REAP Completion Report Basic Psychology, Department of Psychology

Project Sign-off

1. Project achievements

Project objective
The overall objective for this project was to improve reflective and sustainable learning for first year Psychology students. This success of this was to be assessed in three main areas;

- Improvement of student's learning experience
- Improving standard of entrant for second year
- Improvement in final exam marks

Project activities
The project has contained two distinct parts, part one carried out in 2005/6, and part two carried out in 2006/7.

- **Part 1**

This consisted of a pilot experiment working with 56 student volunteers, over a three week period. The pilot was designed to look at the effect on learning outcomes of a series of scaffold tasks completed with the aid of collaborative online peer discussion groups. Generic model answers were supplied following completion of the task. This model was termed the **Collaborative Online Assessment Model.** Student focus groups and questionnaires were carried out after the pilot to assess student experience, and students' exam results in the control and experimental group were also compared.

- **Part 2**

Guided (and encouraged) by many of the practical lessons learnt from the pilot phase the **Collaborative Online Assessment Model** was then introduced to the class of 2006/7, in place of two of the four existing lectures a week. This was a bold step, not originally planned in the project, but it was felt that to be effective there needed to be a compulsory element in the assessment model and it needed to be an integral part of the student experience over the year. Student participation was monitored, and any non-participating students were removed from the class. In total 12 collaborative assignments were completed by a group of 461 students as a compulsory course requirement. Student Questionnaires were again used to gauge student experience and student exam results were then compared with those from previous years.

Next academic year it is planed to assess the qualitative differences in the quality of essay answers submitted by (second year students) who will have taken part in the Collaborative Online Assessment Model

Project achievements
We are satisfied that the project's objectives were not only met in full, but were in fact exceeded.

1. Student Experience
   The results of student feedback shows that the majority of students wished to retain the model as they felt it had a strong positive effect on their learning. (See appendix 1a and 1b)
2. Improving standard of entrant for second year.
   The Psychology major students in 06/07 have a higher mean exam score than those in 05/06.
3. Improvement in final exam marks. (See appendix 2a and 2b).
   - There was a statistically significant improvement in the average student mark from last year with the mean score going from 51.1% to 57.42%.
   - The failure rate has dropped significantly. Last year 13% failed the final year exam, this year it is only 5%. In addition, the failure rate for the whole course has dropped from 12.1% to 2.8%.

- Whilst last year there was a significant difference between the performance of those students who had elected to major in psychology and those who hadn't. (55.4% v 48.52%), no such difference in performance was detected this year. In 2006/7 students majoring in Psychology had an average score of 57.61% and other students averaging 57.45%.

2. Impact on students

Part 1: Impact of pilot on student experiences and final exam results

The outcomes of the pilot were encouraging from a student experience perspective (ascertained by student focus groups and questionnaires, see Appendix 1a), highlighting that all most all of the participants felt the experience to be beneficial to their understanding of the topic (98%). However, in spite of this self-reported increased understanding of the topic, there did not appear to be a corresponding improvement in performance observed in the final exam mark. It appears that any effect of the Collaborative online assessment on improved learning was either short lived, too fragmented, or not sufficiently embedded to make a consistent empirical difference in performance.

Part 2: Impact of Collaborative On-line Assessment Model roll-out

1. **Direct improvements in extent and depth of student engagement**

Getting students to be active participants in tutorials has long been an issue for teaching establishments and there has been much written about mechanisms to improve student engagement. There appeared to be no such issue however with the on-line groups in the "Collaborative Tasks Assessment" model with 16,360 separate messages being sent between group members during the 12 on line assignments. In addition, 43% of the individuals who responded to the questionnaires also met with their groups face to face to pursue completion of the tasks.

From a pedagogical perspective, some of the learning tasks were being completed to levels of competence not expected from first year students with many of the students showing levels of involvement both in the subject matter and in the institution itself at unprecedented levels. For example, students' participation in the first year departmental website forum (which is separate from the assignment forum) has increased dramatically from 2005/6. (For example last year the total number of first year student messages in the departmental website was approximately 2000, by February the departmental on-line forum has registered over 6000 messages.)

