Tracking the Design and Development of a Six Module miniMOOC for Quality Graduate Supervision

Hawazen Alharbi
Werklund School of Education
University of Calgary/King Abdulaziz University
halharbi@ucalgary.ca

Michele Jacobsen
Werklund School of Education, University of Calgary
dmjacobs@ucalgary.ca

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Introduction

The Quality Graduate Supervision miniMOOC is an innovative design solution for faculty development that provides an accessible and flexible online learning environment for graduate supervisors. Many professors tend to develop graduate supervision skills on the job versus through active and intentional training. While many faculty welcome seminars on graduate supervision, the act of balancing demanding research, teaching and service roles and responsibilities can leave little discretionary time for scheduled faculty development seminars or workshops. To support both new and experienced graduate supervisors in continual professional learning to enhance their graduate supervision skills and knowledge, we designed a mini Massive Open Online Course (miniMOOC) on Quality Graduate Supervision at the University of Calgary (Alharbi & Jacobsen, 2016b). The first offering of the QGS miniMOOC is labelled "mini" because the first iteration is being offered as a closed pilot for research.

This paper reports on the design and development phases in the production of the Quality Graduate Supervision miniMOOC. This innovative design solution is part of an overall design based research investigation into the design, implementation and evaluation of online faculty development for graduate supervisors. This paper builds upon the analysis and exploration phase of the miniMOOC (Alharbi & Jacobsen, 2016a) and describes the design elements that were determined to be relevant and necessary for the development of this online faculty development experience. Second, this paper describes the process and challenges experienced during the development of the QGS miniMOOC. Outcomes from the design based research project can inform the design and development of online faculty development and learning opportunities in higher education. Findings from this research are relevant for graduate students, academic faculty across disciplines, senior leadership in higher education, and educational developers.

Background

Graduate supervision is defined as "a complex pedagogical practice. It is a partnership between an experienced and an aspiring scholar, which shifts over the number of years it takes for the research to be done and the thesis to be written" (Kamler & Thomson, 2014, p. 1). Most graduate supervisors develop their practice experientially, that is, by just in time learning early in their academic careers (Alharbi & Jacobsen, 2016b). Some graduate supervisors approach graduate supervision in the ways that they were supervised, while others actively take steps to supervise students in different or better ways. It is clear that the quality of graduate supervision experienced by students varies (Beaudin, Emami, Palumbo & Tran, 2015). The relationship that develops between graduate supervisors and graduate students is one of the important factors in the success of students in their graduate studies (Adkins, 2009; Skarakis-Doyle & McIntyre, 2008). One issue in developing learning opportunities for graduate supervisors is the paucity of literature on how to best support graduate supervisors. A few pioneers in higher education are paying attention to the types of support and informal learning experiences that help to prepare graduate student for research and new faculty members for graduate supervision (see The Thesis Whisperer https://thesiswhisperer.com, and The Supervision Whisperers https://thesupervisionwhisperers.wordpress.com).

Research on student satisfaction with graduate supervision has been carried out (Beaudin, et al., 2015; Erichsen, Bolliger & Halupa, 2014), and advice is provided on helping graduate students with writing (Kamler & Thomson, 2014) and with teaching (Altman, Stein & Stowell, 2015); however, there is a paucity of research on how to be a good supervisor beyond identifying some characteristics of good supervisors (Ismail, Hassan & Masek, 2014). Dangel and Tanguay (2014) wrote, "there is conceptual and empirical literature that points to the need for quality supervision; however, there is less information on how to best support supervisors in their work" (p. 4).

On campus workshops, seminars and sessions focused on graduate supervision can also enhance the skills of newer and more experienced supervisors, and help them to develop expertise beyond their individual experiences being supervised. The busy schedule of faculty members, volume of work, logistical issues such as the times and locations of sessions, lack of recognition or financial awards for teaching, and lack of direction from the university are some of the reasons behind the lack of participation of faculty members in faculty development opportunities available at institutions (Taylor & McQuiggan, 2008). It is important to provide faculty development opportunities that are accessible, flexible and responsive to faculty members' demanding work weeks. Furthermore, the design of a faculty development opportunity that focus on improving the skills of graduate supervisors should emphasis on the idea of creating a safe space for supervisors to discuss, critique and debate this private pedagogical relationship "supervision" (Manathunga, 2010).

