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Druce, Maralyn; Howden, Stella

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New perspectives on health professions students'

e-learning:

looking through the lens of the 'Visitor and Resident' model

Short title:

Health profession e-learning:visitor/resident

Professor Maralyn Druce [1] and Dr Stella Howden [2]

[1] School of Medicine and Dentistry, QMUL and [2] Centre for Medical Education, University of Dundee

Address for correspondence:
Professor Maralyn Druce
Centre for Endocrinology, William Harvey Research Institute
Barts and the London School of Medicine and Dentistry
Queen Mary University of London
John Vane Science Building
Charterhouse Square
London, EC1M 6BQ
Tel: 0207 882 8284
Fax: 0207 882 6197
Email: m.r.druce@qmul.ac.uk

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Notes on Contributors:

Stella Howden is Senior Lecturer in Medical Education at the Centre for Medical Education, School of Medicine, University of Dundee. Her interests include interprofessional education; the relationship between emerging professional and digital identities and curriculum development and evaluation.

Maralyn Druce is Professor of Endocrine Medicine, Barts and the London School of Medicine and Dentistry, QMUL. She developed two MSc Programmes, based on e-learning and 'flipped classroom' modalities. She is Head of Governance for the MBBS Programme and is a practising Consultant Physician with interests in Professionalism and e-learning.

Practice Points

- The 'visitor and residents' model can be used to provide a perspective on the preferences for use of types of online learning activities among postgraduate healthcare care students engaged in e-learning

- Cohorts of students may express a preference or preponderance for 'resident' or 'visitor' engagement with online resources

- Tailoring e-learning opportunities to the preferences and abilities of the student cohort regarding 'visitor' and 'resident' e-learning opportunities may impact upon the student experience and the effects of such tailoring on student learning should be considered

Structured Abstract

Background: The growth of e-learning in health professional education reflects expansion of personal use of online resources. Understanding the user perspective in a fast-changing digital world is essential to maintain the currency of our approach.

Methods: Mixed methods were used to investigate a cohort of postgraduate, e-learning healthcare students' perspectives on their use of online resources for personal and/or professional roles, via questionnaire and student-constructed diagrams, capturing use of online resources (underpinned by White's model of 'resident' and 'visitor' online engagement). Semi-structured interviews explored the use and value of resources afforded via the online environment.

Results: The 45 study participants described a range of prior experiences with online resources in personal and professional capacities, but overall students tended to use online 'tools' ('visitor' mode) rather than highly collaborative networks ('resident' mode). In relation to e-learning, the dominant interview theme was valuing knowledge transfer from the tutor and using 'visitor' behaviours to maximise knowledge acquisition. Peer-learning opportunities were less valued and barriers to collaborative 'resident' modes were identified.

Conclusions: These findings help to inform e-learning course design to promote engagement. The results enable recommendations for use of the 'Visitor and Residents' model and for planning activities that learners might utilise effectively.

Introduction

E-learning is increasingly being used in healthcare to support the delivery of training. A review commissioned by the World Health Organisation has concluded that it is likely to be as effective as traditional methods for training healthcare professionals (Imperial College London & World Health Organisation, 2015). Use of e-learning as part of a teaching strategy either alone or within blended learning has many proposed advantages including reducing the costs associated with delivering educational content, facilitating the development and scalability of educational interventions and improving access to education (Imperial College London & World Health Organisation, 2015). It is projected that e-learning will continue to increase and this is evidenced by a rise in the number of students completing part or all of their postgraduate studies via online 'distance learning' (Mayadas AF, Bourne J, & Bacsich P, 2009; Mayadas AF et al., 2009).

Several frameworks have been invoked with respect to e-learning:

- Churches (Churches A, 2009) revised Bloom's original taxonomy to account for the new behaviours, actions and learning opportunities emerging as technology advances and becomes more ubiquitous. However it does not consider how learners do this, either singly or as a community and therefore has limited scope for informing course design or maximising engagement.

- Salmon's five-stage model considers ways in which student engagement changes over time and providing ideas about how they might best be supported at each stage (Salmon, 2002). However again it focuses rather more on 'what' students are doing at any given time, rather than how or why they do so.

- The 'Community of Inquiry' model (Garrison DR, Anderson T, & Archer W, 2000; Garrison DR & Anderson T, 2003) suggests that meaningful learning occurs within an online community through interaction of three elements – cognitive presence, social presence and teaching presence, each of which needs to be developed and revised as a course evolves.

The importance of achieving interactive dialogue has been highlighted as an important factor in internet based medical education. A realist review (Wong G, Greenhalgh T, & Pawson R, 2010), suggested that getting students involved, sharing information and forming a community are important elements in learning. Indeed many e-learning developers use such models with the expectation that the learner will engage in this way (Jones C, 2015).

Pragmatically therefore it is important that we understand who our learners are in relation to their interface with the online world. Understanding how they view and use online resources as part of their personal and professional lives is likely to shape their engagement with formal, online learning. Many social media tools are available for healthcare professionals and these have been used to improve professional networking and education, organise promotion activities and contribute to patient education and patient care (Ventola CL, 2014). Physicians most often join online communities where they can read news articles, listen to experts, research medical developments and consult colleagues (Househ M, 2013). A survey of over 4000 physicians conducted by a social media site (albeit with a highly North American focus) found that more than 90% of physicians used some form of social media for personal activities whereas only 65% used them for professional reasons (Fogelson NS, Rubin ZA, & Ault KA, 2013).