2. **Student Experience- summary of responses to end of year questionnaire.**

164 students (35%) filled in the structured questionnaires, with 56 also adding additional unstructured comments on their experience of the Collaborative Online Assessment Model. (See Appendix 1b for detail). A summary of findings are outlined below.

The survey showed that the majority of students wished to retain the use of the model, as they felt it had a strong positive effect on their learning. They claimed that as a result of the model they were more interested in the subject, were reading more, working harder and learning more than in other first year subjects. Typical comments included, "*Online projects were good and working with other people to devise answers was a great help and definitely gave me a wider understanding of the subject as some of the group stated facts which I had either forgotten or did not know."* Even a number of students who described the experience as stressful often modified their response with comments such as "*The online projects stressed me out a bit and annoyed me. I hated them!!!. However, I do feel I have benefited enormously from them as they forced me to do work that I otherwise wouldn't have done"*

A relatively small number of negative comments were made about the model, covering a range of objections such as, it was too time consuming for an elective (6), they would rather have the traditional two lectures a week (4 no), and not all the group participated fully (4). Students also proffered a number of suggestions for improvement of the scheme.

1. Student Exam Results

The results of the final student exams were the ultimate test of the methodology. The 2006/7 results were compared with those obtained by students in previous years, (See Appendix 2 for details) and the following results were established.

General improvement in performance

- There was a significant improvement in the average student mark from last year with the mean score going from 51.1% to 57.42%. (t= 8.079, df = 906, p= 0.000, one tailed).
- The failure rate has dropped significantly. Last year 13% failed the final year exam, this year it is only 5%. In addition, the failure rate for the whole course has dropped from 12.1% to 2.8%.

Erosion of difference in results between students intending to major in psychology and others

- Whilst last year there was a significant difference between the performance of those students who had elected to major in psychology and those who hadn't. (55.4% v 48.52%), no such difference in performance was detected this year. In 2006/7 students majoring in Psychology had an average score of 57.61% and other students averaging 57.45%.

2. Indirect benefits of Collaborative Task Assessment Model

The tracking system present on the web-ct enables the contribution of all students to be tracked. Thus those students who are not engaging can be spotted immediately, allowing early interventions/and /or early warning systems. This will of course have implications in the longer term for drop out rates.

3. Impact on staff

The lecturer directly involved with teaching first year students has found this an immensely liberating experience, both in terms of the ability to relate directly to individual students in a way that the current students numbers have made impossible for some years. It also enables instant feedback also from students, which allows the lecturer to pick up any difficulties the class may be having with class content.

4. Impact on costs

(See Plans for Further Development- Proposed revisions to Class Teaching)

Current Costs of Delivery of First Year Psychology Class 2006/7
The tutorial scheme absorbed approximately 200 GTA hours this year + 72 hours preparation time. In addition, some 50 GTA hours were devoted to monitoring the online scheme in its initial stages. About 322 GTA hours were therefore devoted to the current system in 2007-2007.

Proposed costs of Delivery to First Year Psychology Class in the Future
In the light of the above, it is proposed to drop the face-to-face tutorial scheme and instead to employ 12 GTAs to monitor a batch of six online project groups each throughout 2007-2008, allowing them 2 hours to monitor all their groups for each of the 12 online projects, i.e. 288 GTA hours in total. In addition GTAs will be available for a further 48 hrs for face to face consultation, totalling 332 GTA hours.

Differences in costs = 322-336 = + 14 GTA hrs @ £10/hr = + £140

Given the leveraged improvement in student experience and in learning outcomes this is viewed as a very insignificant increase.

5. Sustainability

(See plans for future development below.)

6. Plans for further development

Proposed Revisions to Basic Class Teaching in first year.
A recent Basic Class student survey showed that 90% of respondents (n=20) believe that the current face-to-face tutorial scheme, comprising four tutorials per year, is of little or no value. This may be one reason why student attendance at tutorials is patchy, especially in the second semester. Also, it is clear that, while some GTAs are very effective as Basic Class tutors, others are less so, meaning that the class as a whole has a very uneven 'learning experience' as far as this scheme goes.

