

Sequencing Collaborative Activities in an Online Graduate Program

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Abstract: This paper describes a successive group work sequencing in an online graduate program. Various collaborative work methods have been intentionally introduced in multiple courses under a Story-centered Curriculum in order for the students to become gradually accustomed to collaborative online activities that increase levels of complexity and intensity. It is discussed the factors of group activities that determine complexity and difficulty levels may include the size of a group, nature of submission of the group work (as a group or by individuals), visibility of others' work in progress with the use of different tools available, and making peer comments option or requirement, among others. Students' reactions to the collaborative activities in the online learning environment have been positive, with some implications for improvement of the design of collaborative activities in the future. A set of design principles is called for in the future research to guide designing introduction and implementation of online group activities of others, and to refine our own practice.

Keywords: *sequencing, group work, collaboration, visibility, online graduate school*

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BACKGROUND

Kumamoto University's fully online Graduate School of Instructional Systems (GSIS) was established in 2006 to produce e-learning specialists with the core competencies in instructional design (Suzuki, 2009). Its ground design has been firmly based on the latest concepts of instructional design and technology, in order to practice what it preaches. For example, curriculum was derived top-down from the expected competencies of the graduate, in terms of e-Learning Consortium Japan's requirements for e-Learning Professional's certifications. For instructional strategies, such ground rules were adopted by all professors in the program; (1) not to use the online lecture, recorded or live, as the main method of information provision, (2) not to use closed-book final examination, but to assess the student works with multiple open-book assignments, and (3) to use asynchronous discussion boards as the main mode of communication, in which process can openly be shared among students taking the same course. Every measure has been incorporated in the design and implementation of its program to set up and maintain a high level of instructional quality so that the program itself can be regarded a good example of what e-learning design can accomplish (Suzuki, 2012).

When it was decided to improve the program with a Grant from MOE Japan in 2008, Story-centered Curriculum (SCC) was selected to guide the reform (Suzuki, et al, 2009). SCC is an extension of Roger Schank's instructional design theory called Goal-based Scenarios (GBS). Whereas GBS is a model for designing simulations for learning higher-order skills by doing and making mistakes in a virtual environment, SCC is to be used for curriculum-level design by providing an architecture for higher scalability without losing the "learning by doing" nature of GBS. SCC unites multiple courses, usually taken concurrently within a given semester, by introducing first a cover story from a real-world situation common to multiple courses, in which graduates of the program would be expected to work as professionals. Within such an authentic context, the students would act as if they were already in such a situation, but with assistance and information from faculty when needed.

The implementation of SCC at GSIS has been accepted positively both by professors teaching various courses within the program, and by students who have experienced the new style of online learning (Suzuki, et al, 2009). It has also given us, as the designers of the graduate level education, ample opportunities to try out new ideas and shape them, using the design-based research framework (Nemoto, et al, 2010; Nemoto & Suzuki, 2011). One of the challenges that we have faced has been how to sequence various types of group activities in our curriculum. In SCC, we have more control over the sequencing of weekly units from multiple courses, by aligning to the overall story line, as opposed to any regular curriculum where each course progresses one session per week. Thus, after we set the sequencing the learning contents to have cumulative effects to one another, we sought for arrangement of various group activities across courses to have intentional sequence for gradual introduction to various ways of group activities without giving too much burden on the side of students.

It has been shown in the literature of collaborative and active methods that group activities can be both key to the success of online learning programs and the most difficult challenge to the online learners. For example, Johnson & Johnson (2007) stated that collaborative learning "tends to increase achievement, positive attitude, healthy development, positive relationships with team members," and "provides a sense of belonging, the opportunity to explain and summarize what is being learned, shared mental models, social models, respect and approval for efforts to achieve, encouragement of divergent thinking, and interpersonal feedback on academic learning and the use of the technology (p. 402)." Despite of the premise of collaborative activities, however, the learners may be hesitant to engage in group activities. Simonson et al (2012) pointed out that "although a significant body of research supports the use of collaborative learning and its benefits, many instructors and an even greater number of students prefer not to engage in such activities (p.282)," because of logistical difficulties and the problem of free riders. They caution that it is best to design with these students' attitude in mind, so that "ultimately these valuable work skills will be a practical addition to any students' abilities (p. 282)."