There has been less formal evaluation of engagement with other types of online resources and in order to view learners' approaches we may need to invoke additional models which consider the ways in which individuals interact with online media. White and Le Cornu (White DS & Le Cornu A, 2011) have proposed a model which may be helpful in understanding how health professionals engage with the online world: the visitor and residents model. For White (White DS, 2014) when an individual behaves as a 'visitor', they access the web, selecting and using specific tools and then returning to offline activity, without leaving a trace. The visitor may not see a requirement for

developing an online network and remains goal-orientated, using particular platforms or tools to solve specific problems. In contrast, when an individual behaves as a 'resident' he or she lives out a portion of life online and utilises the web as a 'space' in which they can reside visibly, communally and socially. The two usage patterns are a described as a continuum rather than being mutually exclusive, may be in flux over time (although the drivers for change are not described) and individuals may differ in engagement pattern when usage is primarily personal versus professional/institutional. Although the model itself was developed relatively recently it has been applied in other contexts, including library web spaces (Fagan, 2010) and in the use of e-books via libraries (Engelsmann HC, Greifeneder E, Lauridsen ND, & Nielsen AG, 2014). Literature is emerging to validate the model showing a link between particular visitor/resident attitudes and behaviours (Wright F, White D, Hirst T, & Cann A, 2014).

Understanding how learners perceive their professional and personal engagement with online tools and spaces both before and during a course of e-learning may help us to understand more about how we can support transition into and through online learning. This may lead us to consider some of our underlying assumptions, reveal something of the diversity and preferences of the learners and demonstrate barriers and enablers to engaging with particular elements of learning resources/spaces, thus informing design.

Therefore our primary research questions are:

- How do postgraduate students in a medical discipline view their use of online resources in their personal and professional/institutional capacities and how does this relate to their engagement in an online course environment?

- How can the 'Visitors –Residents' model be used to shed light on such students' use of resources and their self -identification as online participants, and advance understanding of how to support students' engagement with online learning?

Methods

The project was reviewed by the QMUL ethical review process (QMREC1371d). The study participants comprised a single cohort of postgraduate medical students enrolled into an award-bearing e-learning programme (PgDip/MSc) in Endocrinology and Diabetes. Students were recruited by direct email and also via information within their online learning environment.

A questionnaire was administered in November 2014 using the Bristol Online Survey tool (https://www.survey.bris.ac.uk/), to gain demographic information and quantify and qualify the self-reported use of online tools such as emails, YouTube and vines for personal/social and professional reasons (Appendix A) . Open-ended questions were integrated to elucidate characteristics of visitor and resident attitudes towards online resources, according to White and Le Cornu's (2011) description of the model for example describing a typical week of online media use in a personal and professional setting. The participants were also asked to rate the degree to which they self-identified as visitor or resident according to White and Le Cornu's model (to which they had been introduced via a video) on a Likert scale, both in a personal capacity and in a professional capacity. After the questionnaire students were given guidance on how to complete a visitor-resident map and were asked to draw and upload their own map to a secure site (White DS, 2015) .

The maps were initially subjected to visual analysis. Each map was reviewed and for each student, the balance of items in visitor and resident mode was noted for students in their personal and in their 'professional' capacity. The judgement was made by eye according to the amount of space in the relevant quadrant of the map blocked out by blocks – each of which is drawn to represent a particular tool or online activity. For both personal and institutional engagement, students were categorised into one of the following groupings:

Totally in visitor mode / More visitor than resident mode / Approximately equivalent visitor and resident modes / More Resident than visitor mode / Resident only mode

In addition, the maps were categorised (using the same methods of visual analysis of the area blocked out in each quadrant) by whether the student exhibited more 'resident' behaviours when in 'personal' mode or more 'resident' behaviours when in 'professional' mode or whether these were roughly equivalent. These findings were analysed using descriptive statistics. An example of a submitted map and its rating is shown in figure 1.

The maps were also used to guide the design of semi-structured interviews. These were scheduled after the students had completed approximately 9 months of part-time study. All participants who had submitted maps were invited for interview. Students were asked to share and reflect on their maps during the interview, hence the group was limited to this subset. Interviews were carried out via Skype using a screen-sharing tool which allowed interviewer and student to review and discuss the map. With permission from each student, the conversation was audio recorded. The interviews were fully transcribed and subject to thematic analysis (Braun V & Clarke V, 2006). After familiarisation with the content, the text documents were imported into a qualitative analysis programme (Data Miner lite; Provalis research free download http://provalisresearch.com/products/). Items were coded for semantic themes – with the initial codes chosen according to the topics raised by the students. The themes were named and then reviewed and revised. They were then grouped to enable elision into core themes and over-arching themes.

Results

Questionnaire

There were 54 were students enrolled on the programme who were therefore invited to participate, 24 were female and 30 were male, age range 25-59 years. Mean age was 36.5 years (± 7.4) and the median 35.5 years. The students were based in various countries: 21 in the UK and Ireland, 11 in India and Asia, 5 in Europe, 7 in the Middle East, 5 in Australia, 4 in North and Central America and one in Africa.

From the 54 eligible and invited students, 45 questionnaire responses were received (83.3%). Of the respondents the following demographics were self-reported: 21 (46.7%) of the respondents were male and 24 (53.3%) female, with the majority (21 or 46.7%) aged 30-40, with 18 (40%) older than this. Most (25 or 55.6%) had been qualified in medicine for 10-20 years.

Self-reported use of online resources: personal/social and professional/institutional

Students were relatively frequent users of internet resources, with the majority 'logging in' several times per day. However, the perception of social media for professional use was more guarded, with a split between relative enthusiasm for these tools (26.7%), ambivalence (28.9%) and an agreement with the statement that such tools were interesting but better kept outside the professional arena (40%).

When describing their internet use in a personal capacity, students described a high uptake of the use of 'tools' such as Google or other searches (97.8% were frequent or regular users). News sites (77.8% were frequent or regular users) and text messaging (64.5% were frequent or regular users) were also commonly cited. Most (93.3%) were frequent or regular users of email in a personal or social capacity. More interactive activities such as use of Facebook and Twitter were less frequent,

with some use of both, but in both cases more frequent use was reported in the form of reading rather than 'posting' or 'tweeting.' Use of Instagram, vines, blogging and commenting on others' posts were uncommon. The majority of students had never previously engaged in interactive and collaborative or 'resident' type behaviours in a personal capacity: 24.4% had never posted on Facebook, 62.2-93.3% (depending on the activity under discussion) had never uploaded photos or videos, written or commented on a blog, 'tweeted' or collaborated on a shared document.

