

# Quantitative Evaluation of an Intercollegiate Distance Learning System

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**Abstract:** This paper reports on a distance learning system set up between eight educational institutions and tested through the “K<sup>3</sup> Salon” series of lectures. The system is described and questionnaire responses to the K<sup>3</sup> Salon lectures are presented. Results show that distance-learning lectures can be delivered to a sufficiently high quality and that respondents would like to be able to attend lectures from their own desks or their own homes.

## Introduction

The Shinshu Higher Education Consortium (*Koutou Kyouiku Konsoshiamu Shinshu*) is a joint body with the aim of maintaining the individuality and nurturing the talents within eight higher education institutions geographically dispersed around Nagano Prefecture in central Japan. To meet these aims, the Intercollegiate Information and Communication Technology Network Lecture System was set up in 2008 so that shared classes could take place with personnel and students from each of these eight institutions. However, there were concerns that complexity of system operation would lead to unease among personnel and negative reactions to distance learning. Minimising the burden on university staff was therefore considered carefully by the designers and implementers of the intercollegiate distance learning system (Morishita et al., 2009).

It was decided, therefore, to build upon the existing teleconferencing system in use in Shinshu University (Yamasawa, 1997) using experience of practical use to make operation of the new system as simple as possible. A series of events under the umbrella of “K<sup>3</sup> Salon” were set up to test the system and ensure that sufficient quality

could be attained for distance learning between the eight institutions. The purpose of this paper is to quantitatively evaluate the performance of the intercollegiate distance learning system based on the results of a questionnaire conducted after three K<sup>3</sup> Salon distance learning sessions.

## Construction of an Intercollegiate Distance Learning System

Video conferencing equipment was set up in each institution to send and receive sound and high-definition images between projectors, cameras and lecturers' personal computers. Each institution is connected by optical fibre to a Multi-point Control Unit (MCU) in Shinshu University. As a result, simultaneous video conferences between people at two or more of the institutions are relatively easy.

Each institution can participate in fixed or mobile video conferences. A fixed conference takes place in a dedicated classroom or conference room, set up for distance learning or video conferencing with large groups of people, equipped with either a Polycom HDX9000 or a Sony PCS-XG80 tele-conferencing system. Dedicated classrooms are equipped with three high-definition projector screens or plasma televisions with at least 50-inch screens. The mobile system can be taken to any classroom, seminar room or laboratory that has internet access. The Sony PCS-XG80 system is used in combination with at least a 26-inch LCD TV. The entire system is set up on a rack on casters that can be moved easily and is wired so that only one plug needs to be connected to a power outlet. PCSA-DSG80 data solution software is installed in both fixed and mobile systems to allow concurrent transmission from a personal computer.

The system is usually operated by a touch panel or remote control. After being switched on, the system remains powered up but can go into sleep mode if it is not used for a specified time. Other conference rooms can be selected by MCU number from an address book within the system and video conferencing or distance learning can begin.

### The K<sup>3</sup> Salon

“K<sup>3</sup> Salon” is a distance learning programme set up by the Shinshu Higher Education Consortium to test and promote the utilization of the intercollegiate distance learning system. The name “K<sup>3</sup>” is an abbreviation of the Japanese *Koutou Kyouiku Kouryu*, which means “Higher Education Exchange”. K<sup>3</sup> Salons take place at least once per month with a different lecturer from one of the eight participating universities

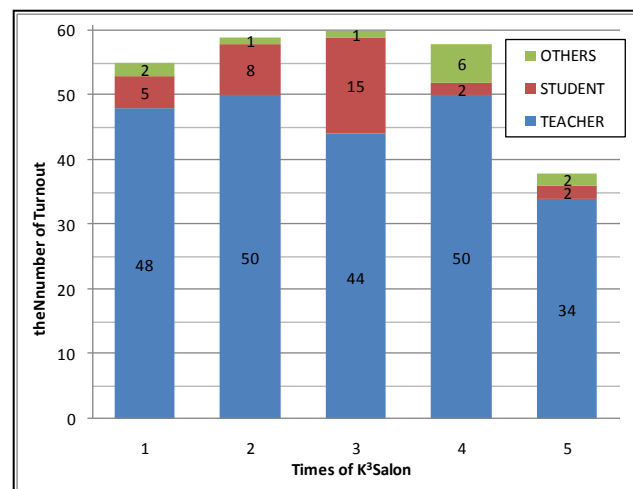


Figure 1 Turnout in K<sup>3</sup>Salons

speaking about a different topic for 90 minutes each time. These lectures are also available on the Web as e-learning materials, where presentation slides are shown next to the presenter, synchronised with voice-on-demand (Logosware, 2008).

The K<sup>3</sup> Salon distance learning lectures began in May, 2009 and have been held five times as of the end of July. Figure 1 shows the turnout at each lecture. People who attended more than one lecture are counted separately as one person for each lecture. After the second, third and fourth lectures, a survey was conducted by giving a paper questionnaire to all attendees. The questionnaire consisted of 26 statements in Japanese to which respondents had to give a score of one to five on a Likert scale depending on the extent to which they agreed (Tsuji, 2002 & Tsujii, 2003). A translation of the questions is shown in the Appendix.

