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Organising undergraduate research projects:

Student-led and academic-led models

Abstract

Purpose: This paper addresses the management of undergraduate final year research dissertations. It intends to explain and clarify our experience of two models of delivery (student-led/academic-led) with reference to interest development theory (Hidi and Renninger, 2006).

Approach: We focus on the advantages and drawbacks of each model within the context of the research literature, and describe a case study of the experiences of lecturers and students in one Division of a metropolitan UK University, running a leading programme in Speech & Language Therapy (Pathology). Recommendations are made which are intended to be of use to colleagues across disciplines and organisations.

Findings: We argue that a delivery where students can choose their research topic from a limited set suggested by supervisors (academic-led model) is best placed to meet motivational challenges in Hidi and Renninger's framework, and also increase feasibility for staff. We discuss how such a model might best be implemented.

Originality: Describing case study experiences within a conceptual framework is important for the development of improved supervision methods. It is hoped that this case study paper will inform other institutions by providing clear theoretical underpinnings and practical recommendations; and that it will lead to further empirical research into models of organising final year dissertations.

Keywords: undergraduate research, dissertation, supervision

Introduction

In the context of increasing student numbers and staff workload in higher education, there has been a move to streamline assessments and improve assessment processes that are sometimes deemed unsatisfactory (e.g., Harrison & Mears, 2013). Most undergraduate degree structures incorporate a large high-credit piece of coursework in the form of a capstone dissertation or project, which often takes considerable time and resources to manage. Rather than address the challenges around undergraduate dissertations, some social science and health degrees have instead abandoned the requirement for an *empirical* project, despite suggestions that they form a key role in facilitating active learning and in developing students as researchers (Healey, Jordan, Pell and Short, 2010). Some programmes require students to simply design a project; Others allow literature based dissertations. Nevertheless, the UK Quality Assurance Agency for higher education (QAA) which oversees and regulates all degree programmes, states in its 2008 guidelines that successful undergraduate students will typically have shown that they have the skills necessary to carry out a research project. This case study considers undergraduate research dissertation systems. The paper is not intended as an empirical study, rather we use a conceptual framework based on motivation and interest (Hidi and Renninger, 2006) to help explain why we think some systems work better than others.

Capstone research projects and the allied health context

In the UK, a capstone research project in the final year is usually considered a requirement for graduation. This dissertation takes the form of an extended written project that includes a discussion of research methodology and results (Healey and Jenkins, 2009), and will often require the student to carry out their own research. We believe that for allied health students, empirical projects are essential for full understanding of how the evidence base is created. There are, however, a number of difficulties in providing empirical project experiences, that relate to the wider higher education context. For example, increasing class sizes, widening participation, increasing staff work load, and changing ethics approval processes can all make it challenging to provide high quality

research projects with parity of experience for students and staff (Thomas et al, 2014; Kain et al, 2014).

This case study approaches the topic of delivering an effective capstone dissertation experience in the context of allocation of final year undergraduate students to research projects from the field of (allied) health sciences, and specifically speech and language therapy. An examination of the online information for the undergraduate speech and language therapy degrees in the UK indicates that most include a capstone research project and there are a number of reasons why these are an important part of training in this context.

First, as practising clinicians, students of allied health qualifications will eventually engage in evidence based practice (EBP), which requires a thorough understanding of the research process.This understanding will enable them to assess, diagnose and treat their clients using the best evidence available. Furthermore, the understanding and implementation of EBP in allied health is a current concern. In a recent systematic review article based on Occupational Therapy, Upton and colleagues (2014) concluded that limited knowledge of research methodology and critical appraisal was a key barrier to carrying out evidence based practice. Thus, the need to increase research capacity in the allied health professions (AHPs) has long been recognised. In 2001, a Higher Education Funding Council for England (HEFCE) report noted that 'the public is being poorly served by the current capacity for research in nursing, midwifery and the AHPs and the outputs from it' (p.6). Student training in research is included in the guidelines of the relevant national bodies in allied health education. In the UK the Health and Care Professions Council's (HCPC) generic standards of proficiency (2012) and the Quality Assurance Agency (QAA) (2001) benchmarks for Speech and Language Therapy include descriptors for research training such as:

- "be aware of the principles and applications of scientific enquiry, including the evaluation of treatment efficacy and the research process " (HCPC 2012, p.12)

- "demonstrate knowledge and understanding of the research culture and methods appropriate to informing the knowledge base of speech and language therapy" (QAA 2001, p.11)

However, these guidelines tend to cast students as fairly passive users of other people's research, rather than active engagement in research (Jenkins and Healey, 2010), which is a theme we focus on later through the framework suggested by Hidi and Renninger (2006). In our experience, motivation for research is often low in allied health students, who enrol in degrees specifically to achieve the goal of qualifying as a health professional, and who sometimes struggle to make connections between research and practice.

