our iPads. Osteopathy, NMS, all of this is completely different, we don't know where to find that information so it's vitally important that we have it written down and they say 'here it is'. It's so important, the language, the way we think about it.

There was also a call for access to a wider selection of case based learning clinical scenarios or 'paper patients':

I don't know how you would facilitate this in an educational establishment, I suppose with paper patients or I remember a tutor in the rheumatology class had a friend/patient from his practice that came in and spoke to us about his arthritis. It's really useful as you get a bit of a story of that person and the way that illness has impacted their lives. Also one of the guys from the IT department came down and talked about his gout diagnosis, how that's impacting his life and the symptoms, personally I engage with a patient's story like that and then I remember the medical stuff around it.

I think we just need to consider as many patients as possible, from as many different angles I suppose, be that paper, be that videos or patient testimonies.

These would be easy to create electronically giving students an extensive database of scenarios to use as necessary.

How knowledge is used in the clinical environment

Despite the quantitative research showing that assessments are the most motivating factor in self-directed learning, the focus groups reported a very clear understanding of how advancing their knowledge enhances clinical practice, with one student plainly stating:

I've got patients over the road (in clinic); I've got to know this stuff.

Another participant echoed this in reference to their work in the BSO specialist clinics:

For me the most motivating tasks are like when I was going to external clinics because sometimes you just feel tired and going to the external clinic gives you good sight and makes you think 'that's what I want to do'. It gets the motivation back up.

This not only shows an appreciation of the need to stay focused for the benefit of patients but recognition of how this is emulating the practice life they are training for.

In terms of how SDL resources can be designed to support clinical learning there was a very clear request for materials that bridge a perceived gap between theoretical and practical learning:

I think reducing the gap between the end of the second year and the end of the third year, I'm not sure how to do that but that would be very important because while the first and second years are just theory, when you go to clinic and you're suddenly just thrown in with patients, you're like 'oh, I don't know what to do'.

Interestingly, students thought that this should be driven by the clinic based tutors working exclusively in this

practical environment, leaving the academic teaching to the anatomy and physiology teachers:

I think you should ask the clinic tutors, we don't know because we're learning the academic side over it here and trying to apply it over there. Bridging the gap is always going to be an issue but I don't think it's us that is really going to be able to do this, everyone's going to do it individually in their own way, they're all going to apply their own learning to it but I think probably the clinic tutor is in the best position to address this.

It may not be unusual in medical education that those teaching in the tutorial spaces and lecture halls the ones expected to prepare learners for practice but in fact, those supporting students in clinical placements should take an active role too. Students are talking about there being poor correlation between what they are able to do in the classroom and their ability to emulate this in the stressful environment of clinic:

I've re-familiarised myself with first and second year stuff and I was amazed to see the paper patients in the second year dealt with high level stuff. We seem to be able to answer that stuff early on but if that presented itself in clinic now we'd be confused. I was amazed to see that it was there but it needs to be there in third and fourth year with what's happened now.

Tutors, in their discussion, expressed an awareness of the weak links between academic and clinical learning but had little idea of how to address it.

Greater clinical teaching in the early part of the course designed to prepare students for what is to come is clearly needed, complemented by more academic activities in the clinical environment. A resource such as a forum that discusses real and current on-going patient cases, allowing students from all years and pathways to participate alongside anatomy, physiology, pathology and clinic tutors could go some way to addressing this. This would work very well with the database of case based learning scenarios previously mentioned. There needs to be this explicit link between book based and real patient case learning and it needs to be there from the start of the course. It should not be left as a part of the hidden curriculum which is how it is currently described:

I've probably learned as much, if not more, in my anatomy knowledge or spent more of my extra hours being intrigued by illnesses friends and relatives have got and then going 'oh that's been diagnosed with that, oh right ...'. It's that clinical curiosity that makes you pick up that paper trail or that idea trail and start to associate it to real people with symptoms.

Faculty and student involvement in creating resources

The discussions around the SDL resources that are created by students were less specific to learning on a manual healthcare course, revolving around the use of

forums. BSO students have set up Facebook groups that they find very useful for sharing resources and seeking answers to questions. This was discussed favourably in both groups. It was initially suggested that any type of forum created by the school would never be able to compete with those managed by students:

No way a BSO run forum would ever be able to compete with Facebook.

