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Analysis of Problems and Needs for Instruction Reform in Higher Education

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The purpose of this research is to identify the kinds of problems and needs that university teachers experience and to suggest new activities to improve the quality of classroom instruction and support systems by adopting "top-down" and "bottom-up" approaches. The authors analyze and categorize these findings into six parts: support for large-sized classes, ICT, participatory classes, requests of administration offices, requests for equipment and facilities, and reform of lesson improvements. To solve these problems and respond to teachers' demands, we describe the importance of training student assistants, fostering dialogue and cooperation with those able to suggest pedagogical improvements, and strengthening of administrative offices and other campus-wide organizations In the future, we intend to implement these activities and support systems, and to clarify their potential problems and effectiveness.

Keywords: higher education, instruction reform, faculty development, teacher's needs and problem

INTRODUCTION

The Ministry of Education in Japan has identified the need to improve the quality of teaching in higher education (2006). Hara (2007) conducted a survey of universities in Kyoto about classroom teaching. Seventy-six percent of the universities said they carry out activities to improve instruction, such as open classes or class evaluations by students. A survey of Japanese universities nationwide showed that seventy-six percent carry out student class evaluations, a percentage that has been rising year by year (Ministry of Education 2004).

Thus it is clear that many universities conduct student class evaluations, although Kitano (2006) points out that the effectiveness of the surveys has not been adequately evaluated. There are problems with holding open classes, as well. Participants are ordinarily limited to those teachers who are interested in lesson improvement or who have been assigned roles in implementing this activity, and the classes are overly structured. Clearly, although many universities have developed systems to improve the quality of

lectures, they have yet to work effectively.

In consideration of these factors, Tanaka (2007) comments that most efforts to improve university instruction are sporadic events that do not link with daily efforts at lecture reform. To improve instruction, universities need to implement activities that connect to continuing pedagogical reform and help develop a support system.

To develop new means of improving classes, we need to rethink our approach. Yamauchi (2004) classifies types of lesson enhancement efforts as "top-down" or "bottom-up." A "top-down" approach is the most common means for upgrading lectures. In this approach, an executive committee discusses improvement topics and instructors are informed of their conclusions at faculty meetings. This approach has become popular at Japanese universities, but it threatens to become little more than a formality (Kinukawa 2006). This is particularly true of efforts that take place sporadically in the alternative, "bottom-up," approach; motivated teachers discuss their activities and develop concrete plans to upgrade instruction. However, this approach has problems in that participation tends to be limited to the same teachers and it has not yet become very broad-based (Kinukawa 2006). To summarize, we believe that it is necessary to combine top-down and bottom-up approaches effectively to develop new techniques to improve university classes; specifically, by eliciting the opinions of motivated teachers in a bottom-up approach and then disseminating these findings systematically to the faculty in top-down style.

RESEARCH OBJECTIVES

The purpose of this research is to analyze teachers' problems and needs in university instruction and to suggest new moves to improve regular classroom instruction and a support system by adopting "top-down" and "bottom-up" approaches. The authors will also discuss the effectiveness of a method that combines a top-down and bottom-up approach.

AN APPROACH FOR IMPROVING CLASSROOM INSTRUCTION

Efforts that aim at improving pedagogy at universities have tended to be sporadic in nature for a number of reasons. Tanaka (2003) notes that due to the rapid post-war expansion of higher education, Japanese universities were forced to systematize their organization to improve effectiveness. As a result, teachers were compelled to follow initiatives decided by a top-down approach, stymieing the effectiveness of instruction reform. In addition, research of higher education topics were usually centered on macro-level topics such as comparative education, the history of education and educational sociology, so it was difficult to link them to regular class instruction reforms (Tanaka 2003). However, researchers have recently begun addressing new research topics, including classroom instruction. They now use a case study approach to regular class lectures and research optimal means of improvement (Suzuki 2006, Terashima 2006). Although this kind of research offers much promise for improving instruction, because individual teachers retain the research results there are problems with sharing the skills systematically and developing a support system.

Pedagogic reform requires sharing of necessary skills and development of a support system, in addition to improving teaching capabilities on an individual basis. Tanaka (2003) points out that it is necessary to regard classroom instruction as a focus for research and to participate in lectures systematically. With this in mind, the authors asked motivated teachers for their opinions about problems and needs to improve classroom instruction, in a bottom-up approach. Based on these opinions, the authors discussed possible approaches and a support system according to a systematic, top-down approach. The approach is explained in figure 1.