Second, as well as enhancing EBP, the final year research project should represent the culmination of skills gained during the degree programme (Malcolm, 2004) and, although there is debate about the relationship between research and teaching in higher education (e.g. Deem and Lucas 2006), the dissertation is an important instantiation of the research-teaching nexus (Neuman 1992). One might argue that this nexus is particularly apparent in the case of undergraduate dissertations since the students involved will be coming to the world of research actively for the first time, and making their first move from knowledge acquirers or consumers to knowledge creators or producers (Manathunga et al 2012, Boscolo, Arfé, and Quarisa 2007). However this pulling together of course components and skills is not always something experienced by students (Thomas et al 2014).

Third, research skill development is increasingly seen as 'an underlying principle' (Katkin 2003) of undergraduate programmes more generally, and students benefit in a wider sense from undertaking their own research and enquiry (Kain et al 2014; Seymour et al 2004) including: learning about a topic in-depth, improving oral and written communication skills, clarifying career plans (Lopatto 2003), independent thinking, preparation for research at higher levels (Tan 2007), increased confidence (Russell et al 2007), and the development of relationships with academics (Butcher and Maunder 2014). There may also be benefits for staff supervising student projects, such as

maintaining intellectual vigour and enhancing teaching (Malachowski, 1996), and the creation of inclusive communities of practice (Smith and Rust, 2011).

Todd et al. (2006) emphasise that the challenges faced by students in completing an independent project are important, and that support in addressing these requires careful supervision. The structure of this support should enable students to move from being guided learners to independent researchers. In addition to the quality of supervision, it is clear that the way in which the choice and allocation of research projects is organised will also impact on the undergraduate student experience (e.g. Smeby 2002 and references therein). This organisation will be the focus of this case study report.

Interest development, motivation and models of supervision

As noted above, student engagement in research is the optimum context for the capstone dissertation to take place. A recent qualitative investigation into allied health dissertations (Kain et al, 2014) identified academic engagement as one of the key themes emerging from evaluations of the student project experience, as well as continuation of research interest after the programme. Staff members can also become disengaged from student research projects and a need for academic engagement from supervisors is also essential (Thomas et al., 2014). Thus engagement from both sides is an important theme to consider when providing a constructive final year dissertation experience for students because without a transparent model of delivery, there may be tension between teaching research skills and developing independent interest in research. For example, students are sometimes discouraged by the fact that their dissertations will not be published but at the same time find it difficult to link their capstone project to practice. It appears therefore that motivation is a key element to successful research supervision yet this is not always explicitly addressed in the delivery of supervisory systems especially at undergraduate level.

Hidi and Renninger's (2006) theory of Interest Development identifies a four phase model of educational engagement which seems particularly relevant to the capstone project experience. This model identifies both *Situational* Interest, in which students are externally supported as well as *Individual* Interest' which describes an internalised motivation to continue engagement. The first stage of Hidi and Renninger's model is Triggered Situational Interest. This stage is usually dependent on a number of external factors including external triggers such as structured educational conditions and support. The next phase is that of Maintained Situational Interest which still often requires external support. Hidi and Renninger suggest that this stage is achieved by personal involvement, co-operation and task meaningfulness. Thirdly, Emergent Individual Interest is posited in which the student begins to develop a predisposition to seek out similar activities. Here the emphasis is on an internalisation of the previous phases, where stored positive feelings and knowledge related to an activity or topic are used to generate new curiosity in the domain. Finally students may reach a phase of Well Developed Individual Interest in which motivation to pursue the activity is stronger than other emerging interests. This motivation is almost entirely self-supporting and perseveres even when external conditions do not facilitate the student.

