

See discussions, stats, and author profiles for this publication at: <https://www.researchgate.net/publication/266210409>

Student project performance management system for effective final year and dissertation projects supervision.

Conference Paper · November 2011

CITATIONS

12

READS

16,853

1 author:



Imed Romdhani

Edinburgh Napier University

126 PUBLICATIONS 1,232 CITATIONS

SEE PROFILE

Some of the authors of this publication are also working on these related projects:



Routing in low power and lossy networks [View project](#)



B-percept® System : Modeling and Assessing Decision-making [View project](#)

Student Project Performance Management System for Effective Final Year and Dissertation Projects Supervision

Imed Romdhani, Martin Tawse, Safa Habibullah
Edinburgh Napier University, School of Computing
i.romdhani@napier.ac.uk

Abstract

This paper presents the features of a new integrated and collaborative online supervision system for final year and dissertation projects. The system is currently under development and it aims to ease the supervision process, federate the tasks of all involved actors and enhance the student learning experience. Collected feedback from students and academic staff shows that such a system can help to maintain an effective and efficient supervision relationship between all parties.

1. Introduction

The supervisory process of PhD research students has attracted a lot of attention and consideration from higher education institutions around the world. Many books, articles and best practice guidelines have been produced for students and supervisors to explain this process, to increase their awareness about the main challenges and the key issues to avoid and to help them establish an effective relationship. In contrast, undergraduate and postgraduate final year and dissertation projects (i.e. those who require the production of a dissertation report at the end) have not attracted a similar focus for different reasons. The requirements and the standards for a high quality supervisory process are usually left for the intuition of the module leader, the supervisor or the academic coordinator and the quality assurance manager of these types of projects. Although some supervisors and module leaders have developed some specific guidelines and pro-forma documents to ease and control the supervision process for both postgraduate and undergraduate students, they have not been supported by a central electronic technology based system that federates the communication between all those who are involved either directly or indirectly in the supervision process. Having such a collaborative system can help to record, monitor and revisit the supervision process and enhance the student learning experience. From a student perspective, having in place a unique electronic supervision system alongside with the traditional face-to-face and paper

based supervision methods, can ensure the homogeneity of the supervision practices within an academic institution, guarantee assessment fairness, ease the communication loop and handle smooth data and report transfer between all involved parties. To capture and reflect the best supervision practices and enhance student learning experience, there is today an urgent need for higher education institutions to design and implement a paperless collaborative supervision system that could be used simultaneously by all the supervision actors. For this purpose, the current paper describes the features of a prototype of an online supervision that has been implemented by Edinburgh Napier University, UK. The motivation behind proposing such a system is to provide a technology educational tool that helps to ease and maintain an effective communication between the supervisor and their supervisees and improve and strengthen the relationship between all the involved parties while minimizing administrative overhead and guarantying better control of project progression and monitoring. This system is not intended to replace the current traditional face-to-face supervision method, but to be used as a complement to it. To achieve these goals, we are going start in the Section 2 by critically reviewing existing supervision practices and standards and contrasting classic and e-supervision methods. We will analyze the strengths and the weaknesses of each method with respect to practicality, effectiveness, efficiency, and quality of student supervision. Then we will briefly describe current electronic educational technology and computer-assisted based tools that are used in the UK. To identify the requirements that an online supervision system should fulfill, we have designed different specific questionnaires for students and academic staff. These questionnaires aim to refine the requirements for our e-supervision tool. Based on the questionnaire results, we have implemented an initial prototype of this system. We are going to explain its features in Section 3 and 4. Finally, we conclude by discussing the strengths and the weakness of this project and briefly describing future work.

2. Related Work

A dissertation or final year project should be designed to build and test the skills and the knowledge acquired during the education and to prepare and train the student towards becoming a professional. Today, there is a great deal of literature on traditional supervision in the theoretical sense. This literature focuses on issues such as relationships, key features, and the ways in which supervision can be managed. The issue of supervision quality is a major problem because of increasing concern about issues of comparability, consistency, and mobility [1]. Before summarizing the key issues, we are going to start first by explaining the supervision relationship, its stages and actors. Then we review the existing methods and tools that are needed.