In a professional capacity, the use of Google and PubMed searches, news sites emails and text messaging, followed a similar pattern to that seen by students in their 'personal' capacity. When students were asked to consider the information about the visitor and resident model that had been made available to them (White DS, 2015) and to categorise themselves on a Likert Scale as a Visitor (1) or Resident (10) recognising that there is a continuum between these two extremes, both mode and median were at the midpoint with a self-score of 5, for both personal and professional capacities.

Maps constructed by students

Twenty one maps were submitted from the total number of 54 students (39% response rate) in a variety of formats (see sample map in figure 1). Visual appraisal of the entries in the institutional / professional quadrants of the maps, showed a preponderance of students exhibiting visitor modes of behaviour, with a total of 52.4% of students identifying more visitor behaviours and none operating in a solely 'resident' mode. However 14.3% students had identified themselves as working more in resident than visitor mode when in their professional role. Some of the activities in this resident role however have relatively low scope for communal engagement in practice, such as PubMed (Table 1).

For the personal quadrants of the maps only 4.8% (one student) identified a degree of activity that was broadly more resident than visitor in nature. Seven students (33.3%) were more 'resident' when in their personal capacity than in their professional capacity, while 3 students (14.3%) were more 'resident' in their professional capacity than in their personal role. The remaining 11 students (52.4%) identified an equivalence of self-reported resident behaviours across their professional and personal capacities.

Semi-Structured Interviews

Of the 21 students who had submitted maps 20 were eligible to participate in interviews (one had interrupted their studies since submission of the map). Twelve students in total responded to the request to participate in an online interview (response rate 60%). The interview participants comprised a spread of demographics similar to the overall group who had submitted maps. The age range of the interview subjects was 29-54 (mean 39.8 years ±9.4) with an equal number of men and women. Only three students had prior experience of e-learning, one on an award bearing course and others in short courses without interactive components.

The prompts for the interview were drawn from the analysis of the questionnaire information. After some initial demographic information the students were asked to reflect on their responses to the questionnaire at the start of the programme and whether things had changed since that time. They reviewed their map together with the interviewer, reflected on its meaning for them at the time of drawing and the current time. Students were asked to present whether they identified themselves as working more in a personal or professional capacity when in the online learning space and to explain how and why they used particular online tools and spaces and how this related to the ideas of being a visitor or resident during the course.

Four main themes emerged from the semi-structured interviews:

- Students valued new knowledge or the 'delivery' of content as the cornerstone of learning for them.

- Dominance of visitor behaviours for personal and professional use, in relation to online resources in a general sense and in terms of e-learning during their postgraduate programme.

- Valuing a hierarchical or 'top-down' model of learning with the teacher as the 'provider' of expert and reliable knowledge with the learner as 'recipient', with less value associated with learning from and with peers.

- Influence of a number of external and internal factors on online behaviour i.e. (i) when students perceived pressures on their time, they selected learning activities that were more 'visitor' in nature than 'resident'; (ii) online postings by peers, which were detailed and developed/shared quickly, appeared to inhibit participation for others; and (ii) 'shyness' or reticence to share ideas was mooted by some as a barrier to 'resident' behaviours.

These themes are outlined in more detail in Table 2. Representative 'quotes' to illustrate key themes are outlined in the Supplementary materials / Appendix B.

Discussion

This is the first example of the description of a cohort of distance learning, medically qualified, postgraduate students in a healthcare discipline and their engagement with online resources through the prism of the 'Visitors and Residents' model. There was reasonable study participation, with the majority of students completing an initial questionnaire, 39% submitting self-drawn 'maps' of their visitor and resident behaviours online and over half of students who submitted maps took part in the semi-structured interview.

The questionnaire findings highlight the use of a range of online resources in a both a personal capacity and, to a lesser extent, in a professional capacity. The use of 'tools' was reported more frequently than the use of interactive platforms and 'social media.' On a linear scale, students identified as being midway between 'visitor' or 'resident,' in both personal and professional capacities. However, the detail captured with the maps demonstrate more 'visitor' than 'resident' online activity. The interview findings gave insight into the preference for 'visitor' activities, which was associated with mastering the content of the programme and principally learning from the expert 'teacher'. Arguably, this frames the student view of learning as addressing an individual's knowledge deficit and pursing the 'solution' as an individual endeavour. White (White DS, 2014) proposes when that when a person is goal orientated, in this way, then the requirement for developing connections with others, being 'resident' may not be as apparent.

This contrasts with interactive aspects of learning and the importance of communities of interest in e-learning theory (Salmon, 2002; Salmon, 2002; Vygotsky LS, 1978; Wertsch JV, 1985 Boettcher JV, 2011). In relation to course design, in this context, students were encouraged to learn with and from one another via discussion board activities, group clinical case analysis and real-time online tutorials. The underpinning assumptions were that these forms of interaction would promote deeper understanding related to individual and group activities and interactions (Garrison DR & Anderson T, 2003).

The perspective of our students suggest that these assumptions and offerings of 'resident' modes for learning may not align with student expectations, their views about how they learn and other contextual factors. The students in our cohort described an affinity to the mode of learning as an 'individual', in which learning is a matter for 'me, the curriculum and the tutor' (White, 2014). When pressures such as time limits constrain behaviour, these students appear to place a greater value on

visitor behaviours, using tools most particularly for the purpose of 'knowledge transfer'. In this situation their emphasis appears to be around knowledge acquisition through didactic modes such as accessing lectures and reading. The behaviour of others was also relevant, indeed as is the case in a traditional classroom even if proactively managed. For example some students reported anxiety about posting online because others had 'got there first.' We may be able to learn some lessons about course design, such as how best to approach moderating postings, hiding and releasing postings to encourage others to take part and using smaller groups so that the feeling of inhibition and judgement may be lessened.