Importantly, interest and motivation are not simply inherent traits present in differing degrees across individuals. Hidi and Renninger (2006) argue that 'interest' is often misjudged by educators, who may believe students have little interest in an assignment when in fact their interest has not been developed through theoretically motivated system delivery. Educators may expect students to have strong internalised and *individual* interest without having first developed a *situational* interest through structured educational support. This misconception may arise because *individual* interest (a student's predisposition to be interested and motivated); and *situational* interest (the structure and content of the activity/topic) are implicitly conflated in delivery systems. However Hidi and Renninger's (2006) model shows progression in these aspects.

The present paper

This case study is based on the experiences of organising student final-year undergraduate research projects within our division over the last four years. We present two supervision delivery models that we have trialled and argue that a 'academic-led' model of dissertation supervision is best placed to meet the motivational phases that Hidi and Renninger outline. The first involves students identifying their own project and finding their own supervisors (student-led), whilst the second involves staff proposing a number of projects from which students can indicate their preferences and be allocated accordingly (academic-led). In both cases, the systems were applied to a final-year undergraduate research methods module, for which the assessment is a dissertation of 7-10 thousand words. Each year there are around 40 students in the cohort, supervised by around 20 staff. Our project allocation process begins in June, students begin projects in September (alongside other modules) and submit dissertations in early May. The benefits and challenges associated with each method will be explored. The academic-led delivery will then be detailed more fully to facilitate others wishing to investigate or apply this model of supervision.

It is important to note that, for our division, the change in systems was driven by increasing load on both staff and students in terms of time and resources rather than pass rates. Our divisional data shows that 99.9% of projects pass under both systems of project management. Neither were we concerned about the marks awarded for projects under the student-led model – our average grade is 65% both before and after the change in project management. Instead, it was the pressure on the system for both students and staff that concerned us. Students were frequently unhappy or highly anxious about the project and required increased pastoral support; staff were often overloaded and under-resourced to supervise effectively. We believed that continuing with the student-led model would result in a loss of empirical final year projects altogether. These pressures are difficult to document in vivo, and therefore this article does not present statistical change. Rather it is a case study documenting and reflecting upon the two systems.

Student-led model

The 'student-led' model, is used in many degrees across allied health disciplines. This model was applied to the module in question until five years ago. In this system, students design their own research project and identify and approach a member of staff to be their supervisor. Students contact supervisors directly via email or in person, and it is up to that member of staff to agree to supervise the student or refer them to someone else. The topic and content of the project is established entirely between the supervisor and student. Thus a minimum of staff support is provided until after the topic and supervisor have been identified, but after this point, supervisors need to spend time working on the feasibility of the project, even though students work fairly autonomously on their dissertations. This model is similar to Chang's (2005) 'budding genius' model, which assumes that the range of students is wide, with the most able students being able to produce publishable research.

Advantages

There are some positive aspects of running a student-led model. It works well for stronger students who identify a suitable topic and find willing supervisors, although only a small number of students are able to completely develop and follow through their own idea. Within Hidi and Renninger's model, it may be that although students need to find internal triggers for their interest, a subset of high-achieving students will develop emerging and well developed *individual* interest more quickly than through a heavily structured delivery system, and may acquire more independent research skills. This idea taps into social learning theories (e.g., Vygotsky, 1929) which suggest that as perceived competence increases, more autonomy is achieved. Chang (2005) argues that independent students need inspiration and occasional guidance, rather than full supervision so that students approaching the end of their degrees become autonomous and independent learners (Greenbank and Penketh, 2009). In addition, workload for staff can be minimal if they are not

approached much by students, are only approached by strong students, or are less involved in the design of projects.

Disadvantages

The student-led model also raises a number of issues for the undergraduate cohort as a whole. First, the majority of undergraduates find choosing a research topic difficult as most have no practical research experience. In Hidi and Renninger's terms, their interest in research needs some substantial external support. In addition, undergraduate students rarely have deep knowledge of any particular area in order to identify a research rationale. Students often identify a very general topic area for research, and usually produce research questions that are too broad to be tenable. Supervisors then aim either to mould these broad ideas into a workable question, or to suggest a very different topic. In the former case, staff supervise projects about which they have little knowledge or interest, where they learn one step ahead of students (L'Anson and Smith, 2004). In the latter case, students can feel disenfranchised as their ideas are set aside and they are channelled into a project for which they have less interest, enthusiasm and ownership. Thus, even where students' interest has already been triggered, they are often then disheartened to find that they cannot translate this interest into a capstone project and they fail to reach the Maintained Situational Interest phase of Hidi and Renninger's framework. Todd et al (2006, p171) note that autonomous work is difficult for many undergraduate students who need a high level of support in order to turn a student-led project into a successful piece of research.

