

Outduction: Enhancing the Final Year Experience The Final Year Project Experience

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1 Project Aim and Objectives

Aim: To investigate the experience of final year projects in EDT

Objectives:

- To investigate the current practices followed in EDT
- To investigate the student experience
- To investigate the equity of supervision
- To propose future improvements

2 Project Background

One of the key objectives of higher education is to help student develop their detailed knowledge of their area of study and this task involves much more than the mere transmission of knowledge in forms of lectures. Particularly in the field of engineering, it is important that graduates have not only understood the various engineering concepts in their particular field but are also well trained to be able to face all the technical problems that will come up during their future professional career. In order to attain this maturity and experience in tackling critical issues, it is a common rule in all engineering that the students carry out a 'Final Year Project'. This project provides a platform for the student to apply all information the student has received along the successive stages of his engineering course in a real project. Hence this project forms a critical module. The central aim of this mini-project was to look at the student's experiences and also look at the various tools and support provided by the School for students undertaking these projects.

3 Methodology

The following activities were carried out to capture the best practice followed in the School of Engineering, Design & Technology at the University of Bradford and get feedback from final year students on their experience.

- Interviewed staff about current practice and their supervision experience
- Focus group with on 14th April 2010 to discuss their final year experience
- Interview of EDT stage-3 students during the EDT project open day (26th and 27th May 2010) to discuss their general feedback on the final year
- Discussion on the final year project at the Student experience forum on 1st March 2010.
- Interview of EDT stage-3 students during the EDT project open day (25th May 2011) to discuss their feedback on the final year project experience.
- Further developed the EDT projects portal based on feedback received from staff and students.

4 Current Practices in EDT

4.1 Project Selection, Allocation and Management

The EDT projects portal (www.edtprojectsportal.brad.ac.uk) is an automated solution for student project allocation (SPA) problem and student project management developed in-house for the School of Engineering, Design & Technology (EDT). The EDT projects portal starts dealing with the problem from the very first stage i.e. input of projects by academic staff and choices selection by the students to the final stages like allocation, marking and preserving records for future use. The EDT projects portal uses Genetic-Algorithm for project allocation thereby guaranteeing the most suitable project allocation and minimum choices clashes. The online EDT projects portal consists of three main interfaces for the different categories of users i.e. students, academic staff and administrative staff. Students can use the system to select the choices and then after allocation process can see their choices and the allocated option. The academic staff can perform several operations like insert, update, modify, delete and view their projects, see the students who have been assigned their project and e-marking their allocated students and providing e-feedback. The administrators can view/generate reports, send e-mails, set deadlines for the project submissions, assign access rights to users, add/modify allocations, projects details etc. and make the system up and down for students during the allocation process.

Figure 1 shows the functional flow of how the EDT projects portal enables e-management for the final year projects. In the first phase all staff members upload their list of projects into the EDT projects portal. They also select the courses whose students can undertake the project. In second phase students browse through the projects made available by the academic staff on the EDT projects portal. The EDT projects portal shows the students only those project which are still available for allocation and which are suitable for their course. Next, the students meet with the different academic staff to discuss some of the browsed projects in detail and finalize their project choices. The students then after proper consideration submit their project choices online using EDT projects portal. The students need to submit 5 projects choices and need to prioritize these accordingly. After this, the GA algorithm is

executed and project allocation is performed. After the allocation process, EDT projects portal is made available to students again to see which project they have been allocated.

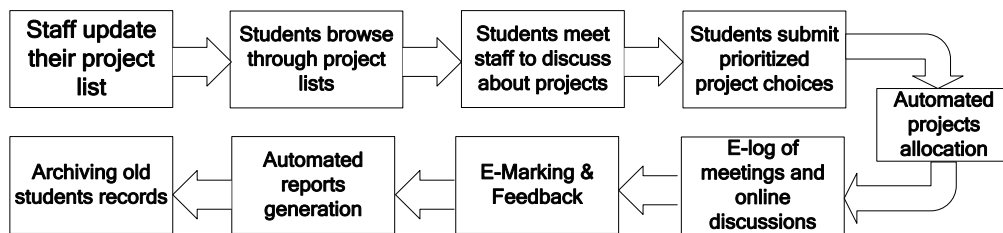


Figure 1: EDT projects portal E-management flow

During the semesters, the EDT Projects portal is used for continuous monitoring of the students. The online progress log feature is provided for students to keep updating the progress. This progress is dates and timed. The supervisor can also put comments on the progress. This can also be used for online discussion on aspects of the project.

