Journal of Information Literacy
ISSN 1750-5968

Volume 5 Issue 1

June 2011

Article
Galvin B. 2011. Evidence-Based Practice: a mind-altering substance. A blended learning course teaching information literacy for substance use prevention work. *Journal of information literacy,* 5(1), pp 65-88
http://ojs.lboro.ac.uk/ojs/index.php/JIL/article/view/PRA-V5-I1-2

Evidence-Based Practice: a mind-altering substance. A blended learning course teaching information literacy for substance use prevention work.

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Abstract

Purpose: This paper describes the rationale and philosophy behind the development of a blended learning course for allied health professionals working in the field of substance use prevention and the results of an evaluation of the pilot course. The course teaches a range of information literacy skills in order to increase the participants' knowledge of evidence-based practice and enable them to pursue an evidence-based approach in their professional work. The course *Evidence-based Substance Use Prevention and Education Practice* was developed and delivered by the National Documentation Centre on Drug Use (NDC), a special substance-use research library in Ireland, where the author works. The NDC is part of a drug and alcohol research unit, comprising epidemiologists, social researchers and statisticians. This unit is based in an Irish Government agency called the Health Research Board (HRB).

Method: Data required for the evaluation of the pilot course were obtained from responses by participants to pre- and post-course questionnaires and from a focus group of some of those who completed the course.

Findings: The course was established on the premise that the effective transfer of scientific knowledge in the field of problem drug use requires that practitioners develop information literacy skills to enable them to understand the principles of evidence-based practice. The findings of the course evaluation suggest that a blended learning course in evidence-based practice is an effective way to teach these skills and promote an evidence-based approach to practice in this area.

Originality: Developing information literacy skills is a key part of the inculcation of evidence-based principles in medical education and in the education of allied health professionals. The teaching of information literacy skills to students involved in health-related education has been studied extensively. The course described in this paper builds on the evidence provided by the literature and applies the principles of information literacy teaching in a setting of continuing professional development. In terms of its scope, target audience and objectives, the course is unique and the insights obtained from the delivery of the course and its evaluation form a useful and original contribution to research in this area.

Keywords

evidence-based practice, e-learning, online learning, virtual learning environment

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1. Introduction to the concept of evidence-based practice and work in the substance use prevention field

The application of what we know from research, from experience, and through the analysis of data will have a bigger impact on health and healthcare than any single drug or technology likely to be introduced in the next decade (Gray 2006, p. 1)

Few concepts have attracted such widespread adherence across such a range of disciplines, or been invoked so frequently to support a particular policy development or intervention, as evidence-based practice (EBP). It has become the unassailable standard for efficacy in all areas of health, education and social policy.

For clinicians and others with the training and confidence to evaluate all decisions in terms of the supporting evidence, evidence-based practice is a fundamental part of everyday practice; abiding by its principles means that good decisions are made. For others, using an evidence-based approach may be an aspiration rather than a rigorous adoption of clearly understood guidelines.

In common with that of many European countries, drugs policy in Ireland is shaped by a national drugs strategy. The National Drugs Strategy 2009–2016 (Department of Community, Rural and Gaeltacht Affair 2009) emphasises the need for a sound scientific basis for all responses to problem drug and alcohol use. It notes that there has been significant growth in the knowledge base on problem drug use but much work remains to be done to translate this knowledge into practice. In 2007 researchers from the HRB conducted a number of focus groups with people working in the area of drug prevention in Ireland. The aim of the research was to find out the extent to which evidence from research is used in this work. The research found that little use was made of evidence but that there was a willingness to engage with and use research evidence to inform practice if the appropriate supports were in place (Keane 2007). One of the barriers to using evidence was the impression that academic research had little practical applicability in the real world of work.

NDC staff discussed the findings of this study with drug prevention workers who use the NDC's information services. During these discussions these prevention workers expressed interest in learning how to make better use of the scientific literature in their field. Responding to this need and developing an efficient, sustainable and verifiable approach to supporting those who wished to adopt an evidence-based approach to their practice became an important consideration for the NDC. It was this consideration that informed the NDC's development of a structured blended learning course in evidence-based practice entitled *Evidence-based Substance Use Prevention and Education Practice.*

While planning the course the NDC had regular contact with a network of drug prevention and education workers in Ireland. NDC staff regularly attended seminars arranged by this network and presented a number of information sessions on the course during 2009. Eight of the 12 students who began the first course in March 2010 were members of this network and would have worked together on various projects. This was useful as personal and professional familiarity helps overcome the isolation often associated with e-learning. The members of this network have considerable knowledge of their own specialist field and experience in planning and delivering educational and instructional programmes. Through our presentations and discussions with the members of this network we gained more knowledge of their experience in using research to inform their practice and their interest in gaining some understanding of the role of evidence in the formation of policy in their field.

2. Linking information literacy, evidence-based practice and problem-based learning within the field of substance use prevention

Researchers in the drugs and alcohol field have studied the process of technology transfer, or applying scientifically developed evidence to standard professional practice, in treatment, drug prevention and recovery (Sloboda & Schildhaus 2002). NDC staff were also aware of studies on the barriers and facilitators to adopting evidence-based approaches in the drug prevention field (Kaftarian, & Wandersman 2000) and efforts to identify means of bridging the gap between research and practice (Saul et al. 2008). In this literature technology transfer in the field of substance use is seen largely as a communication problem which can be overcome through clearer explanation of concepts and intensive engagement with practitioners. While access to information is recognised as an important factor little attention is paid to how practitioners find, evaluate and use information.

There is a much greater emphasis on information skills in the formal training of health professionals; students are expected to become self-directed learners and, by becoming competent information seekers, gain an understanding how evidence can be gathered and analysed to solve a problem. The development of information literacy skills as a means to inculcate the principles of evidence-based practice is commonly used in medical and health education (Kaplan & Whelan 2002) and this is often driven by a problem-based approach to learning (Lusardi et al. 2002). Similarly, the link between problem-based learning (PBL) and information literacy has been made in other studies. For instance, a study in an Irish university found that "Even though information literacy is not an objective of PBL, it is nonetheless an integral concept and students are expected to become lifelong, independent information users." (Dodd 2007, p. 207) PBL facilitates the development of information literacy skills and requires students to work in groups to decide how to approach a problem. By encouraging enquiry, discourse, collaborative effort and knowledge sharing this way of learning also helps with applying these new skills to actual work situations.