There are a number of ways that supervision can be conceptualized or understood as a relationship. One common way that the supervisory relationship can be conceptualized is as a mentoring relationship, in which the supervisor provides academic and personal guidance and social capital to his or her students [2]. This conceptualization of supervision is intended to reduce hierarchical and power differences between supervisor and student and to place the focus on knowledge transfer. In an academic context, the supervision of a final year or dissertation project is a set of stages. Each stage has specific objectives and learning outcomes. Author in [3] have proposed a typical process that has been applied successfully to a wide spectrum of projects. As Figure 1 illustrates, this process or lifecycle is composed of the following seven key steps: development of the project proposal; development of the problem description; following the objectives; presentation and analysis of the data; drawing conclusions and identifying future work; presenting and defending the work orally; and preparation of the final report. These steps are ordered and should be synchronized. The transition from one step to another should be validated by a quality control carried out by qualified persons known as the supervisors and the examiners.

As mentioned before, the supervision process requires different actors with precise relationships. We find typically in any dissertation project the following parties:

The student: is the key actor and they are committed to carry out a project to achieve some learning outcomes (LOs) and goals. For this purpose, the student will seek support from a supervisor to identify suitable approaches and solve problems.

The supervisor: is the person responsible for guiding, motivating, monitoring, and advising the student according to certain supervisory standards and regulations. The supervisor is skilled in carrying out projects in the student's subject area.

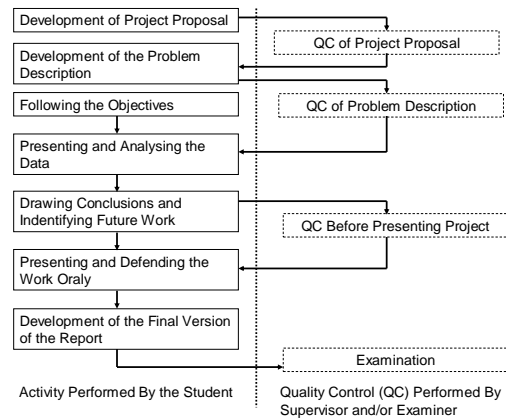


Figure 1: Project Process

The examiner: is the person who assesses the student's achievement either continuously or summatively. The examiner guarantees the compliance of the student's work and the supervision support to the defined higher education regulations and internal departmental procedures. So often, the examiner is seen as the quality evaluator and assessor. To this end, the supervisor needs to collaborate and co-ordinate with the supervisory team and the departmental administrators.

The administrator: is generally a team of persons who design the specification of modules, project, curriculum, guidelines and program of studies within an academic institution. These persons expect a high level of commitment from the student, the supervisor and the examiner. For this purpose, they design the procedures and guidelines to be used according to the latest higher education regulations, the internal charter and policy and the best practice recognized internationally.

In addition to these key actors, other persons may be involved in the supervision process such as a student support adviser, a resource manager, and a trainings and workshop coordinator. All the different actors need to network with each other according to predefined guidelines. At the end of the supervision process, the student is assessed and the whole process is evaluated. As a result, new best practice will be reinforced and others revisited. Such a kind of critical evaluation of the supervisory process can be done by the supervisors themselves and external partners [4]. Depending on the nature of the project and the level of study, some steps may be recurrent and the actors may be doubled. Figure 2, summarizes the different actors and their space of interaction.

Despite all efforts, many supervisory issues may appear at any stage of the project lifecycle. For example the supervisor may face challenges to help his students controlling and conducting their research or projects independently with minimum assistance and interference. In other circumstances supervisors may find difficulty to build the students' autonomy,

reflection, motivation, and self-initiative to control their projects.

