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The Effect of Small Group Tutors on Student Engagement in the Computer Laboratory Lecture

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Abstract: Student engagement is widely recognised as being influential on learning and achievement in higher education. What is less clear is how the knowledge transfers, i.e., the process of engagement by the student with any new forms of teaching demonstrated by the teacher. Aim: To investigate the effect of small group tutors on student engagement in the computer laboratory lecture. Methods: Participants were undergraduate, second year BSc Public Health students taking the Health Information Systems II module. Teaching consisted of 12 x 2-hour face-to-to face classes. Tutors were assigned to groups of 5/6 students from weeks 5-12. Quantitative data from the Irish Survey of Student Engagement was collected in week 12 and analysed using the Statistical Package for the Social Sciences. Qualitative data from a 1-minute pre-and post-module CAT, tutor post lesson appraisals and two focus groups (one student and one tutor group, respectively) were analysed thematically. Findings: This study provided evidence that student engagement and learning was indeed enhanced by the addition of small group tutors in the computer laboratory lecture. In addition, students' attitude to engaging with their programme of study improved and their positivity towards learning increased as the term progressed. Furthermore, there was evidence of an improved student experience and improved personal development that was highly valued by the students.
Keywords: student engagement, small group tutors, tutor assistant, computer laboratory lecture, teaching public health.

Introduction

There is widespread agreement that while there are many formulations for the scholarship of teaching and learning, it includes ongoing learning about teaching and the demonstration of teaching knowledge (Brew & Ginns, 2008; Hutchings, Huber, & Ciccone, 2011; Hutchings & Shulman, 1999). Historically, much of this focus has been on teachers and their pursuit of knowledge through the scholarship of teaching and learning and improvements in their practice of teaching (Brew & Ginns, 2008). However, there is a more fundamental aspect to be considered, and that is the gain to the student of all this scholarly knowledge, and if it actually translates into positivism, and increased learning, for the student. There is some research evidence that engaging in training in university teaching leads to increased student satisfaction and an increase in the use of student-focused approaches to teaching (Gibbs & Coffey, 2004; Lueddeke, 2003). What is less clear is how this knowledge transfers, i.e., the process of engagement by the student with any new forms of learning demonstrated by the teacher, or what Daniel Bernstein calls the 'transactional relation' between teaching practice and student performance (Bernstein, 1998).

One new form of learning in medical education and associated health degrees, including public health, is that of small-group teaching. While there is an abundance of literature on active learning in a variety of disciplines (Freeman et al., 2014; Roach, 2014; Ruest, Svoboda, & Opperman, 2017) and the effect of tutors in the problem-based learning setting, literature is scant on the effects of multiple

tutors in the traditional small group (classroom) setting, and negligible on the effects of multiple tutors in the computer laboratory setting. From the little evidence that is published, we know that tutors' expertise has important effects on the process of discussion in a problem-based tutorial (Silver & Wilkerson, 1991). We also know that tutors with expertise tend to take a more directive role in tutorials, speak more often and for longer periods, provide more direct answers to the students' questions, and suggest more of the topics for discussion (Silver & Wilkerson, 1991). Additionally, it is reported that students guided by subject experts achieve better results than those not guided by subject experts and spend more time on self-directed learning (Schmidt, van der Arend, Moust, Kokx, & Boon, 1993). Nevertheless, we also know that if tutor-to-student exchanges dominate, then there is less student-to-student discussion (Silver & Wilkerson, 1991). Evidence from an undergraduate health sciences curriculum in the U.S. found that the personal qualities of the tutor, his or her ability to communicate with students in an informal way, were determinants of learning. Furthermore, an empathetic attitude that enabled the tutor to encourage student learning, by creating an atmosphere in which open exchange of ideas was facilitated, and the tutor's subject-matter knowledge, were further determinants of learning ((Schmidt & Moust, 1995). Similarly, a qualitative study in an undergraduate medical curriculum, small group teaching setting, identified the tutor's characteristics and a non-threatening atmosphere as the two most important characteristics of effective small group teaching (Steinert, 2004).

The extensive research on third level student development shows that the time and energy students devote to educationally purposeful activities is the single best predictor of their learning and personal development (Astin, 1993; Carini, Kuh, & Klein, 2006; Kuh, 2001b; Terenzini & Pascarella, 1991). This has more recently been defined as student engagement and is widely recognised as being influential on learning and achievement in higher education (Bryson & Hand, 2007; Kahu, 2013; Krause & Coates, 2008; Kuh, 2009). Research on student engagement is underpinned by the constructivist view that education is fundamentally about students constructing their own knowledge and that learning is influenced by how an individual participates in educationally purposeful activities (Krause and Coates, 2008). Students have affirmed how active engagement positively impacts their learning (Lumpkin, Achen, & Dodd, 2015). Since the late 1980s, authors have considered student engagement as an important contributor to the student experience (Astin, 1985, 1993; Bryson & Hand, 2007; Hu & Kuh, 2001; Pace, 1995). Early definitions of student engagement focused on the student. This arose because students had the responsibility for their own success in third level institutions with the institution itself abdicating responsibility(Quaye & Harper, 2014). However, institutional policies, practices, and learning environments may also encourage and support, or discourage and impede students in achieving their educational objectives (Davis & Murrell, 1993; Quaye & Harper, 2014). In fact recent literature speaks of students and universities as partners in education though making the point that while all partnership is student engagement, not all student engagement is partnership (Healey, Flint, & harrington, 2014). A review of student engagement literature by Trowler (2010) captured the responsibility of both the student and the institution. She defined student engagement as, "…concerned with the interaction between the time, effort and other relevant resources invested by both students and their institutions intended to optimise the student experience and enhance the learning outcomes and development of students and the performance, and reputation of the institution" (Trowler, 2010:3). While this broad definition is inclusive, it gives no consideration to the value realised by the very act of engagement, which adds to the skills that are essential to live a productive life after higher education (Kuh, 2003). Shulman discusses this value in his 2002 article, outlining that students who are involved in educationally productive activities in higher education, are developing habits of the mind and heart that increase their capacity for continuous learning and personal development (Shulman, 2002). Boyer and others, influentially, have also considered the

scholarship of engagement to describe how scholars work with and for communities, participating in activities that cross disciplinary boundaries, teaching, research, and outreach (Boyer, 1996).

The phenomenon of student engagement has received recognition in the last decade as a cogent means of guiding higher education research policy and practice (Krause & Coates, 2008) most prolifically in North America (Kuh, 2001b), and Australia (Hamish Coates, 2010), and to a lesser extent the UK (Mann, 2001; Quaye & Harper, 2014). More recently Ireland has acknowledged this research (Drennan et al., 2014; Working Group on Student Engagement in Higher Education, 2016) and along with North America, Australia and the UK, has introduced a framework for capturing student engagement to capture the student's views on their experience, largely based on the seven principles for good practice in undergraduate education: student-faculty contact; cooperation among students; active learning; prompt feedback; time on task; high expectations; and respect for diverse talents and ways of learning (Kuh, 2001a). Originally the National Survey of Student Engagement in the USA (Kuh, 2001b), it became the Australasian Survey of Student Engagement (H Coates, 2009) and in 2013, the Irish Survey of Student Engagement (ISSE, 2015). The purpose of this study is to investigate the effect of small group tutors on student engagement in the computer laboratory lecture.

Methods

Module context and teaching methods

EH2007 Health Information Systems II (HIS II) is a 5-credit module offered to undergraduate BSc Public Health students in their second undergraduate year. Learning outcomes and module structure are summarised in Appendix 1. Teaching consists of 24 hours of face-to-face teaching (12 x 2 hour sessions on consecutive weeks). The teaching plan for the module is summarised in Appendix 2. The corresponding author, with a background in Epidemiology and Public Health, is the sole teacher on this module. Four tutors join the module in week 5 of term. Each tutor is assigned 5/6/ students per group, and they remain with the students until the final week of term, week 12. Teaching is delivered in a computer laboratory. During the period of the current study, twenty-three students took the module.

The module was designed using the Teaching for Understanding (TFU) framework (Wiske, 1998) as a guide (See Appendix 3 for a graphic of the module construction). The TFU is embedded in the constructivist tradition of education. The TFU framework has five interacting elements: generative topic, throughlines, understanding goals, ongoing assessment and performances of understanding. The fundamental aspect of the TFU framework is that the focus is on the student, and on the development of their understanding of the subject and discipline. The generative topic is the Epidemiology of Sexually Transmitted Infections (STIs). The final assessment is a 100% project on the generative topic, or on a sub-theme of the generative topic. Details of the final assessment can be found in Appendix 6. The first six weeks of the module involve interactive sessions in the computer laboratory where students are instructed how to: systematically search the literature; critique sources of literature; develop a focused research question; write a literature review; analyse their data using SPSS (statistical package for the social sciences); and reference their work appropriately using the reference manager EndNote. For the final six weeks of term the students spend the 2-hour class in their groups working on their research project, with assistance from their assigned tutor and the teacher.