In terms of professional or personal identification during learning, for the most part, students related to their professional selves in the online course space. This is in keeping with the finding that one of the main interview themes was around the desire for knowledge acquisition as a primary reason for study and for some, credentialing in the specific professional discipline covered by the course.

Generalisability is important. We present a small-scale study within the context of a particular group of learners. In so doing we highlight a number of influences on engagement with the online spaces, through the prism of the visitor-resident model. Our cohort was of a reasonable size and the response rate to the questionnaire was very good (83%) with demographics of responders being similar to the overall student cohort, suggesting that we are reviewing a representative sample of these students. We know from existing data that the demographics of this cohort are similar to that seen in similar cohorts of students on this course in previous years. However the balance of home and overseas students differs somewhat from the overall picture of all postgraduate distance learners in our medical school in the same intake year. Future work might involve investigation of similarities and differences between learners who have experienced different learning/teaching approaches as part of their primary medical qualification and speciality training. Likewise, it was be

interesting to explore whether students on different types of programmes (in different healthcare specialties), are similar or different and whether the patterns will change in the future as cohorts of students have been increasingly exposed to online environments.

The findings from the questionnaire, maps and interview allow us to draw some conclusions about our use of the digital visitors-digital residents model. The model seems to speak to many students who are able to describe their behaviour in this language. There is no clear hierarchy in terms of whether visitor or resident behaviour is more 'desirable' but it is clear from some of the student responses that they were beginning to reflect upon whether being more 'resident' would be of value to their learning. One area at variance with the model described is that not all students understood the concept of 'residency' as a form of social interactivity or 'leaving a trace of their own identity' behind in the online space. Some students related 'residency' with time spent within the course area irrespective of connecting with others or posting online. This is analogous to real life in which the person who lives in a particular street is as much a resident as the others living alongside them, even if they do not exit the home and interact with the neighbours – simply living there and observing what goes past the window is an equal qualification for 'residency'. This is not really touched upon in White's model and the impact of learning in this way compared to learning in a more obviously interactive mode is not clear. Thus the model as described does not provide a perfect fit with the way in which some of the students conceptualise the visitor and resident identities.

The model may be of use both on an individual and group level as a tool for reflection and to support students in developing self-awareness about their learning preferences. In addition application of the model may be used as a means of informing course design, with course designers developing types of learning resources that would meaningfully relate to the experiences, expectations and preferences of learners.

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Figures and Tables
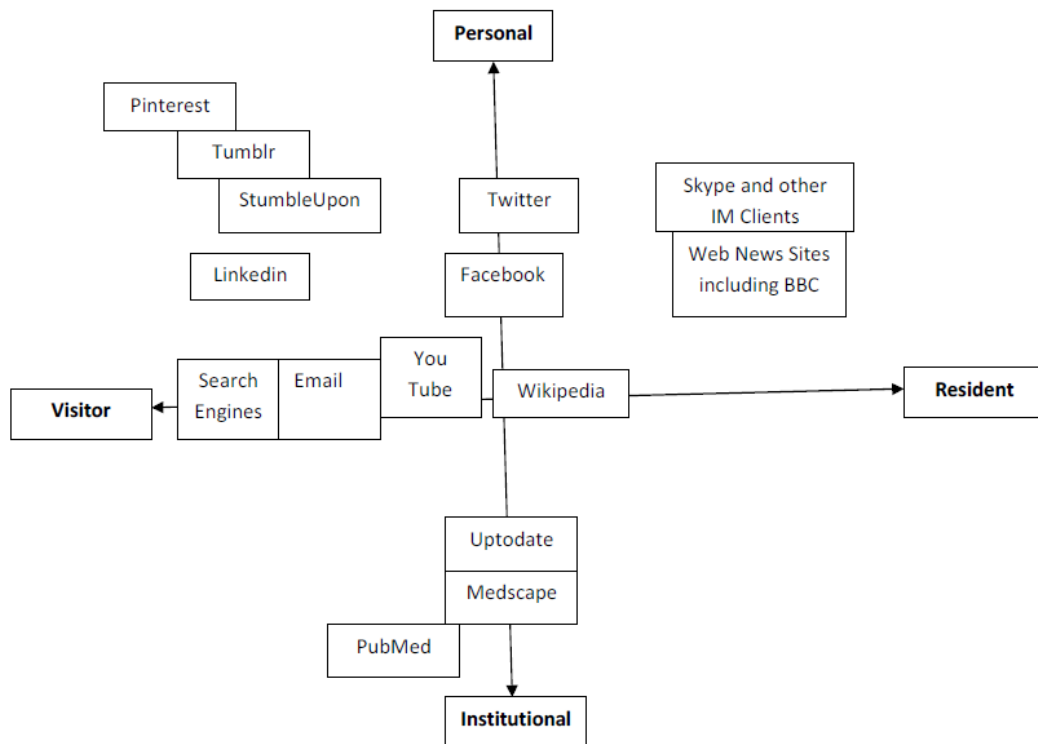
Figure 1: An example of a map submitted. In this case the subject demonstrates 'More visitor than resident' behaviour in a personal capacity and 'More visitor than resident' behaviour when acting in an institutional or professional capacity. The subject also self-identifies more 'resident' behaviours when in personal mode than when in professional / institutional mode.

	Visitor only Number (%)	Visitor >Resident Number (%)	Visitor = Resident Number (%)	Resident > Visitor Number (%)	Resident only Number (%)
Institutional/ Professional Capacity	3 (14.3)	8 (38.1)	7 (33.3)	3 (14.3)	0 (0)
Personal Capacity	3 (14.3)	11 (52.3)	6 (28.6)	1 (4.8)	0 (0)

Table 1: Breakdown of students as identified by most common type of behaviour (visitor or resident) in each of professional and personal capacities.