ORGANIZATIONAL STRUCTURES FOR PEDAGOGIC REFORM

There are two ways to organize initiatives for pedagogic reform: a center style and an executive committee style (Yamauchi 2004). Japan's national universities tend to adopt the center style, in which a university center is staffed by a limited number of full-time teachers who work to implement class

instruction reform on campus and study about improving instruction in higher education in general. In the executive committee style, members are selected from each faculty to serve on the committee. In this case, it may be difficult to share the skills that have been acquired by individual teachers, and if the faculty members transfer to other universities or go overseas for research there may be delays in taking action. It is thus necessary for the university to foster full-time researchers and a dedicated organization (Yamauchi 2004). Researchers who specialize in education, and particularly higher education, are needed in this kind of group.

Our discussion centers on how to organize a faculty group. Administrators' roles as constituent members of universities will not be under discussion here. However, we recognize that the participation of administrators is critical for instruction reform. Hizuka (2007) describes the importance of the administrator's role in understanding lecture content and developing a support system. Universities in the United of States commonly implement staff development to improve their skills and knowledge (Hizuka 2007). In Japan, however, universities still fall short in organizing a system for joint discussion of these topics by teachers and administrators. To be able to develop successful new approaches, administrators must be included in the organization. To summarize, the most effective reform organization involves administrators as well as researchers who specialize in education and educational technology.

Such an organization would have three types of members: Special advisers who specialize in education and educational technology, advisers who specialize in educational technology and instructional design (the latter would mainly be graduate students), and administrators who work to upgrade instruction and provide support. Table 1 explains the members' roles in greater detail.

Table1. *Roles of Members*

Members:	Roles
Special adviser (1 member)	・Investigating plans and systems for instructional reform based on ideas that advisors have gathered from teachers
Advisers (5 members)	・Collecting teachers' opinions on improving instruction ・Participating in and evaluating lectures ・Management of student assistants ・Mediator between teachers and student assistants ・Supporting ICT (Information Communication Technology)
Administrators (6 core members, 6 sub- members)	・Investigating new systems and activities for classroom instruction reform ・Acting as a liaison between administrators and teachers to disseminate information and implement systems

The advisers ask concerned faculty for their opinions, and they introduce these opinions and discuss topics based on the opinions with administrators and special advisers every two weeks. Conclusions reached during the discussion will be fed back to the teachers, allowing the organization to continue assessing the activities in a sustainable way. The workflow of member is explained in Figure 1.

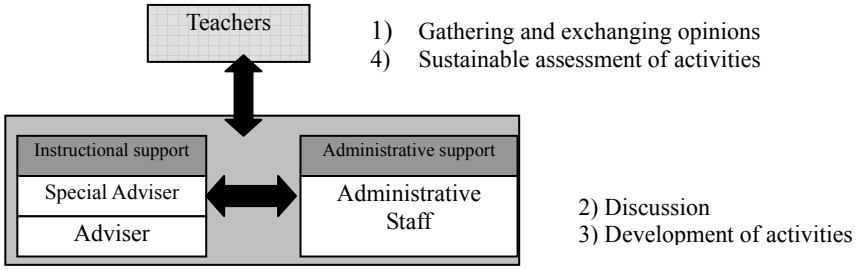

Figure 1. *The Workflow of Members*

SUBJECT OF RESEARCH

About Kansai University

We chose Kansai University as the subject of this research. Kansai University is a very large private university with seven departments, 26,339 students and 615 faculty members (including part-time lecturers). The university conducts university-wide regular open classes and class evaluations by students as pedagogic reform measures. Open classes are held one times a year. Class evaluations by students are conducted once each semester. A teaching assistant system is also being instituted as a trial system. In addition, the university adopted a student assistant system from September 2006 to add manpower for improving lessons. Currently, 140 undergraduates work as student assistants. Four student assistants work at each department's classroom building during each lesson period.

Kansai University's organization for instruction reform

Kansai University has created an executive committee to improve instruction. However, they have adopted a new approach combining bottom up and top down methods as we suggested earlier, because the university hopes to listen to opinions from concerned teachers and discuss effective means to improve instruction when they implement their SA system. This suggests that Kansai University is well suited to adopting this new approach. For this reason the authors selected this school as our subject of research.

RESEARCH METHODOLOGY

The authors interviewed 21 motivated teachers who are dissatisfied with their current instruction techniques and want to improve their classes. A breakdown of the participating faculty can be seen in Table 2. To select motivated teachers, we asked administrators for their recommendations and then interviewed their candidates. We asked the interviewees to recommend other instructors and then interviewed them as well. Interviews were held individually, taking; 1-2 hours. We asked about their problems and needs in teaching according to their current lesson style, and posed related questions about improving instruction, for example, how they obtain tips on improving their lessons.