Although as discussions progressed participants decided that tutor involvement could be useful:

You could ask a question to be answered by students or for a tutor to monitor and go, 'that's really interesting what you've all put, maybe think about this' as a more expert opinion.

Initially it might be sufficient to offer students resources through the usual virtual learning environment pages allowing them to share these as they wish although the idea of using a social media site such as Facebook has benefits in terms of ease of accessibility. It could be trialled with academic tutor forums. Discussion boards on specific areas of pathology are already being used with great success at the BSO although staff have reported that these are very time consuming to maintain in their current format.

Prescriptive and class activity linked resources

There were two very clear areas discussed relating to the types of SDL resources produced by faculty. The first of these centred on learning resources packs which currently replicate information given in published text books. Learners find them useful for focusing their study and they are most heavily used in the first year of the course.

I thought they (LRPs) were really effective, especially in the first year but they seem to peter off afterwards, so the learning resource packs we had in the first year for anatomy for example, were really well structured and I thought that was probably what got me through my anatomy. I think quite a few other people I spoke to felt the same thing.

There were a range of reported issues surrounding this. Some students become reliant on these resources and feel the lack of them in later years. Some find them intimidating and struggle to work through them, with one participant even saying they resented the amount of time they had spent on them in year one. Others found the inconsistency with the way they are used across different subject areas frustrating. Students appear to be asking for guidance on what to study:

It helped you structure your learning.

You have something to follow and you kind of know where you are as well, the course is so massive.

Clearly the learning resource packs particularly suit the style of some learners and were most useful when explicitly linked to class work. Even then faculty need to be realistic about what students can achieve:

I think it's a time issue saying you have to be prepared in five days, students don't seem to be very good at that but I think if you say that 'here's something on prostate' or 'here's something on spondylosis', I'm giving you this information but you do need to know more', that will register and it will get done in that student's time.

Both non-prescriptive SDL practices and those explicitly linked to class activities can have value but institutions need to be clear about which they are going to employ rather than leaving it down to the discretion of individual subject tutors.

There's massive inconsistency from one unit to the next in terms of what you expect from a learning resource pack, their format, what's going to be in there and how they work with lectures. There's massive variation between units, again some will say 'this is your primary text for this unit', others will say 'there's some LRPs but they probably haven't been updated for four or five years, we've left them on there, if you're interested for further reading have a look'. You're left as a student thinking 'I don't really know what an LRP is', despite the fact they're all called LRPs or how I would go about using them at times.

The second aspect of the discussion in this area was widely positive focusing on the provision of revision questions:

There was a list of questions on respiratory system which was really, really useful but it was only for the respiratory system, all the other systems just kind of got ignored. That would have been a really useful concept applied to every one of them because it was a good way to revise; I think everybody really appreciates questions they can go through at home on their own.

That's what I had on my first degree (quizzes), we had self-assessment like that. You just say 'okay, I need to research more on that, research more on that, oh I'm good on this one' and it's reassuring as well, when you do it, it's like 'I know more than I think I know', which is good.

While you're doing a course where you're going to be tested on certain things, you do need that kind of certainty of what you're supposed to be revising.

The faculty discussion echoed much of what the students said with tutors recognising that there was inconsistency in the way learning resource packs were used and that these needed to be rectified. Faculty were also aware of the popularity of the questions provided which indicates a willingness to work on these resources. Tutors expressed a desire to know the extent to which the resources were being used and what the students' attitudes toward them were, which is one of the objectives of this study.

Conclusions

It would have been preferable to have run more than two focus groups but a planned third session had to be cancelled due to timetable changes. Despite this the data collected was highly useful with student comments in both groups focusing on common areas. This made the process of content analysis straightforward and allowed the research team to gather some good evidence from which to draw useful conclusions.

