

Student perceptions of the value of the International Baccalaureate extended essay in preparing for university studies

Final Report

This report describes the procedures and the outcomes of research carried out in the United Kingdom in 2012, whose aim was to explore the ways in which the experience of the extended essay has affected former IB Diploma students in their University studies.

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INTRODUCTION

The overall aim of this project was to explore the learning benefits and outcomes attributable to the IB extended essay in terms of knowledge, skills, abilities, engagement, and other aspects that might prepare students for university studies.

This project focused on the following research questions:

1. How well are the documented curricular aims of the extended essay achieved and sustained as students continue through university studies?
2. To what extent do students perceive the extended essay experience to be valuable to university preparation and in what ways?
3. What is student self-report of the effort they exerted into their work on the extended essay?
4. To what degree do students who have experienced the extended essay meet university expectations for research-related undergraduate work?

In order to satisfactorily answer these questions, the project needed to explore and analyse the thoughts and feelings of students currently studying in research-led universities who had experience of working on an extended essay. The project focused, therefore, upon qualitative methods of data collection, in particular exploring the perceptions of the students themselves and their feelings about the extended essay process and the way(s) it matched with and prepared them for university study (or did not).

Because of the qualitative nature of the evidence to be collected in this project, it was necessary to focus upon a fairly small number of university students, and to collect data in a relatively intensive manner. The results of the project must, therefore, be interpreted as indicative rather than definitive, and are clearly not generalizable to all former IB university students. Nevertheless, some themes did emerge from this research which could be potentially quite important and worthy of wider dissemination.

This report will outline the design of and methods used in the project before discussing the principal themes emerging from the project findings. It will begin with a brief survey of the background to the project, in terms of the target benefits envisaged for the extended essay within the IB Diploma.

BACKGROUND

The International Baccalaureate (IB) is a non-profit educational foundation, motivated by its mission to develop inquiring, knowledgeable and caring young people who help create a better and more peaceful world through intercultural understanding and respect. The organization has built a hard-earned reputation for quality, high standards and pedagogical leadership in the field of international education, encouraging students across the world to become engaged world citizens who are active, compassionate and lifelong learners.

The IB Diploma Programme (DP), for students aged 16-19, is an academically challenging and balanced programme of education with internal assessments and final examinations that prepares students for success at university and life beyond. IB DP students study six courses at higher level or standard level. Students must choose one subject from each of groups 1 to 5, thus ensuring breadth of experience in languages, social studies, the experimental sciences and mathematics. The sixth subject may be an arts subject chosen from group 6, or the student may choose

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another subject from groups 1 to 5. At least three and not more than four subjects are taken at higher level, the others at standard level.

In addition, three core elements—the extended essay (EE), theory of knowledge (TOK), and creativity, action, service (CAS)—are compulsory and central to the philosophy of the programme. The extended essay is a requirement for students to engage in independent research through an in-depth study of a question relating to one of the subjects they are studying.

The aims of the Extended Essay, as expressed in the extended essay guide (IBO, 2007), are to provide students with the opportunity to:

- pursue independent research on a focused topic
- develop research and communication skills
- develop creative and critical thinking skills
- engage in a systematic process of research appropriate to the subject
- experience the excitement of intellectual discovery.

The extended essay provides students with an opportunity to engage in personal research in a topic of their own choice, under the guidance of a supervisor (a teacher in the school). It is required that the supervisor “provides the student with advice and guidance in the skills of undertaking research” (IBO, 2007, p.8). It is expected that student spend approximately 40 hours working on the EE (IBO, 2007). Upon completion of the EE, the supervisor submits a report indicating how many hours the supervisor worked with the student. The IBO does not dictate the amount of time a supervisor should spend working with the student, but does suggest between 3- 5 hours total. This includes time spent with the student conducting a concluding interview (IBO, 2007). The extended essay is “intended to promote high-level research and writing skills, intellectual discovery and creativity” (IBO, 2007, p.2). It is also aimed at encouraging students “to develop the skills of independent research that will be expected at university”.

CONTEXT – INSIGHTS FROM THE LITERATURE

According to Munro (2003), “A key competence in a knowledge-based society is the capacity to convert information into knowledge, to change or enhance it and to use and display this change in knowledge in a range of ways” (5). Such a competence clearly demands more from students than the ability simply to memorise and regurgitate information, skills often traditionally assessed through examination systems (Wiggins, 2011). Wiggins argues that traditional examination-type assessments need to be replaced by what he calls ‘authentic assessments’, by which he means assessments that have a direct relationship to the skills that students will need to exhibit to be successful in a particular area in the world outside the school classroom. Authentic tests are seen as contextualized and complex intellectual challenges, precisely because problems in the world outside school do not come specially simplified and broken down into fragmented ‘bits’. Wiggins goes on to argue that such authentic assessments “culminate in the student’s own research or product, for which ‘content’ is to be mastered as a means, not as an end” (Wiggins, 2011, 91).

The arguments in favour of an approach to education involving more student research/inquiry, of which the IB extended essay is one example, are powerful, not just because involvement in such research is held to be a more accurate context in which to make authentic assessments of students’ knowledge and skills, but also because the experience of research is claimed to be educative in its own right. As Aulls & Shore (2008) have documented, there is a great deal of research that suggests that inquiry based teaching approaches tend to lead to positive learning outcomes, but also a strong argument that Shore et al (2009) have dubbed ‘inquiry literacy’ is an essential aim for 21st century education. Research suggests that teachers’ views or conceptions of inquiry affect their use of inquiry (Kang & Wallace, 2005), and this is borne out by the findings of Connor (2009) that school and teacher factors have a strong influence on the outcomes of student experiences of carrying out research. Connor (2009) attributes the impact of these factors to levels of student engagement with the process of research/inquiry. Such engagement was also suggested by Munro (2003) as one key attribute required if students were to be

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successful in the Extended Essay, alongside self-management, time management and creative thinking. This suggests that the success of the Extended Essay, as a context for assessment and learning, involves a complex set of factors.

It is certainly the case that previous research (Hamer, 2010) has found that students undertaking the extended essay perceive it as a cognitively complex task. Hamer (2010) argued that “[t]he teaching of academic creativity through the EE, the development of a novel research question, the transfer of established concepts, the reprioritisation of ideas and creative processes, generate complex knowledge” (p.320).