Under student-led project delivery systems students often turn to safe ground, approaching staff with whom they are familiar from taught elements of the degree; or attempting research which seems the most akin to practise (often a descriptive case study approach). Whilst this is a reasonable approach from the students' point of view, and we acknowledge that it is crucial to have good relations with the supervisor (Wisker, 2012), staff members who are unknown from the undergraduate programme are rarely approached. Consequently, student skill sets remain limited

and some staff members supervise many more students than others. This situation is unfair for staff, and also affects the supervision experience for students, who might find themselves competing with many others for their supervisor's time, and producing less interesting work than they are capable of. This 'safe' limitation of research experience likely means that development of *individual* interest into post-qualification research is hindered, because the project has not provided positive feelings, or triggered curiosity, which Hidi and Renninger cite as key elements (p.115).

Finally, in the student-led model there are often students who do not manage to find a supervisor because they are unable to identify an area for research (no interest has been triggered), or because they approach staff members very late, and find they are already at capacity. More senior staff members are then required to intervene and pair the student with any available supervisor, which rarely results in a positive start to the project, and the student often feels behind their peers until completion. Students are often assigned to supervisors who work in areas which trigger no interest. Less requested supervisors also accrue less experience of research supervision under this model and so may feel increeasingly under-skilled in supervising.

In sum, asking students to create their own projects from scratch presents a number of difficulties and takes considerable time (Volkema, 2010). Challenges may arise because students fail to develop the situational interest in research described by Hidi and Renninger (2006), or cannot maintain this interest throughout the year. The widespread use of student-led delivery of capstone projects may also partly explain the apparently impoverished individual interest in research post-qualification. Thus, the disadvantages of such a system are clear, and informal feedback from those involved in our own division suggests that the student-led system is unsatisfactory for the majority of staff and students.

Academic-led model

An alternative is 'academic-led' delivery which involves the creation of a catalogue of project summaries from staff members. These may be new pilot projects, or arms of existing research. In

this system, students receive a catalogue, attend a project day in which they learn more about the module and have an opportunity to ask questions from the module leader (see recommendations below). They then select five projects, and email this to the module leader responsible for allocation. Students can talk to supervisors before choosing, but importantly staff are not allowed to independently decide to supervise a student. Instead, students are allocated centrally based on a number of factors. The allocation process follows a 'best fit' model and aims to maximise students' first choices as well as prioritising parity of supervision workload. All first choices are allocated up to the maximum capacity for each staff member. Then second choices are considered for the remainder. However at this point, the degrees of freedom regarding supervisor load become tighter. The process then entails reviewing how many students each staff member has received, and ensuring that all staff have at least one student to ensure that they also gain supervisory experience. Here, even for students who could have been given their first choice project, allocation might be rearranged to allow parity across staff and to allocate all students. For example a student whose first choice is popular, but second choice is for an unallocated supervisor loses their first choice to accommodate good fit across the cohort.

The academic-led model requires some staff time before projects begin (for the project day and organising the allocation) but less time for supervisors negotiating projects individually with students, and less time once projects are underway.

This model has been used for the module in question for the last five years. The decision to trial this educational delivery was originally underpinned by findings from Smeby (2002, p139), where being attached to a supervisor's existing research project can 'improve quality and effectiveness of graduate education in all fields of learning'.