The tutors were all subject specialists. Three were graduates of the BSc Public Health programme and either studying for an MPH or a PhD in the discipline. One tutor was a fourth year medical student who was taking a gap year and studying for the award of MPH. The tutors were selected by FS (lecturer on the module) given their subject specialist knowledge. In week 3, before

their introduction to the class, they were given a 1-hour training by FS on the learning outcomes for the module and their role in meeting those learning outcomes. They were also briefed on the fact a study was being conducted investigating the effect of small group tutors on student engagement and their consent to take part and complete the post lesson appraisal was attained. The tutors were monetarily compensated for their tutoring at the University student tutor/help rate.

Study Methodology

A mixed methods study was conducted to elicit different but complementary data on the same topic to aid the understanding of the research problem. This, referred to as triangulation, validates the research (Creswell & Plano Clark, 2011; Johnson, Onwuegbuzie, & Turner, 2007). The study design, most suitable to the research question was the convergent parallel design, where equal emphasis is placed on both the quantitative and qualitative phases of the research. Quantitative and qualitative data were collected concurrently, the quantitative and qualitative data were analysed separately, and then the two sets of results were merged to form an overall interpretation.

Quantitative Data

Irish Survey of Student Engagement. The Irish Survey of Student Engagement (ISSE), with a small addendum on tutor specific questions, was distributed to the students on the final day of term (week 12). A copy of the survey can be found at http://studentsurvey.ie/. There are six engagement indices: academic challenge; active learning; student-staff interactions; enriching educational experiences; supportive learning environment; and work integrated learning. There are five outcome indices: higher order thinking; general learning outcomes; general development outcomes; career readiness; and overall satisfaction. The sampling frame was the entire EH2007 HIS II class of 23 students. The students were given as much time as they required to complete the survey. Data from the ISSE were entered into SPSS for statistical analysis. Descriptive analysis was conducted for each index to obtain the proportions for each group.

Qualitative Data

1-minute Classroom Assessment Technique. Students were given a 1-minute CAT (classroom assessment technique) (Angelo & Cross, 1993), pre- and post-module, on their learning expectations and engagement with the module. A copy of the questions can be found in Appendix 4.

Tutor Post Lesson Appraisal. The tutors each tutored 5/6 students. They kept a post-lesson appraisal, from weeks 7 to 12 of term inclusive, to record the level of engagement of their group of students. They were provided with 14 specific engagement questions to guide them in that appraisal (see Appendix 5). The tutors submitted these reflections within 2 days of completion of the lesson.

Focus Groups. Six students from the class were randomly selected to participate in a focus group and permission was sought for their participation. It was emphasised that it was entirely voluntary. The 6 engagement indices and the 5 outcome indices from the ISSE formed the topic guide for the discussion. The discussion was recorded on a digital device for transcription purposes. On a separate day, the tutors participated in a focus group discussion on their experiences of being a tutor for EH2007 HIS II and also on their views of the students' engagement with the module. The topic guide for the tutor focus group was again guided by the engagement and outcome indices in the ISSE as well as their experience of tutoring. Permission was sought for their participation and the focus groups were recorded on a digital device. Both focus groups were facilitated by the primary author.

Thematic analysis (Creswell & Plano Clark, 2011; Norton, 2009; Nowell, Norris, White, & Moules, 2017) was undertaken, manually, to synthesise data from the 1-minute CATs, the tutor post-lesson appraisals, and the focus groups. This involved data immersion, generation of categories, deletion of categories, merging of categories, checking of themes, and linking of themes.

Ethical Approval

Ethical approval was granted by the Social Research Ethics Committee, University College Cork, Ireland.

Results

Pre- and post-module 1-minute CAT

There were 23 students in the class, and 18 responded to the pre-module CAT, a response rate of 78%. Twenty students responded to the post-module CAT, a response rate of 87%. The initial question, both pre-and post-, asked students about their expectations for the module. The responses were analysed thematically and three themes emerged: personal goals; knowledge goals; and external goals. Of note was the difference between the pre- and post-module analytical themes. While the pre-module CAT contained all three goal types, the post-module CAT focused only on knowledge goals. The personal goals were varied and very individual, e.g., "to improve my research capabilities, attend all classes, gain knowledge of myself and those around me". One of the major knowledge goals was that of work-integrated learning, e.g., "understand health systems so I can apply it to future work or Public Health". Eight students listed this as an important goal. A further nine students also listed "learning about different health systems as a goal". The list of knowledge goals was more extensive at the end of the semester and the range was very broad. While some were repeated from the pre-module CAT, others were variations on the pre-module goals or new goals, e.g., "putting statistics learning into practice and use technology to write a research report". The phraseology of the post-module goals was different to the pre-module goals, with an emphasis on application. The goals were also much more specific and precise and also more focused. For example, in the pre-CAT, the students had cited "knowledge of statistics and SPSS" as a goal, while in the post-CAT, the students wanted to "put[ting] statistics learning into practice". This shows a move from a naïve understanding to an apprentice level of understanding, along the TFU understanding framework. The external goals related primarily to information seeking for the assessment.

Ninety-four percent of the students said "yes", they achieved their learning expectations/goals. Markedly, five of the responses qualified their "yes" statements by saying they achieved their goals with the help of their tutor. Their responses also pointed to the visibility of the throughlines in the module as well as the BSc Public Health degree as a whole: "…it was good to use real data and observe how it could be used to design a study"; …it helped link all the various modules in the course together"; "…the assignment is challenging but very helpful and insightful in what is to come for the rest of the course or career".

The students were asked about their engagement with the module. Three analytical themes emerged from the data: engagement with tutors, teachers and peers; self/active learning; and time. It was clear that the students did not intend to work alone on this module or the project associated with it, but rather, intended to engage with others around them. All statements regarding engagement with the tutors in the post-module CAT were positive. Self/active learning was a significant analytical theme mentioned by more than half of the students. The students intended to self-engage with the module and become actively involved. The pre-module CAT showed students' intentions, but the post-

module CAT on the same issue highlighted some negative issues related to engagement. Some students felt they didn't put in enough effort: "may have left it too late". Other negative statements were on the difficulty of the module. External factors such as competing deadlines were mentioned as reasons for not being actively involved in the module. Time was a significant feature of engagement for the students and attendance at lectures featured often. The implication was that attendance at lectures was an indicator of future success in their degree.

The students were asked about their expected grade, both pre-module and post-module. This is reported in Table 1, alongside the actual grade achieved. Overall, students revised their expectations downwards, after completing the module. However, the proportion expecting to pass increased. When comparing the expected grades post module to the actual grades achieved, the proportion of first class honours decreased, but there was an increase in those achieving a 2.1 and 2.2, and no student received a pass grade.

Table 1: Proportion of students in each expected grade category pre and post module completion

	Pre-module Grade Expected (%)	Post-module Grade Expected (%)	Actual Grade Achieved (%)
First	28	20	13
2.1	61	45	52
2.2	0	30	35
Pass	11	5	0

The Irish Survey of Student Engagement (ISSE)

There are six engagement indices and five outcome indices. Each of these is analysed separately. Tables of results (Tables 2 -12) are too large to present in the body of the paper but can be found in Appendix 7. Results are compared to the ISSE National Data for 2014/2015 which sampled first year, fourth year, and postgraduate students from all third level institutions in Ireland. Twenty-three students responded to the survey in this study, a response rate of 100%.

Engagement Indices

Academic challenge (Table 2) reflects the extent to which expectations and assessments challenge students to learn. Evidence from the ISSE shows that 2nd year BSc Public Health students were academically challenged. Forty-eight percent 'often' worked harder than they thought they could, which was higher than the 33% found for the sample of 'All students' across Ireland. Sixty-two percent reported they had synthesised ideas into new more complex interpretations. More than 65% report that they spend significant amounts of time studying. However, when asked to quantify this only 19% spent more than 16 hours a week studying or preparing for class etc. The largest proportion, 43%, spent between 1 and 5 hours per week on these tasks. This is similar to the findings for the national ISSE data.