By contrast, the majority of Basic Class students responding to another survey (n= 164) reported that they learned more about psychology, and learned it earlier in the year as a result of the online project scheme than they would have done without it. One problem with this scheme, however, is that no funds were available to monitor students' work in detail and give them any kind of feedback other than 'generic feedback', which consisted of posting on WebCT the best answers produced in each of the 12 projects by one or two groups.

As a result, some students in some groups felt that they were carrying passengers and that the passengers were getting away with doing little or no work. Students also felt that they would have liked more detailed feedback on their group work than the generic feedback could provide, although they reported that that was nonetheless useful to them.

In the light of the above, it is proposed to drop the face-to-face tutorial scheme and instead to employ 12 GTAs to monitor a batch of six online project groups each throughout 2007-2008, allowing them 2 hours to monitor all their groups for each of the 12 online projects, i.e. 288 GTA hours in total.

Monitoring will involve noting participation rates and commenting to students individually, in e-mails, on the general quality of their contributions and advising group members on how to give more useful feedback to other members of the group, with the intention of improving each group's collaborative learning. Each group's final answer on each project will be given a general assessment and a guideline mark, which will not, however, count towards students' end-of-year grade. GTAs will not comment on details of theory which the group discusses: doing so would undermine the principal purpose of the scheme which is to oblige students to take early and continuing responsibility for their learning. As a result, GTAs will require no preparation time to revise themselves the various subjects under discussion in the groups. The posting of generic feedback will continue as a supplement to the work of the GTAs. The GTAs work will itself be monitored by the Class Leader, something not previously possible.

In order not to cut students off from all face-to-face contact with the department, GTAs will make themselves available twice in each semester, at times to be arranged with their groups, for voluntary 'drop-in' sessions with any of their students who wish to discuss matters relating to their studies and reading habits. The purpose of these sessions will be to help students 'understand how to understand', not to provide them with answers to questions about specific details of the course

Extension of model into second year teaching
It is intended to extend this model of teaching into the second year and roll it out to third and fourth year as the students progress.

7. Lessons learned

Firstly the results indicate that that the model is effective and that the improvement in outcomes is greatest for students not majoring in Psychology. Secondly, feedback from the students showed that the majority felt it improved their learning experience and wished the model to be retained.

Changes in implementation are outlined fully under plans for future development, but include full monitoring of the responses throughout the year, and discarding the two multiple choice mid-year tests and the four face to face tutorials.

We would recommend this Collaborative online Assessment model to any other department struggling with large classes. Key elements to include are ensuring that,

- Students are split into small groups
- Rules of engagement are firmly established at the start, i.e. opting out is not an option
- Work is scaffolded, i.e. gets progressively more difficult throughout the year.
- Feedback is presented as best answers from one of the groups.

8. Future Research

Taking the Learning Model Forward

It is our belief that one of the reasons that the teaching and learning model has been so successful is that it taps into the well established social networking habits of the up and coming cohort of learners. It would appear that current student cohorts not only are totally comfortable with technology, (in a way that many lecturers aren't) but that the students are also using the collaborative on-line groups as active social networks, which appear to be impacting positively on their learning experience.

However in spite of this overall transformative engagement of the bulk of the student cohort, there still appears to be a sub-group of students for whom the on-line collaborative working is not engaging. It would be extremely useful to tease out why they feel this way, and to use this information to change/improve elements of the collaborative on-line experiences to extend the efficacy of the approach.

By the end of the 2006/7 academic year there will be a massive databank of the student interactive discourse, which we believe can give us much more insight into the students' experience of e-learning, both from a cognitive and social perspective. We would like to investigate these rich archives in a more comprehensive way to get a greater understanding not just of the learning habits and strategies of effective learners but on just how the use of the VLE affects the whole student experience. We believe that greater understanding of the pedagogical processes involved will enable us to develop this model of Collaborative Task Assessment for larger class sizes and enable the production of a set of guidelines and design recommendations which can be used by any discipline tasked with teaching large classes. This proposed project is outline in more detail in Appendix 3.