Many of these skills of “academic creativity” might be thought to be central to an education beyond secondary school. Thus, theoretically, the extended essay experience appears to be targeted at developing the academic skills which students will need as they progress into higher education.

Hamer (2010) goes on to rank in order of difficulty level (using student perceptions) the skills involved in successfully completing the Extended Essay. The ability to construct a question to guide their research was rated the most problematic of these skills, even beyond the writing up of the Essay itself. There is evidence that students of all ages and levels (and even experienced adults) find the composition of extended writing a difficult task. George Orwell, in his 1946 essay *Why I Write*, said,

“Writing is a horrible, exhausting struggle, like a long bout of some painful illness. One would never undertake such a thing, if one were not driven on by some demon whom one can neither resist nor understand.”

So, for the students in Hamer’s study to rate constructing a question as *even more* difficult than writing up is powerful evidence indeed.

If the extended essay experience was aimed to equip students to operate more successfully in their higher education years, then it might be expected that

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constructing research questions should be a particularly valuable skill for them to experience.

Hamer (2010) concludes his study by recommending that extended essay students, among other things, be:

- systematically exposed to research skills. Research skills are understood as:
 - determining the information needed to answer the research question;
 - ability to locate the sources containing the information. This requires access skills involving information and communication technologies;
 - selecting appropriate information;
 - critical and evaluative skills that create an awareness of the authority and currency of information sourced from the internet, the values and biases of information, the influence of cultural context;
 - synthesising this information into an appropriate presentation format;
 - acknowledging the sources used in approved referencing and bibliographic style;
- taught to recognise the research need/issue and in so doing trained in problem solving
- identification and construction of a clear problem statement;
- taught to formulate sub questions to support the main thesis or question;
- prepared to collect relevant information to answer the questions and sub questions.

This list of research skills overlaps to a large degree with the Assessment objectives listed in the extended essay guide (IBO, 2007, p.4), which specify that:

“In working on the extended essay, students are expected to:

1. plan and pursue a research project with intellectual initiative and insight
2. formulate a precise research question
3. gather and interpret material from sources appropriate to the research question

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4. structure a reasoned argument in response to the research question on the basis of the material gathered
5. present their extended essay in a format appropriate to the subject, acknowledging sources in one of the established academic ways
6. use the terminology and language appropriate to the subject with skill and understanding
7. apply analytical and evaluative skills appropriate to the subject, with an understanding of the implications and the context of their research.”

It is clear, therefore, that the engagement of students in research and the development of the requisite skills for carrying out that research effectively is a key focus of the Extended Essay. This engagement in research is seen as an intrinsically beneficial educational activity that is worthwhile whatever the educational destinations of the students experiencing the Extended Essay. But it is also viewed as a preparation for research activity during future undergraduate study at university. The perceptions of the students themselves about whether the extended essay experience actually achieved this aim of helping them develop requisite research skills can, therefore, be an extremely interesting marker of the success of this experience.

STUDY DESIGN

The study reported here involved a focus on a relatively small number of students, who came to university after experiencing the IB Extended Essay. The aim was to gain an in-depth understanding of the thoughts and experiences of these students with regard to the impact of their extended essay experience on their university study.

The research was undertaken at two Universities in the Midlands of England. Both these Universities were chosen as higher education (HE) institutions which particularly valued research, and where, therefore, the research skills hopefully engendered in students through the extended essay experience might most usefully

be applied in the course of undergraduate study. Former IB students at the two universities were invited to participate. Additionally, a comparative group was also invited to participate, consisting of students who had come to university after studying A-Levels in schools in England or Wales. A-levels (Advanced Level General Certificates of Education) are qualifications undertaken by most students in the United Kingdom intending to seek entry to university courses. They are studied over a two-year period and typically involve in depth study of three subjects, although some students study a fourth. Three is usually the minimum number of A-levels required for university entrance in the UK.

Qualitative research methods were selected for use in this research study for a number of reasons. Strauss and Corbin (1998) claim that qualitative methods can be used to try to understand social phenomena about which little is yet known. They can also be used to gain new perspectives on things about which a lot is already known, or to gain more in-depth information than can be derived from quantitative study, particularly about the attitudes and views of people.

Some key features of qualitative research are:

1. Qualitative research uses natural settings as the source of data. The researcher attempts to observe, describe and interpret settings as they are in natural reality.
2. Qualitative researchers tend to use inductive data analysis, deriving theory from observations of natural data (rather than trying to test hypotheses already developed).
3. Qualitative research reports are descriptive, incorporating expressive language and the "presence of voice in the text" (Eisner, 1991, p. 36).
4. Qualitative research is interpretive, aimed at discovering the meaning that events have for the individuals who experience them.

In the present study, the aim was to explore the views of students about particular experiences they had had (the Extended Essay), and the ways they viewed the effects of those experiences. Thus, the evidence collected in the study consisted of

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attitudes, which needed to be collected in as 'natural' a way as possible if they were to be trusted as representative of real feelings and meanings.

SAMPLE

The sample comprised a total of 43 students currently studying as undergraduates in 2 different research-led universities in the Midlands of England. Twenty-four of these students had come to university via the IB Diploma and a further nineteen students had come to these universities after taking the traditional A-level route.

The total group of 43 students involved were studying across a range of 14 subject areas, these included:

- 5 Arts-Humanities subjects;
- 4 Social Science subjects, and
- 5 subjects associated with Science, Technology, Engineering and Mathematics (STEM)

The sample was not stratified in any way. A large majority of the participating students (35 out of the total of 43) were in their first year of undergraduate study. Eight were in their second year of study. Further demographic information about the sample is given in the following Table 1.

Table 1				
<i>Participant demographic information</i>				
Demographic feature	Number in the IB group (Total = 24)		Number in the A level group (Total = 19)	
<i>Year of study</i>	20 first year	4 second year	15 second year	4 second year
<i>Gender</i>	13 male	11 female	9 male	10 female
<i>First language</i>	22 English	2 non-English	18 English	1 non-English
<i>Age</i>	23 in 18-21 age group	1 mature (over 21)	19 in 18-21 age group	0 mature (over 21)

Each of these 43 students was also asked to nominate a university tutor that they thought would know their work best. They nominated 19 different tutors, 14 of whom agreed to take part in the study (relating to 33 students).