Active learning (Table 3) reflects students' efforts to actively construct knowledge. Questions focus on contribution to class, working with others inside and outside class, teaching others and discussing coursework. The contribution to class or tutorials is dichotomised in the response. While nearly a quarter said they contributed 'very often', only 10% felt they contributed 'often'. The largest proportion, 57%, contributed 'sometimes'. These figures are somewhat different to the national ISSE data, with a higher proportion of Public Health students 'sometimes/never' contributing (67%

compared to 49%) and a much lower proportion (33%) contributing 'often/very often' compared to the national data (51%). Working with other students outside of class is much more common than inside class.

Student-staff interactions (Table 4) reflect the level and nature of students' contact and interactions with teaching staff. Questions typically focused on timely feedback on assignments, discussion of results, and discussion of ideas for projects. The responses from the Public Health students suggest that the level of interaction was poor. Nearly 30% never discussed their grades or assignments with teaching staff, and only 14% did it 'often' or 'very often'. More than half never discussed ideas on coursework outside of class with teaching staff, which is comparable to the national figures. However, none did it 'often' or 'very often' in 2nd Year BSc Public Health, while nationally 14% did. Feedback on assignments, either written or oral, was not timely with 87% reporting they only 'sometimes' or 'never' received timely feedback. This is higher than the 64% reported nationally, but both figures are unacceptably high.

Enriching educational experiences (Table 5) reflects students' participation in broadening educational activities. The broad range of questions include: interacting with students from different cultures and religious backgrounds; participating in community groups; using technology; work placement; studying abroad; and participating in extracurricular activities. Students were quite accustomed to online learning systems. They also reported mixing with students from different cultures 75% of the time, a much higher figure than that reported nationally (58%). Twenty-four percent planned to, or had, participated in a study group. Thirty-five percent had either studied abroad or planned to study abroad. A very high proportion of students, 38%, spent no time participating in sports or clubs and societies. This is lower than the 46% reported at national level.

Supportive learning environment (Table 6) reflects students' feelings of support within the college community. Questions focus on relationships with peers and teaching staff, as well as the supports provided by the institution. In the current study, the students reported a high sense of belonging and rated highly the friendliness and support from their fellow students. The relationships with teaching staff were also rated well, with 80% reporting them as 5,6, or 7 on a 7-point Likert scale. UCC, the institution, also rated well on providing the support needed to succeed academically, with 55% of students reporting receiving 'quite a bit' or 'very much' support. This is comparable with the national ISSE figures. Only 5% said they got 'very little' support. The support achieved for coping with non-academic responsibilities is remarkably different. Forty percent reported receiving 'very little support', a figure similar to the 41.5% reported in the national ISSE figures.

Work integrated learning (Table 7) reflects the integration of employment-focused work experiences into study. Sixty-five percent of students reported that their institution had contributed to them acquiring job related skills 'quite a bit/very much'. Ninety-five percent of students planned to do a work placement. Blending academic learning with workplace experience did not occur often for this cohort in their second year, but this finding is most likely because their work placement takes place in the third year of their degree programme.

Outcome Indices

Higher order thinking (Table 8) reflects students' participation in higher order forms of thinking. The current students felt they are very engaged in higher order thinking. The majority of students, 81%, reported that their course work in year two of their degree had required them to organise and synthesise their ideas into new more complex interpretations and relationships, 'quite a bit' or 'very much'. This is significantly higher than the 59% reported in the national ISSE data. In terms of making judgements about the value of information, arguments or methods, again 81% felt they do this 'quite a bit' or 'very much' in the BSc Public Health degree. Sixty-two percent of students reported applying

theories or concepts to practical problems or in new situations 'quite a bit' or 'very much', a figure comparable with the national data. The final question in the table asked the students about applying basic concepts in an in-depth case or situation. Almost all students, 95%, felt they do this most of the time, a higher figure than the 72% reported at national level.

General learning outcomes (Table 9) reflect the development of general competencies. Question topics were quite broad, ranging from thinking critically, to speaking clearly, writing clearly, analysing quantitative problems and using computing and information technology. The Public Health students rated their acquisition of these competencies either 'quite a bit' or 'very much' at a minimum of 65% of the time. Some competencies were rated as such over 90% of the time. All of these figures are equal or higher than those reported at national level, e.g., in terms of thinking critically and analytically, students felt they were engaged in this competency 90% of the time, whereas this was just 77% in the national data.

General development outcomes (Table 10) reflect the development of general forms of individual and social development. In terms of personal development, more than half the students felt that the institution, UCC, had contributed to their knowledge and skills in understanding themselves 'quite a bit' or 'very much' and understanding people of other racial and ethnic backgrounds, 'some' (55%) and 'quite a bit' (35%). Solving complex real world problems was reported by the majority of students to some degree. Second year Public Health students also scored UCC quite well on developing their skills in developing a personal code of values and ethics. Fifty percent of students felt that UCC had done this 'quite a bit' or 'very much'. Developing skills on contributing to the welfare of their community was again scored high by UCC students. This was 18% higher than the national data for all third level institutions.

Career readiness (Table 11) reflects students' preparation for participation in the professional workforce. The questions focus mainly on job preparation, e.g., keeping CV up to date, how to present oneself to potential employers etc. Given the students are in second year, findings for the questions in this index are mainly 'never' or 'sometimes'. A question of relevance for the public health group is the time spent thinking about career development goals and plans. One third of the class had not spent any time doing that in the past academic year, however more than half had 'sometimes' spent time and a further 14% had 'often' or 'very often' spent time thinking about their career goals.

Overall satisfaction (Table 12) reflects students' overall satisfaction with their educational experience. Forty percent felt their educational experience at UCC was 'excellent' and a further 55% felt it was 'good'. This represents 95% of students and is higher than the 79% reported at national level. Seventy-five percent of students were happy with the quality of academic advice they had received in UCC. Only 15% of students would not go to the same institution if they had to start all over again with 0% of students saying they would definitely not. Ninety-five percent of students were 'very satisfied/satisfied' with their BSc Public Health degree programme and they felt that the best aspect of institutional support for student learning was that UCC encouraged students to think critically and think independently. When asked what the institution could do to improve how it engages with students the resounding response was "smaller classes and tutorials across all modules".

Tutor Post-Lesson Appraisals

Class preparation varied across the weeks. In the main, approximately 50% had done some preparation for the class or progressed their project from the prior week, or had pre-prepared questions. Mixed ability in the groups greatly influenced the effort put in outside of class: "Due to mixed abilities you find that some students have moved the project forward dramatically…while others are still trying to start". Equally significant to preparation for class as an indicator of engagement was the attendance of the students. Those that were absent from class fell behind and required a lot of input from the

tutors to bring them up to date. The average attendance for the term was 60%, but some students attended 100% of the time, and others attended as few as 5 classes of the 12. There was resounding agreement that all students were actively engaged during class. However, their focus and level of engagement increased as the term progressed. One tutor commented: "as the deadline for the assignment approaches, the students are becoming more engaged". Regarding the students' attitude to the module, the general finding was that some students were positive about the course, but others were not, because they found it challenging. There were two important findings related to this: their positivity increased during the term; and they were determined to engage and face the challenges. One tutor commented on week 9 of the 12-week term: "Seeming more positive. Asking good questions. Interested in the 'why' as much as the 'how'".

Concerning the students' engagement with the lecturer, the students were focused on meeting the lecturer's expectations. One tutor wrote "as the module progresses, students are trying harder to reach a higher grade than the beginning of the module". There was consensus amongst the tutors that the students were listening carefully and that they were open to receiving advice on their project. They also acted on the advice. There was agreement amongst the tutors that the students felt free to ask the lecturer questions. Regarding the students' engagement with the tutors, none of the tutors felt there was any anxiety amongst the students in this regard. As the weeks progressed, the students became more specific about their questions, asking "good" questions. Finally, in relation to the students' engagement with their peers, it varied amongst tutor groups. In one tutor group, four of her five students engaged with each other a lot in the early weeks, but this tapered off as the term progressed and they grew in confidence and gained a clearer understanding of their individual projects. However, at all times one student did not interact with any of the group for the entire term. Another tutor reported a different scenario whereby the students worked independently of each other for the entire term and rarely interacted with each other. However, the predominant finding was that students did not assist each other. The other relevant observation was that the student would ask the tutor, rather than their peers. The resounding consensus on working together outside of class was that there was no evidence of this. However, one relevant comment from one tutor, which possibly affects this was: "I think they view this as a very individual project and are afraid of plagiarism".

Focus Groups

There were two focus groups conducted, one with a random sample of six students, and one with all four of the class tutors. Both focus groups were approximately 25 minutes in duration. They were both thematically analysed, and findings were summarised under collective themes for both focus groups. Emerging themes were: academic challenge; active learning and student-student engagement; student-staff engagement; supportive learning environment; higher order thinking; general learning outcomes; and technology.