	Theme	Sub-Themes	Core theme
1	Content and Outcomes are of primary importance in learning.	- Content (syllabus) as the driver to learn - Help with passing exams as a motivator - Desire for 'credentialling' as a student competent in the discipline - Desire to be associated with institution perceived to have prestige, associated with reliable declarative knowledge provision - Self-identification in the course area as predominantly professional rather than personal	**Emphasis on 'visitor' behaviours** - Having a 'problem to solve' at the outset selects for visitor behaviours which use tools to solve problems and this stays stable for as long as there remain problems to solve - Comfort in the visitor mode, in and out of professional learning context where advancing learning in the medical world is associated with learning from experts and places where they (their institution) offer up knowledge
2	Dominance of visitor behaviours in all contexts and over time	- Self-identified 'visitor' behaviours in personal and professional use of online resources - Self-identified resident behaviours often could be classified as more a visitor type too - Identification of 'resident' behaviour as 'time spent in' rather than 'activity in' - Changing behaviours online over time reflecting more of 'the same' eg more searching without change to type of behaviour, use of new tools or ideas	
3	Value attributed to hierarchical and traditional educational model: teachers as 'donors' of expert and reliable knowledge	- Preference given to lectures and didactic learning - Lower value attached to peers and the reliability of their opinions than teachers - Knowledge as 'delivered' rather than constructed	**Individualistic learning** Knowledge is a matter for self, syllabus and tutor'
4	External and Internal motivators influence online behaviours	- Reporting time constraints as a key driver of online behaviours – when students have external time pressures due to work and family they report selecting visitor activities in preference to resident activities that they describe as 'more time consuming' - Construction of and behaviour of others in the online environment as a driver of online behaviours, for example some students are inhibited by other students' knowledge - Behaviour preferences eg shyness affecting wish to expose views and weaknesses to a group	**Motivators and pressure** drive visitor behaviours and knowledge transfer

Table 2: Themes derived from coding of semi-structured interviews

Supplementary Data: Appendices

Appendix A: Questionnaire Content

Screen shot of initial explanation to students within online site:

EDUCATION RESEARCH PROJECT - STEP 1 - EXPLANATION AND INVITATION TO STUDENTS

Dear student

You have just enrolled in a part-time distance learning postgraduate course. We want to make your educational experience the best it can be, so as well as teaching you, we are engaged in some education research to improve our understanding about teaching and learning online.

One thing of interest to us is whether learning preferences for online students are related to the ways in which you already engage with and use other resources on the internet.

We are particularly interested in a new model of online engagement called 'Digital visitors and residents' and we would like to explore this with you. If you are particularly interested in the details of this model you could have a look at the work of David White and his colleagues in http://firstmonday.org/article/view/3171/3049. Essentially when you act like a digital visitor, you start and finish using resources a bit like tools in a tool shed. For example you might decide to use google to search for a particular topic in order to gain some information about it. When you are acting in 'resident' mode, you are essentially having an ongoing presence online with a detectable 'persona' there, for example you might post several tweets about what is happening during your day and respond to the replies you receive.

In 'resident' mode, the internet and its resources are 'places to be' rather than 'items to use.' It isn't 'better' or 'worse' to be more visitor or more resident and it is possible to use both modes in different situtations.

In this first part of the research, you will be filling in an online questionnaire. You will then be asked to watch another short video and then draw and upload a personal map of the way that you use the internet. The questionnaire will prompt you to think about what resources you use and how. The video gives an example of how to draw your own map, thinking about whether your use of any given resource is 'personal' or 'professional' and whether you use it like a 'visitor' or like a 'resident'.

The data in the survey that you complete is anonymised but the information that you share with us is your personal map is not. This is because as well as the research itself, it is interesting to us to hear how you already use the resources available so that we can tailor our teaching to make your learning experience better. You do not HAVE to take part in this research and not doing so will not affect your grades or your course outcome. However we would greatly value your participation so that we can understand your needs much better.

As part of the research, later on during the course you may be invited to take part in a structured interview online about your use of online resources. Again this will take no more than an hour of your time and we really hope you will take part.

NEXT >

Last modified: Wednesday, 17 September 2014, 4:18 PM

Exploring how postgraduate students in a distance learning programme engage in online learning

Introduction to the survey

Thank you for agreeing to take part in this survey. This questionnaire explores your background and the use of online resources for personal and professional reasons.

Please ask if there is anything that is not clear or if you would like more information by emailing: m.r.druce@qmul.ac.uk

Please allow approximately 20 minutes to complete this survey. Once you have commenced the survey it is important you answer each question as you will not be able to go back to them once you have moved on.

Survey Questions

General and Demographic Information

Please tell us something about yourself.

1 What is your gender?

     ○ Male

     ○ Female

2 What is your age?

     ○ 20-30

     ○ 30-40

     ○ 40-50

     ○ over 50

3 How many years has it been since your qualification as a doctor?

     ○ less than 5

     ○ 5-10

     ○ 10-20

     ○ over 20

4 What is your area of origin?

○ UK/Ireland

○ Europe other than UK/Ireland

○ Middle East region

○ India

○ Australia/Asia

○ USA/Canada/Caribbean

○ Africa

○ Other

4.a If you selected Other, please specify:

_____

5 In which area do you currently work?

○ UK/Ireland

○ Europe other than UK/Ireland

○ Middle East region

○ India

○ Australia/Asia

○ USA/Canada/Caribbean

○ Africa

○ Other

5.a If you selected Other, please specify:

_____

6 Which best describes your type of workplace currently?

○ University
○ Large hospital
○ Small clinic
○ Independent practice
○ Other

6.a If you selected Other, please specify:

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[                                        ]
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7 How often do you use resources on the internet during an average week?

○ Several times a day	○ Once a day	○ A few times a week
○ Once a week	○ Less than once a week	○ Never

8 Which statement best describes your overall perception of social media for professional use(e.g. YouTube, Facebook etc.)?

