

## Design of Learning Environment for a Story-centered Curriculum

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**Abstract:** This paper describes three years (2009–2012) of our practice in the story-centered curriculum project that we initiated in 2008, and, as part of a design-based research, how we revised it, retrospectively. While improving the quality of the contents, reflection activity proved to be very valuable, because the learners revealed that their knowledge of each course deepened and that their application skills increased, which was the intent of the curriculum. We found that we deliberately placed much value on reflection activities. To see the effectiveness of the reflection activity, we need to review the extent to which the activity met our intent. Comparing the quality of the reflections of past learners and reviewing the correlation between the timing of the reflection activities and the quality of the reflection, will be the possible action to confirm our decision making to lead a proposal of the design principle.

**Keywords:** *Story-centered curriculum, Reflection, Design-based research*

## **INTRODUCTION**

Curriculum Design with context (Story Centered Curriculum: SCC) is intended to improve learners practical skill, and in this research, our aim is to elaborate knowledge about how we can construct of learning environments to be put into practice. Proposed by R. C. Schank (2007), the SCC is one of the instructional design theories derived from Goal-based scenarios (GBS) that provide architecture to the design of a curriculum with high scalability without losing the learning-by-doing nature of the GBS. Both the instructional design theory, GBS, and the learning theory, Case-based reasoning (CBR), are behind of the SCC approach, which is a practical approach to deepen skills knowledge to teach in a realistic story, developed by enhancing the scalability applied in a curriculum-level design.

The characteristic of this approach is to create a story under the assumption that skills and knowledge will be used in a situation that practitioners use. Compared to the conventional approach, whose curriculum is a collectivity of independent courses, this approach enables instructors to combine several course contents and to provide them as continuum through a story. Since our design and development of the program in 2008 (Nemoto et al.), we have offered the SCC learning environment at our graduate school. Rather than to redefine GBS, Our focus has been to collect various kinds of ideas for instructional approaches for the design of the SCC, so that the SCC approach will become a wide-range delivery approach.

## **IMPLEMENTATION AND IMPROVEMENT CYCLE OF OUR SCC**

The target of our SCC is a master's curriculum in Instructional Systems in order to foster practical educational design through the online courses. The advantage of this approach is that the student can focus on one assignment at a time. Instead of offering individual courses in isolation, the SCC unites multiple courses, usually taken concurrently within a given semester, by first introducing a story from a real-world situation common to multiple courses, in which the target program would be expected to work as a professional. Within such an authentic context, the students would act as if they were already in such a situation, but with assistance from faculty when needed.

We designed the SCC with 5 courses for the spring semester and 4 courses for the fall semester of the first year of the MS program in which courses are all from our department. The learners are expected to access a web sited described about a story, which includes practical applications and commonalities in all courses mentioned above and face the challenges that occur in the story. Each challenge the learner faces in the story is related to a related one class assignment of a course, so that students work through the course assignments by predetermined order.

To create a storyline, we first set a expecting professional who graduated from our program and now works in a corporation or another area; prepared a learning environment to enable the SCC to connect with a story

information with existing course materials. For instance, we developed “SCC HOME,” a portal website, to provide a story and to have our learners access each of the course materials directly related to the story. In addition, we prepared an “MTM Suboffice”, an “Intern Room”, and a “break room” to communicate with peers and instructors in order to stimulate learning activities (Takahashi et al., 2013).

To make decisions to revise the program, we have continuously reflected on the results of each year from various perspectives, such as context and support for the students, which are important resources. Table 1 shows the list of revisions of the last three years based on students feedback, learning outcomes, informal interviews, and so on.

The challenge in the first two years of our SCC implementation was to incorporate into our program the concept of GBS and the characteristics of the SCC. Restructuring the curriculum to provide it through a story and to create support systems were the main design activities (Nemoto, 2011). From the third year, on which this paper focuses, our goal was to operate effectively as well as to obtain a higher degree of quality of the blending of a story and exiting courses. Major revisions were made to enrich the context, create a seamless environment to utilize the story and course contents, and to clarify the expected outcomes to the students, which in turn related to refine the story-driven learning style. Another main issue we faced was the student reflection activities that intended to deepen the learners’ understanding about the contents they learned and the skills they transferred into future practice. The underlined sections in Table 1 emphasize the modifications related to the student reflection activities.