The use of MOOCs for faculty development offer one approach to addressing the accessibility and flexibility issues and thus may encourage greater participation among faculty members. Researchers have recommended the use of MOOCs as a workable solution for faculty professional development (Bond, 2013; Fini, 2009). Fini (2009) explains that most people attend MOOCs for professional development reasons. Zhenghao et al. (2015) report that 52% of respondents who were surveyed after enrolling in one of Coursera's MOOCs pointed out that the main reason they took a MOOC was to build their career by enhancing or improving their current jobs, or to find new ones. These studies indicate that MOOCs can provide accessible professional development opportunities and also have benefits for those who engage in the professional development.

Furthermore, the use of MOOCs could be a solution for busy faculty members to participate in faculty development opportunities as they can determine the amount of time and effort they put into their learning and the time that better fit their schedule and it could help to blur the line between professional practice and professional development if the MOOC join communication, teaching and mentoring of faculty members (Bond, 2013).

This research is guided by two assumptions: 1) that higher education can benefit from the use of MOOCs for faculty development, and 2) a MOOC can be designed that focuses on quality graduate supervision and creating a learning community among participants.

This design based research is guided by three research questions.
1. What design elements are necessary in the development of a Quality Graduate Supervision miniMOOC?
2. What scaffolding and support is necessary to support faculty members to effectively use the Quality Graduate Supervision miniMOOC?
3. In what ways can a Quality Graduate Supervision miniMOOC support and benefit faculty members in the ongoing development of their graduate supervision practices?

Methodology

The present research is a design based approach to designing, developing and evaluating a faculty development miniMOOC for quality graduate supervision. Wang and Hannafin (2005) define design-based research as "a systematic but flexible methodology aimed to improve educational practices through iterative analysis, design, development, and implementation, based on collaboration among researchers and practitioners in real-world settings, and leading to contextually-sensitive design principles and theories" (p. 6–7). This paper focuses on the development of an innovative solution, which is the second of four phases in this design-based research initiative: (1) analysis of practical problems by researchers and practitioners; (2) development of solutions; (3) evaluation and testing of solutions in practice; and (4) reflection to produce 'design principles' (McKenney & Reeves, 2012; Reeves, 2006). In this project, the development of an innovative solution for flexible and accessible faculty development was a six module, QGS miniMOOC, which was offered first as a closed pilot at a Canadian university to evaluate and test the solution in practice. The first offering of the QGS miniMOOC is labelled "mini" because this first iteration was being offered as a closed pilot for the initial evaluation phase of the research.

Several factors, considerations and elements informed the design of the QGS miniMOOC. A conceptual framework for quality supervision emerged from a literature review and three learning theories: constructivism, connectivism and learning community. Principles of constructivism have been incorporated into the design to promote interactive learning, collaborative learning, facilitated learning, authentic learning, learner-centered

learning and high quality learning (Huang, 2002). Connectivism theory emphasizes that "instead of knowledge residing only in the mind of an individual, knowledge resides in the distributed manner across a network" (Siemens, 2006, p.8). Therefore, the design of the miniMOOC emphasizes opportunities for knowledge exchange, discussion, networking and communication among faculty members from diverse disciplines and fields of study (Alharbi & Jacobsen, 2016b). Learning communities in higher education can emerge from the careful design of collaborative learning environments (Tennant, McMullen & Kaczynski, 2010). The development of a learning community in online faculty development can increase learner success; thus, the miniMOOC was designed to support faculty in engaging in and forming a learning community (Taylor & McQuiggan, 2008). The discussion board in the miniMOOC was designed to create a learning community among participants to discuss issues related to graduate supervision and to contribute to the ongoing discussions by giving advices and/or examples based on their expertise in graduate supervision along with the guidance of the discussion moderators.

Process of the Design and Development of the miniMOOC

Designing and offering professional development opportunities must be strongly tied to the institution's strategic vision (Camblin & Steger, 2000). The design of the QGS miniMOOC is aligned with two goals of the university's academic strategic plan: 1) to focus on innovative teaching and learning, 2) to promote the inter-institutional and inter-disciplinary collaboration and internationalization. The university is invested in supporting academic faculty members in developing strong graduate supervision practices and also recognizes excellence in graduate supervision through an established reward structure. The Faculty of Graduate Studies, University of Calgary, has established the "My Supervisor Skills" program to support graduate supervisors with various seminars and workshops throughout the year. Every new academic faculty member must complete an orientation seminar in order to be granted graduate supervision privileges. A faculty member's supervisory privileges are evaluated every five years. Most faculties, including the Werklund School of Education, offer an annual Distinguished Graduate Supervision Award; the university offers the Teaching and Learning Award for Graduate Supervision each year; the Faculty of Graduate Studies grants GREAT Supervisor Awards each year during Great Supervisors Week; and the Graduate Students Association offers the Excellence in Supervision Award. An established reward structure is an important institutional component in the success of any faculty development as the lack of recognition from institutions may be a factor that discourages faculty from participating in faculty development (Taylor & McQuiggan, 2008). To that end, the support that the university offers for faculty members, along with visible recognition through awards for quality supervision, provided a strong foundation for the design and development of the Quality Graduate Supervision miniMOOC at the University of Calgary.

