A Smooth Road from Conventional Teaching to Distance Learning in Teacher Education

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Introduction

Drastic change of teaching and learning environment is taking place due to the fast development in information and communication technology (ICT) and requires us to explore an entirely new type of instruction in teacher education. The ICT provides us with new instructional media as well as new frameworks of knowledge distribution among teaching professionals. In spite of such promising technology, teachers are usually conservative to maintain his/her familiar teaching style and reluctant to innovate lessons adopting new concepts of teaching and learning. The introduction of ICT into schools does not necessarily result in the students' benefits and ends up in the mere installation of equipment and very seldom use of these technologies. One of reasons in such results roots in the individualistic and isolated nature of teaching profession and poor professional communication among colleagues at workplace. In this paper, two aspects of innovation in distance learning for teacher education are discussed; the one is to develop symbols and pictorial presentation methods for universal communication required for distance learning, and the other is to apply these means to convert instruction from the traditional teaching style to new one applicable in distance learning, and to examine its validity.

We enjoy the communication anywhere and anytime through TV, telephone and Internet on the global scale. In spite of such convenience in communication technology, there is no efficient exchange of teaching experiences among teachers, especially among teachers working in different languages. Other professionals such as architects, electricians, and mechanicals use symbols and figures to express their professional ideas and communicate each other, even though they speak different languages. They have common professional terminology to prescribe treatments, models to design new products and formats to describe their experiences. Teaching profession, however, has no universally used symbols or models for prescribing lesson plans, describing teaching and learning events in a classroom and assessing teaching outcomes. For the success of distance learning, it is indispensable to develop a common communication means to express professional ideas and experiences to share teaching experiences at workplaces as well as in the Internet.

Description of educational problems

Educational problems are getting diversified and complex everywhere, but informed immediately

on the global scale through the communication satellite and Internet. Researchers on education conduct scientific observations, qualitative and quantitative analysis, and share their experiences through academic journals or other publications, and recently through ICT. In spite of convenience in communication technology, teachers have very limited occasion to share teaching experiences in systematic way through technological media. They communicate orally with their colleagues or other teachers in meetings or at workplace. Traditional literatures in education tended to describe philosophical thought and educational value, but not to transfer practical knowledge in reliable and valid form. Teachers are not used to express ideas and experiences through public media to enhance their professional competence. There is no universally regulated and unified method to describe teaching and learning events and his/her judgment in a classroom.

Educational measurement tools are reliable to assess the outcome of instruction, but not informative to interpret validity of the instructional process. Recorded video is a trial to show the teaching process without any interpretation and very useful to see the real teaching, but not effective to show teacher's intension or ideas. The spectrum from visible record to linguistic description can be shown as follows.

Real ←--→ Audiovisual ←--→ Expressive ←--→ Linguistic

On the scene In videos By signs and symbols In literatures

Language is the most convenient means to convey ideas and experiences within a community where people speaks common language, but not effective to exchange them out of the community. Audiovisual images are powerful means to overcome the language barriers, but require interpretation in spoken language. The successful implementation of distance learning depends on efficient and effective communication among the participants at different workplaces. Well-defined signs and symbols are promising tools in different communities to control people's behavior and share ideas and experiences in public as well as within a circle of specific professionals. Terminologies, signs and symbols are commonly used to form a professional society in order to share their knowledge and experiences.

A framework to describe instruction

When we design a conventional teaching-oriented instruction, we start at very beginning of the course from describing educational goals and advance to specifying instructional objectives, to predicting teaching and learning events, to selecting teaching materials and to planning outcome assessment. At the moment this procedure is most widely adopted among teachers and efficient to design a lesson for transferring knowledge from teachers to students. Students attending this course tend to be passive to follow the lesson without any clear consciousness of the meaning of their learning. Figure 1 shows an example to describe the procedure of mere teaching-oriented instruction for clarifying the relationship of each component.