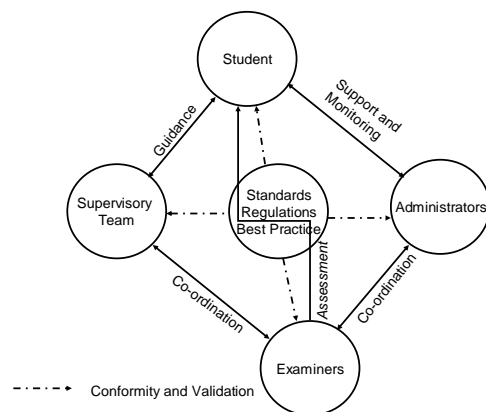


Figure 2: Actors Involved in a Supervision Process

A rational balance between the supervisor's and the student's interests and ambition should be found. Without a clear supervision process and administrative tools to monitor the progress and check the conformity of the implementation of the supervision process, supervisory challenges will increase and student satisfaction will deteriorate. Authors in [5] have identified a set of other critical success factors and they have integrated them into an analytical framework that can be applied to either e-supervision or traditional supervision practices. More importantly, they determined that evaluation of supervision should be evidence-based (that is, dependent on how the supervisor's students have achieved their educational goals including course completion and degree attainment). Although the supervisory dimensions of this model are useful, the evidence-based metric does not take into account student involvement in the process. Thus, this model does not fill the gap in evaluation of supervisory success. It also does not take into account external factors, such as candidate selection and admissions procedures and availability of external support and resources for students, which can affect the educational outcomes of students regardless of the supervisory skill or commitment [6]. These findings consolidate our motivation to put in place a collaborative online e-supervision system to better control, monitor and evaluate the supervision experience for both student and supervisor. In fact, E-supervision, or online supervision, is increasingly common in an academic environment as universities are using technology to support learning and feedback. Both traditional and e-supervision relationships now involve the exchange of email or other computer-mediated communications [7]. However, some supervisory relationships are primarily or entirely computer-mediated, and some universities have also developed programs that are

intended to facilitate the online supervision process specifically [8]. It should be noted that e-supervision research is limited and primarily of a recent nature (although some work [7] is quite old and it is often of a critically reflective nature rather than being based on a larger qualitative or quantitative study).

Today, there are new innovative ways of using the open source virtual learning environment to support the supervision process. Authors in [9] proposed a new online supervision model called POURS (Peer and group Online Undergraduate Research Supervision). This model is designed to help supervising undergraduate project research. The POURS model involves key project stages and deadlines, online exercises, peer reviews and group supervision, and threaded supervisory discussions [9]. Authors argued that since the POURS model was introduced, student learning has been enriched by exposure to a range of topics and methodologies encountered by their fellow students and face-to-face and individual contact between supervisors and students has been reduced, while maintaining the quality of the support. As a result, student performance and understanding of the research process has improved and the quality of dissertations has increased substantially.

Another similar system called ProjectList is proposed by Loughborough University, UK [10]. This system intends first to manage easily a large list of dissertation projects, allocate them to students with minimum overhead by avoiding as much as possible manual solutions that frequently involve multiple documents and spreadsheets, flurries of emails, and lots of fiddly details to keep track of. Secondly, it aims to simplify the supervision process and bring everything together in a single place by easing remote accessibility to academics and students at any time or place. The ProjectList system is reinforced by another tool called Co-Tutor. This second tool is used to track and record the meetings between students and their tutors. Thanks to this system, tutors can record the details of face-to-face meetings, add any information at any time, have a record of email that has been sent to their tutees and add a copy of any email sent by a student into their record.

Compared to ProjectList and Co-Tutor tools, Cambridge University, has proposed another system to address the reporting issue. The proposed tool is called CamCORS (Cambridge Colleges' Online Reports for Supervisions) and it is a supervision reporting system that allows supervision reports to be read, written, and processed online. Using this system, a supervisor can create report forms for each of his students at the beginning of term, write them up after each supervision meeting, and submit them to the university on the completion of supervisions for the term. Compared to ProjectList and Co-Tutor, this online tool is designed to ease the

communication between supervisors and university administrators. It seems that students have no access to this system and therefore they cannot create progress reports or review them before submission. While these different tools attempt to solve supervision issues, save time and maintain an effective and transparent supervision process, we do believe that they still suffer from different limitations and they do not federate the tasks and contributions of all actors. Giving priority to some actors in the expense of others and not sharing a clear global view of the supervision progress in real time with all actors does not help in our opinions to enhance the learning experience and the quality of supervision for a student. Therefore, we propose a new integrated and collaborative tool called Student Project Performance Management system that is driven by student's needs.