The design process was also informed by a series of consultations with experts about elements of the design. In the analysis phase, questionnaires were sent to all graduate supervisors and graduate program directors at the University of Calgary to gather feedback about the challenges faced by graduate supervisors, the need for faculty development opportunities and on the desired topics that such faculty development should address (Alharbi & Jacobsen, 2016a). Key themes from the questionnaire data informed the development of the themes and the learning objectives for the six modules in the QGS miniMOOC. The six learning module themes and the sub-topics are listed in Table 1.

Table 1. The six learning Modules of the QGS miniMOOC and Sub-Topics

Week	Topic	Sub-Topics
1	Introduction to Graduate Supervision	- Introduction to the Quality Graduate Supervision miniMOOC, and supervision resources from the University of Calgary - Introduce the research and invite faculty to be involved.
2	Best Supervision Practices	- Elements of caring and effective supervision - Faculty of Graduate Studies guidelines for supervisor and student best practices - Supervision policy and regulations - Graduate program design and requirements - Supervisor-student checklist
3	Relationship Building	- How to establish good communication from the beginning - Creating shared expectations: -- Frequency of meetings -- Agenda and purpose for meetings -- Timelines and benchmarks

		- What does the first meeting look like?
		- Supervision and mentoring across cultures
4	Mentoring New Researchers	- Supporting students' coursework and program goals
		- Coaching and guiding through the various stages of the writing process, through grant applications
		- Strategies to motivate and support graduate students
		- What resources are available for graduate students?
5	Anticipating and Addressing Challenges	- Identifying students who are struggling
		- Conflict identification and prevention
		- Conflict resolution (what to do and where to go?)
6	Promoting Excellence and Wellness in Graduate Education	- Supporting students with knowledge mobilization and grant writing
		- Developing research teams
		- Striving for balance
		- Supporting wellness and wellbeing in graduate students and faculty
		- Participant reflection on key learning and highlights

Each of the six modules includes an overview, learning objectives, resources, videos and a discussion board. In the design and development phase, the first author finalized the design of each module with a faculty committee, and set to work developing each of the modules along with the expertise of members of the miniMOOC team. In addition to resources and guides available from the Faculty of Graduate Studies, a design decision was made to include videos of expert supervisors. One of the challenges at this stage of the research was to attract sufficient funding for the development the miniMOOC and in particular for high quality video production. Acknowledgement is given to the Faculty of Graduate Studies for providing a development grant for the QGS miniMOOC that enabled the team to work with a professional videographer and editor in the creation of the expert videos for the miniMOOC.