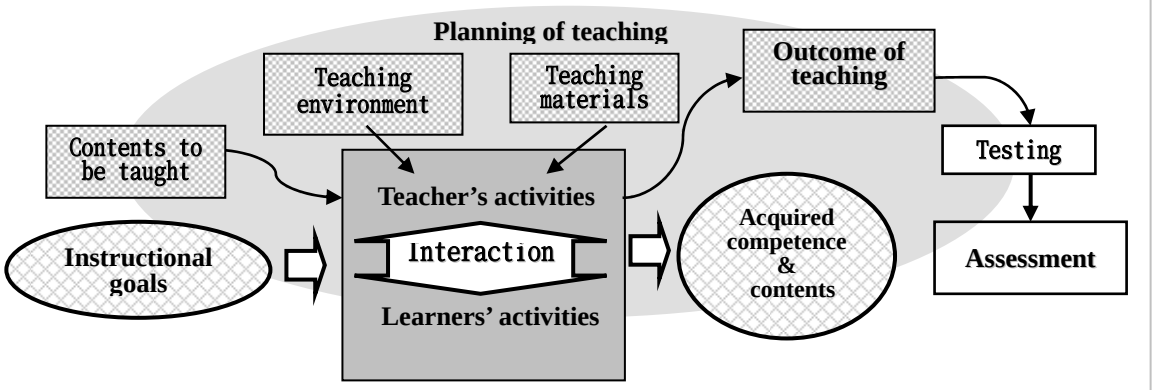

Figure 1. Teaching-oriented instruction

On the other hand, learning-oriented instruction starts from students' consciousness on the meaning of learning. Teachers have to estimate students' expectations or interests at the beginning of the lesson, to plan flexible adjustment to their progress during its course and to assess unexpected outcomes at the end. They are not familiar with this type of instruction and frustrated by the ambiguity of planning. They have some images on their instruction, but cannot express them in written form at the very beginning. This procedure can be illustrated as in Figure 2.

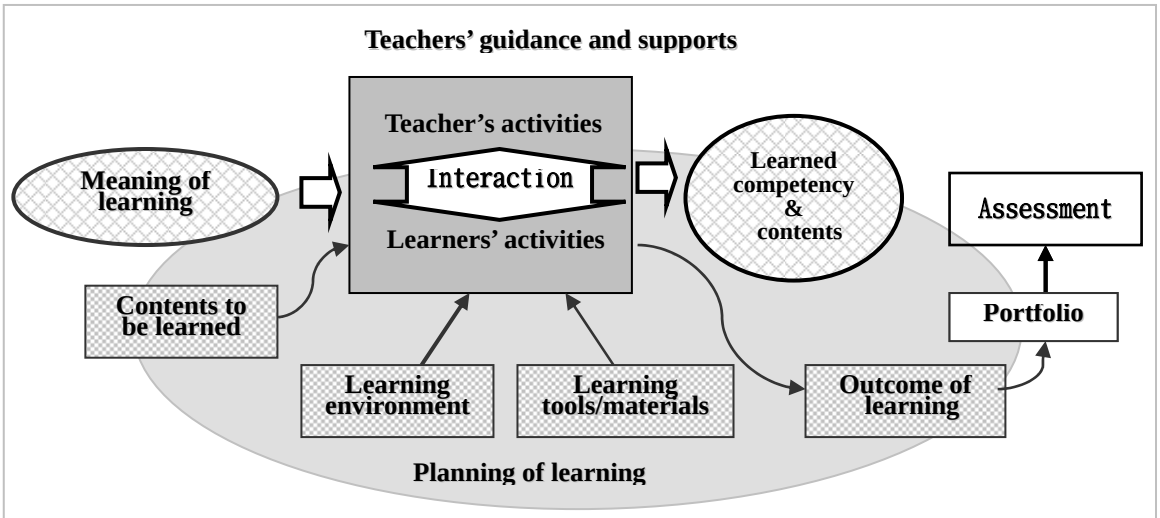

Figure 2. Learning-oriented instruction

In the actual lesson, however, teachers and students always interact each other and take initiatives to plan their teaching and learning activities. We start from our intention and educational aims, and proceed to anticipating students' behaviors followed by our actions. Description of teachers' intention and analysis of instructional objectives, however, do not necessarily result in reasonable motivation at students and effective scopes and sequences of learning. On the contrary, when we start from students' intentions and activities, teachers can arrange environment to support students' learning. In this planning, we can describe physical and psychological environment

for effective learning by means of models and propositions. We need to integrate these two approaches into one comprehensive instruction and can describe it as in Figure 3.