9. Dissemination

(Since January 2007)

Personnel	Occasion/Event/Publication	Date
Dr Deirdre Kelly	Report in HEA Psychology Journal on the project	January 2007
Dr Jim Baxter	Presented to Strathclyde University Learning Enhancement Network – "Assessment for student Responsibility".	30th April 2007
Dr Jim Baxter	Took part in REAP On line conference discussion	29th May 2007
Dr Jim Baxter	Presented to Psychology/Education Colleagues at Queen Margaret University Edinburgh	31st May 2007

Appendix 1a First Year Psychology Students' response to the 2005/6 three week Pilot of the Collaborative Assessment Model

Table 1 Summary of the First Year Psychology Students' response to the 2005/6 three week Pilot of the Collaborative Assessment Model

Questions		**Responses**		
		Yes	**No**	**Sometimes**
(i)	Expressed enjoyment of the experience	50%	0%	50%
		Yes	**No**	**Don't know**
(ii)	Found discussion easier on-line than face to face	42%	58%	0
(iii)	Would meeting the group face to face help on line discussions?	50%	21%	29%
(iv)	Did the exercise help you to understand the subject better?	98%	2%	
		Reading only	**Discussions only**	**Both reading and discussions**
(v)	Which was more beneficial, the additional reading, the discussions, or both?	35%	0.0%	65%

Table 1 show that all of the students enjoyed the experience, at least some of the time, with half reporting enjoyment of the whole process. The most commonly reported dissatisfaction was around the inequity of participation by some of the group members.

The majority (58%) of the participants found it easier to discuss face to face than on line. Those that preferred on-line discussions (42%) expressed the view that they were less self conscious about participating in the discussion on-line. However when the students were asked about the benefits of meeting the other group members 79% felt that this would help the on-line discussions, at least some of the time.

The most significant feedback response was however that almost all (98%) of the participants felt that the exercise helped them to understand the topic better, with the majority expressing the opinion that the learning benefits arose from both the combination of the extra reading and the discussions (65%), with only 35% expressing the view that this was due to the extra reading alone. There were a further number of additional non-structured comments (7 in total) which commented on the positive effects of the exercise on their learning. Typical comments included;

- "I enjoyed this exercise because it actually made me study. Before I tended not to open my books until tutorials etc, so it was a good incentive to actually do some work and learn! I feel that it has assisted me for the exam. It was good getting the opportunity to interact with fellow students"

- "I found it to be very beneficial, at the time I didn't realise how much I was learning …., it was learning without thinking about what I was doing, which I really need because if I think I'm learning something I wont take it in nearly as well as if on a conscious level I'm not aware of it, if that makes any sense!"

Appendix 1b First Year Psychology Student's response to participating in the Compulsory year long Collaborative Assessment Model

Most of the questions demanded a response to the Collaborative Online Assessment experience, ranked on a five point Likert scale, but also contained some yes/no responses and allowed for some unstructured comments. A total of 164 students responded to the questionnaire, of these 69 (42 %) were majoring in psychology. Interestingly, 71 students (43%) reported that in addition to online collaboration that they had met up with at least one person in their online group during the course of the year. The results are summarised as in table 2 below.

Table 2 Summary of student questionnaire responses to COA Experience

Questions	Responses		
	Majority agreed	**Majority disagreed**	**Majority neither agreed or disagreed**
Lack of inhibition			
I didn't post all I knew in case lazier members of the group benefited unfairly from my own hard work		√	
I was reluctant to suggest improvements to other group members' work even when I believed improvements could be made			√
Positive feedback			
I read more about Psychology and read it earlier in each semester than I would have done without the online projects	√		
I learner more about Psychology as a result of the online projects than I did in other subjects	√		
It would be better to scrap the online scheme and return to the traditional system		√	
I found that reading other people's contributions helped me to understand Psychology	√		
The feedback, based on other students' work helped me to understand how to improve my own answers	√		
The online projects made me feel that I was more interested in psychology	√		
I have had to work harder in Psychology than I expected to	√		
Neutral experiences			
I made friends as a direct result of the online project scheme		√	
I only did as much reading as I had to make my contribution to the projects and didn't bother with the rest of the recommended material			√
The online projects helped me to feel more positively about the university.			√
Negative experiences			
The online projects were stressful	√		

The summary of results from the questionnaire show that the majority of the responses to the questions reflected positively on the COA model. There appeared to be no inhibition in responding on- line, and the majority of the students reported a positive effect of the model on their learning.