Advantages

Providing a catalogue of pre-designed projects has a number of practical and theoretical advantages. We have found it to provide an excellent external trigger for both early situational interest and for maintaining this interest (Hidi and Renninger, 2006), because projects demonstrate the breadth of research possible (both in terms of topic and methodologies) but combine these with exciting opportunities to be involved in original empirical research. They also incorporate elements of co-operative learning, meaningfulness and personal involvement (cited by Hidi and Renninger as important to this phase) because the catalogue ideas usually have flexibility to allow ownership of some aspects, and because offering a choice in itself facilitates this psychological state. The catalogue also enables students to have a better overview of the division's research and the breadth of the domain more generally, which is likely to help emerging individual interest in clinical research. We have found that under these instructional conditions, interest is triggered and maintained even in students who were apprehensive or unenthusiastic about research, and in the better students leads to well-developed individual interest evidenced by informal post-graduation involvement in research events and projects.

From a staff perspective, triggering and maintaining interest results in a more positive supervision experience and less time spent resolving difficulties. There are also advantages which reach beyond having more interested students. In the student-led model, spreading out projects evenly across the staff body was extremely difficult, and was stressful for both faculty and students. With the academic-led model, top-down allocation means that parity is much better across individual supervisors, which in turn leads to enhanced supervision time and quality.

Disadvantages

It is possible that by providing too much uniformity in the supervision process, overdirective external support may interfere with the development of independent, original and critical thinking (Jadlemark & Lindeberg, 2012) – especially in high achieving students whose situational interest has already been triggered through taught elements of the programme.   Hidi and Renninger (2006)

attempt to address *how* students move through stages, and personal involvement and the development of curiosity seem to be crucial factors. Plausibly, providing a catalogue of ready-designed projects could limit these factors especially for the most able students.

There are also a few staff-based disadvantages. First, staff members need to prepare student-feasible project summaries in advance. Some staff may not feel able to do this and may in turn need support and motivation. Their own interest in student research may not be sufficiently individualised in terms of Hidi and Renninger's model, to create new projects without student negotiation. Others may feel that their own ideas are not as valuable as those of peers, and a few members of staff may resent being asked for project ideas pertaining to the following year's supervision. A final challenge is that of workload: a supervision workload model (considering the number of BSc, MSc and PhD students supervised by each person) is a useful tool in helping to prevent overloading and in demonstrating parity but this also needs to be considered in the context of more general staff workloads beyond supervision. The lead for dissertation allocation may or may not have this information to hand, and so some flexibility is required to avoid clashes.

Finally allocation itself evidently takes some staff time and potentially creates tension within the staff team. Students should be informed that they might be allocated any one of their choices, and be encouraged not to be disappointed if they do not receive their first choice. Staff should be well informed about expectations of supervision.

Overall, however, we have noticed that our students are more engaged with the dissertation process, and believe that the Hidi and Renninger (2006) framework helps to explain some of the reasons behind this. Nevertheless, some of the challenges mentioned above have been overcome by careful planning around the delivery of our academic-led system, and we now detail our recommendations for implementing this.

Recommendations for implementation of an academic-led delivery system

More detailed recommendations from our own experience about ways in which the system can be
implemented most successfully are given below.

- *Staff preparation*

  Staff benefit from reassurance about the academic-led system. In line with Pennington's
  (2003, p.10) advice, any change process in higher education needs to be transparent,
  relevant to all staff, feasible, and ultimately beneficial. Thus, it is important to emphasise to
  the value of all staff research, and the positive aspects of offering students a wide array of
  project methodologies and topics. Fora can reassure staff about the process, and promote
  the idea that student projects can help staff to advance their own research. This may seem
  impossible when projects are small, but we have successful experiences of group projects or
  students over successive years, collecting cumulative data sets. These are ultimately
  publishable, or act as pilots for grant applications. Chang (2005) also suggests that student
  projects can be inherited and improved year-on-year, until publishable outputs are possible.

- *Clear but simple project catalogue format*

  It is important to ensure that the project suggestions themselves are in a useful format by
  providing a template so all suggestions offer the same type and amount of information. Each
  suggestion can detail the minimum/maximum numbers of students the project can
  accommodate, and give a brief description of each project including the background,
  rationale, and proposed methodology. It is also useful to suggest related papers, which starts
  students reading in the area of their project at an early stage. However too much
  information at this stage becomes burdensome for staff to create and for students to read
  so we recommend about 150-250 word descriptions.

- *Providing different options within catalogue*

It is easier to allocate students when the projects presented cover a wide range of topics and methodology. In recent years we have also found it useful to offer projects supervised by one individual alongside group projects that take on several students under joint-supervision teams. This has also helped to incorporate supervision from less well known, or less popular staff members and to utilise all staff skills.