At the end of the year when the projects are completed, the EDT projects portal is used for performing paper-free e-marking of the reports and also for providing word processed e-feedback.

The EDT projects portal also helps the administrative staff by generating different reports to facilitate in the structured monitoring and management of the projects. The EDT projects portal supports different types of reports generation which includes allocation reports, projects reports, supervisors reports, marking reports and other general reports etc. Finally, at the end of the year, the administrators can archive the old records so that staff members can update their new project lists and the new set of allocations can be made for the next year.

The EDT projects portal has three primary interfaces for the different categories of users such as students, supervisors (staff), and administrators. The EDT projects portal makes it sure that only user from particular category can login using secure server side scripts. If student try to login in staff or administrator side and vice versa, EDT projects portal will reject login request. When users from student category log on, they see student page customized for their course such as postgraduate or undergraduate.

A screen shot for student's home page is shown in Figure 2. The student details (Label '1' in the Figure 2) are presented at the top of the student's home page. First the student can select a supervisor from a drop down (Label '2' in Figure 2) for browsing their projects. Once the student selects the supervisor, all projects from the selected supervisor are displayed in the projects section (Label '3' in Figure 2). On the right side of the home page the selected project are displayed (Label '4' in Figure 2). The students are also allowed to submit one self-generated project. This is done by clicking on the button at the bottom right of the page (Label '5').

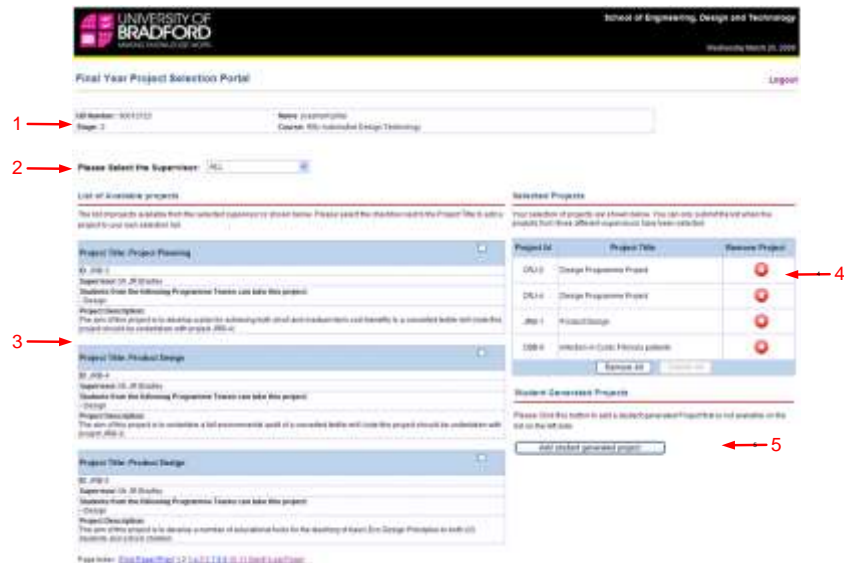


Figure 2: Student's main page

4.2 Project Supervision

Project supervision is an important aspect that influences the students experience with the final year project. Effective project supervision enables not only the student to complete the project but also enjoy the work.

Every student is allocated a project supervisor at the beginning of the project. the supervisor guides the student on the work to be carried out for the project and monitors the progress.

Regular face-to-face meeting are arranged between the supervisors and their project students. The student would discuss their current progress and the future steps in these meetings. The supervisor would make sure that the student is on track and not drifting from their objectives. The meetings were also used for discussing any technical issues or problems that arise during the projects. The supervisors would also guide and provide hints of how these may be solved. It is however encouraged in EDT that the students always come with their own possible solutions. The supervisors then discuss the advantages and/or disadvantages of these solutions.