Over 10 additional unstructured comments were unequivocal in their support for the improved learning facilitated by the model, typical comments included;

- "*Online projects are good idea because it does make you read more and put effort into the subject*",

- *"Online projects did make me read earlier and feel more involved with psychology"*

However the questionnaire also highlighted that in spite of having a positive impact on learning, the majority of the students found the projects stressful. Typical of the unstructured additional comments highlighting this experience (8 in total) included the following;

- "*The online projects stressed me out a bit and annoyed me. I hated them!!!. However, I do feel I have benefited enormously from them as they forced me to do work that I otherwise wouldn't have done"*

- "*I thought these benefited me as I did more work for this class than any other because I had to do it. However sometimes I did get stressed and angry having to check my computer all the time!"*

Interestingly, the exercise did not however appear to affect the students' view of the university, either positively or negatively, neither did the majority of the students report they made friends as a direct result of the project.

A minority of students expressed negativity about the model. The feedback in the unstructured comments showing a mixture of reasoning. Typical comments criticisms of the COA Model were that it was;

- Too time consuming for an elective (6)
- Not all group participating (4 no)

Appendix 2a Comparison of final exam marks between Psychology first year students in 2005/6 and 2006/7

Group Statistics

	Class year	N	Mean	Std. Deviation	Std. Error Mean
Exam result	05/06	486	51.1008	12.31930	.55881
	06/07	422	57.4218	11.07810	.53927

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Exam result	Equal variances assumed	6.138	.013	-8.079	906	.000	-6.32098	.78241	-7.85652	-4.78544
	Equal variances not assumed			-8.139	904.882	.000	-6.32098	.77659	-7.84510	-4.79685

There was a significant difference between exam results in year 05/06 and in year 06/07. (t= 8.079, df = 906, p = 0.000, one tailed).