To accommodate those few students who want to develop their own project, staff can also offer a student-led option for one of their suggestions, simply stating the areas they are willing to supervise. All suggestions can be organised by supervisor surname or topic, and have a code for ease of reference at later stages.

- *Getting the timescales right*

When the catalogue appears, students need adequate time to absorb the information about available projects and make choices, thus it is useful to email the catalogue to students 3 weeks before they need to choose their preferences.

In line with suggestions by MacDougall and Riley (2010), and the practices of various other degree programmes (Healey and Jenkins, 2009) it is good practice to also hold a project day well before the students are due to start their research. So for example, in our division, students beginning their capstone project in September would have access to the project catalogue from the end of April, and then attend a project day in May.

Students email their choices to the allocation team by a firm deadline. We find two weeks after the project day gives students enough time to contact potential supervisors for information, and to find and read the references provided.

In return, we agree to make student allocation decisions 2-3 weeks after the choices have been submitted. Other than the project day commitment, allocation of 40 students in either

version of the academic-led model takes around four hours of staff time in total (2 staff

members x 2 hours).

- *Project day*

The project day needs to inform students about the process of choice and allocation and

reassure them about the support they will receive. We incorporate student suggestions into

future project days. For example we now include more about the role of the supervisor and

how to complete ethics applications. However, it is not possible to include everything that

students think might be useful, either because there is no definitive answer (e.g. how many

participants are needed for each study) or because we do not believe the suggestions are

relevant for consideration (e.g. how much research each supervisor has carried out).

- *Student & staff expectations*

A dialogue about the nature of research in general is also useful, as perceptions can differ

widely between staff and students (Buckely 2011). Students benefit from asking questions

about the project suggestions and viewing past dissertations, which helps them to grasp the

scale of the task, to see that it is achievable, and to note that projects take many different

forms (MacDougall and Riley, 2010, p8). A presentation from a graduate who has

successfully completed the project during project day provides peer validity, especially if the

graduate is has characteristics that are facilitative in peer mentoring (see e.g. Lennox Terrion

and Leonard 2007) and this feature also acts as a trigger for increased situational and

individual interest.

- *Extra information and guidance with project choices*

We ask for five ranked choices and have found this to be a good number of options to allow

allocation. However in recent years we have also given additional guidance: We now ask

students not to choose all their projects from one member of staff, and to consider choosing

a wide range of projects across sub-disciplines to allow allocation flexibility. Students also

indicate other students with whom they would like or not like to be paired, which

significantly smooths the way for successful supervision and completion (see Mellor 2009 for a discussion of various aspects of group work and group formation). Usually 1 or 2 students per year decide to opt for their own project with a supervisor who has given a student-led option.

- *Workload and project allocation*

  As noted earlier, allocating students fairly to supervisors is one of the most challenging aspects of the academic-led system. Encouragingly, offering a wide choice of projects has resulted in broad selection by students, so in our division around 75% of projects can be allocated according to the first method described above. However, an issue with prioritising first choices is that some staff members' projects are rarely chosen, and only ever receive low priority rankings (choice 4 or 5) when they *are* chosen. Allocating first and second choices at the start means that these less popular projects are never allocated, and consequently some staff members might never supervise. Thus, the second method of allocation for the academic-led model has sometimes been used to ensure that all staff members supervise. Before allocation, it is helpful to establish the number of students being supervised by each person (across MSc and PhD), to feed into any relevant workload models.

  To address this issue further, we have found it useful to encourage staff whose projects habitually receive fewer choices to collaborate with more heavily loaded staff. Such joint supervised projects may not only increase uptake among students but could lead to successful cross-disciplinary research teams in the longer term. .

- *Addressing problems with allocation*

  Issues can be partly addressed by explaining the system and constraints to the cohort at the project day. Sending individual allocation emails is also preferable to making the allocation list available to students, as this encourages swapping and student suggestions for possible re-allocations.