Academic challenge. Advance preparation for class was not a feature for BSc Public Health students in general. The reason was: "Some modules we wouldn't even know what's coming up the next week, because they wouldn't have put the things up on blackboard" (Student 1). However, because of the module set up for HIS II, the students did advance preparation for this. The tutors reported that advance preparation very much depended on the individual. Students did not seem knowledgeable on how best to use the tutor support to their advantage. Tutor 3 commented: "But then towards the end, when they realised that the submission deadline was kind of coming closer, they did seem to be more prepared and I think they might have understood more the purpose of having the tutor there was, to ask questions". Tutor 1 identified another possible reason why the students' engagement with them improved as the term progressed: "I think, as well, my tutoring style changed as well towards the end…". There was also a sense from the tutors that the students found the module

extremely difficult, but were satisfied with their achievement when they completed the challenge: "I think there was a sense of satisfaction that they actually…they reflected, in that they found it so difficult to start off with and they go…to see the project nearly finished. I think they did feel a sense of achievement" (Tutor 3).

Active learning and student-student engagement. The students were asked about working with other students from their class on their HIS II project outside of scheduled class time and they all said "no". They said they only work together if they have group presentations or group projects to do. Regarding working together inside class, the response was mixed from the students. The tutors felt that the students all worked, more or less, individually, with minimal interaction between them. It was perceived that the computer laboratory environment, with individual computers, didn't promote interaction. Tutors also reported that the perception amongst the students was that it was an individual project.

Student-staff engagement. In general, asking questions of their lecturers in UCC was dependent on the class size. Students tended to ask questions in smaller groups. Feedback from staff on, or conversations related to, assignments, was not common. When asked about their relationship with their lecturers, the relationship varied with class size (better relationship in a small class) and whether or not they had the same lecturer consistently for the 12 weeks. The students highlighted that the intimate setting in HIS II, with an individual tutor assigned to a small group of students, made it very comfortable to ask questions of their tutor. The tutors felt their relationship with the students was positive and two-way. In terms of the supportive learning environment, the students were clear that they did not want a different tutor each week, as this would decrease the quality of the relationship with the tutor: "I think one assigned is better because you develop a better relationship and you're a lot less hesitant to ask questions" (Student 3). However, they did indicate that occasionally it would be good to speak to a different tutor to gain a different perspective. The students were asked if having a tutor with subject expertise was important. All felt that the terminology in epidemiology was so specific, it was essential to have a subject expert. The students also felt that the subject expert helped them to begin thinking like public health professionals: "They kind of suggest ways of saying things better, like more of a public health way, like phrases etc." (Student 5).

Supportive learning environment. The students agreed that UCC provides support academically but it's not that easy to access: "I think it's there, but you do have to search for it like, it's not, you don't just fall across it, in like you have to feel like you really need it" (Student 5). The students felt that UCC doesn't accommodate people who commute long distances to the campus, or who work to support their studies. Support for sports and social activities was deemed excellent by the students. In terms of health, they did point out the early closures of some canteens, which forces students, studying late into the evening or taking night classes, into eating junk food.

Higher order thinking. The purpose of this module was to give students the skills to organise and synthesise ideas, analyse and interpret relationships, make judgements on information retrieved and to discuss these in the context of a chosen topic. Tutors were asked if the students understood this purpose. The consensus was that while some students understood, the majority were focused on the chosen topic: "I think they see it as the aim of their project, not as learning statistical methods, learning how to write a report, going through that process. They see it more as the topic that they have chosen" (Tutor 1). Critical analysis, organising and synthesising ideas, and making judgements about the value of information was found to be indigenous to the module and to the BSc Public Health degree as a whole. The tutors were asked if they felt the students could see the relevance of EH2007 HIS II for their Public Health degree. The opinion was divided with two tutors saying no, and two saying yes. However, the opinion was that the relevance was better understood at the end of the module: "[They] did actually by the end. At the start absolutely not. They were just trying to get through it…And then toward the end one of them said to me that, "…Oh you know I think I want to work in Health

Promotion more so than Public Health, but I can see that even like in Health promotion I'd probably end up having to write reports"…".

General learning outcomes. Attendance affected the general learning outcomes, i.e., acquiring job related skills, writing clearly and effectively, learning effectively on one's own etc. The tutors all agreed emphatically that they saw a considerable difference in the progress students made if they were good attenders or poor attenders. The students also felt attendance was important to their progress. One student said having the small group makes a difference as it encourages one to attend: "I think it's a lot better too with small groups, because if they were all big groups you're just a face in the crowd and you'd tend to probably not to go in as much" (Student 6). They also noted that the tutors in HIS II encouraged them to attend.

Technology. Regarding the use of technology, the students felt that they have enough of it: "we already have a lot of online stuff" (Student 1). When asked if they would like their degree to be online, the answer was a resounding "no". Student 1: "I think we need the face-to-face interaction".

Discussion

The ultimate goal of the scholarship of teaching and learning is to enhance student learning. Student engagement is widely recognised as being influential on student learning and achievement in higher education (Kahu, 2013, Krause and Coates, 2008, Bryson and Hand, 2007, Kuh, 2009). This study provides evidence that student engagement and learning is indeed enhanced by the addition of tutors in the computer laboratory lecture. In addition, students' attitude to engaging with their programme of study improved and their positivity towards learning increased as the term progressed. Evidence from the focus groups, the Irish survey of student engagement (ISSE) and the tutor post-lesson appraisals supports this assertion. Furthermore, there is evidence of an improved student experience and improved personal development that is highly valued by the students.

This study found that the students were unaccustomed to having a tutor present in their class and they were unsure how to use this new learning environment to their advantage. This has important implications for the future design of this module. In the current study the tutors were introduced after five weeks of the module, when the teaching focuses on data analysis and subsequently the completion of the project (see Appendix 6 for the project description). Introducing tutors earlier in the module may negate this finding, by giving the students the opportunity to develop a relationship with the tutor earlier.

The research findings show that students learned how to improve their interaction with, and utilise, the tutors as the term progressed. We know that with improved interaction comes improved engagement, and with improved engagement comes improved learning (Trowler, 2010). A key aspect of this was advance preparation for the class. The evidence shows that in general, students were not accustomed to preparing in advance for class, but for their HIS II module they found advance preparation necessary to make the most of their learning.

The students rated their tutors very highly with the majority, saying they understood the subject better after they interacted with their tutor. All of the students deemed subject expertise to be an important skill requisite for tutors. It is unclear if this finding would translate to all disciplines, but we know from the literature that the tutor's subject-matter knowledge is an important determinant of learning (Schmidt and Moust, 1995). We also know that tutors with expertise take a more directive role in class, speak more often and for longer periods, and provide more direct answers to students' questions (Silver and Wilkerson, 1991). This was the case in the current study, in which the students turned to their tutor for assistance rather than engaging with their peers. The students were very comfortable with their tutors and felt comfortable asking questions of them. They felt that the small group learning environment in HIS II was "intimate". We know from the literature that a non-threatening

atmosphere is an important characteristic of effective small group teaching (Steinert, 2004). This freedom to ask questions is not evident across the wider BSc Public Health degree programme. The students distinguished between the smaller and larger class groups. They reported that in large classes, which are a feature of their degree programme when they are taught alongside larger classes, e.g. in the Nutrition Module, they don't ask questions because the setting and the atmosphere doesn't permit it.

Tutor-to-student exchanges were more common than student-to-student. This was reported by both the tutors and the students. We know that if tutor-to-student exchanges dominate, then there is less student-to-student discussion, and this can jeopardise an important learning goal: the development of students' skills in active, self-directed learning (Silver and Wilkerson, 1991). This is borne out in the current study, with a low level of student-to-student interaction reported in the ISSE Active Learning index. Only half the students work with other students outside of class to prepare assignments, and less than half work with other students inside class. It was suggested by the tutors that the students may be afraid of breaching the plagiarism rules.

Analysis from the tutor focus group showed that the tutoring style changed as the term progressed. This implies that the tutors were perhaps inexperienced in tutoring. In this instance it was true, as just one of the tutors had tutored previously. Tutor training in advance of the term would thus be beneficial going forward with this module.