Questions were developed in relation to each of the six module themes and were used as a guide for the expert supervisors during the videotaped interviews. The expert supervisors were selected based on having won Faculty of Graduate Studies GREAT Supervisor awards and Faculty Distinguished Supervision Awards. The supervisors included three males and three females from such disciplines as psychology, biochemistry, medicine, education and nursing. The videographer set up a studio in a quiet office space to capture high quality video and sound. Using the prepared questions as a guide, the interviews with each expert supervisor enabled the design team to capture the diverse qualities and practices of excellent graduate supervision in relation to all six of the topics. Each video interview took approximately one hour. The source video was edited so that each of the final expert videos for each question in a module included perspectives from three different supervisors. The selection of the supervisors' responses to each question was based on two considerations: 1) how informative was the answer, and 2) how diverse were the supervisor's answers to the guided questions. The goal was to include composite expert videos for each module that presented diverse and rich responses to questions such as, what constitutes best practice in graduate supervision, how do you identify students who are struggling, and how do you motivate students? For example, in module three, a composite expert video on "how to establish good communication with your graduate students from the beginning" was posted along with two other composite expert videos related to this module's topic. Another video on the course home page combines perspectives from all six expert supervisors on what is most satisfying about being a graduate supervisor (Figure 1).
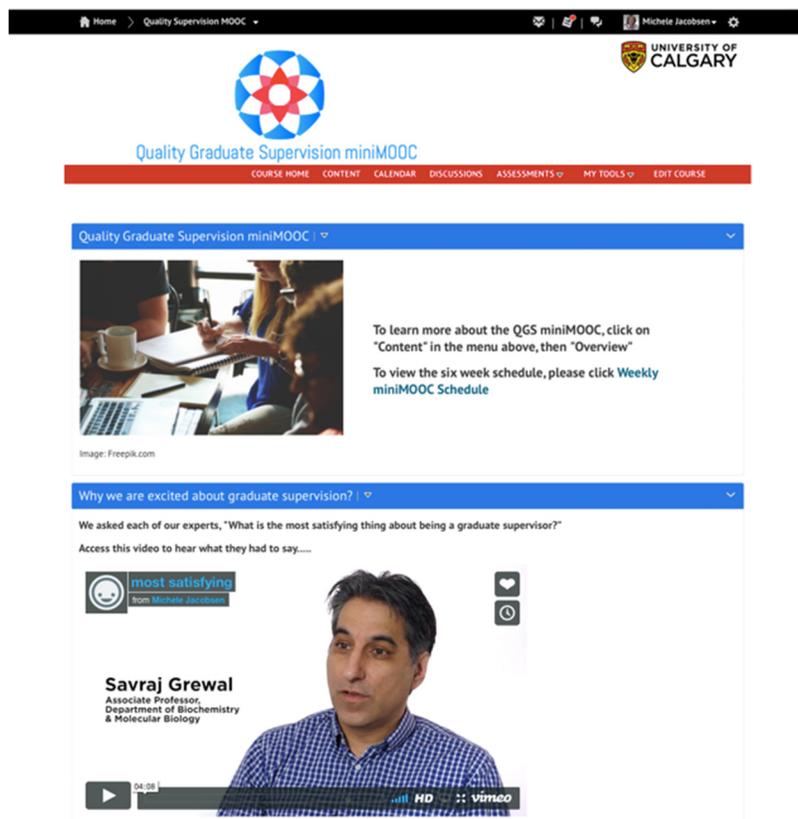
Figure 1. Home Page of the Quality Graduate Supervision miniMOOC

       Questions and prompts posted in each module's discussion forum are aligned with the questions asked of the expert supervisors in the videos. In module five, the discussion board offers case scenarios that the participants were invited to discuss and debate with others. Four of the six experts' supervisors who participated in the video interviews, and an Associate Dean from Faculty of Graduate Studies, were recruited to moderate the discussion forum for a week to answer questions and participate in the discussion. One discussion moderator requested the opportunity to guide the discussion for two weeks in a row after having a very informative experience in the first week. A summary of the design elements and components implemented in the QGS miniMOOC is in Table 2.

Table 2. Design Components Implemented in the QGS miniMOOC

Design Components	Design and Construction
Overview and Learning Objectives	An introduction was developed for each topic of the QGS miniMOOC along with weekly learning objectives.
Experts Supervisors' Videos	- A series of interview questions were developed in relation to each module topic to provide a guide for filming the expert supervisors. - Expert supervisors included three males and three females from such disciplines as psychology, biochemistry, medicine, education, counselling psychology and nursing.
Discussion Board	- Questions and prompts posted in each module's discussion forums are aligned with the questions asked of the expert supervisors in the videos - Discussion moderators were involved in guiding, promoting and summarizing discussion each week
Resources	Resources and content were collected from the Faculty of Graduate Studies at the University of Calgary and from other online sources and was aligned with the weekly topics in the QGS miniMOOC.

The development process to ready the QGS miniMOOC for initial launch took approximately four months, including consultation with the miniMOOC team at every step of the design, gathering formative feedback on each module as well as the overall design and navigation, altering the design of the modules, consulting and getting more feedback, and making multiple changes and improvements through many iterations. The build using the learning management system took approximately two months. As part of the design and development phase, the QGS miniMOOC was accessed by three faculty members who were invited to serve as peer reviewers to evaluate the design, give feedback and suggestions before the miniMOOC was launched. Each of the reviewers who were recruited were selected for their recognized excellence in teaching and or in graduate supervision.