PBL develops information skills and the attributes required to work as part of a team. It encourages peer learning and establishes the correctly formatted question as the starting point of the learning process. It is therefore an appropriate pedagogical tool for any course aiming to teach the principles of evidence-based practice. Information literacy (IL) is the key element in this learning process. By working together on a problem students learn the information retrieval and critical appraisal skills they need to understand how the evidence needed to answer this problem is created, disseminated and judged. This link between information literacy and evidence-based practice is made explicit by Nail-Chiwetalu and Bernstein Ratner (2006). They analyse the five standards in the Information Literacy Competency Standards for Higher Education, the ALA (2004) to see how these standards can applied to EBP in their own discipline. While acknowledging that the ALA standards do not fully map to the steps in EBP, particularly with regard to the later stages of the IL and EBP processes, this framework provides a useful template for the identification of skills which support EBP, as shown by Table 1 below.

Table 1: Comparison of IL competencies and steps in EBP

IL competencies	*Steps in EBP*
Determine what information is needed	Convert the need for information into a question
Access needed information	Find the best evidence needed to answer question
Evaluate the information and its sources	Critically appraise the evidence
Use information effectively	Integrate the critical appraisal with experiences
Use the information ethically and legally	Evaluate the first four steps

Source: Adapted from Nail-Chiwetalu and Bernstein Ratner 2006, p. 159

The course described in this paper applies the principles of information literacy teaching in a setting of continuing professional development and a problem-based approach to learning. The course was established on the premise that the effective transfer of scientific knowledge in the field of problem drug use requires that practitioners develop information literacy skills to enable them to understand the principles of evidence-based practice. We expected that the insights gained from the delivery of the course and its evaluation would support this premise and make a contribution to the study of information literacy development in non-academic settings.

3. Introduction to the course Evidence-based Substance Use Prevention and Education Practice

The NDC is responsible for the design, development and delivery of this course which teaches drug prevention and education workers a range of IL skills helping them to understand how evidence in their field is produced, how this evidence can be found and how research-based knowledge can be used to shape policy and bring about better health outcomes. NCD has provided information support to researchers, educators, policy-makers, service providers and others working in the drug and alcohol field since 2002 and their research repository makes Ireland's research output in this field available online. It also provides a range of other knowledge services both through its website (www.drugsandalcohol.ie) and through its library in the offices of the HRB.

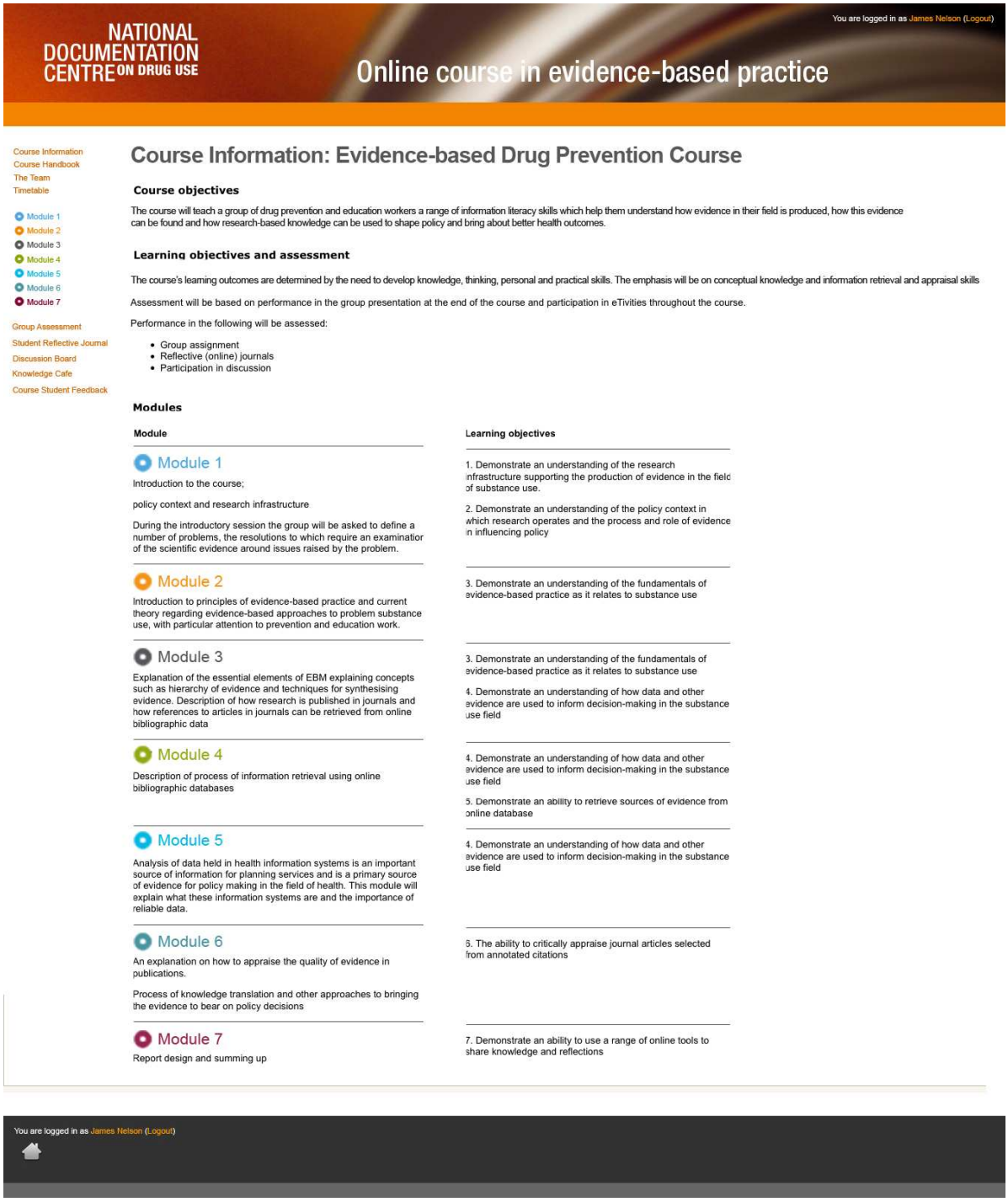
Staff in the NDC work closely with national experts in the fields of epidemiology, treatment, prevention, crime and policy and have drawn extensively on the knowledge of these experts in developing the course. In addition, NDC staff have many years experience tutoring in information literacy, evidence-based practice and the research infrastructure.