○ They're here to stay and I use them increasingly within my organisation
○ They have potential for work / workplace use but I am not sure how they apply to my workplace and work
○ They are interesting but mostly for private use, not workplace use
○ They are a passing fad
○ Not sure

Survey Questions

Personal and social use of online resources

Please answer the following questions based only on your personal and social use of social media.

9 Which of the following do you use for PERSONAL OR SOCIAL reasons (not professional use)?

	Frequent user	Regular user	Occasional user	Past user	Never used it
Google or other search engine	○	○	○	○	○
News and other information sites	○	○	○	○	○
Text messaging	○	○	○	○	○
List Servs	○	○	○	○	○
PubMed	○	○	○	○	○
Emails	○	○	○	○	○
Wikipedia	○	○	○	○	○
Watching you tube videos	○	○	○	○	○
Posting your own photos or videos online	○	○	○	○	○
e-books or e-readers	○	○	○	○	○
Facebook -- reading posts	○	○	○	○	○
Facebook - posting	○	○	○	○	○
Twitter -- reading	○	○	○	○	○
Twitter - posting tweets	○	○	○	○	○
Linked In	○	○	○	○	○

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Instagram	○	○	○	○	○
Vines	○	○	○	○	○
Writing and sharing your own blog	○	○	○	○	○
Postings on other people's blogs and articles	○	○	○	○	○
Document sharing site such as googledocs or drop box	○	○	○	○	○

10 Which types of device do you use to access web resources for personal or social reasons?

	Often	Sometimes	Never
Mobile phone	○	○	○
Tablet	○	○	○
e-books or e-readers	○	○	○
Laptop	○	○	○
Home computer	○	○	○
Work computer	○	○	○
Computer elsewhere eg library	○	○	○

11 How often have you done the following in a personal capacity?

	Very often	A few times	Once	Never
Posted a status on facebook	○	○	○	○
Uploaded photos to a public photo site (eg Instagram or flickr)	○	○	○	○
Uploaded a video to a public site (eg you tube)	○	○	○	○

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Written a blog post	○	○	○	○
Commented on someone elses blog posted	○	○	○	○
Subscribed to an RSS feed	○	○	○	○
'tweeted' on twitter	○	○	○	○
Created or edited a wiki entry	○	○	○	○
Collaborated on a document sharing site such as googledocs or drop box	○	○	○	○

Survey Questions

Professional use of online resources

Please answer the followings questions based only on your PROFESSIONAL use of social media.

12 Which of the following do you use in your professional capacity?

	Frequent user	Regular user	Occasional user	Past user	Never used it
Google or other search engine	○	○	○	○	○
News and other information sites	○	○	○	○	○
Text messaging	○	○	○	○	○
List Servs	○	○	○	○	○
PubMed	○	○	○	○	○
Email account	○	○	○	○	○
Wikipedia	○	○	○	○	○
Watching you tube	○	○	○	○	○
Posting your own photos or videos online	○	○	○	○	○
e-books or e-readers	○	○	○	○	○
Facebook -- reading	○	○	○	○	○
Facebook - posting	○	○	○	○	○
Twitter -- reading	○	○	○	○	○
Twitter - posting tweets	○	○	○	○	○
Linked In	○	○	○	○	○
Instagram	○	○	○	○	○

Vines	○	○	○	○	○
Writing and sharing your own blog	○	○	○	○	○
Postings on other people's blogs and articles	○	○	○	○	○
Document sharing site such as googledocs or drop box	○	○	○	○	○

13 Which types of device do you use to access web resources for professional or work related reasons?

	Always	Sometimes	Never
Mobile phone	○	○	○
Tablet	○	○	○
e-books or e-readers	○	○	○
Laptop	○	○	○
Home computer	○	○	○
Work computer	○	○	○
Computer elsewhere eg library	○	○	○

14 How often have you done the following for professional or work related reasons?

	Very often	A few times	Once	Never
Posted a status on facebook	○	○	○	○
Uploaded photos to a public photo site (eg Instagram or flickr)	○	○	○	○
Uploaded a video to a public site (eg you tube)	○	○	○	○

Written a blog post	○	○	○	○
Commented on someone elses blog posted	○	○	○	○
Subscribed to an RSS feed	○	○	○	○
'tweeted' on twitter	○	○	○	○
Created or edited a wiki entry	○	○	○	○
Collaborated on a document sharing site such as googledocs or drop box	○	○	○	○

Survey Questions

Digital Visitors and Residents

We would really like to explore in more detail some of the ways in which you use technology and social media in your every day life for work and for leisure. This may be a helpful exercise for you to encourage you to think about what helps you to engage and learn online.

15 Describe the things that you enjoy doing with the web and technology each week.

16 Think of the ways you have used technology and the web for your studies. Describe a typical week.

17 Think of the ways you have used technology and the web for personal and social purposes. Describe a typical week.

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18 Think of the ways you have used technology and the web in your professional capacity as a doctor. Describe a typical week.

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│                             │
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└─────────────────────────────┘
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19 Think of a time when you had a situation when you needed answers quickly. What was your preferred method for finding out the information?

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│                             │
│                             │
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20 Have there been times where you were told to use a library or particular learning platform but used something else instead? What did you use or do?

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┌─────────────────────────────┐
│                             │
│                             │
│                             │
│                             │
└─────────────────────────────┘
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21 Consider the information you read about the study before this survey (including the link to David White's work if you read it.) When you think about your PERSONAL AND SOCIAL use only, please try and identify yourself on the spectrum where 1 represents a digital visitor and 10 a digital resident.

- ○ 1
- ○ 2
- ○ 3
- ○ 4
- ○ 5
- ○ 6
- ○ 7
- ○ 8
- ○ 9
- ○ 10

22 Consider the information you read about the study before this survey
(including the link to David White's work if you read it.) When you think about
your PROFESSIONAL use only, please try and identify yourself on the spectrum
where 1 represents a digital visitor and 10 a digital resident.