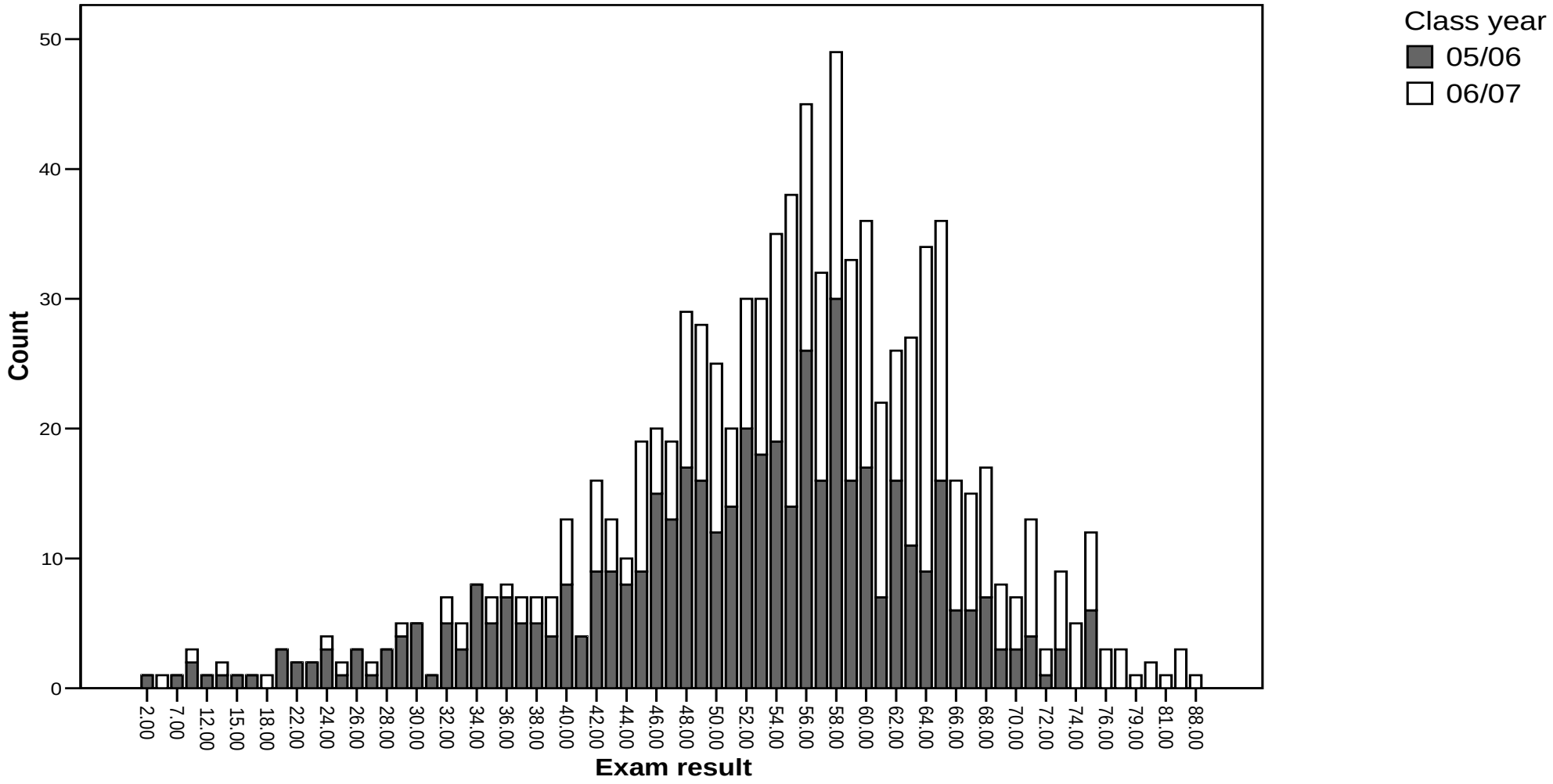

Figure 1 Showing the difference in exam results between 05/06 and 06/07 Psychology Students

Appendix 2b Differences in exam performance between years 05/06 and 06/07 and in elected and non-elected Psychology majors

Between-Subjects Factors

		Value Label	N
category of conditions	1.00	lastpsy	180
	2.00	lastnot	306
	3.00	thispsy	113
	4.00	thisnot	307

Descriptive Statistics

Dependent Variable: Exam result

category of conditions	Mean	Std. Deviation	N
lastpsy	55.4778	8.84090	180
lastnot	48.5261	13.32301	306
thispsy	57.6195	11.71104	113
thisnot	57.4593	10.80490	307
Total	54.0684	12.16488	906

Tests of Between-Subjects Effects

Dependent Variable: Exam result

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	14711.677(a)	3	4903.892	37.104	.000
Intercept	2293180.327	1	2293180.327	17350.708	.000
conda	14711.677	3	4903.892	37.104	.000
Error	119214.080	902	132.166		
Total	2782522.000	906			
Corrected Total	133925.757	905			

a R Squared = .110 (Adjusted R Squared = .107)

There was a significant effect of the category of conditions tested. (F(3,902) = 37.10, p< 0.0005).

Post Hoc Tests (Homogeneous subjects)

Student-Newman-Keuls **Exam result**

		Subset	
category of conditions	N	1	2
lastnot	306	48.5261	
lastpsy	180		55.4778
thisnot	307		57.4593
thispsy	113		57.6195
Sig.		1.000	.163

Means for groups in homogeneous subsets are displayed. Based on Type III Sum of Squares The error term is Mean Square(Error) = 132.166.

a Uses Harmonic Mean Sample Size = 191.109.

b The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

c Alpha = .05.

These results show that students electing to do Psychology major in 05/06 did significantly better than those who did in that year, but that this difference was eliminated in 06/07.