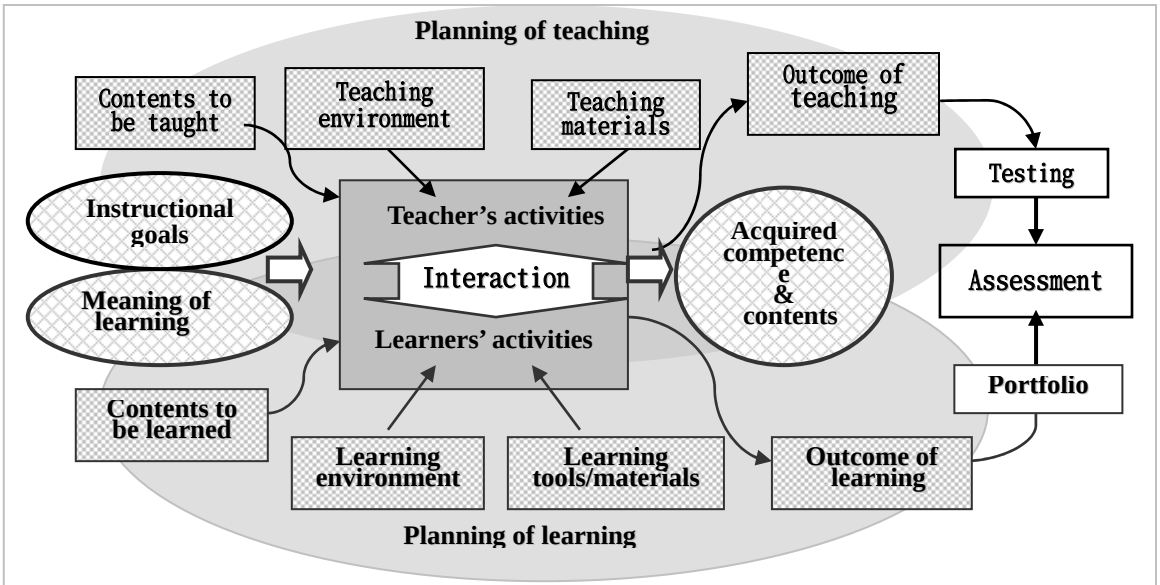

Figure 3. Integration of Teaching- and Learning-oriented instructions

Integrated procedure of designing instruction requires two directions to follow. One direction starts from our subjective intention on instruction and proceeds to teaching strategies and ends to develop a concrete lesson plan. Another direction is from direct observation on students' learning, analysis of activities and predictions of subsequent learning events in the instruction. In the real study on teaching, both directions are taken into account to generate a lesson plan. The designing procedure proposed here consists of five components; images, codes/categories, synthetic and analytic concepts, models and propositions, which form sequential steps shown in the following figure.