Table 2. *Teaching Faculties*

Number of faculty	Literature	Sociology	Economics	Business
	6	5	3	2
	Law	Technology	Foreign languages	
	2	1	2	

RESULTS AND INTERPRETATION

After the interview, we inductively extracted important components of lesson preparation. Relevant problems and needs were categorized into 2types, 6 parts (Table3). From 1 to 3 parts are existing categories, the administrative officers have listened those problems and needs from the teachers. From 4 to 6 parts are new categories, the administrative officers have not listened these problems and needs from teachers. The reasons why we listened new categories is that the teachers recognized the adviser will resolve these problems. Teacher's opinions of new category are listened by the development of student assistant system and adviser staff organization.

Table 3. *Categories of Instructors' Problems and Needs*

Category		Items
CATEGORY 1	1. Support for large classes	Distributing materials Taking attendance
	2. Requests for administrative offices	Acceptance of students' written work Reducing paperwork related to the administrative offices
	3. Requests for equipment and facilities	Improvement of facilities Making the community space for the teacher
CATEGORY 2	4. Support for ICT	1) ICT setting and equipments, and how to use ICT Preparing projectors and laptop computers Digitalization of educational materials and analog video data Making manuals for use of equipment and materials in the classroom Recording videotapes, producing video materials 2) How to utilize ICT into the classroom instruction effectively Effective use of PPT Effective use of learning management system Producing learning management system
	5. Support for participatory classes	Support for participatory classes (Discussions, group work and presentations, debate)
	6. Revision of lesson reform methods	Publishing newsletters Making changes in lesson evaluations

Support for large classes

The students of Kansai University students can attend any lecture that they wish to, and some class's number more than 500 students. In cases like this, the distribution of materials becomes a problem, as it can take more than 10 minutes just to pass out handouts. To start classes on time, instructors note that it is necessary for student assistants to distribute handouts.

Many instructors note that students in enormous classes become less motivated to attend lectures regularly so there are many absences from the class. In order to promote attendance by students and to offer positive feedback to students attending the lecture, instructors check attendance. This can be time-consuming and troublesome, however, and student assistants can be of great help. However, other methods, such as changing the instructional style of the class, can also increase students' motivation to attend. For example, some instructors ask students questions that they write responses to and then read their responses aloud, while others divide students into small groups to discuss a theme. Some instructors prepare an Internet bulletin board network so students can discuss class topics outside of school hours. Therefore, it is necessary to broadly consider educational methods that will motivate students to attend and actively participate in large classes in the future. To do that, instructors need to have an opportunity to observe highly participatory pedagogic methods in large classes.

Requests for administrative offices

The administrative office tries hard to keep teachers informed about administrative information. Teachers need administration offices to accept written work from students for them, but miscommunication between instructors and offices sometimes occurs. In one case, a teacher prepared an envelope in front of

the door of his office for student work, even though the administrative office has already received the work directly from the students. We heard similar stories from other instructors. This suggests a lack of communication between faculty and administrative officers. Administrators need to try harder to communicate with faculty and keep them informed about administrative developments, while instructors need to confirm their requests of administrators.

Requests for equipment and facilities

It is necessary to improve the environment to meet instructors' ICT needs. In particular, those teaching in antiquated classroom buildings may have trouble utilizing ICT. Some classrooms have TV monitors, but the system is too old to display PPT figures clearly. In other cases, the projector is too small to provide enough light for the room. Larger projectors are needed to show figures and digital images clearly. Administrators must try to purchase and adapt ICT equipment as appropriate for the size of the classroom, and they may need to arrange to use the other department's facilities to adequately respond to instructors' requests.

Another important requirement is the need to ask student assistants to transport screens, monitors, and projectors to the classroom. The administrative office often assigns classrooms without confirming whether or not the instructor will utilize ICT in the classroom. Administrators need to ask teachers about their intentions in using ICT-based instruction before deciding on classroom assignments.

Supports for ICT

To nurture student assistants' ICT literacy

Instructors need to arrange for setting up projectors, editing videos and DVDs, recording videos and developing LMS and other aids. Student assistants often help instructors in this preparation, but the percentage of student assistants who have the requisite ICT literacy is limited. Therefore the administrative office for student assistants must train student assistants to improve their ICT literacy. Unfortunately, though, administrative offices handling student assistants may not be aware of individual students' level of ICT literacy. To respond to the needs of instructors, they have to put the right person in the right place. To do that, universities need to develop a system for competency assessment of ICT for student assistants. In summary, we need to develop a training system for student assistants to nurture their ICT literacy and to build a competency evaluation system to assess the student assistants' literacy.