We have additionally found that having a module leader allocation role allows distance from the supervisor and avoids students feeling personally rejected if they do not get their first choices. The module leader can also act as an independent arbitrator who can meet with individual students who express concerns about their allocation, and who is in an appropriate position to re-allocate if for any reason the relationship between a student and supervisor breaks down. Using the academic-led system we find that these issues happen very rarely and less than they used to under a student-led model.

Feedback we have received

As noted earlier, changes were implemented in our division due to increasing pressures for both students and staff within the existing student-led system, which threatened the continuation of empirical final year projects. We were not able to collect data regarding the student-led system. However, during changes in capstone project delivery systems, we have sought feedback from students through various module surveys, questionnaires and rating scales which we believe is worth sharing. Over this period, 95-100% of students on the module have rated the summaries in the project catalogue as being 'very useful' or 'quite useful' (where 'not very useful' and 'not at all useful' are the other options) in deciding their project. On average, 95% of students from each of the last four cohorts have also said they feel they have had the right amount of time to make their choice of project.

Since we began the academic-led delivery model, 93% of students have said they found the talks given on the project day to be 'very useful' or 'quite useful'. Because the different versions of the 'academic-led' model affect allocation to higher ranked choices, this also affects satisfaction with allocation. In the first year, prioritising student first choices, 92% of students were allocated their first or second choice, with the remainder receiving their third choice and all students said they were either 'very satisfied' or 'quite satisfied' with their allocation. However, staff allocation was not

evenly distributed. When prioritising parity of staff workload, around 75% of students are allocated first or second choices, and around 10% receive their fourth or fifth choice. Ratings of 'very' or 'quite satisfied' dropped slightly to between 87% and 93%. Thus, although student satisfaction lowers when staff workload is addressed, a reasonable balance between student and staff satisfaction is achieved.   Between 86% and 100% of students are either 'very' or 'quite satisfied' with the allocation process as a whole.

Discussion and Conclusion

This paper has qualitatively compared two models of delivery for undergraduate research projects using a case study approach. The student-led model works smoothly and feasibly for a very small number of students who are able to design their own project, and in Hidi and Renninger's framework, offers these students an opportunity to fully develop their individual interest. However there are drawbacks inherent in this system for the majority of students, for whom initial motivation needs some external trigger and maintenance in the form of a more structured instructional context. The academic-led model addresses many of these drawbacks. In this model staff suggest projects they would be willing to supervise, students choose a small number they would like to pursue, and are allocated to one of them. This method ensures all students are assigned to a project in good time, that projects are defined and feasible, and that staff supervise a manageable number of projects within their area of expertise.   We believe that this leads to the positive emotional responses fundamental to development in Hidi and Renninger's four phase model of interest.

It is important to reflect on whether the academic-led model would work across disciplines. Smeby (2002) notes that there are major disciplinary differences in project organisation at Master's degree level. Projects in the natural sciences and laboratory fields tend to be organised by grouping students into existing projects suggested by the supervisor(cf. our academic-led model), whilst students in the humanities and social sciences tend to develop their own projects and work

individually (cf. our student-led model). Our projects in speech and language therapy (SLT) are an interesting test-case for this recommendation at undergraduate level, as SLT is built on several separate research traditions including natural sciences (biomedical sciences, articulatory phonetics), social sciences (psychology) and the humanities (linguistics, English language). Nevertheless, our academic-led model has worked across these disciplines, and, furthermore, has been rolled-out to another five divisions in the School of Health Sciences for Master's level students. Following Smeby (2002) we would, therefore, recommend a uniform model across allied health disciplines, but one which is flexible enough to account for related differences in research practices.

This paper concentrates on the process of project allocation itself, the ways in which different allocation systems might affect interest and engagement in undergraduate students, recommendations for optimising the delivery, and student feedback about this process. However, making explicit the links between educational practice and conceptual frameworks is only a first step in fully understanding the effect of the delivery models on the entire dissertation experience. We acknowledge that this is a case study discussion rather than a comparative analysis of the two systems. Further research is warranted to explore the outcomes in terms of staff and student anxiety, completion times, related publications and, perhaps more importantly, continued clinical research engagement post-qualification.

This case study has largely aimed to describe our experiences and give practical guidance. The academic-led allocation model suggested here may go some way to fostering the research-teaching nexus, and to the development of *individual* interest (Hidi and Renninger 2006) in evidence based practice and research after graduating.

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