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Chapter 3C. Using contracts to improve time management and student focussed learning in dissertation projects

Background
The Honours project module is a 30 credit final year module running from October through to the end of March, spanning two semesters. This module provides students with the opportunity to develop a piece of research on a subject agreed between them and the supervisor and is an opportunity for students to develop their research skills and their communication skills. Assessment for the module is in terms of a thesis and an oral presentation in a conference style environment.

Innovation
As I have to supervise a number of students each year, I have to be very careful of the time constraints. Towards the end of the module the students tend to give in project drafts all at the same time and very close to the deadline for submission. I decided to try and combat this by introducing a learning contract with specific deadlines to ensure that rather than having pieces of project all coming in at the end, that I would be able to see drafts of different parts of the projects at evenly spaced time points throughout the course of the module.

Expectation
I hoped that by using a learning contract with specific responsibilities set out for the student, and specific expectations I would fulfil for them, that better time management skills would be developed by the students which would in turn allow me to spend quality time on the dissertation drafts rather than having to rush through them close to the submission date.

Approach
At the beginning of the module I held a briefing session at which time I gave each student a copy of the specially designed learning contract agreement. This document was designed with the advice of other colleagues in IBS who have used such agreements. I modified the contract in a way that was appropriate to my own research laboratory in terms of safety requirements and I added in my own expectations, responsibilities and deadlines (see attached). During the course of the briefing session I went through the agreement document with the student group, ensuring that they had the opportunity to ask questions regarding each section and that they understood the meaning of the agreement.

Assessment
I also made it clear during the briefing, that 10% of the module mark would depend on whether they kept to the conditions set out in the contract. They were then given some time to read through the document themselves before both they and myself signed it.

Feedback
At the end of the module, when projects had been given in, I asked the students to attend a post-module briefing at which point we discussed the learning contract and whether they had found it useful or not. I asked the students a number of questions, the results of which are summarised in table form below.
General questions asked of the students

<table>
<thead>
<tr>
<th>Question</th>
<th>7</th>
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<th>6</th>
<th>8</th>
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</thead>
<tbody>
<tr>
<td>Did they feel confident and competent as researchers?</td>
<td>8</td>
<td>7</td>
<td>7</td>
<td>8</td>
<td>8</td>
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<tr>
<td>Were they aware of safety issues?</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Could they design experiments?</td>
<td>NA</td>
<td>8</td>
<td>NA</td>
<td>NA</td>
<td>7</td>
</tr>
<tr>
<td>Were they sympathetic towards other lab users?</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
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<tr>
<td>Had they developed a toolbag of skills?</td>
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</tbody>
</table>

Student assessment of their own performance

<table>
<thead>
<tr>
<th>Question</th>
<th>7</th>
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<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Did they make a fair contribution to lab maintenance?</td>
<td>8</td>
<td>8</td>
<td>NR</td>
<td>NR</td>
<td>7</td>
</tr>
<tr>
<td>Did they assist in the lab where help was needed?</td>
<td>9</td>
<td>9</td>
<td>10</td>
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<tr>
<td>Did they adhere to safety regulations?</td>
<td>9</td>
<td>8</td>
<td>9</td>
<td>8</td>
<td>8</td>
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<tr>
<td>Did they prepare for meetings in advance?</td>
<td>NR</td>
<td>NR</td>
<td>NR</td>
<td>NR</td>
<td>9</td>
</tr>
<tr>
<td>Did they sort out any problems with</td>
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equipment in an appropriate way?

Were they punctual, polite and sensible?

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<thead>
<tr>
<th>Question</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Was the supervisor available and reachable?</td>
<td>8</td>
<td>9</td>
<td>9</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>Did the supervisor return drafts punctually?</td>
<td>9</td>
<td>10</td>
<td>10</td>
<td>9</td>
<td>8</td>
</tr>
<tr>
<td>Was fieldwork organised appropriately?</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>7</td>
<td>10</td>
</tr>
<tr>
<td>Were the tutorials useful?</td>
<td>9</td>
<td>9</td>
<td>9</td>
<td>8</td>
<td>10</td>
</tr>
</tbody>
</table>

Student assessments of staff performance

Student Achievement

Of the six students starting this module, five of them contributed to the post-module session to provide feedback. These five students submitted their projects on time, with timely drafts and passed the module successfully. These five students had engaged with the learning contract and had found it useful to help with their time management. There was also a section on future career planning which they had found helpful in making decisions and reflecting on skills which they needed to develop to get to where they wanted to go. The sixth student submitted a project which I was not able to see a draft of as she did not submit a draft to me until the day before the deadline—she went on to fail the module and is currently resubmitting.