Three main points needed to be improved in the reflection activities: a) providing brief reflection activities at short intervals to expect naturally-induced reflection(especially in the spring semester because there is a one-time student reflection), b) balancing reflection activities and students’ load, and c) relating the reason for this activity and therefore promoting the value of the students' self-expression. We found that the reflection activities strongly related to the goal of our practice and that the design of the reflection determined how successfully we conducted it.

To provide brief reflection activities, we offered tasks for students to reflect on their learning outcome and application into the practice of what the student learned and experienced. In the first two year, there was a one-time reflection at the end of the semester. We increased the number of opportunities to reflect by setting aside time at the end of all of the courses to reduce the students’ load as well as to secure the quality of the reflections.

To balance the reflection activities and the students’ load, we reserved time so that the learner could create a work plan and a progress report in the fall semester; the semester consisted of three stages, and the participants were expected to submit a work plan and a progress report at each stage until 2011 cohort. The learner proceeded by following his/her own planned schedule, which was different from the spring semester’s approach when the learner was given a more detailed schedule to complete the tasks and assignment. Contrary to our expectations, they proceeded to the next activity before they completed the reflection activity, which shows that the learners studied in our SCC without understanding our intention about the reflection design. In 2012, we decided to change the reflection approach in the second semester; we set a time at the beginning of the semester to plan the whole semester, and expected that the learners would take more responsibility for their own learning plan in a practical manner.

Table 1. Summary of the Revisions (3 years)

Year	Aspect	Spring Semester	Fall Semester
3 <sup>rd</sup> Year:  FY 2010	Developmental team	<ul style="list-style-type: none"> <li>Developed by a team</li> </ul>	
	Overall Design	<ul style="list-style-type: none"> <li>Provided our SCC as a course: "Integrated Curriculum Design" (ICD)</li> <li>Moved sect. 4 of "Information and Communication Technology Learning Support Systems" (ICT) and sect. 1, 2, 4, and 5 of "Human Resource Development Business Management" (HRD) from spring to fall semester</li> <li>Restructured curriculum: 3 weeks per courses (5 courses × 3 weeks = 15 weeks)</li> </ul>	
		<ul style="list-style-type: none"> <li>Succeeded in overall design of the 1<sup>st</sup> year</li> </ul>	<ul style="list-style-type: none"> <li>Succeeded in overall design of 2<sup>nd</sup> year</li> </ul>
	Storyline	<ul style="list-style-type: none"> <li>Changed story to fit a course modification of sect. 3 of "HRD," sect. 1, 2, 4, and 5 of "ICT," and "Introduction to e-Learning"</li> </ul>	<ul style="list-style-type: none"> <li>Succeeded in overall design of 2<sup>nd</sup> year (but deleted sect. 3 of "HRD" and sect. 1, 2, 4, and 5 of "ICT")</li> </ul>
	Instructional Strategy	<ul style="list-style-type: none"> <li>Added reflection activities as an MTM company staff in an "ICD"</li> <li>Moved assignment of "ICD" from "Introduction to e-Learning"</li> <li>Added new assignment: "Reflection and Development of an SCC"</li> </ul>	<ul style="list-style-type: none"> <li>Set work planning and progress reporting as activities in the "ICD" course</li> <li>Simplified format of work-plan and progress report</li> <li>Added new assignment: "Reflection and Development of an SCC"</li> </ul>
	Operation	<ul style="list-style-type: none"> <li>Combined two courses for an SCC student and a non-SCC student</li> </ul>	
<ul style="list-style-type: none"> <li>Minor adjustments to operate as a course, based on second year trial</li> </ul>		<ul style="list-style-type: none"> <li>Switched from 5 to 3 stages</li> <li>Secured time for creation of work-planning and progress report</li> <li>Changed "SCC HOME" design: expanded reflection week</li> </ul>	
4 <sup>th</sup> Year:  FY 2011	Developmental team	<ul style="list-style-type: none"> <li>Developed by a team for our SCC</li> </ul>	
	Overall Design	<ul style="list-style-type: none"> <li>Changed the structure of the "ICD I and II" (divided story into experience and design practice)</li> </ul>	
		<ul style="list-style-type: none"> <li>Succeeded in overall design of first year</li> </ul>	<ul style="list-style-type: none"> <li>Succeeded in overall design of second year</li> </ul>
	Storyline	<ul style="list-style-type: none"> <li>Minor adjustments based on 3<sup>rd</sup> year's storyline</li> </ul>	
		<ul style="list-style-type: none"> <li>Changed mission (from development of consultation package to business support)</li> </ul>	
	Instructional Strategy	<ul style="list-style-type: none"> <li>Revised assignments of "ICD" with mission change</li> <li>Added background information to understand storyline, such as animation, a seating chart of MTM company, MTM management structure, and a contents list</li> </ul>	<ul style="list-style-type: none"> <li>Added exemplifications of work-planning and progress report</li> <li>Added reason to review work-planning and progress report at every stage</li> </ul>
Operation	<ul style="list-style-type: none"> <li>Succeeded in operational design of 3<sup>rd</sup> year</li> </ul>		