OBTAINING THE SAMPLE

A request for volunteers was sent around the two universities, using the university intranet message systems (a copy of this invitation is included in the appendix to this report). The request specifically asked for students who had completed the IB Diploma and the Extended Essay, although, since we did not know beforehand which students would be eligible, it was sent to all university students, those who had completed the IB DP and those who had not. This meant that the initial email would have reached the inboxes of over 12,000 undergraduate students at the University of Warwick, and over 18,000 at the University of Birmingham. Of course, for the vast majority of those students receiving it, this email will have meant nothing at all, and we had no way of knowing in advance how many of this total population of students were eligible, having completed an IB Diploma and an Extended Essay. Thus, calculating a response rate is impossible. However, we received thirty-four initial responses from students, some raising additional questions. In the end, twenty-eight students (IB) volunteered to take part in the study, and attempts were made to arrange mutually convenient times for individual interviews with these students. In the case of four of these student volunteers, it proved impossible to find suitable times and 24 were finally interviewed (13 from Warwick and 11 from Birmingham). They are the prime sample of the study. In planning this project, our original target was to include 12 IB students from each university, so the total number we recruited was on target.

The 24 IB students were asked at the interview if they could each suggest a friend who had done A-levels before attending university. These friends were contacted and 19 agreed to take part in the study as a comparison group. This form of sampling is sometimes referred to as Respondent-Driven Sampling (Heckathorn, 1997) or,

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more descriptively, snowball sampling. It has some advantages as a sampling procedure, principally in that it can allow the development of a sample in a relatively cost-efficient way. Its disadvantages are in terms of the representativeness of the sample derived (Castillo, 2009). In the case of the present study, however, representativeness was not a key issue for either of the samples. The purpose of the study, as discussed earlier, was to explore the views of students who met the expressed criteria of the study, rather than to make a controlled comparison of two distinct groups.

The IB and comparison group students taking part in the study (n=43) were asked to nominate a university tutor that they thought would know their work best and could comment upon this and upon their progress since arriving at university. They nominated 19 different tutors, 16 of whom turned out to be their personal tutors (i.e. with, nominally, a pastoral care role as well as a subject teaching role). Fourteen of these tutors agreed to take part in the study (relating to 33 students).

GATHERING THE EVIDENCE

OVERVIEW

Qualitative research methods were selected for use in this study for the reasons discussed earlier. Data was gathered using two linked approaches. The initial data gathering was done through the medium of a series of semi-structured interviews with individual students, and then tutors. Following these individual interviews, a number of focus groups were also held with members of the IB group. It was hoped this would help stimulate further descriptions by the students.

INDIVIDUAL INTERVIEWS

Each member of the three groups participating in the study was individually interviewed. The three groups were:

- a) Students who had studied the IB Diploma before coming to university

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- b) Students who had studied A-levels before coming to university
- c) University tutors nominated by the students in groups a and b.

Individuals were asked to nominate their own preferred times for these interviews, and a place of their choosing. In terms of timing, most of the interviews with students (a and b) lasted for about one hour, with a few (4) taking around one and a half hours. These student interviews, with the exception of 5 cases where the students chose to come to the researcher's office for the interview, were all held in public places – coffee bars, common rooms. In each of these cases, the student and researcher sat separately from the other people in the room and, although interviews were not totally private, there were no instances where obvious eavesdropping was taking place. At the beginning of each student interview, the participant was offered a coffee (purchased by the researcher) and in the vast majority of cases this was accepted. Interviews were, thus, conducted as informally as possible.

Interviews with tutors were rather different. These were arranged at times to suit each tutor and all were held in the tutor's office. Each of these interviews lasted around 30 minutes. Two only of the 14 interviews were begun with an offer of coffee from the interviewee, and, although the researcher tried to make these interviews as informal as possible, the tone of each was, perhaps inevitably, rather more formal than that of the student interviews.

For each of the three groups, the initial structure of each interview was slightly different, as shown below.

INTERVIEW STRUCTURE FOR STUDENTS WHO HAD TAKEN THE IB DIPLOMA

1. What can you remember about the Extended Essay?
2. What thoughts do you have now about your work on this Extended Essay?
3. What do you feel you learned from your experience?

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4. Which aspects were the most interesting?
5. Which aspects were the most useful to you?
6. Where there any aspects which were disappointing?
7. How have your experiences of study at university been affected by your previous extended essay work?
8. How helpful as a preparation for your university work was doing the Extended Essay?

INTERVIEW STRUCTURE FOR STUDENTS WHO HAD NOT TAKEN THE IB DIPLOMA

1. What can you remember about your A level work?
2. What thoughts do you have now about this work?
3. What do you feel you learned from your experience?
4. Which aspects were the most interesting?
5. Which aspects were the most useful to you?
6. Where there any aspects which were disappointing?
7. How have your experiences of study at university been affected by your previous A level work?

INTERVIEW STRUCTURE FOR UNIVERSITY TUTORS

1. Are you aware of whether Student X took traditional A levels before coming to university or followed the International Baccalaureate and had the extended essay experience?
2. How well do you think his/her previous study experience prepared Student X for university study?
3. Can you think of any strong points or gaps in Student X's preparation for university?
4. How is undergraduate study in your subject and at your university designed to build upon students' previous study?

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The approach of semi-structured interviewing is usually held to be more flexible than standardised methods such as the structured interview or the questionnaire survey (Drever, 2003). Although the researcher had developed some initial questions to prompt discussion, the method allowed for the exploration of emergent themes and ideas rather than relying only on concepts and questions defined in advance of the interview. The initial questions were asked in a similar order and format to make comparison between the answers possible. However, there were also occasions when interviewee responses could be probed for deeper insights into their views. As Gomm (2004) suggests, the cooperative nature of these interviews could be described as a “fact-producing interaction”. Thus, although all interviews covered similar ground, individual interviews were each very different as the flow of the conversation followed a participant’s responses.

Each student interview was digitally recorded and transcribed, and NVivo 10 software was used to help with the analysis of the resulting transcripts.

In the case of the tutor interviews, these were much shorter and more formal, in the sense that interviewee responses were almost always limited to answering the questions they were asked. Attempts were made to probe these responses further, but this proved very difficult, with respondents seemingly reluctant to elaborate on their initial responses. This group of interviews was, therefore, analysed separately from the student interviews and was, in fact, largely done by counting the kinds of responses given to each interview question.

FOCUS GROUPS

Four focus group meetings were held, 2 in each university, attended by 18 students in total. At this stage, only students with an IB extended essay background were involved.