Access to library facilities is essential to the success of any course which involves the study of scientific literature and the NDC is uniquely placed to provide this support to participants. The core course content comprises a series of recorded presentations prepared by either information specialists working in the NDC or by research staff in the HRB. We used Camtasia, a software application which is used to synchronise Powerpoint presentations with voiceover, to develop videos which could be viewed by students logged on to the course system. These videos are complemented by reading material and a small number of instructutional videos.

3.1 Course outline

The seven modules of the course are designed to run over one semester of 12 weeks covering the following topics: the policy context; the research infrastructure; the evidence for drug prevention interventions; evidence-based medicine; searching the scientific literature; critical appraisal; and data sources. We used an activity matrix to calculate the total time commitment to complete the course and estimated this to be approximately 80 hours (See Appendix 4). This is a blended learning course combining a number of face-to-face sessions with online content and course work. The face-to-face sessions are held at the beginning, the midway point and the end of the course. The online part of the course is supported by Moodle, the course management system which provides virtual access to the course content and a platform for the discussion, module tasks and group work.

Figure 1: Outline of pilot course



3.2 Learning Objectives

Knowledge (Breadth and Kind)

1. Demonstrate an understanding of the research infrastructure supporting the production of evidence in the field of substance use.
2. Demonstrate an understanding of the policy context in which research operates and the process and role of evidence in influencing policy
3. Demonstrate an understanding of the fundamentals of evidence-based practice as it relates to substance use
4. Demonstrate an understanding of how data and other evidence are used to inform decision-making in the substance use field

Know-How and Skills (Range and selectivity)

5. Demonstrate an ability to retrieve sources of evidence from online database
6. Demonstrate an ability to critically appraise journal articles
7. Demonstrate an ability to use a range of online tools to share knowledge and reflections

Competence (Learning to Learn)

8. Demonstrate evidence of active reflection on own learning process throughout the programme

The learning objectives listed under the 'Knowledge' heading describe the type of competencies needed to support practice based on scientific evidence. The successful application of these competencies is underpinned by the acquisition of the skills under the 'Know-How and Skills' heading. The problem-based approach to learning provides a framework through which these skills can be developed and the basic concepts of evidence-based practice can be grasped. By identifying and seeking a solution to a particular problem the participants learn and apply a range of information literacy skills to understand both the notion of evidence-based practice and how this is relevant to their own work situation. This process comprises the following steps:

1. Framing the research question
2. Finding the evidence relevant to the research question
3. Critically appraising the research gathered
4. Presenting the results of the investigation in a clear and convincing manner

The steps in this process map the information literacy competencies and the EBP steps in Nail-Chiwetalu and Bernstein Ratner's comparison shown in Table 1. The students identify and attempt to resolve a problem in groups. They divide tasks, share knowledge of the technical and conceptual skills they have learnt and plan the presentation of findings together. Each step requires them to apply the information skills they have learnt and deepens their understanding of EPB concepts.

3.3 Assessment

Two types of assessment are used in this course, group assignment and reflective (online) journals because they are appropriate to the course's problem-based and resource-based design as advocated by Macdonald and Savin-Baden (2004), together with other assessment methods that have been successfully used with problem-based learning scenarios. Whilst participation in discussion is not included in MacDonald's and Savin Baden's list of assessment methods this

was included as part of the assessment because it is a good indicator of the student's engagement with an online course. All of these assessments are examined below.

3.3.1 Group assignment

The group assignment comprises:

1. A written report (max 1,000 words)
2. A presentation

During the introductory session the participants define a number of problems relevant to their own work. Much of this session involves teasing out the elements of the problem so that it can be framed as a research question. The final question must specify:

- An intervention or a number of interventions relevant to the problem
- A target population (e.g. at risk young people aged 14 to 15 in a school setting).
- Outcomes or effects
- Relevant comparator groups (where applicable)

Addressing the chosen problem requires an examination of the scientific evidence. Each group must demonstrate in their report and in their presentation how they went about finding this evidence and show what evidence is available to support the intervention chosen.

In order to provide a real-world setting for this assignment, each group is asked to present their work in the form of a response to a request to tender (see Appendix 1). A satisfactory assignment provides evidence that the group would be ready to begin work on such a project and demonstrate that the course's learning outcomes have been achieved.

Each group assignment will be marked with a group score of pass/fail.

- Each presentation will run for a maximum of 20 minutes with 10 minutes Q and A from other participants and course tutors

- Each group will have a facilitator who will outline what is to be covered at the beginning of the presentation and what area each participant will cover.

- The facilitator will briefly describe the process of interaction through discussion and the contribution which knowledge sharing made to the content and planning of the final presentation

- Each member of the group will participate in the presentation

Each presentation will:

1. Outline the problem which the group is seeking to resolve using the PICO format

2. Identify a difficulty in attempting to apply principles of EBP to non-clinical interventions.

3. Identify the levels of hierarchy of evidence that are relevant to determining of efficiency of interventions in prevention field

4. Explain the search strategy which will retrieve the literature relevant to the topic

5. Explain the criteria which you will use to select items for inclusion in the bulletin

6. Describe the approach to identifying data sources, Government publications, grey literature and other non peer-reviewed sources of evidence relevant to the topic

3.3.2 Reflective (online) journals

All participants will complete at least one entry to their personal journal during the course of each module. A minimum of five journal entries will be required to pass the course.