*Table 1. Summary of the Revisions (3 years) (continued)*

5 <sup>th</sup> Year: FY 2012	Developmental team	<ul style="list-style-type: none"> <li>• Developed by a team for our SCC</li> </ul>	<ul style="list-style-type: none"> <li>• Developed by a team for our SCC</li> </ul>
	Overall Design	<ul style="list-style-type: none"> <li>• Minor adjustments based on 4<sup>th</sup> year</li> <li>• Succeeded in overall design of first year</li> </ul>	<ul style="list-style-type: none"> <li>• Focused on activities at Institute for e-Learning Development</li> <li>• Embedded a research course, “Special research I,” into story</li> <li>• Had learners work on same team through the semester</li> </ul>
	Storyline	<ul style="list-style-type: none"> <li>• Minor adjustments based on 3<sup>rd</sup> year’s storyline</li> </ul>	<ul style="list-style-type: none"> <li>• Added the story to the internship at “Institute for e-Learning development”</li> <li>• Changed missions: appended “research proposal” and “proposal to Institute for e-Learning development”</li> </ul>
	Instructional Strategy	<ul style="list-style-type: none"> <li>• Added new character in the story</li> <li>• Added interaction aspects in the curriculum, such as virtual community, gave an award to person with outstanding good results of assignment</li> <li>• Sent reminders to the person who became delayed in progress</li> <li>• Closed secretary's office</li> <li>• <u>Added clear approach to write reflection</u></li> </ul>	<ul style="list-style-type: none"> <li>• Added Manager Nakamura’s farewell (in a story)</li> <li>• Added intern information in cover story of fall semester</li> <li>• Changed scope of learning plans (per stage -&gt; whole stages)</li> <li>• <u>Added instructions to reflect work report and progress report, per stage</u></li> <li>• Changed weekly message content from weekly advice to three parts: “reflection of the final week,” “weekly procedure,” and “most recent event”</li> </ul>
	Operation	<ul style="list-style-type: none"> <li>• Adjusted deadline to fit an SCC and a non-SCC student</li> </ul>	<ul style="list-style-type: none"> <li>• <u>Set reflection time at the beginning of fall semester (preparation week)</u></li> <li>• Switched design of “SCC HOME” from Gantt Chart to calendar style</li> <li>• Added progress of elective courses at SCC HOME</li> </ul>

To further the students’ self-expression as well as the importance of reflection, we gave them minimal instructions for the reflection activity because we expected the learners to realize, by themselves, the importance of reflection. There was a tendency for the learners to delay the planning and reflection, therefore, we explained the purpose of reflection and its potential advantages.