Thus the purpose of this paper is to describe our experiences in introducing group activities in order for the students to become gradually accustomed to various collaborative online activities with increasing levels of complexity and intensity. It is also discussed what has been the students' reactions to the collaborative activities in the online learning environment. It was also aimed to discuss the factors of group work activities that determine complexity and difficulty levels, trying to propose a set of design principles to guide introduction of online group activities.

GROUP ACTIVITIES IN GSIS'S SCC: THE FIRST SEMESTER

The first thing our new students encounter is our online asynchronous orientation course (Nemoto & Suzuki, 2011), where they are introduced to the use of various tools and functions of our learning management system including discussion board. In the first session, each student is asked to introduce him/herself to the cohort of usually less than 20 peers (18 in 2012 cohort), by creating a new thread in a discussion board. For example, within a month prior to 2012 cohort entering to our program, a total of 31 postings and replies were made by 21 participants, including one professor and one teaching assistant. With no specific request was given to reply to others, only three students replied to the postings of others; other replies were made by the professor and TA. The orientation course ends with an introduction to SCC, where they are fictitiously hired by an e-Learning vender to improve the quality of their service as their mission (Suzuki, et al, 2009). They are told that they are expected to complete weekly work orders from Mr. Nakamura, their hypothetical boss, for which they are supported by various courses offered by GSIS.

The first course of the SCC is "Introduction to e-Learning," where four individual papers are required as assignments (or work orders from Mr. Nakamura), together with 15 small tasks needed to complete the assignments. No group work is required in tasks and assignments; all were individual works in this course. However, replying to the postings in discussion boards becomes a requirement in this course; all the students must make at least one reply to any postings for each task, and at least two for any postings of drafts to be submitted as assignments. When the assignments are submitted by a student to the professor, it is also required to attach notes of revisions that have been made by adopting comments from peers. As the result, for the first task in "Introduction to e-Learning" in 2012, a total of 60 replies were posted to 28 postings (including 10 students who were not in the 2012 cohort) with no postings from the professor and TA. The average number of replies from the 18 students in 2012 cohort was 2.50 ($SD=1.47$), producing a total of 45 replies. For the 5th task to submit and exchange ideas for the draft of the first assignment in Week 1, a total of 125 replies were posted to 27 drafts (including 8 students who were not in the 2012 cohort) with no postings from the professor and TA. The average replies from the 18 students in 2012 cohort was 5.06 ($SD=2.87$), producing a total of 91 replies.

The second course is "Instructional Design I," which starts in Week 4, just after completing the first course "Introduction to e-Learning" during the first three weeks. Three individual assignment papers are required in this course representing three major steps in creating a paper-based instructional material (proposal, design review, and formative evaluation report), together with 15 small tasks to support the process. Although no group paper submission is required, the students are required to work in a trio to critique each other's drafts for all the three submissions. When students submit their draft proposals as task 4 to a discussion board, trios are to be formed automatically, from the first three students making the first trio, and so on. So, a total of six trios are created for 2012 cohort. Although it is open to submit a critique to a posting outside of the trio that one belongs, it is required to make comments to the other two students within the trio. Checklists are made available to support the process of mutual evaluation, and approval of the other two members is required to submit assignments to professor, before he judges the overall quality to decide if the submission gets a pass or "revise and resubmit" status.

The third course in intellectual property and the fourth course in information technology are mainly on individual basis, due to the preference of the professors, which may also reflect the nature of the contents. By reflecting two professors' teaching preference and/or strategies, the fourth course has both aspects of individual works that are invisible to other students in the class and that are open to others, depending on the tools used in the course. Discussion boards make progresses of others open, while the use of submission tools directly from students to professor does not inform others of the progress being made.