3.0 Student Project Performance Management System

As stated earlier, our new system shares common advantages with existing proposed tools and tries to further enhance their limitations. Compared to similar online tools, our proposed system is central and collaborative at the same time. The specific requirements of each supervision actor are taken into consideration and the whole communication channel between the parties is carefully designed.

From a design point of view, our system includes the following elements.

3.1 Project database

This database contains all dissertation projects proposed by all teaching staff and students for a given department of discipline. Project proposals are uploaded to the system using an online form. The specification of each project includes an abstract, a list of keywords, a list of required resources (hardware and software), and preferable skills. The list of project proposals is classified or clustered into subject areas or research focus. To ease project search, this database is linked to the supervision system with a friendly Graphic User Interface (GUI). This GUI interface allows a quick, simple and advanced search. Students can browse projects per topics, subject area or sub-category.

3.2 Supervisory Team Database

This database contains the lists of tutors or supervisors. Supervisors are linked to the list of projects that they have suggested and they are classified according to their fields of expertise. These fields of expertise match the keywords used in the project database. Within our system, supervisors can

be grouped into small groups with respect to the different categories used to classify projects. When a student shortlists a project proposal of interest, the supervision system automatically proposes some potential supervisors (supervisors and second markers) for the project. Consequently, the system will ease and hasten supervisor allocation and assignment which will help to avoid significant delays in starting a project and saves the student's time. Within this database, different roles and supervision quota can be assigned to each staff member. Such feature will help to control the staff workload across academic terms and ease the work of subject group leaders.

3.3 Performance Management Plan

Once a dissertation project is identified and the supervisory team is agreed and allocated, the student starts tackling their project. For this purpose, they will need to agree a schedule and a work plan with their supervisor. Therefore, our system contains a performance management plan that allows defining milestones, tasks and goals and their corresponding timeline and expected deliverables. This performance management plan is initiated by the student himself, validated by the supervisor and shared with the other actors such as the second marker and examiner. The former can use this performance management plan to monitor the progress and arrange a progress review meeting whenever needed. Our supervision tool allows the student and the supervisory team to check the current progress at any time and add comments whenever required. Progress report documents and charts can be produced and printed and exported by all involved actors depending on their access control policy with accordance to the supervision regulation.

3.4 Trainings and workshop database

During a dissertation project, a student needs to consolidate and learn new skills. To address this issue, we added to our system a database for academic and professional workshops and trainings. As part of the performance management plan the student needs to agree with their supervisor which type of trainings or skills they require to attend to better achieve their project. This will be documented as a specific task within the performance management plan. Automatic notification will be sent to the workshop or training organiser. For example, a student may be advised to seek help from the student academic support adviser to enhance time management, academic writing and oral presentations skills. Other technical skills may be provided by external academic institutions or department.

3.5 Assessment Forms

Depending on the assessment scheme and the nature of the dissertation project, our supervision system allows the supervisor and the examiners to complete and print electronic assessment forms. These forms can be accessed by the student at the end of the supervision process so that he will have a detailed feedback about his performance.

3.6 Communication interfaces

The supervision system provides support for communication and group work. Example of features that are still under development include videoconferencing capability, integrated chat and whiteboard; online discussion, file management system and mail system.

4.0 Student and Supervisor Views

Before starting prototyping our new online system, we conducted a survey with 29 undergraduate computing students at the School of Computing at Edinburgh Napier University to collect their views and expectations about our system. This survey runs for one week at the beginning of this academic year 2010. Students were given the following nine questions (Q1-Q9) and their answers vary from: Agree Strongly (AG), Agree Slightly (AS), Neither Agree nor Disagree (NAND), Disagree Slightly (DS), and Disagree Strongly (SD).

Q1: Do you think that current paper based project ideas booklets and using WebCT to advertise project proposals are enough to find a relevant project or not?

Q2: Do you think that current supervision system helps you to indentify the right project for you before starting it (having sufficient advice, background, and hardware and software tools from supervisor if necessary)?