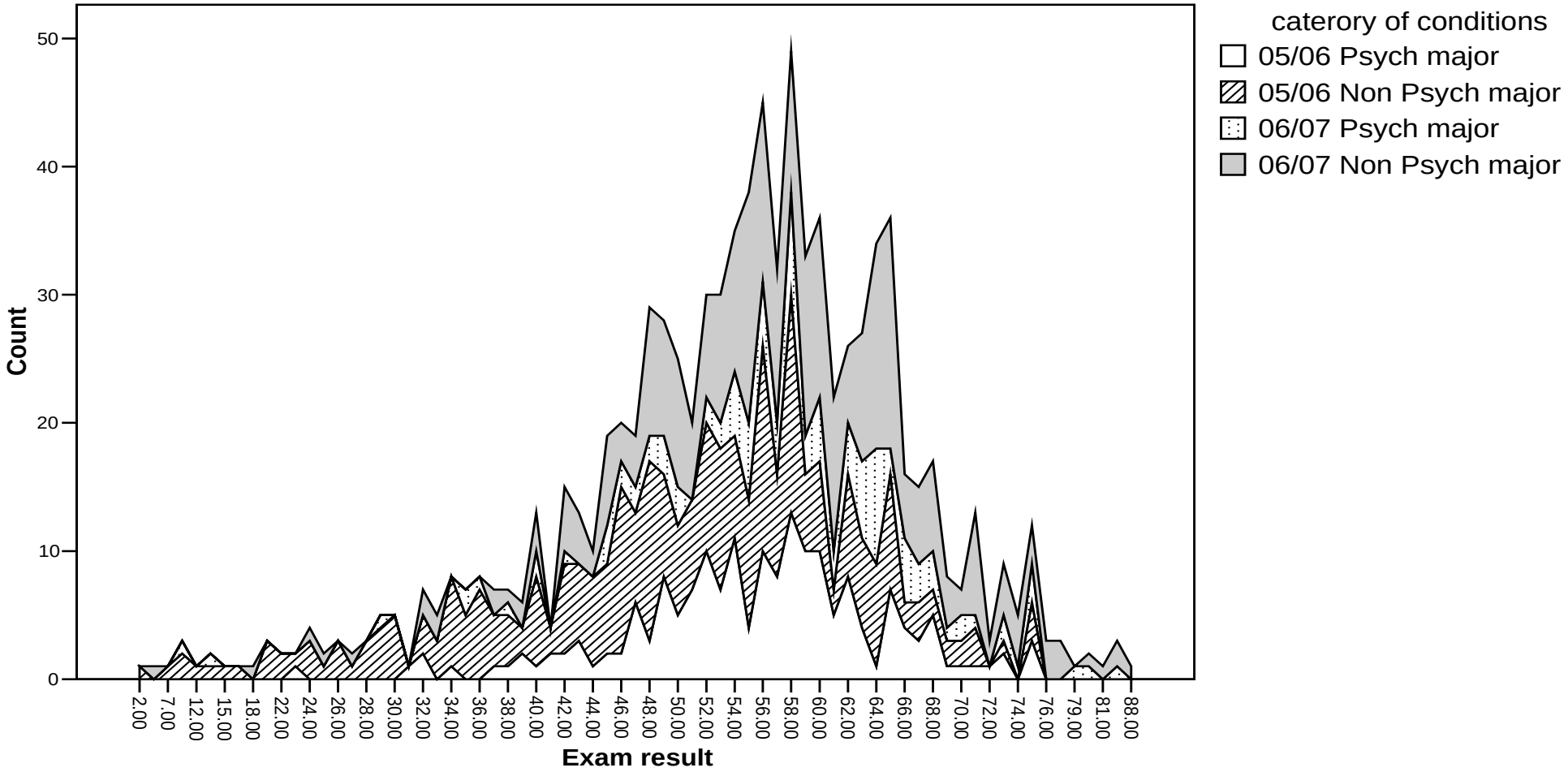

Figure 2 Showing differences in exam performance by year and by selection of subject major

Appendix 3 Proposed further research into the mechanisms that support collaborative learning on-line.

Objectives
The primary objective of the research will be to establish the relationships that exist between the student's expressed experience of collaborative on-line learning groups and their types of on-line interaction (both social and cognitive), in relation to learning outcomes. This will allow better understanding of the relative roles of the cognitive and social factors which promote enhanced peer learning. It is hoped that such an approach will address some of the dearth of pedagogical research in this area.