The fifth and last course in the first semester deals with business and management aspects of e-learning. Because it is taught by three lecturers from outside, this course has three assignment papers, together with one positioning paper at the outset of the course, and one reflection paper at the end, all to be done by individual students. There are some mixtures of tools in this course by instructors; the first one uses both submission tool and discussion boards with no requirement in mutual comments, the second one use both submission tool and multiple choice quiz with no visibility of others' activities, and the third one uses submission tools and a group work at the very end, where 3-4 students are assigned to a group to critique each other's works within the group. The final lap-up group work for this course for preparing a reflection paper divides students into two groups, each having either viewpoint of a provider or a customer, so that each member of each group makes comments to a proposal created by the other team, in a discussion board.

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It was not due to the overall pre-planning, but due to professors' preferences, that our students experience a diverse set of communication tools and types of collaboration in the first semester. We value mutual commenting to each other, because it provides opportunities to apply what they are learning to different cases. We also value openness of peer works shared among all students in the class, because it provides opportunities for observational learning vicariously. The absence of those features in some courses may have enriched the experiences of our students with other possibilities to compare to our valued way. It was designed with intention, however, that heavier types of collaborative group activities were put on hold until in the second semester. Basically what is included in the first semester is all individual work, to avoid overloading the beginning students. Still, they are to experience commenting to each other's works, as well as revising their own works according to suggestions from peers, which in term should serve a basis to build their capacities for more advanced collaboration in the second semester.

GROUP ACTIVITIES IN GSIS'S SCC: THE SECOND SEMESTER

The second semester is structured differently in that, while each week has one particular assignment from a course given to the students in the first semester, they are given all the course information at the outset of the second semester and decide on their own their schedules for the entire 15 weeks. This change aims to allow more control over planning of their learning to assist them to become self-regulated learners. The core course of the second semester, "Practicum in e-Learning I," involves group activities throughout the semester to deal with a client professor who feels a need to blend his/her course (Nemoto, et al, 2010). Thus, decisions as to when to prepare for presentations to the client, and when to work on group tasks of other required courses, must be made in harmony as a group. Each student then must plan for other individual tasks (they may take different elective courses) to create an overall study plan for him/herself.

Under a story that the student is now hired as an intern (a fictitious position) by the Institute of e-Learning Development (IeLD) at Kumamoto University (a real organization), they form teams of 3-4 students, each to be assigned to a client professor. Their mission is to help the client solve his/her problems by reading a request for proposal and course syllabus, asking qualifying questions, studying IeLD's policy and good practices, creating a prototype of e-learning elements, and proposing and negotiating a solution of blended e-learning into the client's face-to-face course. Each team is expected to work closely throughout the semester as a group, with intern advisors (professors in GSIS) to get support at various stages before contacting the client. Each team is also expected to work collaboratively with other teams to exchange work-in-progress and learn from each other. Five products (assignments) are required in this course, all of which are created and submitted as a team, except for the last product of an individual reflection report. Each team needs to divide work to be positively interdependent to each other, somebody taking leading role to set up deadlines for contribution from its members, as well as schedules for synchronous meeting over SKYPE.

There are two other required courses in the second semester that call for group activities: "Instructional Design II" and "Practice of Distance Education." The professor teaching "Instructional Design II" wants to form groups of about six students, so we proposed to combine two teams of "Practicum in e-Learning I" to constitute a group for this class. Because this course requires changes in group configurations from the first half to the second half of the course, we proposed not to destroy the teams of "Practicum in e-Learning I," but to combine different sets of teams for the second half; from A+B and C+D to A+C and B+D, for example. This was intended to keep the team of "Practicum in e-Learning I" as the core of all group activities in the second semester, not to lose collaborative group atmosphere by changing group members from one course to another randomly. The same principle was applied when the professor of "Practice of Distance Education" asked for dividing the entire class into two large groups; we proposed to keep all group members of "Instructional Design II" to be in the same large group, altering the combinations to form different halves for the second large group activity. This was one of the proposals added to the management of SCC in 2012, by taking students' opinions of 2011 cohort that they suffered from random groupings in concurrent courses. In 2012, different groupings existed to meet the requests from professors asking different group sizes, but the core teams are always kept unchanged for more stability, as a compromise.