On discussion with various EDT academic staff, it was seen that there are two general practices for the structure of the meetings. There are some academics who meet all their final year project students together as a group, while the rest meeting their project students individually. Meeting the students as a group has shown to have several advantages:

- Most of the times the students have similar problems, like want to know about plagiarism, good referencing techniques, word/page limits, etc. So it is better to discuss these as a group, as it makes smart use of the academics time. Otherwise the supervisor would be repeating the same things with each student.
- There may be times when the students do not remember all the questions to ask, but others in the group may ask the related questions.
- The students also learn from the experience on the other group members. Eg 1: If they see that one of the group members has used a certain technique, then it may give them also the idea to use a similar technique. Eg 2: If they see that one of the

group members has used a survey, then it may give them also the idea to also use one.

- Also there are times when introvert student may not be comfortable to ask direct questions to the academic staff. Such a student would benefit from having open discussion with other group member and the supervisor.
- Some academic staff asks the group members to give a presentation during the meetings. This helps the student's communication skills as they get the experience to present their work even though in small groups. This is highly beneficial for students who have fear of public speaking as the presentation to such a small group will enable them build more confidence.

The EDT projects portal is also used for maintaining e-logs of the progress meetings. The students are asked to add the minutes of their meetings with their supervisor. The students can also upload files like papers read, draft results, draft dissertation chapters, etc. The supervisor can then also add comments to these uploaded files. This helps in providing direct feedback on their progress.

The EDT project portal is also used for the final assessment of the final year project dissertations. The supervisors use the portal to input the detailed marks for the various criteria and also provide detailed written (word processed) feedback. It is envisaged that from next year, this detailed feedback will be emailed back to students. This will help them realise where they have made mistakes and guide them how they could further improve.

4.3 Project open day

One of the key parts of the final year project in EDT is the final project open day. This is a showcase of all final year projects taken by the students in the different disciplines (Civil, Mechanical and Automotive, Medical Engineering and Electrical and Telecommunications and Technology Management) in EDT.

The open day is usually comprised of two strands.

Strand 1: The students in the area of Technology Management have to make a 15 minute PowerPoint presentation on their project. The presentation is attended and assessed by at least two but usually three academic staff members. This provides an excellent platform for the students to showcase their project and present the work carried out and their key findings.

Strand 2: The students in the other areas i.e. Civil, Mechanical and Automotive, Medical Engineering and Electrical and Telecommunications have to present a poster on their project work during the open day. Due to the large number of the students, the open day takes place usually in the Norcroft Centre and the Atrium or Small Hall/Great Hall. This provides a good platform for the final year project students to showcase their projects to not only other students of the university, but also to the various academics and most importantly external industrial visitors. The students of the Electrical area also showcase their working prototypes along with the posters. The posters are also formally assessed by the academic staff.

5 Results

5.1 Feedback from Staff

On discussing with various academics it was seen that they had very positive views regarding the EDT projects portal. They found it beneficial and it helped them manage their project students. Every academic found the user interface to be simple and easy to use. They also liked the fact that it can be accessed from outside the university, and hence enabled them to mark the reports from home as well.

On discussing with the administrative staff it was seen that they also found the EDT project portal very easy to use and found it very helpful as it provided them with a single place for managing checking information regarding projects like supervisors, 2nd markers, marks of any students. The administrator also really found the marking reports helpful, as it automatically generated the overall marks of all the students based on their programme teams. The administrators could use this directly to input into the SAINT system.

5.2 Feedback from students:

Feedback on the Project portal

The students also liked that simplicity of the EDT projects portal and the project selection mechanism. They felt it was much better than a paper version and it also helped them search for suitable projects.

Some student did feel that they should be informed of their project allocation sooner.

Feedback on the final year project

A Survey was conducted among the final year project students to see how they perceived their final year project and how they felt that their project has helped them.