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Focus group research involves organised discussion with a selected group of individuals to gain information about their views and experiences of a topic. It is particularly suited for obtaining several perspectives about the same topic (Gibbs, 1997). The benefits of focus group research include gaining insights into people's shared understandings of everyday life and the ways in which individuals are influenced by others in a group situation (Bloor et al, 2000).

During these meetings, which were held in a fairly relaxed environment with tea and biscuits being made available for the 4 or 5 students who attended each one, groups were initially asked to introduce themselves to each other and then to describe their recollections of their extended essay work. It was anticipated that the group would require some prompting with more direct questions about their experiences, but in fact this was not required as a lively conversation ensued in all groups. These conversations were digitally recorded and the resultant transcripts added to the NVivo analysis.

DATA ANALYSIS

Data was analysed using NVIVO 10 software. The individual and focus group interviews were transcribed and then imported into NVIVO. In the following section of the report the procedures for analysing the data and moving towards a statement of its key themes will be described.

The four major sets of data, consisting of interview transcripts, were as follows:

1. 24 individual interviews from the IB students
2. 19 individual interviews from the A-level students
3. 4 focus group interviews from the IB students
4. 14 individual interviews from university tutors

Sets 1, 2 and 3 were entered into NVivo and initial coding begun.

Following the guidelines suggested by Charmaz (2003), the following questions were asked about the data as it was being coded:

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- What is going on?
- What are people doing?
- What is the person saying?
- What do these actions and statements take for granted?
- How do structure and context serve to support, maintain, impede or change these actions and statements?

To show how coding was achieved, an example is given below of the way in which one extract from one interview was dealt with.

The screenshot below shows the original transcript of the responses made by one IB student to one interview question. One will notice that, although this discussion occurred in response to one interview question, it actually involved the interviewer probing further at certain points, to extend the information derived. Such a process is characteristic of semi-structured interviewing.

The extract shows the sections of the text (marked) which were coded in some way during the data analysis. Each of the initial codes was derived from the data itself and the analyst's judgement as to meaning of utterances. In NVivo terms, this involved the development of free nodes, although in a grounded theory approach (Strauss & Corbin, 1998), this would be referred to as open coding.

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Interviewer:	What can you remember about the Extended Essay?
Student YY:	Do you mean the long essay I did last year?
Interviewer:	Yes, where you had to carry out and report your own research.
Student YY:	Oh yes, that was fun. I was really proud of what I did in that project. Got a good mark too!
Interviewer:	So what do you remember about doing it?
Student YY:	Well, I remember being a bit worried at the beginning. They said we would have to choose our own topic and that sounded quite scary. I didn't know if what I thought would be a good topic or not. Er ... you know, they said we could choose from a really big area and at first, you know, it was a bit too big really.
Interviewer:	So what happened?
Student YY:	Mrs XXX said we should think of a couple of topics which we might want to do and then talk them through with her and our other teachers. I did have an idea that I could ... you know, I wanted to think about language studies - Category 3 I think it was - so I thought about looking at the internet and the way it was changing language. But Mrs XXX said that was a bit big and I think she was probably right - one of my housemates at uni knows someone who's doing a PhD in something like that! So I ended up making it smaller and I looked at the language some people were using on Facebook. It was still quite big though and I think I could have done with being told to make it even smaller.
Interviewer:	Do you remember anything else?
Student YY:	Yes, I remember getting really stuck when I found out I couldn't just tell people about all the data I had collected. You know, I had downloads of about 300 Facebook pages but then I suddenly thought I had no idea what to do with all these pages. I guess that's when I realised I just didn't know how to do research. I mean, I loved doing the research but I never knew if I was doing it properly.

The codes developed during the open coding of this particular extract were as follows:

- achievement
- area of study
- choosing own topic
- concern
- decision-making
- didn't know how to do research
- discussion with teachers
- enjoyment
- pride
- too large a topic
- too much data

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A full list of the open codes developed from the data derived from the IB students is given in Table 2 below.

To demonstrate how this coding was applied to the extract, a screenshot from NVivo, showing the relevant coding stripes for this extract, is shown below.

Interviewer: What can you remember about the Extended Essay?

Student YY: Do you mean the long essay I did last year?

Interviewer: Yes, where you had to carry out and report your own research.

Student YY: Oh yes, that was fun. I was really proud of what I did in that project. Got a good mark too!

Interviewer: So what do you remember about doing it?

Student YY: Well, I remember being a bit worried at the beginning. They said we would have to choose our own topic and that sounded quite scary. I didn't know if what I thought would be a good topic or not. Er ... you know, they said we could choose from a really big area and at first, you know, it was a bit too big really.

Interviewer: So what happened?

Student YY: Mrs XXX said we should think of a couple of topics which we might want to do and then talk them through with her and our other teachers. I did have an idea that I could ... you know, I wanted to think about language studies - Category 3 I think it was - so I thought about looking at the internet and the way it was changing language. But Mrs XXX said that was a bit big and I think she was probably right - one of my housemates at uni knows someone who's doing a PhD in something like that! So I ended up making it smaller and I looked at the language some people were using on Facebook. It was still quite big though and I think I could have done with being told to make it even smaller.

Interviewer: Do you remember anything else?

Student YY: Yes, I remember getting really stuck when I found out I couldn't just tell people about all the data I had collected. You know, I had downloads of about 300 Facebook pages but then I suddenly thought I had no idea what to do with all these pages. I guess that's when I realised I just didn't know how to do research. I mean, I loved doing the research but I never knew if I was doing it properly.

Open coding, following the above model, was carried out on the transcripts of the 24 individual interviews and the 4 focus group meetings with the IB students, using a constant comparative approach (Strauss & Corbin, 1998) in which data and its categorisation was constantly compared to what had gone before. By the conclusion of this process, 41 free nodes had been developed in NVivo (shown in Table 2 below) during the analysis - in fact, these codes were mostly developed from the first half of these interviews and the analysis of the final half showed that the coding saturation point had been reached with this data. No new codes were developed during the analysis of the focus group transcripts.