Reflective journal entries will include reflections on:

- The learning objectives associated with the module and their understanding of it
- The process and dynamic of online interaction particularly in regard to knowledge sharing
- Creating references which will be of use to final group assignment

3.3.3 Participation in discussion

A minimum of eight separate contributions to the online discussion forum are required to pass the course. These contributions must include at least one reply to a trigger question in each module. Below is an example of a post from the fifth module:

Re: Module 5 Thread 1: Appraising systematic reviews

Monday, 17 May 2010, 10:37 AM

Comment on how using this tool helped (or didn't help) you understand what makes a good systematic review

I found the tool really helpful for going through the article 'Inequalities and the mental health of young people. A systematic review of secondary school-based cognitive behaviour interventions' - which by the way I found an interesting article also since it was youth specific. We have used some CBT techniques in our programmes and work with young people on a range of health and personal development curricula.

By using the tool it made me realise how important the variety of components are in making something a valuable and trustworthy piece of research or evidence - looking for everything from authors bias or affiliations, funding, study design, criteria for inclusion/ exclusion, sources searched, criteria and decisions about validity, results of review, quality of review assessed etc. It is time consuming using a tool like this but I found it comprehensive. I was wondering if there is a similar tool which can be used when reviewing primary studies or RCT's for example?

However I was thinking if it came with a score card or a way of weighing sections of the tool would it be good because many of the questions gave the option of 'not stated' - and if you cannot find this info or its not clear then does it make one piece of research less valuable, relevant and trustworthy that another? Research articles can be daunting and I think I would use a tool like this again to help me look beyond the charts and graphs in the appendices or the results in the abstract to help me assess or appraise a piece of research in the future. Just because the results or outcomes may tell you what you want I think it is much more (time consuming and) beneficial to assess whether the research is reliable or not?

Show parent | Reply

3.4 Online learning model

Gilly Salmon's (2002) five-stage model of online learning is useful for arranging online activities so that participants are gradually encouraged to extend their participation from initial establishment of their own online presence to more involved and technically more difficult collaboration and knowledge sharing. The model helps both with the chronological ordering of the course content and with ensuring that the online activities associated with particular learning outcomes are scheduled in an appropriate place on the course. As the sharing of knowledge amongst participants is such a central part of the course it is important that they are supported and progress gradually to a stage at which they can participate fully and confidently in online discussion. In Salmon's five-stage model the participants, facilitated by an e-moderator, progress through the stages of:

- Access and motivation;
- Online socialisation;
- Information exchange;
- Knowledge construction;
- Development.

The selection of an appropriate arrangement for course components is informed by the course content, learning outcomes, the resources available to both tutors and participants and the profile of the participant group. We used the Institute of Education Work-based Learning for Education Professionals Centre's (WLE) schema of pedagogical templates for online learning (Jara 2007). Jara uses the term 'blended' to refer to a course or module which has both face-to-face and distance/online elements. He describes a series of seven pedagogic templates for integrating technology into teaching and learning, ranging from those which comprise mainly face-to-face course work with some minor online support to courses which are delivered totally online. From this schema we selected the 'Face-to-face Events' pedagogic template for blended learning in which the core learning and support activities are online and face-to-face activities are used for support at various points during the course. As mentioned earlier, the course has three face-to-face sessions, at the beginning mid-point and end of the course.

4. Evaluation of the pilot course

The first pilot course in evidence-based practice ran over twelve weeks, between March and May 2010. Twelve people enrolled in the course and attended the introductory face-to-face session. Eight students completed the assessments and the evaluation of the pilot programme was based on quantitative data obtained from responses to pre- and post-course questionnaires. Evaluation of qualitative data was obtained from a number of sources including responses to free-text questions in the questionnaires and from a focus group held three weeks after the end of the course, data taken from online discussion posts, from students' reflective journals and from feedback at the mid-point session.

4.1 Findings from the pre-course questionnaire

The twelve students who began the course completed the pre-course questionnaire during the first session (Appendix 3). The purpose of the survey was to find out what expectations the participants had at the start of the course, what they hoped to get out of it and what they thought of the information provided at the beginning of the course. The pre-course questionnaire also sought to ascertain the participants' experiences of doing similar types of course.

Whilst two of the participants had experience of learning online, all of the participants were not sure how much time they would need to devote to studying for the course, but most expected to spend at least five hours per week on their course work.

When asked why they were doing the course, most respondents said that they anticipated enhanced professional practice as a result of the course, as illustrated by the following quote from a participant whose attendance was based on the need to:

> [..] inform my work in X, in supporting us to plan our work or interventions in line with evidence-based practice. To be able to align the research which is available in relation to drug prevention alongside other research which the Best Practice Unit in X will be using to inform other areas of our work, e.g. crime prevention programmes, leadership programmes and sexual health programmes.

The respondents were also asked to list three things that they hoped to get out of the course. Most hoped to improve their skills in finding research and information and one third felt that the course would be valuable in increasing their capacity to influence policy, confirming views expressed in conversation with tutors prior to the course.

4.2 Findings from the post-course questionnaire

The eight participants who completed the course responded to the post-course questionnaire (Appendix 2) and gave feedback on their experience in doing the course, their assessment of the content and delivery of the course, its relevance to their work, and their opinions on how the course might be changed to better achieve its objectives.

4.2.1 Part 1: Course planning, organisation and material

The respondents were asked eight questions designed to allow them to rate the organisation and delivery of the course. All but two of the responses either agreed or agreed strongly with positive statements regarding the course. The most favourable response was in regard to the video presentations, with six respondents strongly agreeing that they were of high quality.

4.2.2 Part 2: Course content and requirements

The questions in this section sought to assess how closely the experience of participants corresponded with their expectations prior to starting the course. Most respondents thought the course attempted to cover the right amount of material. However, six replied that the amount of work required to cover the course content was more than they had expected, and four felt that completing the course requirements needed more effort than they had thought. The average time spent on all course activities was slightly more than 10 hours per module, with the bulk of this time allocated to reading course content and carrying out the required activities. Averages of 3.8 hours and 2.0 hours were spent on group work and self-directed learning respectively.

4.2.3 Part 3: Learning management system and tutors' contributions

From responses to the pre-course questionnaire, it was clear that few of the participants had experience of using online course management systems. However, none of the participants expressed concern about working with Moodle, and the group as a whole appeared to be fairly confident about engaging with it given that six of the respondents strongly agreed with the statement that the Moodle management system was easy to navigate. This response reflects

both the ability of the participants to deal with the online environment and the user-friendliness of the system.