Q3: Do you think that a centralised online supervision system with advanced searchable project database (search with keywords or classified projects) will be more efficient than paper based method (booklet and guides)?

Q4: Do you think that an online supervision system with online tracking and monitoring facilities is better than using traditional e-mails to seek clarifications or feedback about a project prior to starting it?

Q5: Do you think that during a project, the current supervision practice (method and forms) are sufficient to set clear milestones and deadlines that you can check whenever necessary?

Q6: During a project, do you think that paper based diary forms are enough to record and reflect on the outcomes of the meetings with your supervisor?

Q7: During a project, to you think that sharing files and reflection with your supervisor is easy using just the e-mailing system or face-to-face meetings?

Q8: During a project, do you think that using an online supervision system where you can add on a flexible manner the project goals, milestones and deadlines is better than using paper based diary forms?

Q9: Do you think that an online supervision system that records all project steps, forms and progress (i.e. record-keeping relating to the project) will enhance the communication between the supervisor and the supervisee and save their time?

Table 1: Students Feedback

Q	AG	AS	NAND	DS	SD	NR
1	2 6.89 %	16 55.17 %	4 13.79 %	7 24.13%	0 0 %	0 0 %
2	3 10.34%	15 51.72 %	7 24.13%	3 10.34%	0 0 %	1 3.44 %
3	12 41.37 %	12 41.37 %	3 10.34%	1 3.44 %	0 0 %	1 3.44 %
4	9 31.03 %	6 20.68 %	8 27.58 %	3 10.34%	2 6.89 %	1 3.44 %
5	2 6.89 %	14 48.27 %	8 27.58 %	2 6.89 %	0 0 %	3 10.34%
6	3 10.34%	14 48.27 %	6 20.68 %	3 10.34%	1 3.44 %	2 6.89 %
7	8 27.58 %	12 41.37 %	5 17.24 %	2 6.89 %	0 0 %	2 6.89 %
8	7 24.13%	14 48.27 %	4 13.79 %	1 3.44 %	1 3.44 %	2 6.89 %
9	7 24.13%	12 41.37 %	8 27.58 %	1 3.44 %	0 0 %	1 3.44 %

The collected results show clearly that an important number of undergraduate computing students who are still facing problems to identify a correct dissertation project that suits their programme of study and their ambitions (See Table 1). Around 62% of them found that current practices are helpful and sufficient for them. When comparing current practices and methods with the proposed features of the new computer-assisted supervision system, the majority of the students agree that such a system will ease the supervision process, save their time and improve their performance. As table 1 illustrates, 82% of the questioned students think that a centralised online supervision system with advanced searchable project database (search with keywords or classified projects) will be more efficient than paper based method (booklet and guides). Moreover, 72% of the questioned students agreed that using an online system will help them to better manage and control their project compared to just using paper-based diary forms. In addition 65% think that having in place an online supervision system that records all project steps, forms and progress will enhance the communication between the supervisor and the supervisee.

Questionnaire for Academic Staff

In addition to interviewing undergraduate honours students, different members of staff that are partially or totally involved in supervising undergraduate and

postgraduate students across the whole university were interviewed to collect their views about the features they would like to have in our system. 50 academic and administrative members of staff at Edinburgh Napier University were interviewed in June 2011. The following questions were given and answer ranges from: Very Useful, Useful, Neutral, Not Very Useful, Not At All Useful, and No Opinion.

Q1: A list of projects suggested by each staff member

Q2: A feature for classifying project proposals into subject areas and sub-categories for each discipline

Q3: An option for the student to choose their projects of interest.

Q4: A feature for a student to submit a project proposal

Q5: A feature for staff to indicate which events they recommend for their student.

Q6: A record of workshops, events and trainings that a student has attended during the dissertation project.

Q7: A calendar/diary indicating all deadlines set by the supervisor or module leader.

Q8: An editable workflow chart, e.g. Gantt chart.

Q9: Supervisor comments after each meeting or task.

Q10: Student comments after each meeting or task.

Q11: Comments from the second marker when required e.g. progress review meetings.

Q12: Overall project feedback from the supervisor.

Q13: Overall project feedback from the second marker or examiner

Q14: A shared documents repository for the performance management plan.