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Table 2 <i>Open codes emerging from the initial analysis of interviews and focus group meetings with IB students</i>	
Code	Description
achievement	Felt they had achieved something special through the Extended Essay
concern	Had some worries about the process but overcame these.
pride	Felt pride in what they had achieved.
treated as grown ups	Felt they were treated as adults.
beyond the teacher	Thought they had learned more than the teacher knew.
not just normal school essay	Thought the extended essay task was much bigger than normal school essays.
enjoyment	Enjoyed undertaking the Extended Essay
pleasurable experience	Found it a pleasurable experience
fun working with colleagues	Found it enjoyable working with their peers
best experience of school	Thought this the best thing they had done while at school
decision-making	Making decisions about what to study was hard at first
area of study too big	Chose too big an area to study
choosing own topic	Choosing your own topic was exciting
could study something interesting	Following their own interests was unusual but good
helped me make sense	Able to make their own sense of the ideas they encountered
careful about sources	Had to be careful about sources of information used
planning work	Needed to plan carefully and think ahead
focus on understanding	Needed to understand rather than just remember facts
learnt to search for information	Needed to learn to search for information efficiently
too large a topic	Chose too large a topic to begin with
too much data	Had too much data to know how to deal with comfortably
didn't know how to research	Did not have knowledge to carry out research
finding a suitable research question	Had trouble finding a suitable research question
designing instruments was hard	Designing research instruments was difficult
needed more guidance in reporting	Needed more guidance to write a research report
what is a research report?	Was unsure what a research report was exactly
discussion with teachers	Discussing research with teachers was sometimes

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	helpful, but not always
support with research was not enough	Support from teachers in carrying out research was not enough
PowerPoint useful?	Hard to learn all you needed about research from a PowerPoint presentation
Teachers' knowledge	Felt teachers did not always know more than students about carrying out research
teachers and research	Would have liked teachers to have done some research themselves
tutors knowledge about IB	Did university tutors know anything about the IB experience?
tutors interest	Not sure tutors were really interested in their students
building on what's done	Tutors don't try to build on what students have done before university
programme same for everyone	The undergraduate programme is the same no matter what students have done before
no research since school	Haven't done research since arriving at university
don't meet researchers	Don't meet many researchers in the university
mysterious profs	Professors are mysterious figures and hardly ever teach undergraduate students
not invited to research	Haven't been invited to do research by anyone
assessment with no research	Undergraduate assessment doesn't involve them researching
universities and research	Do universities really value research?

The next part of the analysis was to use the open coding approach on the 19 individual interviews with the A-levels group of students. These were students with a different educational history to the IB students and, as expected, their responses during the interviews led to new codes (17) needing to be employed in the analysis. Because this group did seem to be so different from the IB group, a completely separate analysis was carried out of their interview data, with comparison between themes only being done at the conclusion of the analysis of both groups.

The next step in the analysis of the data was to look for links between the codes (free nodes) employed during the initial analysis. The next round of coding was axial coding (Strauss and Corbin 1998). This meant attempting to inter-relate the codes already developed into categories. In NVivo, this was achieved by selecting and merging the existing free nodes in the Node Browser. This resulted in hierarchically

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arranged tree nodes, or categories (Gurdial Singh & Jones, 2007). The tree nodes identified from the IB student data were as follows:

- Pride in their achievement in completing the Extended Essay
- Enjoyment of the process of undertaking the Extended Essay
- The freedom to select their own topic and to pursue it
- Their development of study skills and 'study awareness'
- Difficulties in designing, carrying out and reporting research
- Support from teachers in understanding and carrying out research
- Lack of linkage with their university study programme
- Involvement in research while at university

Precise information about the way in which open codes related to the tree nodes (categories) can be seen in Table 3 below.

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Table 3 <i>Developing tree nodes or categories</i>	
Grouped open codes	Category summarizing this group
<ul style="list-style-type: none"> • achievement • concern • pride • treated as grown ups • beyond the teacher • not just normal school essay 	Pride in their achievement in completing the Extended Essay
<ul style="list-style-type: none"> • enjoyment • pleasurable experience • fun working with colleagues • best experience of school 	Enjoyment of the process of undertaking the Extended Essay
<ul style="list-style-type: none"> • decision-making • area of study too big • choosing own topic • could study something interesting 	The freedom to select their own topic and to pursue it
<ul style="list-style-type: none"> • helped me make sense • careful about sources • planning work • focus on understanding • learnt to search for information 	Their development of study skills and 'study awareness'
<ul style="list-style-type: none"> • too large a topic • too much data • didn't know how to research • finding a suitable research question • designing instruments was hard • needed more guidance in reporting • what is a research report? 	Difficulties in designing, carrying out and reporting research
<ul style="list-style-type: none"> • discussion with teachers • support with research was not enough • PowerPoint useful? • teachers' knowledge • teachers and research 	Support from teachers in understanding and carrying out research
<ul style="list-style-type: none"> • tutors' knowledge about IB • tutors' interest • building on what's done • programme same for everyone 	Lack of linkage with their university study programme
<ul style="list-style-type: none"> • no research since school • don't meet researchers • mysterious profs • not invited to research • assessment with no research • universities and research 	Involvement in research while at university

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The tree nodes identified from the A-level student data were as follows:

- Enjoyment or lack of enjoyment of the process of completing A-levels
- The focus of A-levels on the learning of facts
- The lack of attention to study skills during the A-level programme
- Support from and relationships with their teachers
- Preparation for their university study programme

It should be borne in mind that the codes and categories derived from this A-level group were in response to quite different interview stimuli. The questions they were asked during interview were superficially worded similarly to those asked of the IB students, but the reference point of these questions was to an entire course of study (the A-level programme) rather than to one individual element of a course of study (the Extended Essay). Thus the meanings of the questions were actually quite different for each group even though the words may have been similar.

In the case of the 14 tutor interviews, it seemed sensible and more cost-effective to carry out the analysis in a less time-consuming way. These interviews were much shorter and more formal than the interviews with the students, and interviewee responses were almost always limited to only answering the questions they were asked (perhaps the tutors were pushed for time, or being interviewed about student progress felt slightly threatening to them). Attempts were made to probe these responses further, but this proved very difficult, with respondents seemingly reluctant to elaborate on their initial responses.

This group of interviews was, therefore, analysed separately from the student interviews and was, in fact, largely done by counting the kinds of responses given to each interview question. The responses made by these tutors are described and discussed in the Outcomes section of this report.

OUTCOMES

The project outcomes will be reported under the main themes which emerged from the data. The process of deriving outcome themes from the project findings, that is, the codes and categories developed from the data, will firstly be described. Then each outcome theme will be presented and illustrated by direct quotations from participants, interviews or focus group contributions. A final sub-section will discuss the responses from the university tutors interviewed in the project.

