



International Journal of Research in Open Educational Resources

المجلة الدولية لبحوث المواقع التعليمية المفتوحة

Enhancing collaboration between research supervisors and students using Learning Management Systems (LMS): Pedagogical perspectives

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International Journal of Research in Open Educational Resources

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Abstract

Background & Aims: Research supervision is a complex of processes that are more likely to be managing the research as a project. These complex processes requires coordination and collaboration between research students and their supervisors to manage different demands including the managing the research project, learning, publications, conferences, networking, and career development. There are many concerns have been pointed out in the previous research in relation to student-supervisor relationship. Researchers raised the issue that student-supervisor relationship is complex because gaps between experiences and expectations in relation to supervisory styles, feedback, and exposure to research & career networks. It is argued, in this paper, that using Moodle to manage student-supervisor relationship will improve the collaboration between students and their supervisors and coordination between the panel of supervisors and thus enhance the quality of and satisfaction about the relationship from the commencing to finishing the research project (and beyond).

Proposed Methods: After designing and implementing SuperVision (an adapted Moodle platform for supervision), and recruiting research participants (research supervisors, research students, learning advisors and librarians), a mixed-methods approach will be used. Activity reports analysis will be used to evaluate the activities, expectations and experiences in SuperVision. Four questionnaire will be distributed to the four types of participants to gain further insights on any differences between these experiences and their expectations. In the third stage of data collection, online focus groups will be used to collectively discuss technical features both enabling and hindering the collaboration in SuperVision in order to produce SuperVision Plus.

Expected Outcomes: It is expected that this project achieve a number of outcomes for both research supervisors such as better managing and coordinating the work in the research project, while the research students can develop their critical thinking and writing skills that enable them present conference papers and write journal articles – maximising the opportunities for future research careers after their successful graduations.

Keywords: Learning Management Systems, Research Supervision, Supervisors, Research Students, Moodle in Supervision, Communications, Pedagogy, Tracking Progress, Maintaining Activity Record, SuperVision.

Enhancing collaboration between research supervisors and students using Learning Management Systems (LMS): Pedagogical perspectives

Introduction to ICT in Research Supervision

Research supervision is a complex of processes that are more likely to be managing the research as a project. It is a process in which transition occurs from non-academic to academic status [1]. Supervisors are project managers for their students' research regardless of any tensions between their academic roles and their personal life commitments, with a goal in mind to allow a space for their students to develop independence [2]. Research supervision not only concerns the one-to-one relationship between a research student and their supervisor(s), it involves mentoring, guidance, and critical thinking [3; 4]. Research supervision is a complex process that has a number of interactions between interpersonal, social and environmental issues as well as the cognitive/technical processes of research itself. This complex process requires coordination and collaboration between research students and their supervisors to manage different demands including research, publications, conferences, career development, and networking [5]. Relationship between students and their supervisors should be built up around effective commitment and trust, to ensure the satisfaction and sense of belonging [6]. In general, research supervision includes many tasks and different internal and external factors that affect on the relationship and the processes [3; 7; 8; 9]. Supervision includes conversations between students and their supervisors to “to maximise the benefits of learning” [10, p. 212]. However, from the research and pedagogical perspectives, there are many issues that have been reported as problems associated with student-supervisor relationships.

Code of Supervision Practice

Opposite to teaching, supervision is associated with long-term activities, encouraging students to contribute to knowledge, guiding students towards independent learning, and allowing students to develop their own planned activities [7]. Supervisors should possess interpersonal skills to encourage good writing and be able to work with different learning styles. Indeed, supervisors are taking a major part in assisting their research students in developing their writing skills, and in many cases they are informed enough to suggest to their students venues of support networks that are essential to enhance their writing skills [11]. Supervisors should also be able to work with culturally diverse students, and help their students not only until they finish their research, but work with them to disseminate their research in presentations and publications to assist them in their capacity in research careers [12]. Collaboration between supervisors and research students starts to be evident when they work together in research publications, as “co-production” [13], as it is advisable that research students publish as they go [14].