## **CHALLENGES TO THE NEXT STAGE**

We developed our SCC with a case at Carnegie Mellon University West Campus, and have modified it every year based on our learners’ opinions and actions; the modifications enabled a more stable operation and reduced the load of implementation. But we still have the potential to improve our program with the contiguous revisions. Our greatest challenge, in this study, is to identify the key senescence of our design and the lessons we learned, from which instructors’ viewpoint and to what extent.

One of the characteristics of using an SCC (GBS) is that the learners have opportunities to use their knowledge and skills obtained in a story together rather than separately. This approach is a good fit for our target

audience who is expected to work in a professional context. In addition, conducting reflection activities and providing support to students to help them visualize the learning process, could be another advantage to employ an SCC. We intended, in our learning activity design, for students to reflect on their action activities (Schon, 1987), and as a result, we found that the reflection activity is the strong characteristic of our design. The reflection activity can be added to the SCC activities, or we could say that the reflection activity is part of the SCC. This presentation shows the changes in the reflection activity; in the future, we hope to propose, from this reflection trial, new support for learning that enable the application in other practices with a clear viewpoint to lead the research outcome.

To see the effectiveness of the reflection activity, we need to review the extent to which the activity met our intent. Comparing the quality of the reflections of past learners and reviewing the correlation between the timing of the reflection activities and the quality of the reflection, will be the possible action to confirm our decision making to lead a proposal of the design principle.

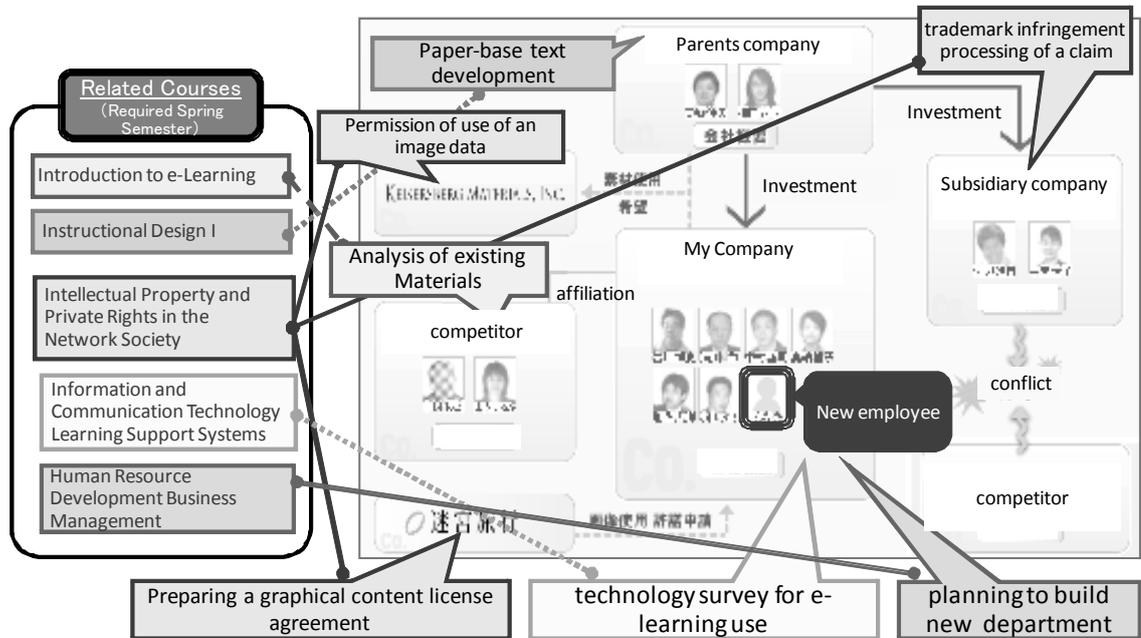


Figure 1. Relationship with the existing course and the story (spring semester)

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