Alignment with the Learner Experience Strategy

The project successfully reflects many aspects of the University of Bedfordshire Learner Experience Strategy, most explicitly in the commitment to directed independent learning and self-directed learning. The new BSO Part Time degree was launched in recognition of a changing learner community and this project is essential in meeting the requirements of this particular learner group, while potentially bringing them into a wider community of learning through clinical discussion forums. Student consultation activities have given them a key voice in this scheme while providing them with a very explicit example of how research and scholarship is used to inform development and promotion of learner experiences. Academic tutor activities for BSO part time students are already carried out through electronic channels and forums but this is now intended to be strengthened. Structured peer learning will directly benefit from any enhancement of self-directed learning resources with technology and e-learning playing a substantial role in the new initiative.

Evidence of Innovation and Enhancement

The need for self-directed learning materials and electronic resources to be improved was highlighted in student feedback and by institutional and course review. This was a key reason for the school to concentrate on this area of provision. The research team is confident that the BSO is now in a clear position to introduce some new student centred SDL resources that are both innovative and sustainable. Many of the proposed changes present a significant improvement in the pedagogy and vision of SDL and e-learning at a local level.

Value for money

To be able to execute a large scale audit and review such as this it was necessary to invest a certain level of financial resource to the project. This has been spent on consultation and paying staff additional hours for the setting up of new resources. This initial investment has enabled the school to embed procedures that could inform the provision of self-directed learning activities into the next decade.

Sustainability

While electronic resources do need periodically updating the pedagogy behind this project is designed in such a way that new technologies could be encompassed within existing procedures. The software used to implement the new resources is all based on easily accessible low cost programs.

Widespread Impact

This project will immediately cover the school's three pre-registration courses but has the very real potential to affect the way students are supported and improve learner experience across the BSO's entire course profile. Beyond this we may, through partnerships with other providers and educational conferences, be able share new practices with healthcare colleges across the international community.

The new resources detailed below will be reviewed across the next academic year and a second research project will be carried out to ascertain the success of each. The subsequent research paper will complement the work done here and will be available in August 2014.

Recommendations

The final phase of the project was to set up a selection of new SDL resources based on the research findings. These are set to be in place ready for the new academic year 2013/2014 and will be reviewed across the next ten months feeding into a new SDL policy for release in August 2014. It is anticipated that other small HEIs will be able to adopt similar practices.

A new electronic style of learning resource pack will be available to students providing an introduction to the topic and a detailed overview of the course content with links to other presentation, video and audio materials. The aim is to guide learners through the relevant content, directing students to appropriate chapters and sections of key reference texts rather than simply repeating information that is easily available elsewhere. Students will also have the option of searching directly for the relevant resources allowing varied styles of access to the materials. Initially this will centre on NMS with a view to extending the format to all other areas following review. The amount of text will vary as appropriate for each subject. Tutors will be able to easily direct learners toward particular resources for class preparation in the early stages of the course while more senior students will be able to access information as needed to revise knowledge.

Formative online assessment quizzes will be used for all topics in anatomy and physiology. These can be completed by students at any time and as often as required.

Facebook pages will be created for communications between year one and two part time students and academic tutors. If these prove useful, social media may well be used to support learning in the future.

Discussion forums are being introduced based around recent patient cases in the clinic. The patients, student osteopaths and clinic tutors involved in treatment will be anonymous. There will be only two or three of these each term but they may run for a number of weeks.. These will be monitored by clinic tutors and lecturers who will be encouraged to comment in accordance with their own agendas. Students will also be invited to engage in the discussion either reading threads or posting comments. These forums will give students

opportunities to gain experience of working patient scenarios before they start treating in clinic while witnessing how knowledge is applied in practice. Senior students will be involved in discussing a selection of patients wider than those that they are treating themselves. Case based learning will no longer be limited to either the classroom or the clinic and the gap between these two learning environments may be lessened. All forum discussions will be archived.

A series of talking heads videos are also being captured of patients talking about their cases and symptoms. These can be used in a variety of ways both in tutorials and for SDL with tutors using them for case based learning or students taking practice case histories.

Publications/Presentations

The early phases of this project were presented at the 'Tomorrow's Osteopaths Designing and Implementing an Osteopathic Curriculum' Conference on 20 April 2013 at The Royal Society of Medicine in London.

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