Tutors reported increased student learning, motivation, engagement, and expectations over the course of the module. Their positivity also increased. This change of attitude was attributed to a variety of causes. They became more aware of the purposes of the knowledge (categorised at an apprentice level in the purposes dimension of understanding in the TFU framework (Wiske, 1998)) whereby, with support they identified essential questions and used what they learned to solve practical problems. They were able to link the module and see the relevance of the content to their degree programme as well as to the broader public health discipline. The students were actively engaged in their own learning and devoted much time to the module. More than one third of students dedicated more time to this module than any other module. This finding emerged in both the post-module CAT and the focus group. The students also felt a sense of achievement as they progressed through the module, which motivated them to produce high quality work. The content and structure of the module, with the project as the culminating performance, lends itself to this. They initially found the module difficult, but the addition of the tutors to the class to assist them in the research process, guided them through this difficult stage. This finding emerged in their focus group upon completion of the module. In addition, in the module CATs while 11% of students had expected a pass grade at the beginning of the module, this decreased to 5% at the end of the module. There was a consensus amongst the tutors that the students who worked actively during all classes seemed more confident, but all students' confidence in their work improved as the term progressed.

Online learning for both undergraduate and postgraduate programmes is now a considerable part of education in many universities worldwide. UCC is no exception. Though this course is not online, all of the course notes are available online, which potentially encourages non-attendance. Despite this, according to the students in the study, attendance is of considerable importance and linked to one's success. Findings from the focus group with the tutors show that anxiety was related to attendance level, i.e., the more the student attended, the less anxious he/she felt, and the more positive about learning he/she became.

Student engagement is defined as, "the time and efforts students devote to activities that are empirically linked to desired outcomes of college, and what institutions do to induce students to participate in these activities" (Kuh, 2009). A key component of this definition is that it acknowledges that engagement is a concerted effort by both the student and the institution. In this respect, the students felt supported by their institution in their academic studies, some of the time. Several students

mentioned that critical thinking and independent thinking was encouraged. They identified very positive relationships with teaching staff, with 80% of students rating the staff highly for being available, helpful, and sympathetic. However, they did note that feedback on assignments and examinations was poor. The students mentioned a crisis with conflicting deadlines to such an extent that they were unable to devote the dedicated time needed to complete their HIS II work. This is a further lack of institutional support for the learning environment. This is significant given that we know that institutional policies, practices, and learning environments can encourage and support, or discourage and impede students in achieving their educational objectives (Davis and Murrell, 1993).

Findings from the CAT showed that the students' concept of engagement largely focused on time and their own effort, with significant numbers quantifying the length of time they spent on the module. Given that their grades reflected their expectations, the findings also suggest that their grades reflected their efforts.

In this study, the students report a high level of academic challenge, an important indicator of student engagement (Hamish Coates, 2007), in both their response to the questionnaire and in the focus groups. Nearly half of the class felt that they worked harder than they thought was possible. The students reported that their ability to succeed was related to having the tutors present in the computer laboratory. This finding was supported by the tutors when explored in the focus group. Findings from the post-module CAT and the focus group showed that the students found the module extremely challenging. One student reported "The assignment is challenging but very helpful and insightful in what is to come for the rest of the course or career". The sense, that they were satisfied with their achievement on completion of the module was also evident from the tutors.

Students were aspirational in the pre-module CAT and identified personal goals, knowledge goals and external goals. However, the focus in the post module CAT was on knowledge goals. Teaching at its best means not only transmitting knowledge, but transforming and extending it as well (Boyer, 1990:23-24). On exploration of this with the tutors in the focus group, they identified the pressure of the submission deadline for the project as a possible reason for this. They felt as the term progressed, the students become very focused on the deadline. They also suggested that the project weighting, 100% for the project, may be another contributing factor. There is scope for change in this aspect of the module in the future. Reducing the weighting and considering other assessment modalities are potential options.

This teaching takes place in a computer laboratory, a unique setting. There is no literature on the influence of this setting on student engagement, so this study is timely and worthwhile. As the lecturer on this course, I can give my personal account of the influence of the tutors on teaching and engagement. I have taught this course for 10 years and taken it through various morphisms - with no tutor, with one tutor and subsequently multiple tutors. With each iteration, student engagement improved. Without the tutors I had to try and problem solve the students' issues individually, as well as instruct the class. It was extremely inefficient and ineffective and progress on the course was slow. Tutors assigned to small groups allow me continue with the course, while the tutors assist the students with the various issues. Unfortunately, I had not embarked on the scholarship of teaching and learning in these early stages of the development of the course, so I did not evaluate the progressive impact the addition of tutors had.

This teaching methodology is potentially applicable to any discipline and any number of students. Further studies would need to be conducted to verify this. If we take the large class scenario, tutor support could only enhance the learning experience for both the teacher and the student. Implementing this in the traditional lecture style theatre would be challenging, as moving around in such spaces is extremely restrictive. If we consider the issue of institutional support to enhance student engagement, as discussed in this paper, then perhaps universal design for learning principles

need to be considered if we are to progress our teaching methodologies (Gordon, Meyer, & Rose, 2016).

The design of the EH2007 HIS II module, both in terms of structure and content was firmly based in real life, and appears to have been successful in meeting learning outcomes and facilitating student engagement. There is considerable evidence that the module changed students' attitudes and perceptions, and prompted them to increase their engagement, which in turn led to a more positive experience in university and increased their preparedness for working in the area of public health. Work integrated learning and career readiness, both inextricably linked, are both key indicators of student engagement (Kuh, 2009). The students were vocal in their acknowledgement that the module was relevant and applicable to their knowledge of public health and also to their future careers. They also mentioned the visible link between HIS II and their overall degree programme. The use of the Teaching for Understanding Framework (Wiske, 1998) to design the module, and the study of student engagement, both of which are underpinned by the constructivist tradition of education (Krause and Coates, 2008), allows for the students to make this connection to the real world setting. Evidence from the questionnaire, the CATs and the focus groups show that the students have been actively engaged in authentic work, as defined by (Blythe, 1998), and have been guided in the process of making connections between prior knowledge and new knowledge, to develop their understanding of public health.

Strengths and limitations

The convergent parallel study design, whereby the use of quantitative and qualitative approaches, in combination, provides a better understanding of the research problem than either approach alone, is a strength of this study. The study sample is small therefore we cannot generalise our results to the entire student population. However, by their definition, focus groups are small, therefore we feel that the information provided accurately represents the undergraduate experience with tutors in the computer laboratory lecture. Our students were all Public Health majors therefore caution should be applied when extrapolating the findings to other disciplines, though we have no reason for suggesting that the same findings would not be cross-disciplinary. It would be beneficial to elicit the opinions of students from other disciplines in future research. The outcomes measured through quantitative and qualitative methods are compared to national statistics, and not a prior HIS II offering without tutors. This was not possible and is a limitation of this study also. There are a number of sources of bias in cross-sectional surveys, including response bias and self-report bias. In terms of response bias, however all 23 students answered the ISSE so we do not feel that it is an issue in this study. Focus groups are also subject to a number of biases including selection bias. Students were randomly selected for their focus group however, and the tutor focus group included all tutors, thus negating selection bias.

Conclusions

In conclusion, the purpose of the study was to explore the effect of small group tutors on student engagement in the computer laboratory lecture. The evidence shows that student engagement and learning is indeed enhanced by the addition of tutors in the computer laboratory. We know that students' attitude to their learning, their motivation, and their engagement with the module increased as the term progressed. We also know that students' confidence in their ability and positivity improved over the term. Positivity and motivation, according to tutor reports, was related to attendance.

However, to capitalise on these findings and continue to improve student engagement, a greater number of tutors is required so the tutor-to-student ratio is decreased.

The constructivist tradition of education prevails, and students did learn through their own effort and active engagement with authentic challenges. However, the broader definition of engagement, where some of the responsibility for engagement resides with the institution has also been considered here, and while supportive in many aspects of the students' education, there is scope for further development in this area.

Acknowledgements

I would like to thank my two 'critical friends', Dr Fiona MacLeod and Dr Séamus Mc Monagle, who assisted me with feedback and friendship throughout this action research process.

Appendix

Appendix 1

EH2007 Health Information Systems II
Credit Weighting: 5
Semester(s): Semester 2.
No. of Students: Max 50.
Pre-requisite(s): None
Co-requisite(s): None
Teaching Method(s): 12 x 2hr(s) Lectures (and practicals).
Location: Computer laboratory
Module Co-ordinator: Omitted for blind review.
Lecturer(s): Omitted for blind review.
Module Objective: To provide an introduction to the use of information and communications technology in the management of health information and health knowledge, as a tool for self-directed and life-long learning in the context of Public Health practice and research
Module Content: Public health resources on the world wide web; Critically appraising the literature; Health information systems in practice; Electronic health records; Organisation of references using Endnote; Introduction to MS Excel; Introduction to SPSS
Learning Outcomes:
On successful completion of this module, students should be able to:

- Investigate the determinants of major diseases using Public Health resources on the world wide web
- Use appropriate Public Health websites to find aggregate level data on major diseases
- Manage their references using Endnote
- Analyse their data using SPSS
- Present their findings electronically using MS Excel and MS PowerPoint.