The tutors' support was also well received. Seven participants either agreed or agreed strongly that the visual presentation of the course was well organised, with one neither agreeing nor disagreeing with this statement. All agreed that communication via the course management system was effective, with seven strongly agreeing with this statement. All agreed that support from the tutors was adequate, with seven agreeing that it was more than adequate. The entire group strongly agreed that the tutors' encouragement of participants to voice their own points of view was more than adequate.

4.2.4 Part 4: Participants' experience

In response to the question about which aspects of the course they enjoyed most respondents mentioned the course content; "The course content was hugely interesting. Finding sources of information & evaluating it, understanding how to systematically research".

Several respondents enjoyed specific modules or parts of modules with database searching and using the critical appraisal tool being mentioned most often, while four respondents specifically mentioned the online discussion. Only one said that they particularly enjoyed the group work element, but there were no negative comments regarding group work. In the section of the questionnaire dealing with learning for professional development, all respondents agreed that they had learnt something about working with other people from doing the course.

Responses to the question regarding what parts of the course they enjoyed least revealed problems with time management. Four respondents identified this as a significant difficulty, while another two suggested that the course might be delivered over a longer period to give more time to reflect on the content covered. There was recognition that regular postings to the discussion boards supported learning: "I think I need the discussion board tasks and the learning journal tasks to make me complete the reading, course work etc.", although it was also clear that completing the postings was difficult for some: "As much as I support the idea of posting to the discussion board, I found it intimidating". Finally, one respondent felt that the group assignment was introduced too early in the course and that there was a lack of clarity about what was required until quite late in the course.

4.2.5 Part 5: Participants' learning for continuing professional development

The final section of the questionnaire examined how the participants might apply what they had learnt from the course in their professional practice. Seven strongly agreed that the course was relevant, although they did not give specific reasons as to why this was the case. The same number strongly agreed that their analytical abilities had improved and that they had a better understanding of the concepts of evidence-based practice. All respondents had specific ideas about how they might apply what they had learnt in their professional practice. For example, one intended to "Encourage organisations and project workers to use evidence in their direct work – support people in accessing quality evidence". Another said, "I will be more familiar with finding data and evidence to support work I do or am interested in doing and I will share this learning with other colleagues too." Six strongly agreed that their understanding of research had increased.

4.3 Findings from the focus group

In May 2010 we held a focus group of 90 minutes with three students who had completed the course. Two other students had intended to participate but had to withdraw on the day. The group discussed the following issues raised in responses to the pre- and post-course questionnaires:

- the volume of work required to fulfil the tasks associated with each module and the group project;
- the quality of the student experience in using the course material and in peer learning;
- changes which could improve the course; and suggestions for making the course more relevant to the work of the participants.

The report on the focus group is presented below under these separate headings.

4.3.1 Effort required to fulfil course requirements

All of the participants, while conceding that the preliminary course material made it clear how much time would be required to cover the course content and fulfil course requirements, said that they did not have a clear understanding of what this meant in practice. Five to six hours per week (on those weeks without a face-to-face session) sounded very manageable, but the reality of combining their studies with work and other commitments was more demanding than they had envisaged. As one participant put it:

> Understanding of what five hours a week meant wasn't very clear to me. I tried to start and complete a task – it might have meant a whole day. I didn't think it through thoroughly. [My employer] supported me but still it was hard to get through the work.

All participants found that completing the online discussion requirements took considerably longer than they had expected. While they understood that essay-standard contributions were not required and that the purpose of the posts was to encourage interaction and discussion, they found that responding to the trigger questions took a lot of effort. They were concerned less about completing the task itself than about posting contributions that were of a sufficiently high quality, knowing that their peers would be reading the posts and that they would remain in place for the duration of the course.

> The idea that everybody was having a look made it different from a classroom situation. The pattern was established in first module. Maybe more emphasis [is needed] in first session about what it's for and how to approach it.

Participants suggested a number of possible solutions to address this difficulty. First, it should be made clear that it is acceptable to pick up on a point made in the trigger questions or in another post and respond to it in one's own post. This would help get over the assumption, albeit not supported by any explicit instruction from the tutors, that it was necessary to demonstrate comprehensive knowledge of the topic being covered in the post or provide a lengthy, very considered response. Secondly, the group-discussion part of each module should begin with a single thread; the requirement would still be for a minimum of eight posts but these could be in response to different aspects of one trigger question. This would allow discussion to flow more freely as people could pick up on points made in other posts and respond to them. All participants enjoyed completing the more task-oriented requirements in Modules 4 and 6 and suggested that it would be useful to have similar requirements in each module. This would allow for greater

interaction and would vary both the engagement with course content and the tone of posts to the online discussion boards.

4.3.2 Quality of student experience

All participants expressed satisfaction regarding working online and engaging with the course management systems, confirming the findings of the post-course questionnaire. The training in using the Moodle system during the first session was seen as particularly important and the instruction provided was regarded as being of very high quality. With regard to the course content, all participants found the video presentations particularly useful and enjoyable because their length was appropriate and they enabled viewing of specific sections; also they provided clear references to the Irish situation and gave a sense of engaging with 'real people' involved in the presentations. The required reading was seen as challenging but rewarding, and the systematic reviews were described as 'well chosen'. The learning opportunities offered by the online discussion forum were felt to be limited by the small number of contributions posted, The task-oriented requirements, in particular the application of the critical appraisal tool in Module 5, were seen as a very useful complement to the conceptual work required to prepare and write the posts for the online discussion.

4.3.3 Proposed changes to course structure and content

There was general agreement that the course structure was sound and that the content was of high quality and appropriate to the learning outcomes. While suggesting some changes to the way in which the online discussion are initiated and managed, the group agreed that engaging in the online discussion was a valuable learning experience and was useful for maintaining the discipline necessary to get through the course.

Many suggestions for possible changes focused on the sequencing of events. It was felt that, while the earlier part of the first day of the course was of real value, too much may have been covered. In the afternoon they were expected to have a very structured discussion, identify the problem on which they would focus for their project and form themselves into groups. As we can see from the quotes below it might be better to move certain activities to a later session:

> We got more into it at the second meeting. We understood more; [we] could see how things could have been sequenced better. Also, start the group process later – after people have got to grips with the material.