DEVELOPING OUTCOME THEMES

As described above, categories were developed from the grouped open codes found within the data. The categories derived from the IB students were compared to those derived from the A level students and meta-categories developed which were labelled as 'themes'. The relationship of categories and themes is shown in Table 4 below.

Table 4 <i>Relating outcome categories to themes</i>		
Categories derived from IB students	Categories derived from A level students	Outcome themes
<ol style="list-style-type: none"> 1. Pride in their achievement in completing the Extended Essay 2. Enjoyment of the process of undertaking the EE 	<ol style="list-style-type: none"> 1. Enjoyment or lack of enjoyment of the process of completing A levels 	<ol style="list-style-type: none"> 1. Overall reactions to the extended essay and A Level experience
<ol style="list-style-type: none"> 3. The freedom to select their own topic and to pursue it 4. Their development of study skills and 'study awareness' 	<ol style="list-style-type: none"> 2. The focus of A levels on the learning of facts 3. The lack of attention to study skills during the A level programme 	<ol style="list-style-type: none"> 2. Learning from the extended essay and A Level experience
<ol style="list-style-type: none"> 5. Difficulties in designing, carrying out and reporting research 6. Support from teachers in understanding and carrying out research 	<ol style="list-style-type: none"> 4. Support from and relationships with their teachers 	<ol style="list-style-type: none"> 3. Criticisms of the extended essay and A-levels experience
<ol style="list-style-type: none"> 7. Lack of linkage with their university study programme 8. Involvement in research while at university 	<ol style="list-style-type: none"> 5. Preparation for their university study programme 	<ol style="list-style-type: none"> 4. The impact of the extended essay and A Level experience on undergraduate study

THEME 1: OVERALL REACTIONS TO THE EXTENDED ESSAY AND A LEVEL EXPERIENCE

The predominant theme to emerge from the interviews was that all the students who had completed an extended essay prior to coming to university were very positive about their experience. They expressed positive feelings about the opportunity they had been given by the extended essay to pursue a topic of their choosing.

"It was good to be able to study something I had chosen."

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“This was probably the only time in school when I decided for myself what I wanted to learn about.”

They were also very positive about what they produced during this activity.

“I was really proud of what I did in that project. Got a good mark too!”

“It helped me make sense of some things I never understood before.”

The idea that the extended essay experience had helped them to “make sense” of the subjects they had studied was a commonly expressed idea across students studying the Arts-Humanities subjects, Social Science subjects, and the STEM subjects. They used expressions such as “helped me understand”, “made me think more deeply” in addition to “helped me make sense”, a form of words used by no less than 9 of this group.

It was noticeable that those students who had followed a more traditional A level programme were much less positive about their school experiences, and seemed especially sensitive to the feeling that the learning of facts had been predominant in their school experiences.

“I thought they didn’t treat us as very grown up.”

“A levels were pretty much like GCSEs – you just had to learn lots of stuff.”

“I enjoyed English A level because you could say what you thought about the books, but History was just about remembering facts.”

We must recognise, however, that the comparison that has just been made between IB students and A level students is quite an unfair one. Both samples are, of course, not representative but, even bearing that fact in mind, the questions they were

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asked were quite different in nature. The IB students were asked about one aspect of their pre-university course, rather than the whole course. It is possible that, had they been asked about the whole of their IB Diploma course, they may have expressed less positive feelings. If A-levels had a similar independent project component, a more direct comparison would have been possible.

THEME 2: LEARNING FROM THE EXTENDED ESSAY AND A LEVEL EXPERIENCE

The IB students were clear that they had learnt from their extended essay experience.

“I got really interested in my topic because I had chosen it.”

“I think I ended up learning some things my teacher didn’t know.”

This learning concerned not only the content of the material they had studied for their Extended Essays, but also aspects of study skills and what might be called ‘study awareness’.

“I learnt to become very careful about the sources of information I used. I made a big mistake once relying on a Wikipedia entry, but I didn’t do that twice!”

“I soon realised you couldn’t just leave this till the night before it had to be in.”

The A level students had more mixed feelings about their learning (although the caveats made earlier about the responses from this group must be borne in mind).

“I enjoyed Chemistry but the Physics was a bit boring. There was so much to learn.”

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“We never got asked what we were interested in.”

“I hated all those essays. I used to wonder if the teachers really read them.”

A commonly expressed idea among this group was that their A level study had made them learn plenty of facts but had not really helped them develop their skills of studying.

“I expected to learn more about how to study without being told by teachers, but I’m not sure I learnt how to do that.”

THEME 3: CRITICISMS OF THE EXTENDED ESSAY EXPERIENCE

But there were some disappointments for the IB students. These mostly focused on the support they were given for their extended essay work while at school. All claimed to have had some introduction to methods of carrying out research, but for many this was not very memorable. Only 4 members of the group claimed to have had sustained and effective support in designing and carrying out their research.

In all the interviews participants were asked, as a supplementary question, to describe the nature of the support they had received in carrying out the research which underpinned their Extended Essays. For well over half of them (16 students), this support had consisted of being taken through a research methods Powerpoint by a teacher at the beginning of their work on the Extended Essay, but that was then all they had had. Consequently they expressed some rather puzzled views about the process of doing research.

“I loved doing the research but I never knew if I was doing it properly.”

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“I did a questionnaire but only found out they were bad questions at the end. I wish someone had told me.”

“Doing research is not as easy as it sounds.”

One student, on the other hand, was very fulsome about the support she had had in setting up and carrying out her research project.

“I think I was very lucky. My teacher had actually done some research of her own and she told us a lot about the problems she had had and how she got round them. I saw her a lot as I was doing my own research and then writing it up and she was always very helpful. I wouldn't have got such a good mark without her help.”

Yet such support appeared to have been the exception, and the sheer struggle that most of the group had had in setting an appropriate research question and designing a project to answer this question sensibly came across quite powerfully.

The A level students also ranged from being disappointed by the support they had received at school to expressing gratitude for the support given by individual teachers.

“We were always having to learn things for tests and exams, but nobody told us how to do that. I just used to try to learn loads off by heart.”

“My Biology teacher, Miss XX, was brilliant. She showed us some fantastic revision web sites which really helped.”

THEME 4: THE IMPACT OF THE EXTENDED ESSAY AND A LEVEL EXPERIENCE ON UNDERGRADUATE STUDY

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Both the IB and the A level students were less than positive about the ways their pre-university work, including the extended essay experience, was underused in their university work. Several IB students expressed some disappointment that, even in research-intensive universities, they had had little chance to use the skills they thought they had developed through their work on the Extended Essay. It is important to note that the majority of students in the sample were in their first year of university study.