Assessment: Total Marks 100: Continuous Assessment 100 marks (Students must complete a Health Informatics Data Report 100 marks).
Compulsory Elements: Continuous Assessment.
Penalties (for late submission of Course/Project Work etc.): Where work is submitted up to and including 7 days late, 10% of the total marks available shall be deducted from the mark achieved. Where work is submitted up to and including 14 days late, 20% of the total marks available shall be

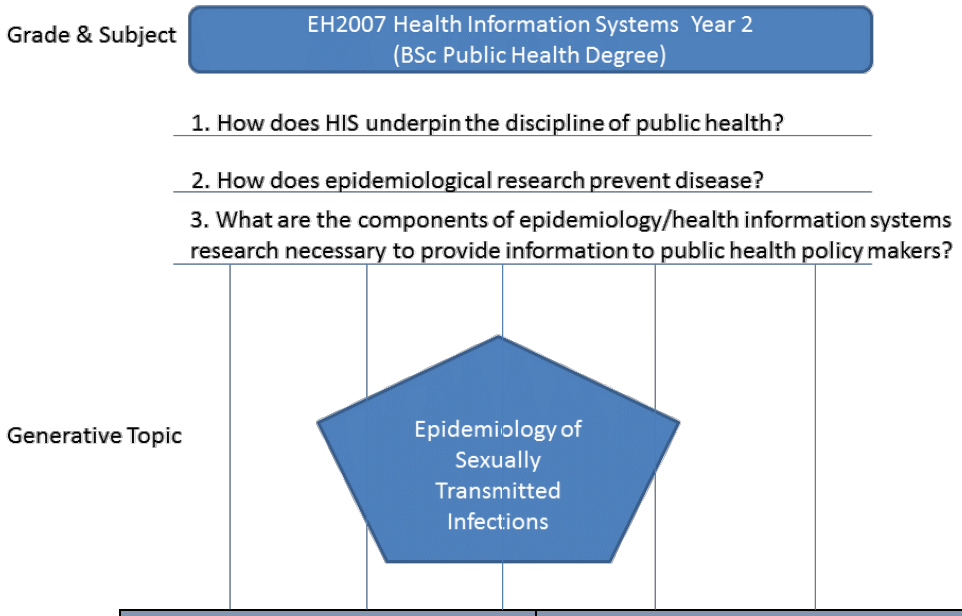
deducted from the mark achieved. Work submitted 15 days late or more shall be assigned a mark of zero.
Pass Standard and any Special Requirements for Passing Module: 40%. Formal Written Examination: No Formal Written Examination.
Requirements for Supplemental Examination: Marks in passed element(s) of Continuous Assessment are carried forward, Failed element(s) of Continuous Assessment must be repeated (as prescribed by the department).

Appendix 2. Teaching Plan for Semester 2 EH2007 Health Information Systems II

Semester 2	**Date**	Room	Topic
1	13 January	BHSC 101	Narrational Entry Point. DVD "And the Band Played On". Assign questions on DVD
2	20 January	WGB _G34	Searching the literature. Developing a focused research question. Assign end of term Public Health data report
3	27 January	WGB _G34	Searching the literature – electronic databases. Critiquing the literature
4	03 February	Boole Library Basement (Research Skills Training Rm)	EndNote Reference Manager Training – Compulsory.
5*	10 February	WGB _G34	Assign tutor groups. Introduction to Statistical Package for the Social Sciences (SPSS)
6	17 February	WGB _G34	SPSS continued.
7	24 February	WGB _G34	Referencing and supervised work on project
8	3 March	WGB _G34	Supervised work on project
9	10 March	WGB _G34	Supervised work on project
10	17 March	WGB _G34	No class on St. Patrick's Day
11	24 March	WGB _G34	Supervised work on project
12	31 March	WGB _G34	Supervised work on project

*Introduction of tutors to class

Appendix 3



	Understanding Goals	Understanding Performances	Ongoing Assessments
Introductory Performance(s)	1. Students will understand the relevance of systematic research in identifying the causes of disease 2. Students will understand the importance of critiquing sources of literature on the World Wide Web 3. Students will understand the importance of developing a focused research question	1. Through watching the DVD, "And the Band Played On", students will identify, discuss and debate the errors experienced in isolating the causes of HIV/AIDS 2. Focused questions provided to the students during the DVD will assist them in developing their understanding of the evolution and management of STIs, specifically, HIV/AIDS	1.Informal assessment through discussion in class 2. Informal assessment through guided discussion of the DVD question sheet provided
Guided Inquiry Performance(s)	Overarching goal for the mid-section of the course: Students will understand that their research question will guide their performance in designing, constructing, integrating, analysing, critiquing and concluding their research project.	Students will build toward achieving the understanding goal; 1. Students will plan/design their research project 2. Students will construct their research question – a subtheme of the generative topic 3. Students will review the relevant literature on their chosen topic and reference accordingly 4. Students will plan their analysis to answer their research question 5. Students will analyse the given STI dataset, with due consideration of their research question 6. Students will discuss their findings relative to their literature review and their research question 7. Students will evaluate if they have answered their research question	1. Cumulative informal teacher assessment through one-to-one feedback as they develop their project in class 2. Self-assessment relative to the project guidelines given 3. Self-assessment – have they answered their research question 3. Peer-assessment (feedback through working in pairs and/or groups as is permitted)

Culminating Performance(s)	**Learning Outcomes:** On successful completion of this module, students should be able to: 1. Investigate the determinants of major diseases using public Health resources on the world wide web 2. Use appropriate public Health websites to find aggregate level data on major diseases 3. Manage their references using Endnote 4. Analyse their data using SPSS 5. Synthesise their knowledge of HIS1, statistics, and HIS2 to construct a report on the Epidemiology of STIs in Ireland 6. Critique the relevant STI literature	Students will build toward achieving the understanding goals (learning outcomes) by: 1. Engaging with the project inside and outside class 2. Reviewing literature from peer reviewed sources as guided by the teacher 3. Analysing the dataset provided as guided by the teacher 4. Interpreting the results by integrating their knowledge of public health and epidemiology with their findings	Summative assessment. 100% research project on the Epidemiology of STIs in Ireland. The criteria for each performance will be: 1. Clearly defined research question 2. Relevant review of literature with peer-reviewed citations 3. Detailed statistical methodology with appropriate statistical techniques to answer the research question 4. Deductions from the analysis to produce relevant results 5. Appraisal of the findings, linked to the literature review. 6. References correctly cited using Harvard or Vancouver method.

Figure 1: Graphic of EH2007 Health Information Systems II module through TFU lens

Appendix 4

Pre-module CAT

1. What are your learning expectations for this module?
2. Having read the course outline and assessment for this module, how do you intend to engage with the module?
3. What grade do you hope to achieve?

Post-module CAT

1. What were your learning expectations/goals for this module?
1b. Did you achieve your learning expectations/goals for this module?
2. Have you engaged with this module, e.g., time research etc.?
3. In light of how you engaged with this module, what grade do you hope to achieve?

Appendix 5

Dear Tutors,
I am investigating the effect of tutors on the computer laboratory lecture. My research question is; has the use of tutors in the computer laboratory lecture effected student engagement in their learning
I wish to record your view on how the students in your group have engaged with their learning. Lectures have now finished, and we are focused on working on the project until the end of term. I will give you a sheet each week, and ask you to comment on the cues below, as well as any additional observations you would like to mention.