> . . . get to grips with the course, what's required, and then look at the topic you want to do. Also how are you going to do it. You were doing everything you needed to during the module. People moved at different paces within the group.

Participants found it difficult to organise group work in the limited time allocated in the introductory session. The reason for this is that while the problems to be addressed were identified and the groups were formed on the first day, people did not work at the same pace, so that some members of the groups were ready to start work on the group project while others were not. While increasing the number of face-to-face sessions might have a positive impact on group formation and preparation for the assignments, this would be difficult for people who had to travel to attend an extra session. There was general agreement that it would be better to begin the process of identifying a problem and establishing the groups at the second face-to-face session.

> Maybe at that point you could clearly allocate work to the individual and then everybody has clear responsibility. Individuals in group are also clear about what needs to be done and then people can work independently to a certain extent.

A change in scheduling of the course elements would also make it easier to allocate portions of the overall project to individuals within the group and enable individuals to work independently of the group to produce a piece of work for assessment, while at the same time ensuring that the group worked together cohesively. The issue of grading the assignments was discussed in this context. The students' work during the pilot course was not graded. However, this would have to change if the course is to be accredited by an university or another awarding body. The focus group discussed how this might affect future courses. None of the participants saw grading as an impediment to achieving any of the learning outcomes and, while they could see how grading might affect open discussion if applied to the online post requirement, they felt that it should not be difficult to accommodate a grading requirement within the group assignment.

All of the participants agreed that there was scope to alter the format of the online discussions to facilitate more frequent contributions and more open debate. Suggestions included organising a discussion around a particular piece of legislation or policy and inviting contributions from the perspective of the participants' professional backgrounds in community, voluntary, treatment, youth work or other services. These types of changes would encourage greater contribution to discussion, but mandatory posting should be retained to ensure that all students participate in discussions. One participant explained without the requirement to make posts they would not have made as many posts

> There has to be an obligation to reply. I work under pressure. I wouldn't have read the posts unless they were based on work situations. I didn't read additional material.

4.3.4 Relevance of the course to work situation

Responses to the post-course questionnaire showed very strong agreement with the suggestion that the course was relevant to the participants' work, and this view was confirmed by the focus group's. Some felt that the loss of participants early in the course narrowed the range of peer-learning opportunities:

> …it's a shame that people fell off. There's a richness in meeting people, there's a strength in finishing it. It's a pity people didn't finish it. A good mix of people – rehab, harm reduction, rehabilitation etc. – and we would all have got more if more had stuck with it.

This comment reflects a participant's appreciation of the potential for peer learning through discussion and the value of the discussions that did take place and that the course's potential for peer interaction was somewhat diminished when people dropped out of the course. Nevertheless the course, while academic and conceptually challenging, was very relevant to drug prevention work:

> A lot of this is very close to what people do. We need people to better reflect on their own work. I could get a query on peer education – my response should be, Where is the evidence research, what are other projects doing? A multi-faceted response [is needed], one of which is looking at research.

4.4 Summary of findings from the evaluation

The findings of the evaluation demonstrate that, while the participants found the course requirements challenging, they had a clear understanding of its goals and rationale and were very committed to and engaged by the whole process. They were also comfortable with the course

design and with using the online course management system. Most found that the effort required to study the content and fulfil the course requirements was greater than they had anticipated and some suggested that extending the course over a longer period might be helpful in this regard. However, there was also a recognition that the timeframe of the course imposed a useful discipline and that there might well be a loss of momentum if the course were to be extended. There was considerable satisfaction with the course content, especially the videoed presentations which people saw as focused, relevant to the local situation and containing content of very high quality.

The two areas of most concern related to fulfilling the online discussion and group work requirements. All participants understood and supported the notion of sharing learning through posts to the online discussion forum and agreed that there should be a required minimum number of posts per module. Completing the posts was rewarding and contributed to achieving learning outcomes, but a way needs to be found to encourage less polished contributions and more open discussion. Much of this could be achieved by modifying the trigger questions initiating each thread and stress that a response to the particular aspects of the module that interests the student is what is required in the post. This might encourage shorter, more succinct and more frequent posts.

5. Conclusion

The course described in this paper was established on the premise that a grounding in the principles of evidence-based practice could support the transfer of scientific knowledge and increase the extent to which allied health professionals working in drug prevention use evidence in their work. This grounding can be established if students develop the skills to identify what information is needed to answer a problem, find the information, evaluate it and use it effectively. These information literacy skills parallel the stages of evidence-based practice and their acquisition is essential to understanding the principles underpinning the scientific approach to solving problems in the health area. We used a problem-based learning approach where the participants are required to frame a problem related to their own work in the form of a research question, an essential first step in learning evidence-based practice. Problem-based learning also requires a team-based approach which encourages peer learning and a sharing of knowledge gained between participants. Through the evaluation and the participants' contributions during the course we found they had developed skills in framing a research question correctly, finding the literature and appraising research. They enjoyed these aspects of the course and presenting their findings at the end. We were less successful in eliciting contributions to the online discussion forum despite the fact that we consider this aspect key to sharing knowledge and maximising peer learning. Significant changes will be needed in in future courses to address this. The students enjoyed learning about the basic concepts of EBP and the role of evidence in policy development but the pilot course did not have a mechanism to assess the extent of the participants' knowledge of these topics. In future this will need to be examined and a thorough assessment mechanism developed.

Determining the impact on the participants' professional practice will require further study and a detailed analysis to measure barriers and facilitators to using research. A follow up study is scheduled in early 2011 to identify the long term impact of the course on the participants' professional practice. This study will inform the development of evaluation data gathering for future courses and help to ensure the systematic recording of the level of knowledge transfer that this course has generated.

References

American Library Association (ALA). 1989. *Report of the Presidential Committee on Information Literacy.* [Online] Washington: ALA. Available at http://www.ala.org/ala/mgrps/divs/acrl/publications/whitepapers/presidential.cfm [Accessed 01 June 2009]

Brettle, A. 2003. Information skills training: a systematic review of the literature. *Health Information and Libraries Journal*, 20 (Supl. 1), pp 3-9

Bundy, A. 2004. *Australian and New Zealand Information Literacy Framework: principles, standards and practice*. (2nd ed.) Adelaide: Australian and New Zealand Institute for Information Literacy

Department of Community, Rural and Gaeltacht Affair (2009) National Drugs Strategy (interim) 2009-2016. Dublin: Department of Community, Rural and Gaeltacht Affairs, Dublin.