“They said we would be involved in research but we haven’t been yet.”

“We only meet the Profs at lectures – seminars are mostly with tutors who are not really researchers.”

“Maybe we’ll be doing research in the final year?”

Both the universities in which these students were studying claim to place an emphasis on undergraduate research. The following extracts are taken from the web site of two departments from one of these Universities.

*“***** is a research-led department and research is embedded into our teaching at all levels. We encourage undergraduate students to be fully integrated into the research culture of the Department by participating directly in projects. The experience gained in producing, presenting and publishing research is invaluable for enhancing the student experience and for future employability.”*

*“Even in a highly technical subject such as *****, I believe that undergraduates can make a real contribution to original research.”*

Both universities advertise and award undergraduate Research Scholarships and make the following claims about the aims of such scholarships.

You will gain first-hand experience of academic research and have the opportunity to contribute to developing new knowledge in your subject area. You will develop valuable transferable skills such as project management, oral and written communication skills and teamwork – all of which will enhance your readiness for the next step in your career.

In addition to the monetary rewards the following benefits have been reported by previous scholars:

- *Gain valuable experience in undertaking significant academic research*
- *Contribute to the development of new knowledge*
- *Work in partnership with academic staff*
- *Become more aware of and be more integrated with the university's research culture*
- *Gain insight into undergraduate postgraduate study*
- *Helped to refine research, organisational and interpersonal skills*

However, from the point of view of all of the students involved in this present study, these claims did not have a great deal of meaning at present. Of course, it may be true that involvement in the research of a university department might be something more likely to be experienced later in students' undergraduate careers. Nevertheless, the research scholarship schemes advertised by both Universities are explicitly targeted at non-final year undergraduates (presumably so they would not interfere with final year examinations). None of the 8 second year undergraduate students interviewed here showed any awareness of these schemes, however, nor of any other invitations to become involved in research which may have been issued by their Universities and departments.

THE VIEWS OF UNIVERSITY TUTORS

Of the 14 tutors interviewed as part of this project, only one was aware that the student who had nominated him/her as a tutor well placed to comment on student progress had actually come to university from an IB background. This being the case, it was not surprising that these tutors felt unable to comment upon the effects of the extended essay experience on these students' undergraduate progress.

None of the tutors could say whether the pre-university educational experience of the students had prepared them well for university, other than saying that the students must have been suitable for university as they had met the required entry grades. This should not be viewed negatively, however, as it suggests that these IB students were indistinguishable to their tutors from those students who had arrived at university through the traditional A Level route. The IB students were, by this token, apparently performing in their university work at the same levels of their A level peers.

These tutors all saw their role as 'academic pastoral' rather than as monitors of students' academic development. In other words, they claimed that they kept in touch with these students because of a professional concern for their welfare and well-being. None could actually give much information about a student's academic progress, saying that the tutors who actually taught them would be better placed to give this information.

Of the 14 tutors interviewed, 12 mentioned the research-led nature of their universities and claimed that undergraduates would need to engage with research. When asked to volunteer any details of how this had happened with the particular students concerned here, however, none could do this, although one tutor suggested that:

“I know that there are research scholarships for undergraduates. I hope Student X might want to apply for one of these at some point.”

CONCLUSIONS

In this section I will relate the findings of this project back to the original research questions which began the project. These questions were:

1. How well are the documented curricular aims of the extended essay achieved and sustained as students continue through university studies?
2. To what extent do students perceive the extended essay experience to be valuable to university preparation and in what ways?
3. What is student self-report of the effort they exerted into their work on the Extended Essay?
4. To what degree do students who have experienced the extended essay materials meet university expectations for research-related undergraduate work?

HOW WELL ARE THE DOCUMENTED CURRICULAR AIMS OF THE EXTENDED ESSAY ACHIEVED AND SUSTAINED AS STUDENTS CONTINUE THROUGH UNIVERSITY STUDIES?

The aims of the Extended Essay, as expressed in the extended essay guide (IBO, 2007) are to provide students with the opportunity to:

- pursue independent research on a focused topic
- develop research and communication skills
- develop the skills of creative and critical thinking
- engage in a systematic process of research appropriate to the subject
- experience the excitement of intellectual discovery.

The findings of this project suggest that most of these aims had been met, with one caveat.

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The IB students interviewed in this project certainly expressed the view that they had really enjoyed and valued their extended essay experience. They were much more positive about their pre-university education than were the students who had come to university via the A level route (although given the design of the project, too much should not be read into this). They also felt that the extended essay experience had taught them a lot, especially in terms of being critical and independent.

However, they did express some disappointment with the research methods support they had received while at school. This had meant that their engagement in a systematic process of research and their development of research and communication skills were variable across the schools and teachers they had experienced. Some had had positive experiences but these were in a small minority. The majority of these students claimed to have been taken through a PowerPoint presentation on research methods and then, virtually, left to their own devices.

TO WHAT EXTENT DO STUDENTS PERCEIVE THE EXTENDED ESSAY EXPERIENCE TO BE VALUABLE TO UNIVERSITY PREPARATION AND IN WHAT WAYS?

The majority of the IB students in this study indicated there were few opportunities to use the skills they had developed through doing their EE. In particular, they were disappointed that the expectations they had about being involved in research when at university had not been met.

The implication of this outcome is that receiving universities perhaps need to be better informed about the pre-university experiences of their incoming students, although whether they are prepared for the differentiation in student treatment that such information might imply is a more difficult question.

WHAT IS STUDENT SELF- REPORT OF THE EFFORT THEY EXERTED INTO THEIR WORK ON THE EXTENDED ESSAY?

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It was clear from the responses of the IB students interviewed in this project that they had enjoyed and valued their extended essay experience and had, thus, committed themselves to it. This, it might be argued, is likely to have led to a great deal of student effort being devoted to this experience.

This study cannot, of course, reveal whether these students would have committed the same amount of effort to other forms of pre-university study. What the study can say, however, is that these IB students were much more positive about their pre-university education than were the students who had come to university via the A level route. Given the design of this project, however, it is important not to overstate this outcome. The IB students were asked only about their experience of the Extended Essay, whereas the A level students referred in their interview responses to their courses of study as a whole. The outcomes of the two groups are not, therefore, directly comparable.