Student comments on the Honours project module

'the module was heavily weighted and therefore important'

'the module was enjoyable'

'I enjoyed learning through problem solving'

'it would be useful to meet up as tutor groups in summer prior to starting the project and work on a literature review during the summer'
'it would be good to have had the presentations earlier, they were quite close to exams'

Reflection

Having tried out the concept of learning contracts I feel it has been a very useful tool. On this occasion it worked out well with 5 of the 6 students engaging fully with the idea and actually finding it helpful. This was borne out with the regular submission of drafts and the way in which the students respected staff time, by preparing for meetings and being punctual. Some of the students were not as good at time management as others, but I felt that they had all gained something by having the opportunity to reflect on it and they all felt that they had been able to improve in this aspect. This would be an important skill for them when leaving the university and going in to the working environment.

Future developments

I think the learning contract could be further honed, and I will try out one of the ideas expressed verbally by the students, to introduce it at an earlier stage, i.e. in the summer so that they have plenty of time to think about it and engage with it. I will definitely continue to use it as I feel that it is a good way of encouraging the students to take responsibility for their planning of the project and of their future career development. I also feel that it adds something to the project module that would be otherwise lacking, it brings a component of emotional intelligence to the module by providing opportunities for discussion about whether they have been able to meet a deadline, whether they have applied for a job, whether they have visited a career, advisor, constructed a CV, completed an experiment, sorted out safety forms etc. It provides a structure for students which they might not otherwise be aware of as a supervisor might be driving that side of the module rather than letting the student take responsibility for it.
Dear All,
Welcome to the research group of Jo Porter. As a member of the group you will have certain responsibilities and will contribute to the maintenance of the laboratory. We expect good laboratory conduct by all and insist that you are fully aware of the laboratories safety policies. If you are working in the field you must also ensure that you are fully briefed on safety issues, informing others of your whereabouts and closely following the IBS field book guidelines. If you are bringing samples from the field to the lab, prepare before hand in terms of access to buildings, equipment etc.

We provide you with up to date knowledge, space and guidance in exchange for your help to keep/ maintain the laboratory in 'ship shape'. We want students to be resourceful, to reduce waste, keep the laboratory tidy and be sensible at all times.

You will be introduced to laboratory members and must adhere to any advice that they give you particularly with regards to safety. If you are working with hazardous chemicals a comprehensive assessment of safety must be performed.

Please note:
• Lab coats must be worn at all times when working in the laboratory.
• Always complete COSHH forms for laboratory experiments and a field safety assessment form if working in the field (ask your supervisor about this).
• It is your responsibility to tidy up after conducting experiments. This includes the washing of glassware (please think: of others that work in the laboratory).
• Scientific equipment cost considerable sums of money, treat with care and respect.
• Take extra care not to cross contaminate, do not return chemicals into the same container, this might appear wasteful but possible contamination of stock is too high a price to pay. Be careful with glassware that may need to be sterile. Carelessness can ruin others peoples research.
• If you break something please inform the lab members for the sake of safety and general running of the laboratory. Also, if a piece of equipment does not work place a dated note explaining the problems you had.
• Please note that blue bins are for general rubbish, yellow bins for rubbish that has to be autoclaved, red bin for phenol tubes. If you break glassware this must be disposed of in a sharps and breakages bin (CARE!).
• Please note the position of the first aid kit, fire fighting equipment etc (please read instructions) and be aware of the fire drill in the event of an emergency. Try to anticipate potential accidents in order to avoid them.
• You are not allowed to consume food in the laboratory (this includes bottled water).
• If you switch something 'on' you must ensure that you switch it off before going home- especially bunsens, microscope etc.
• If you want help to calibrate a piece of equipment please see Rory, Liz or Gareth.
• You are not allowed to work in the laboratory during weekends, before 8:30 am and after 5:30 pm during weekdays. You therefore need to organise your time carefully, always allow clean up time.
• We enclose a working compact, which will be used to determine your level of initiative over the two semesters representing 10% of your final project mark.

The 10% for your project initiative will be assessed on your ability to complete the laboratory compact. This will include exercises and activities you must complete as part of your dissertation.