The research will also be able to identify a number of "good-learning experience" indicators, such as frequency of engagement, student experience and types and style of discourse associated with good learning outcomes. This knowledge will assist in the production of a series of design parameters for the development of effective collaborative on-line learning models, which can be applied to any discipline. These design principles are likely to cover a range of parameters such as the design of the groups, the nature of the collaborative tasks, and the promotion of social networking, with the aim of encouraging positive learning and student experiential outcomes.

The identification of "good-learning experience" indicators could also be used to monitor the early efficacy of on-line collaboration both at a group and individual level, and allow for early intervention by the tutor, either by altering some of the model parameters or by early identification of students with negative experience indicators.

Outputs
A detailed report will be produced which will present the results of the study along with key findings from a psychological perspective on effective learning. In addition, a second report will be produced which will outline a series of design recommendations regarding the effectiveness of a collaborative on-line model from the perspective of the holistic student experience which can be applied to any discipline.

Methodology
Social Constructivist research points to positive effects of peer discussion on conceptual understanding, and we would anticipate that this well-replicated positive effect to triangulate with a range of other measures to be collated. Discourse analyses of the archived on-line discussions from 2006/7 along with other indicators of student experience and student outcome, will allow a better understanding of the holistic student learning experience. We propose to show that students engaged in the blended learning tasks, not only enjoy the experience, but that there will be a positive nexus of effects relating quality of discussion, and learning outcomes. It is proposed that a mixed method approach be carried out, combining evidence from a range of different sources. The project will also have an open ended approach which will allow unexpected findings to emerge.

Following the first blended delivery of first year Psychology course, a representative sample (approximately 100 individual students who reflect a range of performance (High, medium and low achievers) will be identified. Following full ethical protocol, (seeking informed consents etc.), these students will then form the participant cohort for the project and their experiences of the blended delivery will be the subject of three modes of research and analysis.

1. ***Discourse analysis***

The online student discussions will be subjected to a discursive analysis in order to identify specific practices that are used to manage students' online identities, contributions and the interaction between group members. For instance, analysis will focus on the ways in which messages are structured and phrased (to the level of specific words being used), and how these demonstrate students' engagement with a particular task. While this analysis may not, on its own, indicate the level of students' understanding of course content, combined with other data, it will enable us to identify what types of student interaction should be encouraged for successful learning on-line. The analysis of the online discussions will be carried out in parallel with those of the interviews, in order to ensure themes in one are picked up and addressed in the other.

2. Student interview

Individual students will be interviewed to elicit their experience of the course with questions spanning social as well as cognitive topics. The students will be encouraged to reflect on a range of issues covering their experience, not only of the effectiveness of the learning but also on the social networking aspects of the experience. For example, they will be asked questions such as, 'what are the positive/negative factors about the online collaboration groups, and how does this fit in with your daily timetable?', 'do you ever talk to the same class members in person as well as in the online discussions?'. The data will be analysed using Interpretative Phenomenological Analysis (IPA), an approach that is highly suited to understanding the rich texture of participants' understandings and experiences on a specific topic. This approach also allows themes to be analysed across a broad sample, integrating them into meaningful clusters and providing key research findings.

3. Quantitative analysis

Rates of student participation, along with exam results, and outcomes from Student questionnaires will be analysed. All of the results will be correlated to see what patterns (if any) emerge with regard to the student e-learning experience, and if any of the variables (interaction rate, types of interaction etc.) are an indicator of better experiential and learning outcomes. Where positive correlations are established regression will be employed to establish further understanding of possible causal links.

Proposed Project organisation

Model

It is proposed that a full-time post-graduate researcher be appointed for the period of the study. Key departmental staff will be Dr Jim Baxter and Dr Tony Anderson, both of whom have been leading on the REAP Psychology initiative which initiated the on-line learning model. It is proposed also that Dr Andy Tolmie[1], because of his experience in this area and previous involvement with the on-line learning curriculum project play an external advisory role. Dr Sally Wiggins will contribute directly with the project in her areas of expertise, Discourse Psychology.

[1] (Dr Tolmie has moved on from Strathclyde University to the Psychology Department of London University in January)