Dodd, L. 2007. The Impact of Problem-Based Learning on the Information Behaviour and Literacy of Veterinary Medicine Students at University College Dublin. *Journal of Academic Librarianship*, 33 (2), pp 206-216

Gray, M. 2006. *The National Knowledge Service Plan 2007-10*. London: National Library for Health

Harvey, J. (ed.) 1999. *The evaluation cookbook*. [Online] Edinburgh: Learning Technology Dissemination Initiative. Available from http://www.icbl.hw.ac.uk/ltdi/cookbook/cookbook.pdf [Accessed 25 May 2009]

Jara, M. and Mohamad, F. 2007. *Pedagogical templates for e-learning. WLE Centre Occasional Papers in Work-based Learning* [Online] London: Institute of Education. Available from http://www.wlecentre.ac.uk/cms/files/occasionalpapers/wle_op2.pdf [Accessed 28 May 2009]

Kaftarian, S.J. and Wandersman, A. 2000.. Bridging the gap between research and practice in community-based substance abuse prevention. *Journal of Community Psychology*, *28*(3), pp 237-240.

Kaplan, R. and Whelan, J. 2002. Buoyed by a rising tide: Information literacy sails into the curriculum on the currents of evidence-based medicine and professional competency objectives. *Journal of Library Administration*, 36, pp 219–235.

Keane, Martin 2007. Promoting evidence-based practice in drugs task forces. *Drugnet Ireland*, Issue 24, Winter 2007, pp 11-12

Koufogiannakis, D. and Wiebe, N. 2006. Effective methods for teaching information literacy skills to undergraduate students: a systematic review and meta-analysis. *Evidence-Based Library and Information Practice*, (1) 3, pp 3-43

Koufogiannakis, D. et al. 2005. Impact of librarians in first-year medical and dental student problem-based learning (PBL) groups: a controlled study. *Health Information and Libraries Journal*, 22(3) pp 189-95

Lusardi, M.M. et al. 2002. A problem-based learning approach to facilitate evidence-based practice in entry-level health professional education. *Journal of Prosthetics & Orthotics.* 14 (2) pp 40-50

Macdonald, R.F. and Savin-Baden, M. 2004 *A briefing on assessment in problem-based learning* (*LTSN Generic Centre Assessment Series)*. [Online] Available at: http://www.heacademy.ac.uk/assets/York/documents/resources/resourcedatabase/id349_A_Briefing_on_Assessment_in_Problembased_Learning.pdf (Accessed 05 June 2009)

McAvinia, C. et al. 2008. The role of a virtual learning environment (VLE) in the teaching of an accredited module in information literacy skills, in *Emerging issues II: the changing roles and identities of teachers and learners in higher education*, eds Higgs, B. and McCarthy, M. Galway: NAIRLT. pp 153-165

Nail-Chiwetalu, B.J. and Bernstein Ratner, N. 2006. Information literacy for speech-language pathologists: a key to evidence-based practice. *Language, Speech and Hearing Services in Schools*, 37, pp 157-167

Rankin, J.A. 1996. Problem-based learning and libraries: a survey of the literature. *Health Libraries Review*, 13 (1), pp 33-42

Salmon, G. 2002 *Etivities: the key to active online learning*. London: Kogan Page

Saul, J. et al. 2008. Research and action for bridging science and practice in prevention. *American Journal of Community Psychology, 41,* pp 165–170.

Sloboda, Z. and Schildhaus S. 2002 A discussion of the concept of technology transfer of research-based drug "abuse" prevention and treatment interventions. *Substance Use & Misuse* 37 (8-10), pp 1079-87

Appendix 1: Request for tender proposals.

Developing a coordinated approach to substance use prevention and education in Ireland

As part of an initiative announced by Minister John Curran in March 2010, the Office of the Minister for Drugs (OMD) and the Health Service Executive, in partnership with Irish-American Philanthropies Ltd., is supporting the development of a coordinated programme of substance use prevention and education throughout Ireland.

The aim of this initiative is to provide substance use prevention and education workers with the information, training and administrative support they need to implement interventions which are proven to be effective and which are appropriate to both the settings where they are being introduced and the population targeted. OMD and partner agencies will work with local and regional drug task forces to identify the specific needs in each area and to project manage the implementation of the agreed interventions.

Research programme
A key part of the this initiative is a research programme which will identify a prevention and education need within your task force area and propose an appropriate intervention to meet this need. Grant aid totalling €200,000 will be made available to support the research work of the successful applicants.

Your task is to write a submission outlining a proposed prevention and education intervention in your task force area. The proposal should be structured in the following way:

1. Introduction
2. Background
3. Aims and objectives
4. Population and setting
5. Intervention (which should include the following)
    a. Consideration of the hierarchy of evidence
    b. List of the sources of evidence
    c. Note of the data sources used to estimate the problem
6. Evaluation plan
7. Bibliography

You will make a presentation of this proposal to the board awarding the tender. Following your presentation the board will ask questions concerning your approach to the determining the evidence base for the intervention you have chosen

- Each presentation will run for a maximum of 20 minutes with 10 minutes Q and A from other participants and course tutors
- Each group will have a facilitator who will outline what is to be covered at the beginning of the presentation and what area each participant will cover.
- The facilitator will briefly describe the process of interaction through discussion and the contribution which knowledge sharing made to the content and planning of the final presentation
- Each member of the group will participate in the presentation

Appendix 2: Evidence-based drug prevention course evaluation questionnaire

Part 1: Resources, organization, content and requirements

Please indicate the extent to which you agree with the statements below on scale of each of the questions 1–5. (1= Strongly agree; 5=Strongly disagree)