Although supervision previously has minimal documentation, now there is an emphasis on reports, audits, and monitoring [15]. Although supervision is a relationship with a scholarship purpose, it involves many of professional learning conversations [10], in which there is a transition from dependency to autonomy. However, supervisors' mentoring to research students has a positive impact on student satisfaction and their outcomes in relation to number of presentations and publications [16]. Furthermore, there is an increased goal on employability of research students [15]. Empirical research has found that supervisors should ensure the progress of their research students, coaching their research projects, and enable them to participate in academic / professional practice [17]. Although universities are not employment agencies for research students, supervisors are expected to inform their research students the type and nature of skills that employers are looking after. Supervisors should help their research students to develop their publication records (recommending appropriate conferences and journals and assisting them in planning their papers) and to introduce them to the academic networks and personal contacts, suggest potential thesis examiners, and to support them for postdoctoral positions [18].

Issues in Research Supervision

There are many concerns have been pointed out in the previous research in relation to student-supervisor relationship. Researchers raised the issue that student-supervisor relationship is complex because there are divert supervisory styles, inconsistency in feedback channels, and distributed cognition demands [19]. Previous studies show that research candidates need of supplementary training in relation to employability skills [20]. Another concern is related to communications between supervisors and their student which, to large extent, depend mainly on emails [21], which affect negatively on the supervisor-student relationship. Although many recommendations and proposals, the range of evidence that is usually used to support claims of supervisory excellence tends to be limited [22], especially that the most concern in the supervisor-student relationship is about the lack of regular contact between the both, which make students feel unhappy [23], and they have suggested using technology-enabled communication as an option [23]. Supervision is moving from sole supervisor towards supervisory panel [24] – and thus collaboration and coordination between supervisors and the research student are always being questioned.

ICT in Research Supervision

In an attempt to work on enhancing collaboration activities and knowledge management between students and their supervisors in graduate theses, an e-tool (SRST) is argued to organise the main four elements in theses: documents, ideas, discussions, and tasks, and although the attempt to integrate between different stand-alone systems into one “big” system to avoid running different applications [25], it remain unclear how far this project stands now. Indeed, the integration between different systems is now an old style issue... these days, open source software are developed and allow to opportunity to integrate micro-software called plug-in, which can add extra feature to a specific software.

Although the use of collaborative educational technologies, (Microsoft Education 365 [26], Moodle [27], Joomla [28], and Mahara [29]), is well established at the undergraduate levels, it seems that such current technological solutions are not designed to perfectly suit research students and their supervisors. In an attempt to manage distance supervision, Moodle was used: supervisors are required to answer all the questions that their students post through Moodle, and students are required to send their progress report via Moodle. Research students can communicate with their fellows and share ideas through Moodle [30]. However, due to the lack of built-in functionality of voice/video communications, students reduced their interaction in Moodle, and began to phone their supervisors [30] – a feature that should be supported to ensure efficient use of Moodle in the supervision. It was found that Moodle is sufficient in relation to educational auditing functions, but more computerised techniques are still needed to ease the audit processes [24].

Unlink Microsoft Education 365 [26], educational institutions prefer to adopt the use of educational open source software like Moodle [27], Joomla [28], and Mahara [29], as they are free and their open-source code allow these institutions to customize the software to meet their needs and lectures/students’ needs. Moodle is, however, best in relation to collaboration and communication features (Figure 1) such as blogs, forums, file exchange, internal messaging system, live chat, wikis, integrated email, virtual classroom, training workflow but above all the collaboration management. Moodle has content features such as content/resource management, custom functionalities and reporting & skill tracking, and custom user interface. Moodle has exam/test engine and its grading system. The administrative features of Moodle include registration management, assigning different roles and administrative reporting [27].