Learning outcomes
After completion of this module we will expect you to be:
• a confident, competent and safe researcher in the field and / or laboratory.
• aware of safety issues and good laboratory practice.
• able to design, conduct and analyze experiments in a methodical, organised and logical manner.
• sympathetic to the working practices and needs of other researchers working alongside you on separate research projects.
• aware of future research and job opportunities, developing your own 'tool bag' of skills in order to fulfill your career ambitions.

The laboratory is a sociable environment where people help and work together to make the place function as a unit. However, there are boundaries as some work with hazardous chemicals, others have to do very detailed work, which requires intense concentration. Organise yourself so that you do not disrupt the work of others.

Ask for advice early in the morning or late in the afternoon prior to experimentation the following day. You should always prepare before experimentation, test methodology and follow an appropriate experimental design. Poor researchers are badly prepared, they turn up and expect others to drop tools and help them, they often work late as they misjudge how long a task takes, they leave the place untidy overnight and are completely unsympathetic to others.

STUDENT COMPACT
We expect you to:
• make a fair contribution to laboratory maintenance (cleaning etc)
• to assist in the laboratory where your help is needed
• to adhere to all safety regulations
• to always prepare for your work and book equipment needed in advance
• to inform us if there is a problem with equipment
• to be punctual, polite and sensible.

Please note that 10% of your project mark is awarded for initiative, organisation skills, keeping to deadlines and achieving the above.
PLEASE COMPLETE THE FOLLOWING:
Project compact

i) My hypotheses are as follows:

ii) List of methods and skills that I will adopt to test the hypotheses:

iii) My experimental design is as follows (include replication):

iv) I will analyse my result as follows:

iv) List of equipment that I will need to use:

v) Chemicals that I will use:
COSHH
PLEASE ensure that you have completed all the appropriate safety forms, you are not otherwise legally allowed to work in the laboratory or field.

YOUR FUTURE
It is essential in Semester 1 that you prepare a CV and organise a meeting with careers to consider your future. You need to decide whether to:

- continue studying (e.g. Masters, Ph.D.), if you wish to remain in Aberystwyth please inform us and we will provide you with details of post-graduate courses at UWA.
- train for employment (e.g. teachers training, police, armed forces)
- seek employment directly (consider your CV and what you can offer, it is a highly competitive market, consider extra curricular activities and what you can do to appear more employable).
- take a year out to travel (this must have a purpose, you will also need to save a considerable amount of money to sustain yourself).

We have seen first class students remain unemployed for years after their degree because they did not make adequate preparation for the future. It is crucial to get ahead of the game and secure your future.

ASSESSMENT CRITERIA
During the project period the student:

- completed a first draft of his/her General Introduction plus a full project plan by Monday the 1st of December 2004
- completed a first draft of the project by late March 2005
- used good laboratory practice and made an effort to keep the laboratory clean and tidy at all times
- could work and think independently
- showed evidence of wide reading, good organisational skills etc
- organised and attended regular meetings and made good use of the student-supervisor interaction
- was punctual and made good use of meetings with the supervisor, prepared a list of questions etc
- returned any items borrowed from the supervisor or laboratory (books, papers, equipment)
To be signed by the supervisor:
1) The student has completed all COSHH and safety forms and is legally allowed to work in the laboratory

Supervisor _ Date: _ _ _ _ _ _ _

2) The student prepared a CV during Semester 1

Supervisor _ Date: _ _ _ _ _ _ _

3) The student visited careers during Semester 1

Careers officer _ Date: _ _ _ _ _ _ _

4) The student completed a draft of their General Introduction and a comprehensive project plan by the 1st of December 2004

Supervisor _ Date: _ _ _ _ _ _ _

5) The student completed a first draft of their project by the end of March 2005

Supervisor _ Date: _ _ _ _ _ _ _

Careers and or further study considered by the student with actions taken:

i) 

ii) 

iii) 

iv) 

The pastoral role of the supervisor: If you have personal or health problems it is imperative that you inform your supervisor. If you experience illness and fail to attend a class or meet a deadline, please ensure that you obtain a doctors paper and submit to the General office to Mrs Anna Cole. We will defend you in the final examiners meetings it is therefore very important that you keep us informed. We all operate an open door policy in this respect and all discussions are kept completely confidential between the student and Institute.

This document should be RETURNED to your supervisor on completion of the project and will be used for assessment purposes. Failure to do so will affect the outcome of your projects 10% assessment.