   ⃝ 1   ⃝ 2   ⃝ 3

   ⃝ 4   ⃝ 5   ⃝ 6

   ⃝ 7   ⃝ 8   ⃝ 9

   ⃝ 10

End of Survey

Thank you for completing the survey. Your time and effort in answering these questions is appreciated.

Now please go on to to the next step. This will involve watching a short video which gives an example of how to draw a map of your own personal use of online resources. We would then like you to spend a few minutes drawing your own personal map and uploading it via the link given after the video.

We are really looking forward to understanding your online learning needs a bit better!

If you have any questions or concerns about the manner in which the study was conducted please, in the first instance, contact the researcher responsible for the study, Maralyn Druce (m.r.druce@qmul.ac.uk).

If this is unsuccessful, or not appropriate, please contact the Secretary at the Queen Mary Ethics of Research Committee, Room W117, Queen's Building, Mile End Campus, Mile End Road, London or research-ethics@qmul.ac.uk.

Theme: Content and Outcomes are of primary importance in learning.

The students were invited to discuss several aspects of their learning needs and what drew them to the course. A strong overarching theme was the role that students gave to knowledge and the centrality of gaining 'knowledge' and mastery of content. Reasons given for this varied including mastery of a defined curriculum, credentialing for professional development and demonstration of benefits to students' ability to deliver high quality patient care.

> '…[it was] also a way to help me to prepare myself for my final examination next year for my specialist degree.' [I12_M29]

> '…I get to see a lot of thyroid disorders and metabolic disorders and I thought that if I take this course I would be better equipped at dealing with those patients myself. I do refer to the endocrinologist if I cannot manage this at my level. But it gives me more confidence in managing these patients. [I10_F45]

> 'At some stage I may start doing some kind of endocrine clinic of my own and it's the right direction if I am going to be more involved with these things' [I3_M40]

Students rarely highlighted advantages of the process of learning, such as the value of discussions but a common theme related to knowledge and content.

Demonstration of the quality of knowledge mastery was given an additional 'sheen' in the eyes of students by the perceived prestige of the institution from which their new knowledge was 'bestowed'

> 'and you have a great centre…which is known worldwide so I knew that I was going to learn from multiple specialists' [I12_M29]

> '[the course] had a very good reputation' [I2_M36]

> 'this was the course on everybody's lips' [I7_F30]

Although not clearly part of this core theme, an emergent aspect from this theme is that students approached the course for the most part in the context of their 'professional identity'. The interactions related to mostly clinical questions and they approached this as they would in the workplace

'I think regarding the course it would be a bit of both, but mostly professional as we don't really know each other that well in order to be personal and it's conversations that are professional in nature so it is mostly the professional part' [I4_F42]

Where students discussed the adoption of their more 'personal' identity this was either in the context of them feeling that the two distinct personae discussed were more of a mixture, or became 'merged' online – when thinking in a personal capacity alone this tended to refer more to the fact that they sometimes had to engage in course materials in what they deemed to be 'personal' rather than 'work' time.

This may in part explain why when students described themselves they identified themselves as working in the online course environment in their 'doctor' or 'professional' capacity rather than in their personal capacity as it is in the professional capacity that the knowledge acquisition is most salient for them.

Theme: Dominance of visitor behaviours in all contexts and over time

Students describing their use of resources, both outside of the course, before starting it and also later on during the course, as well as students describing their use of particular tools or activities within the course, tended to focus on behaviours that would be described as 'visitor' behaviours. They also favoured tools and online sites that could be described as favouring 'visitor' behaviour. This was the case when discussing their maps (which as previously discussed, demonstrated a preponderance of visitor behaviour) but was also the case in more generalised discussions around learning and online behaviours.

'I'm obviously a visitor. I'm quite an inquisitive person so if I have a question then I will look for it and I will search then I will go. I don't have sites that I reside in. I just go to find the information that I want on the topic and where I go depends on whether it is medical or personal, if it's health issues, if it's travel if it's anything I just go in and out' [I4_F42]

'Let's start with visitor because when you think about twitter and you tube and all of that, I have never signed up to all of them. I'm not sure hwy but I felt that they were dangerous [laughs].' [I6_F59]

'I download articles through PubMed and I go through them, the relevant articles for the week, and I..then of course the video lectures are the most important to me and I go to them to understand the subject' [I8_M54]

Even where students self-report their online behaviours as 'resident' the way in which they talk about them is different to the way in which White and colleagues describe online residency. Students conflate 'time spent within' a particular online environment as being resident, even where they do not post or directly contribute or leave an active trace of themselves.

'I think I am resident mostly because I am studying most of the time, even if I am not on the university site all of the time I am still looking at the materials that I have downloaded and studying the suggested reading articles and books' [I8_M54]

'whenever I have some free time in the clinic or even during my break hours in the clinic I tend to devote it to the course, just to see what's going on…so I take it more as a resident…I'm really just receiving' [I10_F45]

The preference for and preponderance of visitor behaviours appeared stable over time. When students reflected on how their behaviours had changed they general described doing 'more of' visitor behaviours such as online searches or the use of more emails, rather than a shift in the quality or nature of online behaviours.

'I just feel that when you reach a certain age and level of experience that you already have your rituals, your learning habits and it is not necessarily that the course would change them, just that the course has increased the quality but the habits remain the same. So if somebody learns better by interacting, if they have that type of personality, then I think it is more personality-related. I feel more comfortable with lectures' [I4_F42]

That said there was an element of developing familiarity with others on the course and a shift towards more confidence in resident behaviours was described by a minority of students

> 'I suppose as the course went on I started to feel part of the resident community. I don't know if that makes sense? Because we gelled as a group I started looking out for their comments so yes I moved from being just a visitor to looking out for their comments, who says what, what they say, their comments on what I say…so yeah…we gelled as a group and I think I became a resident, yeah.' [I6_F59]

Theme: Value attributed to hierarchical educational model

An important theme overlapping with the concept of 'knowledge is king' was the value attributed to a hierarchical model of education in which tutors were seen as the 'donors' of knowledge. Preference was therefore given not just to 'visitor' behaviours online, but specifically to the use of didactic learning materials such as lectures, from trusted sources with a high perceived value. In contrast mistrust of the opinion of peers as a source of learning was expressed, with the delivered course materials and tutors being more subject to rigorous 'quality control.'