The survey mainly targeted the following areas:

- i. Time Management Skills
- ii. Future Prospects
- iii. Social and Professional skills
- iv. Supervision Quality

The results of the survey are discussed below.

a) Time Management Skills

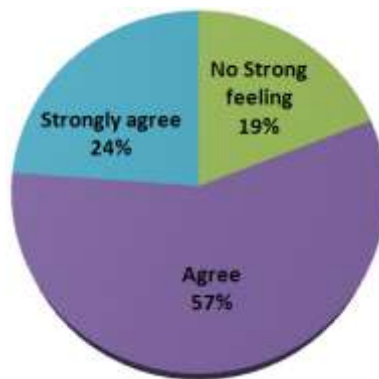


Figure 3: Survey response on time management skills

Figure 3 shows the survey response of the students on the time management skills. 81% of the students felt that their final year project helped them improve their time management skills. Most of the students felt it was challenging to complete a good project along with the various teaching modules. Hence they were required to properly manage their time and make sure they meet all the requirements. The students are expected to write a time plan for their project in the semester 1 and are advised by their supervisors to manage their time effectively to make sure they stick to this plan.

b) Future Prospects

Figure 4 shows the survey response of the students regarding the role of projects for future prospects. 73% of the students felt that their final year project helped them prepare for their next step i.e. either getting into a job or higher studies. On discussing with students, it was seen that the project was one of the biggest piece of single yet complex work that they undertook from beginning to end and hence helped them practically apply all their skills and subject knowledge. Most of the students felt that this would help them get a good job and also help them in their projects in companies.

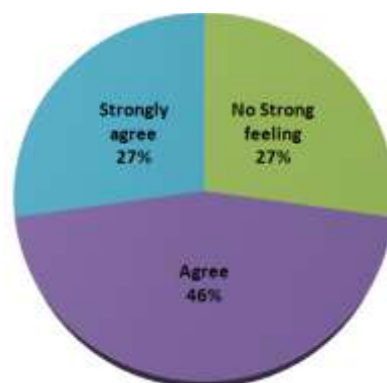


Figure 4: Survey response on future prospects

Some students felt that the project had also helped them understand some of the complex theoretical concepts studied in their other modules. Also some student were introduced to some new concepts and areas which motivated them to take up further studies like related MSc's.

c) Social and Professional skills

The survey response on their social and professional skills is given in Figure 5. It was seen that 68% of the students felt that the final year project had helped them develop their social and professional skills. Most of them felt that they were able to present their project work to other people and were also trained in making either presentations or posters.

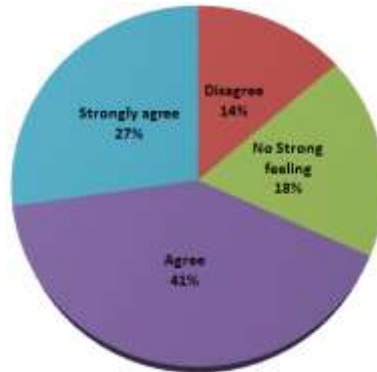


Figure 5: Student's main page

However it was seen that while 18% did not really feel strongly about this, 14% actually disagreed and felt that the project did not do enough to improve these skills. On discussing this further with students, it was seen that while the students were asked to present their work in the open day, they felt that they were not really trained for this. It is suggested to include some seminars on presentation skills in the second semester to help them be better prepared for the open day.

d) Supervision Quality

The survey response regarding the supervision quality is shown in figure 6. It was seen that 76% of the students were happy with the supervision they got. They felt the supervisors were helpful and guided them nicely through the year. Most students felt they could easily meet their supervisors and could discuss their progress and issues with them.

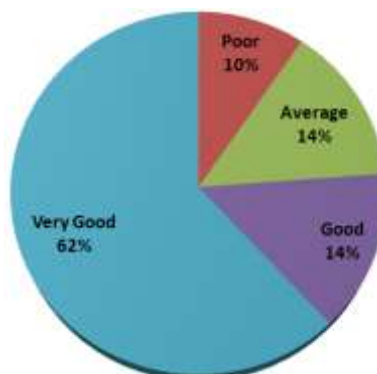


Figure 6: Student's main page

However 10% of the students were not very happy with the supervision they got. While in some cases they did not get along with the supervisor, in other cases they felt that they did not get enough time with their supervisors.