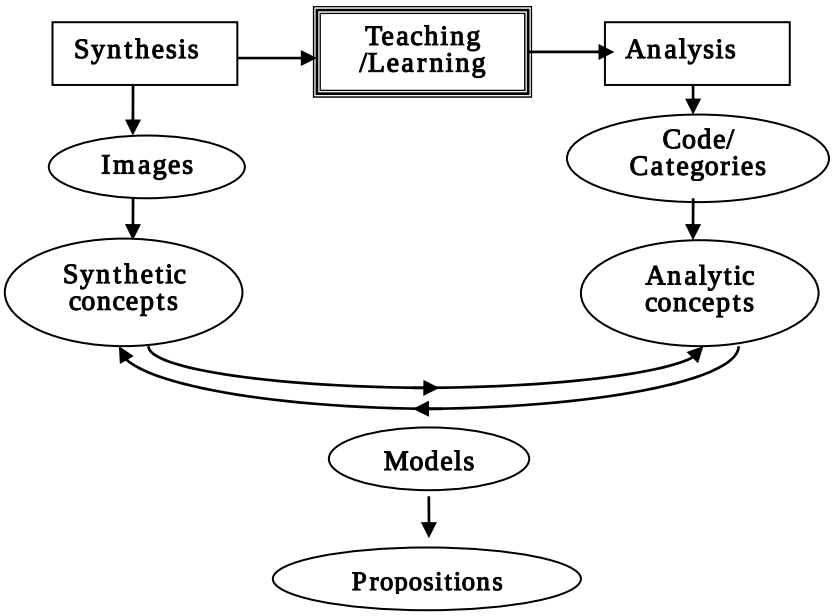

Figure 4. Procedure for extracting models and propositions

In the conventional lesson plan, we describe educational aims and goals, instructional contents, teacher's activities, learners' activities, teaching materials and other remarks. When we start to develop our idea from educational norms, value systems differ from teacher to teacher, from school to school, from society to society and even from nation to nation. It is easy to express these ideas as expectation and philosophical views, but hard to reach common agreements on educational goals and subsequent teachings and describe instructional events to occur in the teaching process in advance. Descriptions in written normative form are easy to read, but difficult to modify and revise referring to observed events in a class.

On the other hand, when we start to develop a lesson plan from predictive description of teaching and learning in the class, it is not difficult to reach common agreement referring to symbols, concepts, models and propositions empirical statements to describe the lesson. Whole configuration of symbols, concepts, models and propositions or empirical statements constitute a structured lesson plan and represent a specific procedure to achieve educational goals. Keywords and graphic representations for instructional designing facilitate teachers to develop their ideas and revise them repeatedly. The concepts can be described in symbols and/or keywords, while the models can be represented by symbols and concepts. In this context, each component of symbols, concepts, models and propositions could be free from any specific value system. Educational value of teaching is testified after the construction and execution of lesson plan, not before the construction.

The proposal described here aims to give in-service teachers a new framework to initiate innovative instruction in daily teaching and means to communicate them with colleagues at different workplaces. The revising procedure is vital to improve an initial lesson plan referring to the actual situation to be observed in the class and reach the refined plan to realize the intended instruction. They start writing lesson plan in very primitive way using pictorial images, proceed to the stage of keywords or concepts, represent ideas in graphic models and describe judgment and explanations in empirical statements. This framework was applied to my teaching on 'Instructional Technology' at Bukkyo University in 1999 and 2000 and approved functional in the conventional classes.

Moving toward Distance Learning for Teacher Education

It is hard to change the framework of familiar teaching style and accept new types of instruction even in teacher training colleges. In order to facilitate smooth transition from teacher-centered instruction to learner-centered instruction, following principles are developed and applied in three sequential trial courses; (1) one educational principle of the right to learn depending on one's capabilities; (2) two social views of the school's responsibility as a learning community and a learning organization; (3) three developmental steps involving images, models and empirical propositions; (4) four school factors of educational ideals, teachers' competence, the realities and the constraints, (5) five learning principles of autonomy, collaboration, contribution, responsibility and thanks, (6) six instructional

components of meaning, activities, contents, environment, tools and outcome, plus a 6x6xN group formation and instructional management.

To guide students' autonomous team activities that are indispensable for implementations of distance learning, the above-mentioned six items were gradually developed during the course of the lessons.

(1) One educational principle: the right to learn depending on one's capabilities

The Constitution of Japan maintains as follows:

Article 26: All people shall have the right to receive an equal education corresponding to their ability, as provided by law.

The strong governmental policy for promoting a national education has hampered the development of teachers' initiatives while strengthening their passive attitudes towards the instructional planning needed for an entirely new situation. Students also tend to think of education as their duty rather than their right. It is indispensable to transform this attitude into an autonomous decision in order to plan their learning. Japanese education is still of a paternalistic nature, from elementary to higher education.

(2) Two social views: the learning community and the learning organization

The school has two aspects of a community and an organization. The community aspect tends to be stable and maintains its cultural heritage, while the organization part acts as an agent to enhance its own functions and renovate them. The school is expected to be a learning center for its community and to alter any conservative features to correspond to society's changing, growing needs and the learners' expectations.