Figure 1: Collaboration features in Moodle (source: Moodle [27])

The wiki functionality allows collaboration in writing and editing the content, but it also develops skills to edit independently [31]. It was found that using wikis between supervisors and students increased the transparency of student-supervisor interactions, and wikis were efficient to aggregate content and enable coordination between the supervisory panel and projects [32]. It was found that wikis help improving the quality of social construction [33]. The wiki is argued an vital tool especially when there is a need for collaboration in proof-reading theses and it helps developing writing skills especially for international students who write in second languages [34; 35; 36]. Collaborative writing offer opportunities to stimulate critical thinking and reflections. However, the true collaborative writing may work only when active involvement is fostered by paying attention to the construction of wikis [37]. It is advised, however, that when wikis are to be used as a mean of collaboration in the research writing and supervision, expectations are set-up forward between collaborators to avoid possible tensions especially when noting that the version-tracking data is proved to be unreliable to obtain insights into actual processes of collaboration [38].

Previous research has shown evidence that the collaboration tools are blended together to enhance collaboration outcomes and increase students' engagement in virtual communities (forums, blogs, wikis) [39]. The integration between wiki writing and discussion functions (such as forums) enhances the clarity and understanding [40]. The use of interactive approaches in the intellectual process of research supervision can increase the student-supervisor relationship outcomes [41]. Research students can communicate with their fellows and share ideas through Moodle [30]. Such a communications between fellow students enable group learning, which is vital for scholarly and professional learning [42]. Supervision meetings can be virtual/online using special plug-in features in Moodle, to allow regular meetings between research students and their supervisors. Previous research has suggested, for example, that in distance supervision, fixed virtual office hours should be used between research students and supervisors, a blend of various feedback approaches are recommended to be used (short messages and long in-depth feedback), and with an exchange of recorded audio messages when needed.

Moodle can be used not only to enable collaboration between research students and their supervisors, it can be used to develop research skills for research students and interpersonal supervision skills for supervisors. Moodle can include resources for research students such as recordings of seminars and training sessions (for example: NVivo & SPSS) [43]. Supervisors, too, can access to resources and professional development that help achieving efficient supervision and pastoral skills [9; 44] and Moodle can provide them with these resources.

Research Problem

It is argued that using Moodle to manage student-supervisor relationship will not only improve the collaboration between students and their supervisors, it also help enhancing the coordination between the panel of supervisors and thus enhance the quality of and satisfaction about the relationship from the commencing to finishing the research project (and beyond).

Main research question

How Moodle can be designed and adapted to ensure the quality of and satisfaction about student-supervisor(s) relationship?

Subsidiary research questions

To answer the main research questions, a number of subsidiary research questions have to be answered. Answers to these questions contribute to the answer of the main research question. These subsidiary research are:

- 1) What are the activities that supervisors and students do?
- 2) How student-supervisor(s) activities be managed using Moodle features and other plug-ins?
- 3) What are the Moodle's users and what are their privileges and roles?
- 4) How ethics considerations be managed, and how research participants be recruited?
- 5) What can student-supervisor activities tell about their experience within Moodle?
- 6) Are there any differences between expectations and experiences between research students and supervisors?
- 7) How Moodle can be re-designed to effectively enhance positive outcomes in supervisor-student relationship and overcome any barriers/obstacles?

Research Scope & Expected Outcomes

Research Scope

Any research project needs to has its narrow focus to be applicable/manageable within the research timeframe (commenting and finishing the research project), and thus the duration of this research takes about 4 to 5 years if this research to be applied for PhD Projects and 2 to 3 years if this research to be applied for Master Projects. Distant research students and supervisors (onLine Study Group oLSG) can be recruited for this research - as they are more likely to use Moodle. Onsite research students and supervisors (onSite Control Group oSCG) can be recruited for the purpose of undertaking comparisons with the study group. Learning advisors and librarians will be available for the two groups.

Expected Outcomes

It is expected that this research achieves a number of outcomes at the short-term and long-term for students and their supervisors – as summarised in the following Table 1.