Can you comment on each of the following, during the class of [month, day]? Be specific as to the number of students that meet the criteria below.
1. There is evidence that the students spent time preparing for this class
2. The students are actively working on their project during class. Or the students are passive during class.
3. The students are positive when facing this course? Or perhaps the students are anxious and give up easily in the face of challenge.
4. The students are working hard to meet the lecturer's expectations for the module
5. The students interact with the lecturer during the class
6. The students ask questions of you, the tutor?
7. The students ask other students, questions?
8. The students contribute to group discussion/general discussion within the group?
9. The students are working to assist other students in the group?
10. There is evidence that the students are working with other students outside of class.
11. The students are motivated to learn and are actively working on the project during class
12. The students connect ideas from the course to prior experiences and knowledge
13. Compared to last week, have the students made progress in their work and (ii) in their attitude to their work? [Question asked after tutor's first week]
14. Please add any other comments you think may be relevant to the students' engagement in their learning for this module

Appendix 6

EH 2007 Assessment
Public Health Data Report
Theme: Epidemiology of STIs: analysis from a clinic sample
Title: Topic of your choice within this theme, using the STI dataset supplied to support your aim(s)

Part I – Introduction & Literature Review (30 marks)
Part II – Statistical Methods (15 marks)
Part III – Results (25 marks)
Part IV Discussion (15 marks)
Part V – Completion of Report (15 marks)

Pass Mark 40%

Your Data Report will be based on STI data from a STI clinic in Ireland. The data fields remain the same as those originally collected, but the data have been modified. The dataset will be supplied to you. The database contains data from 2005-2015. To view up to date STI data from Ireland, including HIV, go to the HPSC website. You will be asked to complete a data report which is similar to a peer-reviewed journal article. Your project should include the following sections:

- Introduction [200 words]
- Review of Literature [700 words]
    - Comprehensive review of international and local literature
- Statistical Methods [300 words]
    - Describe the SPSS and statistics you have chosen to conduct
- Results [500 words]
    - Describe and interpret the results from your SPSS. You may include up to **five** tables or figures.

- Discussion [800 words]
    - Discuss the results in the context of the background/literature review

The title for your report is, **"Epidemiology of STIs in Ireland 2005-2014"**. You are expected to provide a comprehensive review of the international literature in the area including the most up-to-date findings. You will find there is a lot of literature on this topic. In general, when we are presenting the Irish case, the review of literature will start with general/historical information, world scenario, European scenario, Irish scenario. Articles should be from trustworthy **peer-reviewed sources** and be referenced correctly. Articles should be no older than 10 years, unless giving historical context. Websites, e.g., WHO, are suitable for providing up to date incidence and prevalence but are not allowable for literature review, in general, because the material is not peer-reviewed.

The report should be typed in Font Size 12 Calabri and Line Spacing should be 1.5 Times. Referencing **MUST** be conducted in EndNote, and according to the Harvard or Vancouver system with a **minimum of 20 and a maximum of 40 references**. The project should **not exceed 2,500 words**. Please go to the website for the Journal of Epidemiology and Community Health for further details on referencing which can be located under the "instructions for authors" section.

Submit your assignment via Turnitin. Please also submit one stapled copy (do not put it in a plastic folder) of your assignment in the Assignment Drop Box outside the Dept. of Epidemiology and Public Health office by 4pm on Friday 17th April 2015. The penalty for the late submission of your final project has been outlined in your syllabus.

You are not allowed to collaborate with other students on this assignment and plagiarism will not be tolerated.

Appendix 7

Table 2: Findings for student engagement: academic challenge index

Questions		Response Options	2nd Year BSc PH (%)	*All Students (%)
In this academic year, how often have you	Worked harder than you thought you could to meet teacher/tutor's standard expectations	Never	14.3	13
		Sometimes	33.3	42.1
		Often	47.6	33.2
		Very often	4.8	11.7
In this academic year how much has your coursework emphasised the following intellectual activities	Analysing the basic elements of an idea, problem, experience, theory, such as examining a particular case or situation in depth and considering its components	Very little	0	4
		Some	4.8	23.6
		Quite a bit	81	42.9
		Very much	4.3	29.5
	Organising or synthesising ideas information or experiences into new, more complex interpretations and relationships	Very little	0	7.9
		Some	19	30.0
		Quite a bit	61.9	39.2
		Very much	19	22.9
	Making judgements about the value of information, arguments or methods, e.g., examining how others gather and interpret data and assessing the soundness of their conclusions	Very little	0	9
		Some	19	29.8
		Quite a bit	42.9	37.2
		Very much	38.1	24

	Applying theories or concepts to practical problems or in new situations	Very little	0	6.6
		Some	38.1	25.1
		Quite a bit	57.1	37.3
		Very much	4.8	31
To what extent does your institution encourage	Spending significant amounts of time studying and on academic work	Very little	0	3.3
		Some	35	21
		Quite a bit	50	46.9
		Very much	15	28.8
During the current academic year, approximately how many	Assigned textbooks, books, book length packs, or journal articles of subject readings have you read	None	9.5	10.2
		1-4	38.1	33.2
		5-10	33.3	20.8
		11-19	9.5	12
		>20	9.5	23.8
How many hours do you spend in a typical 7-day week doing each of the following	Preparing for class, e.g., studying, reading, writing, doing homework, lab work, analysing data, and other academic activities	None	0	3
		1-5	42.9	34.7
		6-10	23.8	23.4
		11-15	14.3	15.1
		16-20	9.5	10.2
		>20	9.5	13.6

**All students include Undergraduates Year 1, Undergraduates Year 4 and Postgraduate students.*

Table 3: Findings for student engagement: active learning index

Questions		Response options	2nd Year BSc PH (%)	*All Students (%)
In your experience at your institution, during the current academic year, how often have you done each of the following	Asked questions or contributed to discussions in class, tutorials, labs or online	Never	9.5	5.6
		Sometimes	57.1	43.6
		Often	9.5	30.1
		Very often	23.8	20.6
	Worked with other students inside class to prepare assignments	Never	9.5	12.2
		Sometimes	47.6	32.9
		Often	33.3	36.4
		Very often	9.5	18.5
	Worked with other students outside class to prepare assignments	Never	4.8	22.4
		Sometimes	42.9	33.5
		Often	47.6	28.8
		Very often	4.8	15.3
	Tutored or taught other college students	Never	90.5	67.4
		Sometimes	9.5	23.1
		Often	0	6.9
		Very often	0	2.7
	Discussed ideas from your coursework with others from outside class	Never	4.8	6.8
		Sometimes	28.6	35
		Often	57.1	36.7
		Very often	9.5	21.6

**All students include Undergraduates Year 1, Undergraduates Year 4 and Postgraduate students.*

Table 4: Findings for student engagement: student-staff interactions index

Questions		Response options	2nd Year BSc PH (%)	*All Students (%)
In your experience at your institution, during the current academic year, how often have you done each of the following	Discussed your grades or assignments with teaching staff/tutors	Never	28.6	32.3
		Sometimes	57.1	44.9
		Often	4.8	16.6
		Very Often	9.5	6.3
	Discussed ideas from your coursework or classes with teaching staff outside class	Never	52.4	49.8
		Sometimes	47.6	36.5
		Often	0	10.5
		Very Often	0	3.2
	Received timely written or oral feedback from teachers/tutors on your academic performance	Never	22	18.1
		Sometimes	65	46.3
		Often	5	27.1
		Very often	10	8.5
Which of the following have you done, or do you plan to do before you graduate	Worked on a research project with a staff member outside of coursework requirements	Do not know about	28.6	24.2
		Have not decided	38.1	22
		Do not plan to do	19	32.8
		Plan to do	14.3	15.3
		Done	0	5.7

All students include Undergraduates Year 1, Undergraduates Year 4 and Postgraduate students.

Table 5: Findings for student engagement: enriching educational experiences index

Questions		Response Options	2nd year BSc PH (%)	*All Students (%)
During your current academic year, how often have you done each of the following	Used an online learning system to discuss or complete an assignment	Never	9.5	14
		Sometimes	23.8	22.8
		Often	33.3	26.2
		Very often	33.3	37
	Had conversations with students of a difference ethnicity/nationality than your own	Never	0	10.4
		Sometimes	23.8	31.6
		Often	61.9	30.9
		Very often	14.3	27.1
	Had conversations with students who are very different to you in terms of their religious beliefs, political opinions or personal values	Never	9.5	13.3
		Sometimes	42.9	37.5
		Often	38.1	28.1
		Very often	9.5	21.1
Which of the following have you done, or do you plan to do before you graduate from your institution	Internship, fieldwork or clinical placement	Do not know about	14.3	15.5
		Have not decided	23.8	17.8
		Do not plan to do	4.8	22.3
		Plan to do	57.1	30.2
		Done	0	14.2
		Do not know about	9.5	15.1

	Participate in a study group or learning community	Have not decided	38.1	20.8
		Do not plan to do	28.6	26.3
		Plan to do	14.3	18.2
		Done	9.5	19.6
	Study a foreign language	Do not know about	19	10.1
		Have not decided	28.6	13.9
		Do not plan to do	28.6	41.6
		Plan to do	19	17.2
		Done	4.8	17.2
	Study abroad or student exchange	Do not know about	4.8	10.8
		Have not decided	38.1	17.6
		Do not plan to do	23.8	44.1
		Plan to do	23.8	20.3
		Done	9.5	7.2
	Independent study e.g. outside of your course	Do not know about	4.8	8.8
		Have not decided	28.6	20.3
		Do not plan to do	28.6	19.9
		Plan to do	33.3	33.5
		Done	4.8	17.5
About how many hours do you spend in a typical 7-day week doing the following	Participating in extracurricular activities, e.g., organisations, clubs and societies, sports etc.	None	38.1	46.2
		1-5	28.6	33.1
		6-10	19.0	12.6
		11-15	9.5	4.5
		>15	4.8	3.6