Some general student comments:

Some of the general feedbacks given by the students during the focus groups are below:

“It covered all aspects in terms research, project management, planning and achieving a goal”

“It allows student to think critically and apply most and perhaps all the subjects learnt throughout our degree years into this particular module. It's not a ‘Monkey see, Monkey do’ activity.”

“Reduce the amount of students under this supervisor as he is overloaded and only able to spend short period of time meeting each student before seeing another. Need more discussion time...”

This clearly shows that the students appreciate the amount of work involved in the project and are also happy to see that they are actually applying the theoretical concepts and are not merely copying old projects. Some students did feel they needed more time with their supervisors.

6 Recommendations

- The EDT projects portal has been extremely useful and it is recommended that other schools should adopt a similar tool.
- Provide more seminars and tutorial to all students on report writing skills, plagiarism, etc. – Make attendance to these compulsory.
- Provide more guidelines on what is expected in a final year project – work carried out, and supervision levels, etc.
- Provide more project choices on the EDT Projects portal – maybe use project areas instead of specific titles. This also enables in the allocation of projects.
- Include seminars on Presentation skills.

7 Dissemination

One paper was published in an international conference:

- M. Ali, P. Pillai and Y. F. Hu, “An automated online student project allocation and management system”, 26th International conference on CAD/CAM, Robotics & factories of future, Kuala Lumpur, Malaysia, July 2011.

8 Appendix 1 – Outduction questionnaire

We are conducting a short anonymous and confidential questionnaire as part of the Outduction Project, funded by the Higher Education Academy.

Outduction is a collaboration between the University of Bradford and Kingston University. We are investigating the experiences of final year undergraduates, with the aim of better supporting their transition to live, employment or further study beyond graduation.

Are You a Final Year Student?

Yes No

If no, no further questions

1 Project experiences

1.1 Your Skills Development and Learning

1. Looking back on your project, what gives you the greatest sense of achievement?

2. What are the key things that you have learned through completing your project?

3. How has the project helped you to manage expectations, time, and workload?

Not at all 1 2 3 4 5 Very much

4. How has the project helped you to develop your presentation skills?

Not at all 1 2 3 4 5 Very much

5. How has the project helped you to develop social and professional confidence?

Not at all 1 2 3 4 5 Very much

6. How well do you feel that the project prepared you for your next step (job market or further studies)?

Not at all 1 2 3 4 5 Very much

7. How well has the timing of the project fitted with other academic work during the final year?

Not at all 1 2 3 4 5 Very much

Comments and suggestions for improvement:

1.2 Choosing Your Project

8. What were the main factors that influenced your choice of project?

9. How useful was the project portal tool?

Not useful 1 2 3 4 5 Very Useful

Comments and suggestions for improvement:

10. How do you rate the choice of topics available?

Limited 1 2 3 4 5 Wide

Comments and suggestions for improvement:

1.3 Support

11. What have been the main sources of support that you have drawn upon while you have been working on your project?

12. What have been the things that you have most valued in the support that you have received from your supervisor?

13. Overall, how do you rate the quality of support you received from your supervisor?

Poor 1 2 3 4 5 Excellent

Comments and suggestions for improvement:

14. How do you rate the support you received from technical staff?

Poor 1 2 3 4 5 Excellent

Comments and suggestions for improvement:

15. How do you rate the hardware/software resources available for your project work?

Poor 1 2 3 4 5 Excellent

Comments and suggestions for improvement:

1.4 Final Comments

16. Do you have any suggestions about improving the project, or your broader final year experience?

Thank you for taking time to complete the survey. If you would like to be informed of the outcomes of the project (reporting September 2011), please leave contact details on a separate contact sheet.

Further information about the project can be found at www.outduction.ac.uk