Table 1: Short-term and long-term outcomes for supervisors and research students

	Research Supervisor	Research Student
Short-term Outcomes	<ul style="list-style-type: none"> - Less workload in relation to communication and to organise thesis structure and its focus/ direction - Saving time in coordinating meetings and to provide constructive/ consistent feedback 	<ul style="list-style-type: none"> - Improving critical thinking and quantitative & qualitative research skills - Improving writing and organisation skills
Long-term Outcomes	<ul style="list-style-type: none"> - Better management for last-draft of the thesis - Successful research examination 	<ul style="list-style-type: none"> - Contributions to conference papers and journal articles - Research career path opportunities

Research Methods & Milestones

1) Literature Review

The literature review discussed in the introduction of this paper has outlined the research undertaken so far in relation to the use of technology to manage collaboration in general, and collaboration in research supervision in specific. However, there is a need to determine and outline major activities, as expected or experienced, by research students and their supervisors. Figure 2 outlines major research activities and related individuals. The review will also involve whether or not the current Moodle support these activities or not; and if not, are there any additional available plug-ins to handle required research activities. For example, the current Moodle does not have built-in referencing management system, a free/ commercial plug-in is needed to be implemented and integrated into Moodle to allow insert & edit references in wikis. Literature review will also include finding relevant and useful resources for research students (tutorials and materials for quantitative & qualitative research methods) as well as resources to research supervisors to develop their supervision and interpersonal skills. Progress Report will be designed to have insights on the major research activities and related individuals – as outlined in Figure 2.