## Results

There were 49.2%, 56.7 % and 32.8% valid responses to the questionnaires from the attendees of the second, third and fourth lectures respectively. Figures 2 to 4 show the results for each lecture and Figure 5 shows the sum of responses from all three lectures.

The first eight questions concerned issues relating to the lecturer being physically absent from the classroom. More than half of all respondents indicated that the lecturer's physical absence was not detrimental to the lecture. In addition, almost half of the respondents (46.3%) felt that they could relax more when there was no lecturer in the room (question 13).

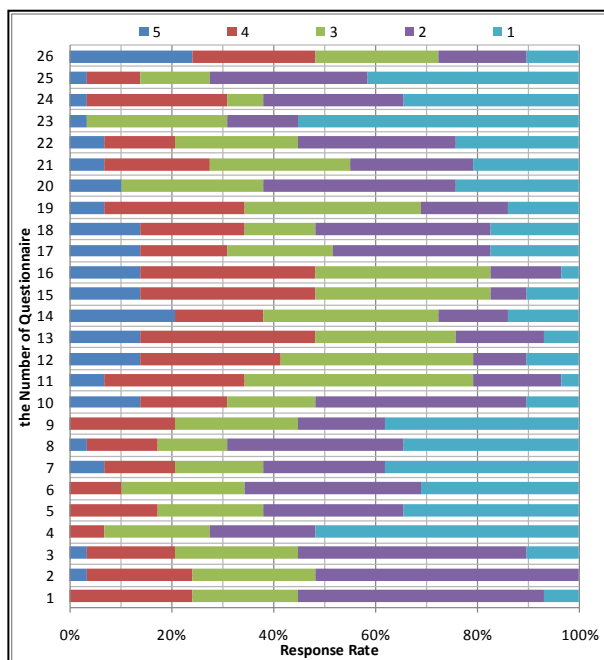


Figure 2 Response Rate of 2<sup>nd</sup> K<sup>3</sup>Salon

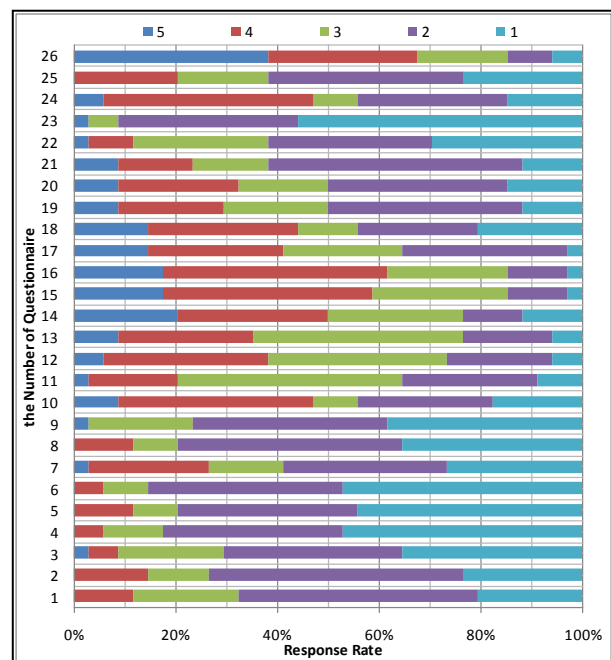
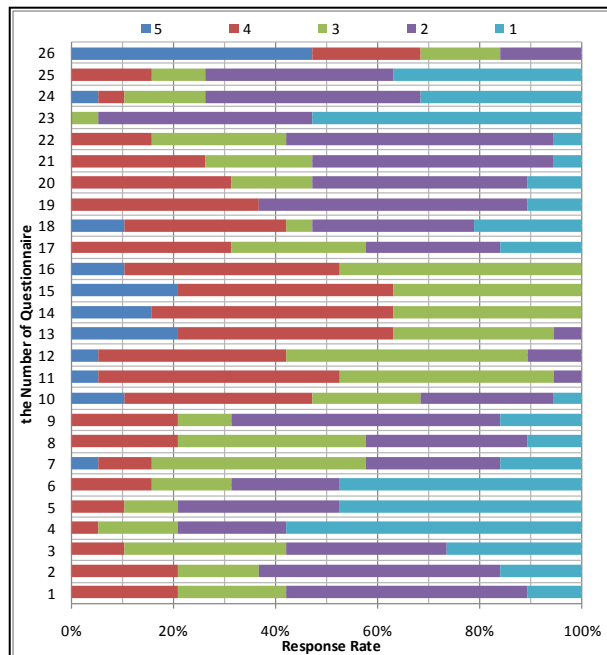
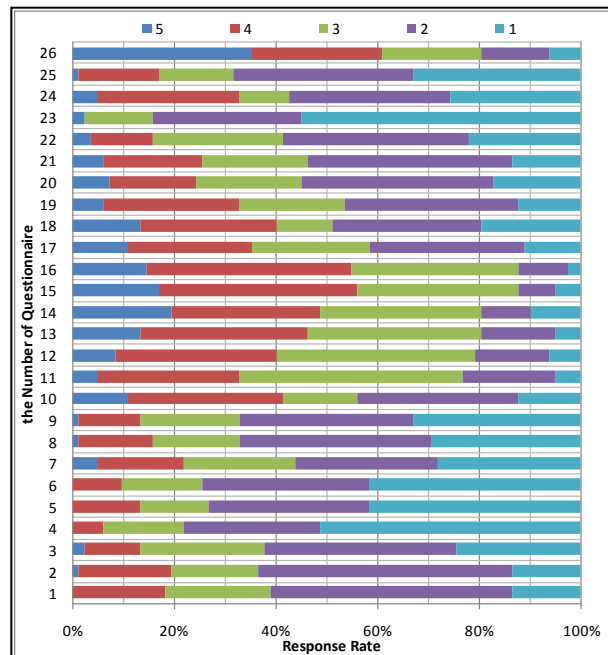