> 'see the problem of interaction and of interacting with a group of students is that you have to be careful what somebody says and what are the arguments because they might be giving the wrong information. And they might have valid arguments but you would have to go and research that before deciding to retain that sort of information.' [I7_F30]

Overall the knowledge that was 'delivered' by 'safe' routes such as video lectures were trusted over information on discussion boards. In general students identified other students who they perceived to be very senior or experienced from their posts and developed a good deal of trust over time in the postings of these individuals

> 'because I've noticed from the clinical cases and from the discussion board, some of our colleagues in the diploma they are very expert in the field actually…I can see that their level is a bit higher than my level – they have lots of knowledge…those are very informative people.' [I4_F42]

Theme: External and Internal motivators influence online behaviours

Students spent a good deal of time in structured interviews reflecting on factors influencing the ways in which they use online resources. Some of these influences were external. A common theme both in terms of number of students who made reference to it and also the number of students who mentioned this multiple times was the pressure of time. It was clear that taking on an additional part time course of study as well as (often) full-time work and family commitments creates a pressure for many which results in the need to make choices. It may be therefore that this theme was a function of course design, resulting in student preferences being driven by what they perceive to be 'important', or 'interesting' or 'achievable' in this context, whereas in another context they might choose on the basis of activities they find most academically helpful. Students implied that resident behaviours may require more investment of time to develop relationships with peers and in an environment in which knowledge acquisition is primary, visitor modes may be more efficient.

> *'There are usually other time constraints so I usually access the information that I am out to look for and then get back to whatever other things I need to do' [I1_M34]*

> *'I am a person that if I would like to participate and comment then I would like to do it in a quality time so I would rather not just say something because I would rather spend some time preparing it.' [I12_M29]*

> *'My first objective is to finish the exercises and clinical cases. If I have time after that and I do get back then I spend my time on the clinical discussions and on the discussion boards and to reply to others….but it all depends on how much time I spend' [I3_M40]*

Time was also relevant to another external influence that came up frequently – namely the role of behaviour of others in driving individuals own behaviour choices. This partly related to the concern that if others had already posted or interacted in some way, a subgroup of students felt under greater pressure to say something novel and meaningful if they were to interact at all.

> *'I am always a bit delayed in the discussions and everyone has already raised all of the issues that I would have and there is no point in posting because it has already been said. These people are very fast and very active and I appreciate them because I learn a lot from them' [I7_F30]*

The prolific or expert interactions of others were sometimes deemed either off-putting or simply a way for fellow students to 'gain information' without the necessity of interacting themselves

> *'I see quite a few people are posting there and are very active …they post frequently and go to the clinical cases and write about them. They post their comments on whatever search they have done…I just tend to read their posts and find out what materials they have been looking at and do they give references, so I go to the references and see the paper for myself just to correlate whether they are thinking on the same level…so in that way I use the discussion board a lot. So although I am not discussing, I am just receiving a lot of information.' [I10_F45]*

Unfamiliarity and geographical distance can contribute to a feeling of 'shyness' with colleagues. The size of the group can also cause concern about exposing one's views. For many students this was a first experience of online learning and the need to get used to a new way of learning was evident

> *'one thing is that we do now know all the other participants very well and umm communication may have been largely by email and maybe it's quite…maybe we do not know if we communicate how that other person will feel. That maybe could be one reason why we don't participate.' [I1_M34]*

> *'You worry that if you put a comment somehow that you will feel inferior, but we are learning, we are all of us learning' [I4_F42]*

> *'I had no knowledge of this before this because like on all of the courses I had been on before like the person was in front of me and you could interact with the students and with the tutor or professor so this… I admit at the beginning I was unsure where do I go from here if I need to ask or to discuss or anything for actually quite a while….it was really a bit unnerving until I, as I said, got my footing right.' [I6_F59]*

Students acknowledged the role that their personality and preferences have in driving their online behaviours, irrespective of the course environment or the behaviour of others.

> *'I see the emails, I see the course, I do do that, but then and only if absolutely required like I see that no one has mentioned a burning issue then I post it, or if it is a part requirement of*

the course then I do it…because I like to see what the others have to say. I take in the information and then, ummm, I really don't post. There are some restraints in me that doesn't allow me to post…it's just that I am a little shy maybe' [I10_F45]

'Maybe not so much of an extrovert, maybe I'm a little inhibited, in the first place, to put it there…maybe it's part of my nature that I don't volunteer first..it is my nature.' [I11_F38]

Core themes

The development of these themes appear on reflection to give rise to some core ideas. One core theme or idea is the students' focus on individualistic learning: in which learning is a matter for 'me, the syllabus and the tutor.'   This model might favour particular visitor behaviours online and a distrust of a focus on 'process' at the expense of content.

A second common theme was that the driver behind engagement on the course was for many students related to the wish to master the topic, to complete the curriculum or to develop professionally, rather than for interest alone. It is possible that when students are engaging in learning in order to 'fix' a problem or lack that they have identified, having such a 'problem to solve' at the outset might select for visitor behaviours which use tools to solve problems. This type of behaviour seems to stay stable for as long as there remain problems to solve.

Finally, given the value placed on individualistic learning and the use of learning to 'fix' a problem, a further core theme emerging was that when pressures constrain behaviour, students expressed greater value on visitor behaviours and 'knowledge transfer', again rather than a focus on process.