To respond to requests for guidance in operating ICT and incorporating it in classroom instruction

Instructor's needs were divided into two types: guidance in operating ICT, and advice on how to incorporate ICT to improve classroom instruction. As far as guidance in operating, some instructors want to operate ICT equipment by themselves, while others expect student assistants to handle operation. In the first instance the student assistant can instruct them in operation, while, in the letter case the student assistant and adviser should support operation of ICT. However the teachers ultimately must operate ICT by themselves. To do that, they need to develop a support program. We programmed PPT training seminar to start and 60 teachers participated in the seminar. It is said teacher does not attend these kind of seminar, however the teacher want to improve their technique. The basic seminar is important for those teachers who haven't utilize ICT yet.

Also, when advisors discuss ICT with instructors, it is important that they ask them about their objectives in using ICT and how they can incorporate it into their curriculum rather than merely respond to their stated requests. For example, an instructor may ask the advisor for assistance in applying a university's

Internet learning management system (LMS) for a student questionnaire. This LMS may be appropriate when asking students of the same university for their opinions, but it is inconvenient for use in creating tables and calculating responses by downloading a CSV file format. In that case, the advisor should suggest different Internet-based survey software that would better fit the instructor's needs.

Thus, interaction between advisors and teaching staff is important; by carefully inquiring about the objectives of the curriculum and the background for using ICT, the advisor may suggest more effective ICT utilization.

In terms of desirable educational approaches, many questions have been raised about Kansai University's LMS, it is called CEAS "Web based Coordinated Education Activation System". The system links to the university's class lists so teachers don't need to register their students' names and it is very convenient to use. Some teachers are interested in using LMS in their classes, however they may not clearly understand the functions and merit of using LMS. To respond to the demand of these teachers, it is necessary to suggest some models using LMS in order to promote effective utilization of LMS by analyzing past instructors' examples. A support system for utilizing LMS effectively is required, as well.

Environmental arrangement for ICT

Several teachers note that although there may be a paucity of ICT equipment on campus, the university actually has sufficient ICT equipment. This discrepancy reflects the fact that administrative offices do not possess up-to-date knowledge of the state of affairs of ICT equipment university-wide. An administrative office may be aware of the situation among its own faculty, but may have little information about other departments. There are 7 departments in the university, and each faculty's administrative office rarely communicates with the others. That is one reason why they cannot satisfy instructors' demands. Administrative offices need to promote information exchanges with other departments and throughout the university. This will enable them to provide faculty with sufficient information about ICT equipment and its use to promote wider implementation in the classroom.

Support for participatory classes

Some teachers want student assistants to help facilitate participatory-style classes. In one of these courses, a first-year course on study and research skills with about forty students, the instructors had adopted a participatory style of instruction emphasizing discussions and presentations.

The problem here, however, was that the instructors had not yet utilized student assistants in the classroom and knew little about their skills, so they were unable to make clear requests. This suggests the need to create a concrete support menu for student assistants to help instructors realize their objectives and ideas for improving instruction. Before the course starts, the student assistant, instructor and administrator should hold a meeting to discuss the aims of the course and the desired role of the student assistant.

To meet instructors' needs, student assistant must act as facilitators in supporting participatory class functions such as small group work, discussions, and presentations. However they lack that capacity at present. Administrators need to develop a system for training them, and student assistants need to nurture their skills through participating in training courses. On their part, instructors need to indicate their readiness to receive trainee student assistants.

Revision of lesson reform methods

Many teachers want to revise currently popular techniques for improving classroom instruction, such as open classes and student class evaluations. For example, in most cases open classes only allow participants to watch the lecture; faculty members who are unable to. Participate may watch a video of the class on the Internet. Yet for many instructors, this approach is insufficient, since they would like to discuss the class in detail after watching it to learn more about objectives and contents. Others may not wish to take part in an open class, but they would like to know more about objectives and teaching methods by accessing a website or reading a newsletter at their leisure. Although most university instructors would wish to learn more about their colleagues' teaching styles and methodology, their differing needs and course content means that the optimal teaching approach will vary for each individual. Open classes would be a more effective pedagogic tool if related information was offered on websites or in newsletters and teachers could meet to exchange opinions and concerns about the class.

DISCUSSION

Based on the interviews with instructors, the authors with to suggest three areas in which regular university classroom instruction can be improved.

Nurturing student assistants' ICT literacy

Developing a learning community of student assistants

Most instructors need the support of student assistants for ICT-based and participatory classes. However, because the number of student assistants with sufficient skills to respond to teachers' demands is limited we need to train them in these skills. Advisers can teach SAs useful ICT skills such as shooting and editing with a video camera and utilization of LMS. Many student assistants already know how to set up projectors and other ICT equipment: they can teach other SAs working in the same department.