The types of group activities are different between the two required courses in the second semester. In "Instructional Design II," with groups of six students, each group is given a request for proposal to analyze, research, and create a plan as a group in a closed discussion board, which can only be seen by group members. When a group creates a draft plan, they submit it to an open discussion board. In the open discussion board, each team gets comments from students from other groups: at least one comment to a selected group is required. In the third stage,

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each group goes back to their closed discussion board for analyzing comments from peers. However, the final proposal is created and submitted to the professor individually, taking both group discussion and peer comments into considerations. In the second half, where a more in-depth proposal is requested, all submissions are to be done individually with peer support within the group. On the other hand, “Practice of Distance Education” used a larger grouping where a leader is named by the professor to each group to submit a group report by summarizing the group discussion. At least three postings are requested from each member before the dead line date, so that the leader can start summarizing a total of 30 – 40 postings. Individual reflection comment is also required for each member regarding his/her contribution to the group report. The same format is used twice with different leaders and different group configurations in the first half of the course, which is followed by a lecture by a part-time instructor (a professor of a different institution). No group activity is required in the second half of the course.

A year-long journey of peer collaboration under a successive group work sequencing described above is summarized in Table 1. The complexity and types of collaboration are different among the courses in the second semester, it is oriented more toward group activities than the first semester. Students are always busy scheduling group meetings, taking various roles within the groups and commenting to each other’s works. It is a burden for students, besides learning the contents of those courses, but considered important to become able to handle this not-so-easy task of collaboration, through their own learning experiences, in order to become e-Learning specialists.

Table 1. Peer Collaboration under Successive Group Work Sequencing

	Week	Course title	Group report	Group activity	Mutual comments in discussion boards	Individual report
	0	Orientation	None	None	Optional	None
Semester 1	1-3	Introduction to e-Learning	None	None	1+ reply required in all sessions	Revision note required to reflect peer comments
	4, 6, 9	Instructional Design I	None	Trios	Required within trios using checklists	Revision note required; OK from peers required to submit
	5, 7, 8	Intellectual Property and Private Rights in the Network Society	None	None	No use of discussion board	Directly submitted to the professor
	10-12	ICT Learning Support Systems	None	None	1st half: Optional; 2nd half: No use	Directly submitted to the professor
	13-15	HRD Business Management	None	Role play discussion (1/3)	Not mentioned (3 sessions); Required (2 sessions)	Directly submitted to the professor
Semester 2	1-15	Practicum in e-Learning I	Five products	groups of 3 - 4 working with a client	Required within groups in all sessions	One reflection report at the end
		Instructional Design II	One draft proposal	groups of 6 working on different cases	1+ reply required in all group sessions; 1+ reply required to other groups' draft (twice)	Directly submitted to the professor (4 reports)
		Practice of Distance Education	Two in the first half	two large groups	3+ postings required for group discussion (twice)	Group leaders submit reports twice
		Special Research I (research methodology)	None	None	Optional in the first 5 sessions; 1+ reply required in all other sessions	Revision note required to reflect peer comments

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STUDENTS' REFLECTIONS TO THE GROUP ACTIVITIES

Nine students out of 18 who were in the cohort of Year 2012 and experienced SCC took an optional course (one credit) for reflecting their experiences of SCC and learning the design theories and implementation intention behind the scene, as a part of their training to become a provider of such a curriculum. Of the nine who took the reflection course, five students answered to the reflective activity by posting an opinion(s) to a task regarding the collaborative group activities. The other four had withdrawn from or discontinued the course before this particular activity. A transition graphic shown in Figure 1 was used with some explanation of our intent in sequencing the group activities in the first two semesters, in order to help reflect the learning experiences.