The Quality Graduate Supervision miniMOOC was first offered as a closed pilot at one university in Winter 2017. A link to a recruitment video and email invitation to participate in the QGS miniMOOC was sent to all graduate supervisors at the University of Calgary. Diverse faculty members from computer science, education, political science, medicine, veterinary medicine, sociology, art, engineering, physics & astronomy, nursing and physiology & pharmacology chose to take part in the first offering of the QGS miniMOOC (Alharbi & Jacobsen, 2017). The QGS miniMOOC was launched via three orientation sessions (online and on-campus) for the 23 graduate supervisors from eleven different disciplines who initially signed up. The purpose of the orientation was to introduce the faculty members to the QGS miniMOOC, provide a brief demo, and introduce them to the study. Each supervisor was provided with a binder that included an overview of the six modules, the FGS Supervisor Handbook produced by the Faculty of Graduate Studies, a copy of the orientation slides, and several printed resources from the first two modules. Supervisors were encouraged to print and save resources in their binder that they found to be helpful from the QGS miniMOOC. A demo was provided to show faculty members how to login the miniMOOC and navigate the different modules. An online seminar was provided for faculty members who could not attend in person. Graduate supervisor participants were unanimously very enthusiastic during the orientation about the QGS miniMOOC learning experience and were eager to get started – more than half viewed the videos, accessed the rich resources and engaged in the discussion forums during the first few days that the QGS miniMOOC was open.

The instructor sent the 23 graduate supervisor participants a group email at the beginning of each week to guide them on how to engage in the miniMOOC activities and with the learning resources (see Table 3).

Table 3. Example of Instructor's Weekly Email to miniMOOC Participants

Good Morning Graduate Supervisors!! **Welcome** to Module 4 and Week 4 in the Quality Graduate Supervision miniMOOC! Our topic this week is **Mentoring New Researchers.**
Module 4, Mentoring New Researchers: This module has several objectives: to gather ideas about how to support students with coursework and program goals, to access strategies for coaching and guiding students through the writing process, to learn strategies from others about how to motivate students to make timely progress in their programs, and to access the plethora of resources available to support students and supervisors. For example, I recently learned about this treasure trove of helpful resources by Canadian and UK researchers: http://doc-work.mcgill.ca I will be adding this reference to Module 4, and also accessing it heavily for my own graduate supervision.
Keeping yourself on track: Academic faculty are organized, right? The **value** of online learning is the **accessibility** and **flexibility** to make it work for YOUR busy schedule! However, it works best when you _schedule_ MOOC learning into your week! If you have not done so already, I encourage you to add "miniMOOC" to your calendar, and login several times per week to access resources, watch the videos, and to engage with others in the discussion forum.
Learner Expectations for this module: As with the first three modules, you are expected to: 1) Access and review the rich resources, 2) Watch the expert videos (and take jot notes!), 3) Engage in the Community of Practice by contributing to the Discussion Forum, and 4) Respond to discussion contributions made by others. Optional Portfolio - you can complete any activities and add useful resources you have found to your FGS Supervision Handbook.
Discussion Forum & Moderator: I am thrilled to introduce the Discussion Moderator for this week, **Dr. Name** Professor, Department Name. Many of you may feel you already know Dr. Name from the Expert Videos! *Dr. Name will be on hand this week to answer questions and w will also be taking part in the discussion forum!*
I will be checking in with our group regularly, either through email or by taking part in the discussion forum. All the best in continuing your active learning journey in the miniMOOC.

Of the 23 faculty members who signed up for the Quality Graduate Supervision miniMOOC, a total of 15 graduate supervisors completed all six of the modules and were presented with a certificate of completion. Of the 15 faculty members who completed, 2 had requested and benefitted from extra time beyond the six weeks to complete the final modules. As for timing, the pilot was offered in March and April, and the final two modules overlapped with the end of semester grading and reporting period. In future offerings, the development team will offer the miniMOOC earlier in the semester, like October and November, or February and March, or even in Spring or Summer semesters, so that the final two modules do not overlap with the demands of end of semester.

As part of the overall design based research project, data was collected using interviews, surveys and observations with participants during and at the end of the course to evaluate the implementation phase, to learn about what worked and what needs to be changed, and to inform the design principles for faculty development MOOCs. While data is currently being analyzed, and full research findings from the entire design based research project will be shared in a doctoral dissertation and subsequent presentations and publications, it is fair to conclude that the QGS miniMOOC pilot was a successful learning experience for faculty participants and that this project will continue to expand to a wider audience at the University of Calgary, and eventually, beyond our campus to graduate supervisors from the wider higher education community.

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