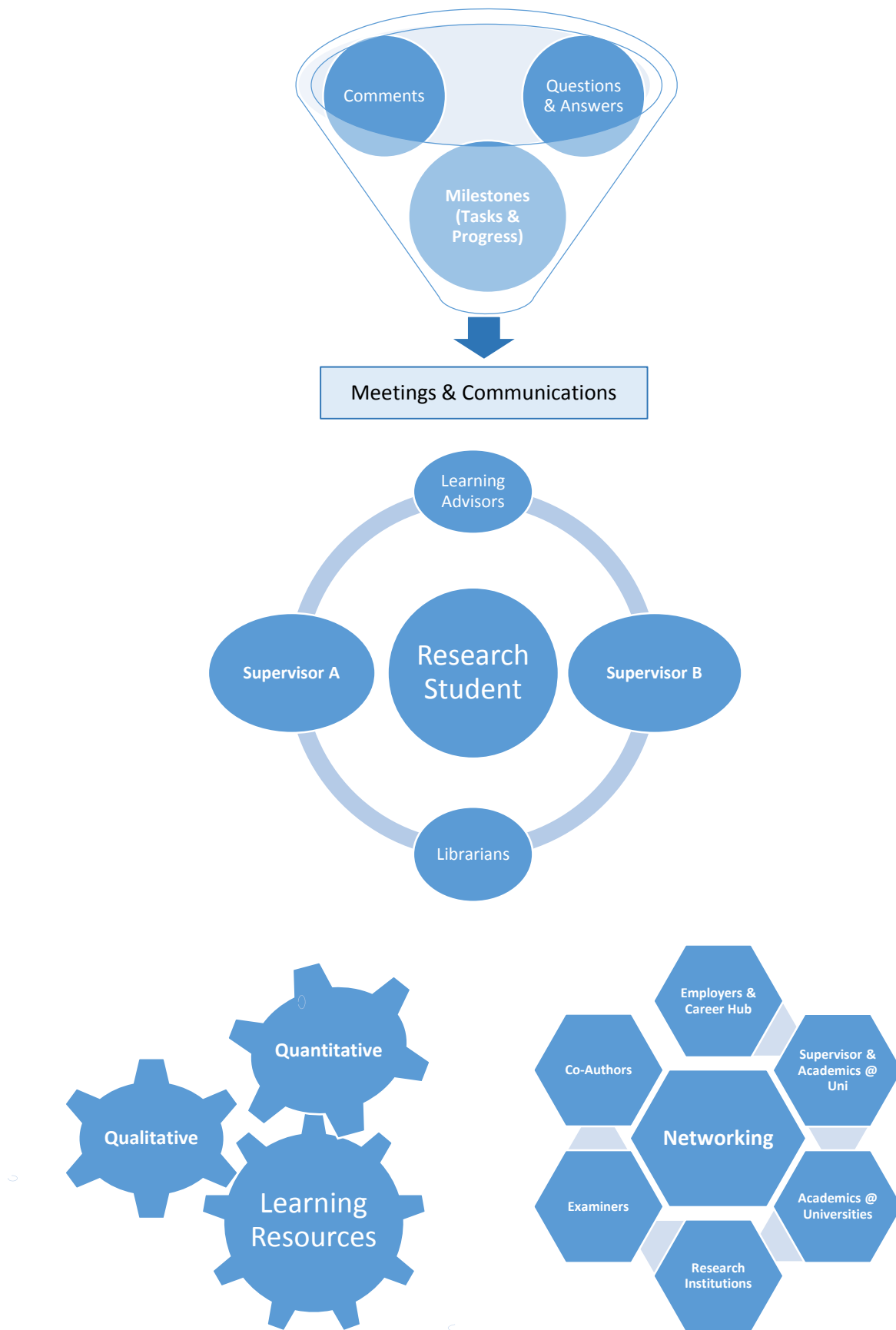


Figure 2: Main components to be considered in SuperVision

2) Designing Moodle for Supervision

After determining all the activities that are to be undertaken by supervisors, research students, librarians, and learning advisors, as well as all corresponding features & tools and any additional plug-in, the supervision system of Moodle (as can be called SuperVision) will be designed. The design will involve assigning groups, roles, and preparing the foundation materials.

3) Recruiting Research Participants

Before recruiting research participants, an ethics approval has been gained. Once the project is approved, the researcher will start recruiting the research participants. Those who will be participating in this project are 2 onsite Control Group (oSCG) and 2 online Study Group (oLSG). Each of the four groups is to consist of 2 or 3 supervisors, a research student, 2 learning advisors, and 2 librarians. Orientation sessions will be offered to participants in the four groups to outline how they can report their activities in the progress reports (especially those in oSCG), and how they manage and use different functions, features, tools, and plug-ins in SuperVision (especially those in oLSG).

4) Activities & Progress Report Analysis

The researcher will use content analysis to evaluate the progress reports for those who participated in the oSCG, while activity analysis and system reports analysis will be used to evaluate the activities undertaken by oLSG participants. Themes will be identified to cluster activities, expectations and experiences with a focus on positives to be enriched and negativities to be eliminated. The system reports and activity reports will be collected at 3 intervals (4 months).

5) Online Questionnaire

After analyzing the data generated from the reports, four questionnaires will be distributed to the four types of participants (supervisors, research students, librarians, and learning advisors) in the four groups. Participants will be required to draw further their views on their experiences with the supervision and if there are any differences between these experiences and their expectations.

6) Online Focus Groups

It is intended that these focus groups are to refine findings obtained from the report analysis and the online questionnaire analysis. These focus groups will collectively discuss technical features both enabling and hindering the collaboration in SuperVision, and how the system has / has not helped achieving the desired outcomes – as outlined in Table 1.

7) Re-Design SuperVision

Based on the findings obtained in the online focus groups, SuperVision will be redesigned to incorporate suggestions by participants in the focus groups, as well as implementing any new plug-ins and developments in Moodle to be used on a larger scale with other research students and their supervisors – which can be called SuperVision Plus.

To sum-up the research stages, the following Table 2 provides a research timeframe and major milestones and deliverables.

Table 2: Research Project Timeframe & Deliverables

Stages & Deliverables	Year 1			Year 2			Year 3		
	4Mons.	4Mons.	4Mons.	4Mons.	4Mons.	4Mons.	4Mons.	4Mons.	4Mons.
Literature Review, Moodle Features & Plug-ins Review, and Progress Report Design									
- Progress Report			◆						
Designing Moodle for Supervision									
- SuperVision			◆						
Recruiting Research Participants									
- Research Management Induction			◆						
Activities & Progress Report Analysis									
- Journal Articles of findings of the 3 sub-stages of activity/ progress reports				◆	◆	◆			
Online Questionnaire									
- Journal Article of findings of the online questionnaire							◆		
Online Focus Group									
- Conference Paper about SuperVision Plus (Commercialisation)								◆	
Re-Design SuperVision									
- SuperVision Plus									◆

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