**All students include Undergraduates Year 1, Undergraduates Year 4 and Postgraduate students.*

Table 6: Findings for student engagement: supportive learning environment index

Questions		Response options	2nd Year PH BSc (%)	*All Students (%)
Which box represents the quality of relationships with people at your institution?	Relationships with other students	Unfriendly, unsupportive, sense of alienation	0	1
		2	0	2
		3	5	4.2
		4	0	10.3
		5	45	19.7
		6	30	24.0
		Friendly, supportive, sense of belonging	20	38.9
	Relationships with teaching staff	Unavailable, unhelpful, unsympathetic	0	1.4
		2	5	4
		3	10	8.8
		4	5	17.9
		5	45	26.1

		6	30	20.4
		Available, helpful, sympathetic	5	21.5
To what extent does your institution encourage each of the following	Providing the support you need to help you succeed academically	Very little	5	6.9
		Some	40	30.7
		Quite a bit	30	41.5
		Very much	25	21
	Helping you cope with your non-academic responsibilities e.g., work, family	Very little	40	41.5
		Some	35	33.6
		Quite a bit	10	17.8
		Very much	15	7.2
	Providing the support you need to socialise	Very little	35	33.1
		Some	35	35.4
		Quite a bit	25	22.7
		Very much	5	8.7

**All students include Undergraduates Year 1, Undergraduates Year 4 and Postgraduate students.*

Table 7: Findings for student engagement: work integrated learning index

Questions		Response options	2nd Year BSc PH (%)	*All Students (%)
In your experience at your institution, in the current academic year, about how often have you done each of the following	Blended academic learning with workplace experience	Never	57.	35.4
		Sometimes	33.3	29.1
		Often	4.8	21.4
		Very often	4.8	14.2
Which of the following have you done, or do you plan to do, before you graduate from your institution?	Industry placement or work experience	Do not know about	0	11.3
		Have not decided	4.8	11.9
		Do not plan to do	0	13.6
		Plan to do	95.2	36.1
		Done	0	27.1
	Improved knowledge and skills that will improve your employability	Never	4.8	6.4
		Sometimes	33.3	30.9
		Often	52.4	40.9
		Very often	9.5	21.8
Has your experience in your institution contributed to your knowledge, skills and personal development in the following area?	Acquiring job related or work related knowledge or skills	Very little	0	11.7
		Some	35	30.5
		Quite a bit	60	34.1
		Very much	5	23.7
	Explored how to apply your learning in the workplace	Never	19	15.7
		Sometimes	52.4	32.9
		Often	23.8	33.4
		Very often	4.8	18

**All students include Undergraduates Year 1, Undergraduates Year 4 and Postgraduate students.*

Table 8: Findings for student engagement: higher order thinking index

Questions		Response options	2nd Year PH BSc (%)	*All Students (%)
During the current academic year, how much has your coursework emphasised the following intellectual activities?	Organising and synthesising ideas, information or experiences into new more complex interpretations and relationships	Very little	0	7.9
		Some	19	30
		Quite a bit	61.9	39.2
		Very much	19	22.9
	Making judgements about the value of information, arguments or methods, e.g., examining how others gather and interpret data and assessing the soundness of their conclusions	Very little	0	9
		Some	19	29.8
		Quite a bit	42.9	37.2
		Very much	38.1	24
	Applying theories or concepts to practical problems or in new situations	Very little	0	6.6
		Some	38.1	25.1
		Quite a bit	57.1	37.3
		Very much	4.8	31
	Analysing the basic elements of an idea, problem, experience or theory, such as examining a particular case or situation in depth and considering its components	Very little	0	4
		Some	4.8	23.6
		Quite a bit	81	42.9
		Very much	14.3	29.5

**All students include Undergraduates Year 1, Undergraduates Year 4 and Postgraduate students.*

Table 9: Findings for student engagement: general learning outcomes index

Questions		Response Options	2nd Year PH BSc (%)	*All Students (%)
Has your experience in your institution contributed to your knowledge, skills and personal development in the following area?	Acquiring job related or work related knowledge and skills	Very little	0	11.7
		Some	35	30.5
		Quite a bit	60	34.1
		Very much	5	23.7
	Writing clearly and effectively	Very little	5	10.5
		Some	25	29.4
		Quite a bit	40	38.1
		Very much	30	22
	Speaking clearly and effectively	Very little	0	12.1
		Some	20	30.5
		Quite a bit	45	36.8
		Very much	35	20.6
	Thinking critically and analytically	Very little	0	3.7
		Some	10	19.7
		Quite a bit	35	41.9
		Very much	55	34.7
	Analysing quantitative problems	Very little	0	10.3
		Some	30	29.5

		Quite a bit	55	37.2
		Very much	15	23
	Using computing and information technology	Very little	0	10.6
		Some	15	24.5
		Quite a bit	50	32.8
		Very much	35	32.2
	Working effectively with others	Very little	0	6.5
		Some	25	24.7
		Quite a bit	60	39.7
		Very much	15	29.1
	Learning effectively on your own	Very little	0	6.2
		Some	35	23.7
		Quite a bit	60	40.3
		Very much	5	29.8

**All students include Undergraduates Year 1, Undergraduates Year 4 and Postgraduate students.*

Table 10: Findings for student engagement: general development outcomes index

Questions		Response options	2nd Year PH BSc (%)	*All Students (%)
Has your experience in your institution contributed to your knowledge, skills and personal development in the following area?	Understanding yourself, e.g. self-reflection	Very little	20	14.3
		Some	25	28.5
		Quite a bit	45	33
		Very much	10	24.3
	Understand people of other racial, ethnic or national backgrounds	Very little	10	20.5
		Some	55	31.6
		Quite a bit	35	28.3
		Very much	0	19.6
	Solving complex real world problems	Very little	5	15.3
		Some	40	32.8
		Quite a bit	45	32.8
		Very much	10	19.1
	Developing a personal code of values and ethics	Very little	5	19.6
		Some	45	31.5
		Quite a bit	40	30.1
		Very much	10	18.8
	Contributing to the welfare of your community	Very little	20	33.3
		Some	25	34.5
		Quite a bit	35	21.2
		Very much	20	11.1
	Voting in local, or national elections or referenda	Very little	40	53.8
		Some	40	24
		Quite a bit	15	13.7
		Very much	5	8.4

**All students include Undergraduates Year 1, Undergraduates Year 4 and Postgraduate students.*

Table 11: Findings for student engagement: career readiness index

Questions		Response Options	2nd Year BSc PH (%)	*All Students (%)
During the current academic year, about how often have you done the following?	Spent time keeping your CV up to date	Never	28.6	32.7
		Sometimes	42.9	37.7
		Often	23.8	19.8
		Very often	4.8	9.9
	Thought about how to present yourself to potential employers	Never	4.8	17
		Sometimes	61.9	35.9
		Often	19	31.8
		Very often	14.3	15.3
	Explored where to look for jobs relevant to your interests	Never	19	18.6
		Sometimes	38.1	35.7
		Often	28.6	29.4
		Very often	14.3	16.3
	Used networking to source information on job opportunities	Never	28.6	30.5
		Sometimes	38.1	34.1
		Often	23.8	23.3
		Very often	9.5	12.2
	Set career development goals and plans	Never	33.3	24.7
		Sometimes	52.4	35.9
		Often	9.5	25
		Very often	4.8	14.4

**All students include Undergraduates Year 1, Undergraduates Year 4 and Postgraduate students.*

Table 12: Findings for student engagement: overall satisfaction index

Questions	Response Options	2nd Year BSc PH (%)	*All Ireland (%)
Overall, how would you evaluate your entire educational experience at your institution?	Poor	0	4.1
	Fair	5	17.4
	Good	55	51
	Excellent	40	27.6
Overall, how would you evaluate the quality of academic advice that you have received?	Poor	5	6
	Fair	20	24.3
	Good	50	50.9
	Excellent	25	18.8
If you could start all over again, would you go to the same institution?	Definitely no	0	4.1
	Probably no	15	13.4
	Probably yes	45	41.4
	Definitely yes	40	41

**All students include Undergraduates Year 1, Undergraduates Year 4 and Postgraduate students.*

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