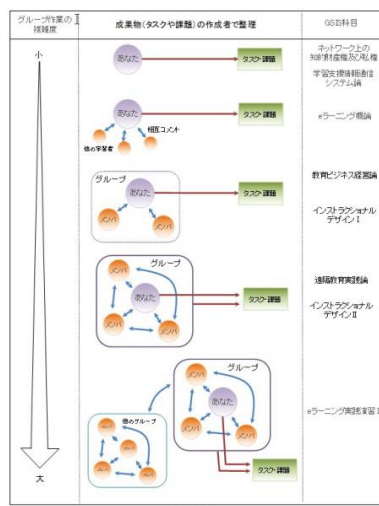


Figure 1. A Diagram showing Sequencing Group Activities with Increasing Complexity

Student A was very happy to know that the group activities are sequenced with gradually increasing level of difficulties, when our design intention was unclosed in a reflection activity. He thought it was because of curriculum design with this successive sequencing of group activities that he could perform well in the last and the most difficult collaborative group work. He was accustomed to online group activities as he has gone through various types of collaboration before it came to the hardest one. He suggested providing a little more support to be given at initial stages, in the form of fail-safe information, stating what to do when a group activity would not run smoothly. It would be like a scaffolding; gradual fading out of support as students' experiences accumulate during the year. He mentioned it may conflict with the "learning by doing and learning by making mistakes" philosophy of the program, but initial failure could be so critical for a student so that failures should be saved to the later time when the students become more endurable.

Student B expressed her positive feeling toward the collaborative group activities that she was able to work in accordance with her own learning style, and that relaxed to enjoy the diversity of opinions and perspective due to different professional backgrounds of peers. She felt it was easier in the second semester when group products were required, because the outcome goal was clear. This was contrary to our prediction in that it would have required in depth collaboration among group members to create group product, than merely commenting to each other's individual works to be submitted individually. She was not sure if her comments to peer's works were valid and to the point, when she made comments to the works of peers, and sometimes felt her comments were at a superficial level, just to check if all the required points were covered. However, when a minimum quality standard was specified and notified to the students in an assignment, she could feel good to have contributed to peer's works, by checking her comments against the standard. This is a very natural reaction as they were still the ones who were in the process of learning, confirming the importance of providing evaluation scheme or prescribed checklist to secure the validity of mutual comments among students. She noticed through this experience that when such a scheme is not available, the first thing to do in the group work is to discuss the evaluation criteria, before getting into the critiques of individual works.

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Two students reacted positively for the small size grouping. Student C suggested a gradual expansion of the group sizes with pairs as its core so that responsibility of each student can be made more apparent and place less burden on scheduling group synchronous sessions on SKYPE; he suggested to have pair work first, paring two pairs to form groups of four, then finally larger groupings of eights or twelve's. Student D felt 10 students in a group was too big to consolidate diverse opinions in this asynchronous distant environment, and it was an "intentionally designed good experience" to realize it didn't work with a large number of students in a group. Student A reacted by saying that he noticed the same core grouping was used in multiple courses, which makes group activities easier than having different grouping for each course. It was one of the improvements that we tried in 2013, based on student opinions and observations from the previous year.

Student E raised a question as to how the use of different communication tools for collaborative work would have made a difference, after tried out only discussion boards and heard about Google Docs for compiling group opinions in the large size grouping (10 in a group). Although uses of different tools were spontaneously initiated in some groups with a member who was more familiar with the variety of emergent collaborative tools, it remains to be our future task to determine which tools should be mandatorily assigned and/or made available as options.

CONCLUSIONS: LESSON LEARNED AND IMPLICATIONS

It has been discussed in this paper that, by gradually increasing the complexity of collaborative works in an online graduate school, the students' capacity of collaboration may increase to become more capable online learners. Various aspects of collaboration may affect the complexity, including the size of a group, nature of submission of the group work (as a group or by individuals), visibility of others' work in progress with the use of different tools available, making peer comments option or requirement, among others. Johnson & Johnson (2007) pointed out that not all groups are collaborative; putting some students in a group does not guarantee that collaboration will take place. To reach the full potential of the group, "five essential elements must be carefully structured into the situation; positive interdependence, individual and group accountability, promotive interaction, appropriate use of social skills, and group processing (p. 406)." It is our future task to examine in depth how those essential elements are evolving, and may evolve in a better way, by changing the design of each of collaborative activities and the sequence of them. We also need to propose a set of design principles for others designing similar online collaborations in the future, toward a model of the sequencing collaboration in an online learning environment.

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