(3) Three developmental steps: images, models and empirical propositions

The traditional procedure for developing instructional programs starts with the instructors identifying educational goals and instructional objectives. When students fully expect to identify these goals and the meaning of learning, instructors have to clarify their expectations and explain the meaning. To develop the instructional process, instructors have to express ambiguous images at the beginning, then clarify them gradually in accordance with the students' progress, identifying the real learning events and describing them in the form of models and empirical propositions. These images, models and propositions are evaluated during and after the classes, stored in a computer and utilized to design the next lessons.

(4) Four school factors: educational ideals, teachers' competence, realities and the constraints.

School education is too complex for novice teachers to be able to describe its relevant factors. Education students will be expected to plan a virtual school, but limited to taking these four factors into account. Educational ideals should correspond to teachers' competence and the realities which schools always face, including countless constraints.

(5) Five team learning principles, ACCRT: autonomy, collaboration, contribution, responsibility and

Thanks.

To change the students' present passive attitude into one of active learning, five principles are introduced from the beginning of the courses and repeatedly referred to during the semester.

(6) Six instructional components, MACETO: meaning, activities, contents, environment, tools and outcome.

The instructional process is very complex. It is hard to design one fully from the beginning. Using this list of components stored in an Excel file can suggest the elements to be considered in instructional designing.

(+) Plus 6x6xN group formation and instructional management

The framework was intensively examined over the last three years to test its validity in the 'Introduction to Instructional Technology' course. The first stage started with 228 undergraduates, and advanced to a course for 78 students in a laboratory well equipped with computers and finally to a course for 108 students in an ordinary classroom connected to a small computer laboratory.

Three Instructional Trials

Three steps took place to convert the introductory lesson from a conventional teaching mode to knowledge productive learning. The common goal of these trials was to encourage students in these courses to propose a virtual school and an example of a lesson plan to conduct a class on a specific subject or topic.

(1) The first stage:

Subject: 'Introduction to instructional technology 2000'

Number of students: 228

Lesson: fifteen lessons on Fridays 16:10-17:40

Capacity of Classroom: 300 seats for lecture style instruction

Facility: Portable projector

Aims of the first step: to keep participation active and a high rate of student attendance

In this course, each team produced a virtual school and tried to clarify its educational aims, the facilities available in the school, a timetable of lessons and other details. They also referred to homepages of different schools on the Internet and had direct contact with actual schools resembling their virtual schools. They tried to express their perceptions using illustrations and figures. This first stage focused on keeping their attendance over ninety percent during the whole term. I avoided providing an overwhelming amount of information or forcing the students to receive and understand the meaning of what was presented. They were expected only to express their ideas of a virtual school and develop a lesson plan.

The 228 students were grouped into 6 large divisions containing 6-7 member teams which worked independently from the others. Within the group of 6 teams, they exchanged ideas in the form of poster sessions, presenting their works on the walls of the classroom. Figure 5 shows two examples for explaining students the outline of the course and conceptual learning space.

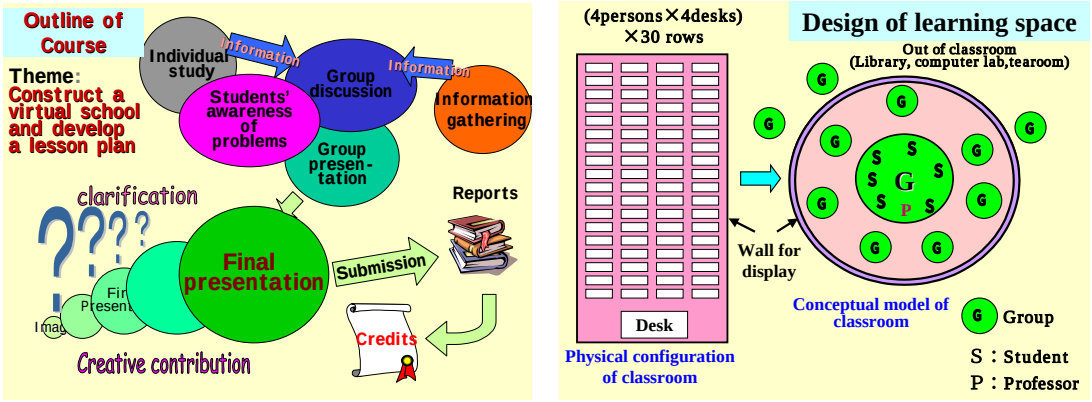

Figure 5 Pictorial presentation course and learning space

(2) The second stage:

Subject: 'Introduction to Instructional Design and Analysis'

Number of students: 78

Lesson: fifteen lessons on Fridays 10:40-12:10

Capacity of laboratory: 93 seats in a computer laboratory

Aims of the second step: to confirm the effect of computer utilization and networking for group-work and judging the quality of reports

In this course, computer facilities were provided and each student could enjoy sufficient opportunity of using PowerPoint and Word to express his or her ideas. In spite of such an ideal technological setting, their images of virtual schools were not rich in comparison with those generated in the first stage. In this configuration of computers, students' discussions were not heated or sufficient to generate new ideas. This experience showed that group discussion is indispensable to create new ideas of a virtual school; adequate technological facilities do not necessarily guarantee a high quality of instructional products.

(3) The third stage:

Subject: 'Introduction to instructional technology 2001'

Number of students: 108

Lesson: fifteen lessons on Thursdays, 14:30-16:00

Capacity of Classroom: 200 seats in a lecture room and 40 seats in a separate computer laboratory

Aims of the third step: to ensure effective team working and quality reports on the design of a virtual school, and examples of a lesson plan on a specific subject or topic.

This course was conducted in an ordinary classroom equipped with a projector and screen with about forty computers in a laboratory apart from the classroom. Cellar phones were intensively used to communicate with each other in order to adjust work meetings out of the classroom for exchanging ideas.

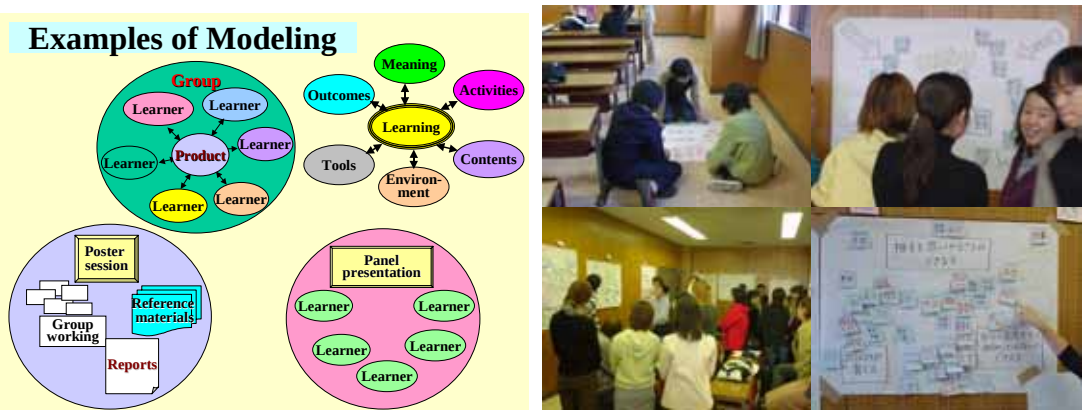

Figure 6 Example of models and scenes of students' learning

Conclusion

Information and communication technology and science on teaching and learning enabled us to develop an entirely new style of instruction for coping with a great number of students having different experiences and variable interests. Distance learning depends on autonomous, collaborative, contributive, responsible and thankful attitude of participants. Lecture style instruction is neither attractive nor effective for active attendants to share experiences and produce new knowledge applicable to their daily problems. A sequence of instructional trials showed that student discussion in teams stimulates creative learning and produces a visible and viable instructional outcome in university teacher training courses. The next step of this trial is to implement the above-mentioned procedure for in-service teacher training in Kyoto district.

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