Student assistants' ICT skills must also be nurtured on the job. To do that, we must create a learning community in which students teach their skills to each other. Advisors and administrators should hold meetings every few weeks with student assistants to discuss these topics and share skills. Also they use mailing list to share the information, exchange opinions and questions. The advisers and administrators pick up their discussion theme to meeting with special adviser and adviser and administrators and try to include SAs's opinion for improving support system.

Assessing SAs' ICT skills and setting goals

To respond to instructors' demands, administrators must assign student assistants with appropriate skills. This task is made easier if administrative offices adopt a system for evaluating the ICT skills of student assistants and dispatches the appropriate students. With such a system, students can also understand their skill levels and set goals for competence. This kind of competency system has been adopted by many companies to evaluate workers' skill levels and set goals (Lyle 2001). As part of this system, a competency index identifies the skills and levels that the company requires. Universities, as well, should develop competency indexes as needed to support pedagogic improvement and they should implement these indexes to gauge student assistants' competency and to help them set goals.

Cooperative lecture improvement

Many faculty members keep students' attendance records to motivate students to participate in and concentrate on their class work. It is clear that many instructors are eager to apply effective pedagogic

techniques that would bolster class participation. In addition, advisors who receive instructors' requests for ICT support should ask the teachers about their pedagogic objectives and other background information to discern whether new ICT technologies or systems might not be preferable for meeting the instructors' needs. Advisors with expertise in educational technology and instructional design can dig deeper into the background of teacher's requests and work with them to decide effective approaches for improving instruction and creating a support system. The authors intend to pursue research in this area by analyzing a number of case studies in terms of such factors as class size, content of instruction, and educational methodology to enable us to create appropriate learning support models.

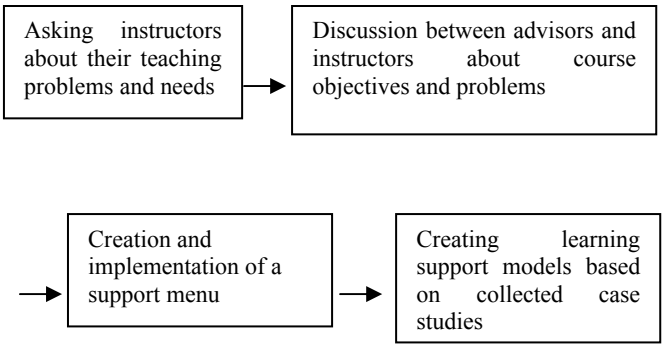

Figure 2. *Workflow of Adviser*

These discussions also revealed that university instructors demonstrate differing degrees of enthusiasm and interest in pedagogic reform. This suggests that in future, implementation of new activities and a support system also consider teachers' individual levels of motivation.

Improving links with faculty and organization of administrative offices

From the interviews it became clear that that administrative offices need to work harder to share information about ICT materials with the entire faculty, to supply ICT materials suited to the size of the classroom, to assign rooms equipped for ICT use, and to convey complete information completely to the faculty.

Some instructors have already made similar suggestions to administrators. However, in the past there has not been a campus-wide organization that could respond to teachers' demands, and administrators tended to respond to each comment on an individual basis. Naturally, there is only so much an individual administrator can do, so instructors' opinions were not fully expressed at administrators' meetings and their problems were rarely resolved. Today, however, there is a campus-wide organization, in which administrators, super advisors and advisors discuss pedagogic improvement based on teachers' opinions and develop new activities and support systems. Whatever new strategies are adopted, it should combine both top-down and bottom-up approaches and links between administrators, faculty, and advisors in order to be effective.

CONCLUSION

The authors analyzed problems and needs for university classroom instruction. The needs that were identified included: support for large-scale classes, ICT, and participatory classes; systematic responses to requests of administrators, installation of ICT equipment, and reconsideration of pedagogic reform activities. We suggested several steps that could be taken to solve these problems and respond to instructors' needs, including training student assistants, improved linkage between instructors and others

who can institute instruction reforms and the creation of campus-wide administrative and other organizations for reform. In the future, we intend to implement these activities and a support system, and identify resulting problems and effects.

From these discussions, we have understood the necessity for combining a bottom-up approach of eliciting instructors' opinions with a top-down approach of instituting reform activities and a support system. In the future, we will assess the sustainability of reform activities and support systems seek to implement rapid and flexible improvements. Future research must involve a larger number of faculty interviews to get a broader base of opinion, and it must include the opinions of instructors who are less highly motivated than those who participated in the research under discussion here.

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