TO WHAT DEGREE DO STUDENTS WHO HAVE EXPERIENCED THE EXTENDED ESSAY MATERIALS MEET UNIVERSITY EXPECTATIONS FOR RESEARCH-RELATED UNDERGRADUATE WORK?

This turned out to be a somewhat problematic research question, not because of any aspect of the preparation of the IB students for university expectations, but simply because it was difficult to determine the universities' expectations for research-related undergraduate work. The students involved in this study were either first or second year undergraduates and none of them indicated involvement in any research-related undergraduate work at the time of this study.

None of the tutors interviewed in the study could say whether the pre-university educational experience of the target students had prepared them well for university. This suggests that these IB students were indistinguishable to their tutors from those students who had arrived at university through the traditional

A Level route. The IB students were, by this token, apparently performing in their university work at similar levels of their A level peers.

IMPLICATIONS AND RECOMMENDATIONS

There are two main areas arising from this research in which the International Baccalaureate might make a useful response. These are:

- A. Developing the support that is given to students undertaking the Extended Essay.
- B. Making a more concerted effort to ensure receiving Universities understand to a greater extent the experience that extended essay students have had.

A. SUPPORTING EXTENDED ESSAY STUDENTS

The students who had undertaken the extended essay were generally very positive about the experience, and this positive feeling extended to the ways they had been supported in their work by their teachers. A comment from one student shows this feeling well.

“I had a brilliant teacher. She was always there when I needed help. I don’t know how I would have managed without her.”

The one area in which this support seemed not to have been as good as it might have been was in the development of student research skills. The student who commented that, “Research is not as easy as it sounds” was making an excellent and heartfelt point. Research is not easy and carrying out research well demands a high level of knowledge of process and a sophisticated understanding of content.

The teaching of research skills to students is certainly not an area which can be called under-developed. There is a huge literature on this topic, ranging from support materials on the nature of research and its tools (e.g. Tashakkori & Teddlie, 2002; Cresswell & Plano Clark, 2011), to research investigations into how best to

implement this teaching (e.g. Winn, 1995; Ball & Pelco, 2006). It would almost certainly be of great benefit to students undertaking the extended essay if they were introduced to and supported in research methods and procedures to a greater extent than they are at present (or at least than the 24 students interviewed in this project were.)

To expect individual teachers to provide such high level support to their students is probably expecting too much. There are undoubtedly some teachers involved with the extended essay who are capable of providing the requisite support for their students. But the majority may well find that greater centralised support would be useful. The IBO outlines requirements for supervisors that include appropriate qualifications in the subject of the EE and familiarity with Diploma Programme, but the IBO does not explicitly state research experience as a requirement (IBO, 2007).

Thus the recommendation arising from this aspect of the current project is that the IBO take a lead in developing some more extensive research methods training materials, suitable for typical IB students, and capable of being delivered, with local modifications perhaps, by teachers who are not themselves active researchers. While the IBO provides guidelines and support materials for the EE supervisor, perhaps these materials could be examined to determine alignment with university research expectations. Most universities have produced such materials for their own use (albeit usually at a higher educational level) and commissioning a set of tailored and adaptable research methods training materials would not be too great an undertaking.

B. PASSING ON THE MESSAGE TO UNIVERSITIES

This research has raised the question of what it means when a university says it is committed to research at all levels.

The involvement of undergraduates in research activity, as a normal part of their university course, has been an aspiration for most Universities for a while now. It has

seen expression in the exhortation by Paul Ramsden, Chief Executive of the Higher Education Academy, in 2008:

“We need to encourage universities and colleges to explore new models of curriculum. Government and funding bodies should incentivise and support the radical realignment of undergraduate curricula: we require curricula that are transdisciplinary, that extend students to their limits, that develop skills of inquiry and research, and that are imbued with international perspectives. ... There are several models that we might explore. They should all: ... Incorporate research-based study for undergraduates (to cultivate awareness of research careers, to train students in research skills for employment, and to sustain the advantages of a research-teaching connection in a mass or universal system) ...” (Ramsden, 2008, pp 10-11).

The paper on this topic by Healey and Jenkins (2009) has been very influential on thinking in this area, yet the reality, if the current project is representative in any way at all, is that university students are not routinely involved in research, at least during their early undergraduate years.

This is not, of course, to claim that university tutors are not committed to research – In universities like the two involved in this research, research is a major component of their job requirements, and their past record in research is considered when they applied for their jobs. But this does not necessarily mean they are committed to the research of their undergraduates. Raising the profile of undergraduate research is one thing, but there do seem to be some difficulties in following this through. Certainly it seems rather a shame that university tutors (at least a significant majority of those interviewed in this study) are not even aware of the fact that the undergraduates they work with have completed a substantial research-based assignment before coming to study with them.

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The situation seems to demand an enhanced public relations exercise on the part of the IBO, targeted not at schools and/or students, but at the universities who will select and receive IB graduates. The achievement and experience of such graduates is qualitatively different from those of other university entrants. University tutors need to know about that and hopefully this study can be useful in shedding light on the pre-university research experience of IB students.

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APPENDIX 1: THE INVITATION EMAIL SENT TO POTENTIAL MEMBERS OF THE STUDENT SAMPLE

From: Wray, David <D.J.Wray@warwick.ac.uk>
To: Students@Warwick
Date: Fri, 2 Dec 2011 10:19:00 +0000
Subject: RE: International Baccalaureate Diploma

Did you study the International Baccalaureate Diploma before you came to University?

Did you complete an extended essay as part of this study?

Would you be willing to talk to me about your experiences with these, and about how they prepared you for undergraduate study at university?

I work in the Institute of Education at Warwick University and I have been commissioned by the International Baccalaureate Organisation to carry out some research to explore the learning benefits and outcomes of the IB extended essay in preparing students for university studies. So, if you completed an IB extended essay before you came to university, your views are very important to me and to the IBO.

Participation in this project will not involve very much of your time. I would like to:

- * Interview you for a maximum of one hour,
- * Talk to you as part of a group of students who have also completed the extended essay for a maximum of one and a half hours.

Any information you give me will remain completely anonymous and you will not be identified in any way in any report arising from this project, or in any communication I have with the IBO or the University about this project.

I will send you a copy of the final report of the project.

If you interested in taking part in this project, please either email me back on d.j.wray@warwick.ac.uk, or call me on 02476 522057.

With all best wishes

David

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