Course planning, organization and material		
1	The course seemed well organised:	1 2 3 4 5
2	What was expected of participants on the course was very clear	1 2 3 4 5
3	The balance among activities (assigned readings, discussion posts etc.) was satisfactory:	1 2 3 4 5
4	The information in the course documentation was satisfactory:	1 2 3 4 5
5	Topics and activities were presented in a logical and coherent sequence:	1 2 3 4 5
6	The course aims corresponded closely with what you learnt on the course:	1 2 3 4 5
7	The course aims corresponded closely with what you required to do on the course:	1 2 3 4 5
8	Overall, the course material was satisfactory:	1 2 3 4 5
9	The video presentations were satisfactory :	1 2 3 4 5
10	The assigned readings related to the learning objectives of the module:	1 2 3 4 5
Course content and requirements		
11	The scope of the course was too broad:	1 2 3 4 5
12	The orientation of the course was too narrow:	1 2 3 4 5
13	The course content was too theoretical:	1 2 3 4 5
14	The course attempted to cover too much:	1 2 3 4 5
	The course attempted to cover too little:	
15	The amount of work required to cover the course content was more than I expected:	1 2 3 4 5

	The amount of work required to cover the course content was less than I expected	1 2 3 4 5
16	The time and effort required to complete course assignments was more than I expected:	1 2 3 4 5
	The time and effort required to complete course assignments was less than I expected:	1 2 3 4 5
Course requirements		
17	The module assignments (online discussion and journal) were worthwhile:	1 2 3 4 5
18	The group assignment was worthwhile:	1 2 3 4 5
19	The assignments were relevant to the course conent:	1 2 3 4 5
Learning management system		
17	The visual presentation of the course was very well organized:	1 2 3 4 5
18	Moodle was easy to navigate:	1 2 3 4 5
19	Learning how to use the system took a long time:	1 2 3 4 5
20	Communication via the system was effective:	1 2 3 4 5
21	The face-to-face meetings were valuable:	1 2 3 4 5
22	The online discussion was very valuable:	1 2 3 4 5
Tutors' contributions		
23	Support from the tutors during the course was adequate:	1 2 3 4 5
24	The tutors encouraged articulation of participants' view points:	1 2 3 4 5
25	What aspects of the course did you enjoy most?	
26	What aspects of the course did you enjoy least and what changes would you recommend?	

Part 2: Participants' outcomes and reflections

Please indicate the extent to which you agree with the statements below on scale of each of the questions 1–5. (1= Strongly agree; 5=Strongly disagree)

Participant learning for continuing professional development		
23	The course was relevant to my work:	1 2 3 4 5
24	The course contributed to my professional development:	1 2 3 4 5
25	The course improved my understanding of the concepts and principles of EBP:	1 2 3 4 5
26	The course increased my ability to talk about this subject:	1 2 3 4 5
27	My ability to analyse real problems in my professional practice improved:	1 2 3 4 5
28	My ability to analyse research in this field improved:	1 2 3 4 5
29	How much did the course teach you about working with other people?	1 2 3 4 5
30	The course made me more confident about raising and discussing EBP concepts:	1 2 3 4 5
31	Describe how you intend to apply what you have learned on the course in your professional practice.	
32	How will what you have learnt on this course impact on your colleagues or others with whom you work?	
33	In what ways do you think could the course be changed to make it more relevant to your own work and to those to whom you deliver services?	
34	During the first face-to-face session you were asked what you hoped to gain from the course. Has this been realized?	

Appendix 3: Evidence-based drug prevention pre–course questionnaire

#	Question Text	Question Type
1	Have you been given a course document?	Yes/No
2	Do you think this document is detailed enough?	Yes/No
3	List there anything missing from the course document which you think should be included.	Text
4	Are the course aims clear to you in terms of what you are going to learn?	Yes/No
5	Are the course aims clear to you in terms of how you are going to be assessed?	Yes/No
6	Are the course aims clear to you in terms of resources necessary to complete the course?	Yes/No
7	Have you ever been assessed a part of a group? (e.g. group report or group presentation)	Yes/No
8	Have you ever been assessed by your peers (self and peer assessment techniques)	Yes/No
9	How much time do you expect to spend studying for this course (hours per week)?	Numerical/Text
10	Have you ever studied an online course such as this?	Yes/No
11	If Yes, name the course(s) you have studied online	Text
12	Have you ever used a learning management system such as Moodle, Blackboard or WebCT?	Yes/No
13	If so, please state the system(s) you have used	Text
14	Do you have any concerns about the course at this stage in terms of content?	Yes/No
15	Do you have any concerns about the course at this stage in terms of mode of delivery/technology?	Yes/No
16	Do you have any concerns about the course at this stage in terms of assessment?	Yes/No
17	Why are you doing this course?	Text
18	Name 3 things you want to get out of this course	Text

Appendix 4: Activity breakdown matrix for pilot NDC information literacy course

		March 1-14		Mar 15-21	Mar 22-Apr 4		Apr 5-18		Apr 19-May 2		May 3-May16		May 17-23		
		Module 1		Module 2	Module 3		Module 4		Module 5		Module 6		Module 7		
ACTIVITY	Pre-Course	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Post Course	Total Hours
		F2F						F2F					F2F		
1. Face2Face (N Total Hours Here ->)		6						3					3		12
Orientation		1													
Scenesetting		1													
Technial support		1													
Group work		2													
Presentations		1						2					2		
Evaluations															
Review								1					1		
Online activities (Breakdown)															
2. Engaging with content (N hours Total Here ->)		1	2	3	2	1	1	1	2	1	2	1			17
Content 1		1		1	1	1	1		1		2				
Content 2			1	1				1	1			1			
Content 3			1	1	1					1					
Content 4															

3. eTivities group - (N hours Total Here ->)			2	2	1	1	1	1	1	2				1	12
eTivities group			1	2	1		1	1	1	1					
eTivities group			1			1				1					
eTivities group															
4. eTivities individual (N hours Total Here ->)		1		1	1	1	1		2	1	1			1	10
eTivities individual		1		1	1	1	1		1	1	1				
eTivities individual									1						
eTivities individual															
5. Independent Learning (N Total Hours Here ->)	2	2	2	2	2	2	2	2	2	2	3	1	4	2	30
Group Work		1	1		1	1		2							
Preparation for F2F sessions	1										2	4	4		
Research	1	1	1	1	1		1		2	1	1	1	1	2	
Additional Reading				1		1	1		1			1			
Reflection															
6.TOTAL HOURS PER WEEK	2	10	4	8	6	5	5	7	7	6	6	2	7	4	79