Q15: A feature to export the performance management plan, e.g. as a PDF file.

Q16: The number of projects proposed by each academic staff

Q17: A summary of the existing quota of project supervision for all staff.

Q18: A summary of all students in need of assistance, e.g. those with no project or not allocated to a supervisor or second marker.

Q19: A communication interface where messages or queries can be posted and exchanged between all actors (e.g. the Module leader or the school office administrator asks for an action to be taken).

Q20: A link between this system and the student's e-Portfolio or other Virtual Learning Environment.

Q21: A section for news feeds

Table 2: Staff feedback

	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
Very Useful	20	19	16	21	17	27	34	18	23	27	14	18	16	10	17	10	10	15	10	8
Useful	23	27	26	21	26	20	14	22	20	19	23	25	23	26	25	15	24	22	15	22
Neutral	6	3	6	6	5	3	2	9	4	3	9	4	7	8	3	13	11	8	14	15
Not Very Useful	0	1	0	1	1	0	0	1	0	1	0	0	1	1	5	3	2	4	3	
Not At All Useful	1	0	1	0	1	0	0	0	2	1	1	1	1	0	0	5	1	0	3	1
No Opinion	0	0	1	1	0	0	0	1	0	0	2	2	3	5	4	2	1	3	4	1
Total	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50

Staff survey results show that the majority of academic staff are endorsing the idea behind this system and they think that it is going to help them to

maintain an effective supervision relationship with their students while saving time and smoothing the communication process. Some members of staff have recommended setting some priorities in implementing certain features compared to others and the system should be easy to use.

5. Conclusion

The proposed e-supervision system constitutes an attempt to federate the communication and the process between all involved parties in a final year and dissertation project. Survey questionnaires show that both students and academic staff are endorsing the idea. The system needs to be fully implemented and then widely tested to confirm whether it helps to improve the quality of supervision and enhance student learning, feedback and assessment experiences. Future work will focus on these points and collect measurable evidences and metrics to evaluate the performance of this system.

4. References

- [1] Baptista, A. V., "Challenges to doctoral research and supervision quality: A theoretical approach", *Proceedings of a Social and Behavioral Sciences* Pages 1-15, 2011.
- [2] Manathunga, C., "Supervision as mentoring: the role of power and boundary crossing", *Studies in Continuing Education*, 29 (2), 207-221, 2007.
- [3] Mikael Berndtsson, Jorgen Hansson, Bjorn Olsson, and B. Lundell, "Thesis Projects: A Guide for Students in Computer Science and Information Systems", Springer-Verlag London Ltd; 2nd Edition, ISBN-10: 1848000081, 25 Oct 2007.
- [4] Firth, A., & Martens, E., "Transforming supervisors? A critique of post-liberal approaches to research supervision", *Teaching in Higher Education*, 13 (3), Pages 279-289, 2008.
- [5] Nulty, D., Kiley, M., & Meyers, N., "Promoting and recognising excellence in the supervision of research students: an evidence-based framework", *Assessment & Evaluation in Higher Education*, 34 (6), Pages 693-707, 2009.
- [6] Buttery, E. A., Richter, E. M., & Filho, W. L., "An overview of the elements that influence efficiency in postgraduate supervisory practice arrangements. *International Journal of Educational Management*, 19 (1), Pages 7-26, 2005.
- [7] Stacey, E., & Fountain, W., "Student and Supervisor Perspectives in a Computer-Mediated Research Relationship", *Proceedings of the Annual Conference of the Australasian Society for Computers in Learning in Tertiary Education*, pp. 519-528, 2001.
- [8] Paliktzoglou, V., & Suhonen, J., "Part-time online PhD reflection: train of thoughts". *Procedia Computer Science*, 3, 149-154, 2011.
- [9] Kay MacKeogh, "Using Moodle to Support Peer and Group Online Undergraduate Research Supervision", *EdTech 2008, the Ninth Annual Irish Educational Technology Users' Conference*, 23 May 2008.
- [10] Loughborough University, "ProjectList information site", retrieved from: <http://projectlist.lboro.ac.uk/>