Figure 3 Response Rate of 3<sup>rd</sup> K<sup>3</sup>Salon



**Figure 4** Response Rate of 4<sup>th</sup> K<sup>3</sup>Salon



**Figure 5** Response Rate of All K<sup>3</sup>Salons

In responding to a question about the uneasiness of asking the lecturer a question (question 10), there was a difference between the responses from the second lecture and the third lecture. In the second lecture, most respondents indicated that it was comparatively easy to answer questions (51.7%); in the third lecture, many indicated that it was more difficult (47.1%).

The answers to questions 20 to 25 showed that most members of the audience were happy with the video and audio quality of the lectures. Again there was some difference between responses to the three lectures with 47.1% of respondents for the third lecture indicating that the voice was sometimes unclear while around 30% replied that they could not hear the lecturer clearly in the second and fourth sessions.

The answers to questions 14 to 16 suggest that most respondents were satisfied with the system, although around 30% replied that they neither agreed nor disagreed with each statement. More than half answered that they would like to be able to attend lectures from their own desks or from a personal computer at home.

## Conclusion

It was possible to create an intercollegiate distance learning system that was easy to use by simply selecting conference room numbers from a touch panel or remote control. The high definition video images and sound were of sufficient quality and participants were satisfied with this system.

This study has shown the feasibility of an intercollegiate distance learning system in which citizens can audit classes and students from other institutions can gain exchangeable credits from their own institutions, from their own desks or from their own homes.

The present study has documented attempts to create and test an intercollegiate distance learning system that can be operated with a minimum burden on teaching staff. Questionnaire results clarify that the system can provide sufficient quality and that it is ready to provide credit-transfer classes between institutions and deliver lectures and courses to members of the public. Many respondents would like to be able to study from their own desks or homes and this clarifies in broader terms the decentralisation of study by distance learning.

Future efforts will be directed towards building and supporting the distance learning system, maintaining the network environment and conducting further surveys to evaluate the system.

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## Appendix: Questionnaire Survey Items (Translation)

5: Strongly agree

4: Somewhat agree

3: Neither agree nor disagree; don't know

2: Somewhat disagree

1: Strongly disagree

1. It was more difficult to understand a lecture watched on television than live.
2. The atmosphere of the lecture was not transmitted in distance learning.
3. It was not possible to concentrate on the lecture because of (staff's) lack of experience using the equipment.
4. It was not possible to concentrate on the lecture because there was too much whispering with no lecturer in the classroom.
5. It was not possible to concentrate on the lecture because there was no sense of tension that a lecturer was in the same room.
6. I felt a sense of alienation because there was no lecturer in the classroom.
7. I did not feel any physical contact because the lecturer was not in the classroom.
8. A sense of familiarity did not develop because the lecturer was not in the classroom.
9. I felt confused because there were two screens and I did not know which one to look at.
10. Although it was technically possible to ask questions, the atmosphere made it difficult to do so.
11. Compared to a face-to-face lecture, the audio visual equipment was used effectively so it was easy to understand.
12. Compared to a face-to-face lecture, the lecturer was well prepared.
13. It was easier to relax because there was no lecturer in the classroom.
14. The content of the distance learning lecture felt advanced.
15. Distance learning has advantages saving time and money and should be promoted.
16. This system is generally good.
17. I felt that the screen was difficult to see.
18. The figures and writing from the computer screen were difficult to read.
19. It was difficult to see the screen showing the lecturer's movements and gestures.
20. Because there were not enough screens, it was difficult to see the lecturer's movements and the computer screen.
21. Distance learning is tiring for the eyes
22. It was tiring because of the positioning of the screen.
23. The room was too small for the number of participants.
24. The lecturer's voice was not clear.
25. The speaker volume made it difficult to hear.
26. I would like to be able to attend a lecture from my own desk or from a computer in my home.