Teleteaching and Teamwork – A Contradiction?

Experiences with a series of virtual seminars at the FIM of University Linz

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1. INTRODUCTION

In the field of distance teaching a lot of emphasis is put on holding lectures (e. g. by use of videoconferencing systems) or producing materials for telelearning in a conventional way (like multimedia CD's or books) (See Sautter [7] for some tables and Mühlbacher [6] for a comparison between a presence and a Tele-university), but these are only a part of the teaching at universities.

Integrating teamwork into teleteaching seems to be very hard: If everyone works from a different place, how can a group work closely together? How can they form teams, work together on common data and discuss it, if they are separated not only by space but also by time? These are difficult problems, but they can be solved if tools and concepts are extended in contrast to conventional teleteaching. Moser [5] identifies that networks and groupware allow focusing on the task of working together (coordination, cooperation, co-decision, discussion of results, etc.) without the restrictions as being at the same place or working at the same time which are common in conventional teaching as Jahn [4] observes.

2. UNIDIRECTIONALISM VS. MULTIDIRECTIONALISM

Teamwork in teleteaching can be seen as a subpart of multidirectionalism in contrast to conventional teleteaching, which is more or less equivalent to unidirectionalism. In contrast to Tella [8], who uses unidirectionalism, bidirectionalism and multidirectionalism to signify the dimension of communication only, we focus instead on the dimensionality of the transfer of knowledge. We also connect them with certain aims of the teaching process. To clarify the meaning of and the difference between those two the following definitions can serve:

? *Unidirectionalism*: Teaching occurs only between the teacher and the student in the form of transfer of knowledge or skills from the teacher to the student (including feedback), like in lectures or through CD-ROMs. Summary: One piece of knowledge is distributed identically to an arbitrary number of participants. The focus is on the knowledge itself.

? *Multidirectionalism*: Teaching occurs between the teacher and the students but also amongst them (students also teach each other through their work), like in teamwork. Summary: A number of persons learn in moderate detail about more or less different but interrelated pieces of knowledge and acquire an overview on the whole by intensive communication and integration of the various results. The focus is how to acquire, interrelate, use and present the knowledge.

As an example for a multidirectional course virtual and international seminars can serve, where the participants have to cooperate across distance to create a common result. Each participant has his own work to do and to present, acquiring information both through the Internet and other sources, but it is closely related to the other person's tasks. The aim of the courses is to create a common result, to which all students add their own ideas through collaboration and communication, presenting each other with new bits of knowledge. The institute carried through a long series of such courses.
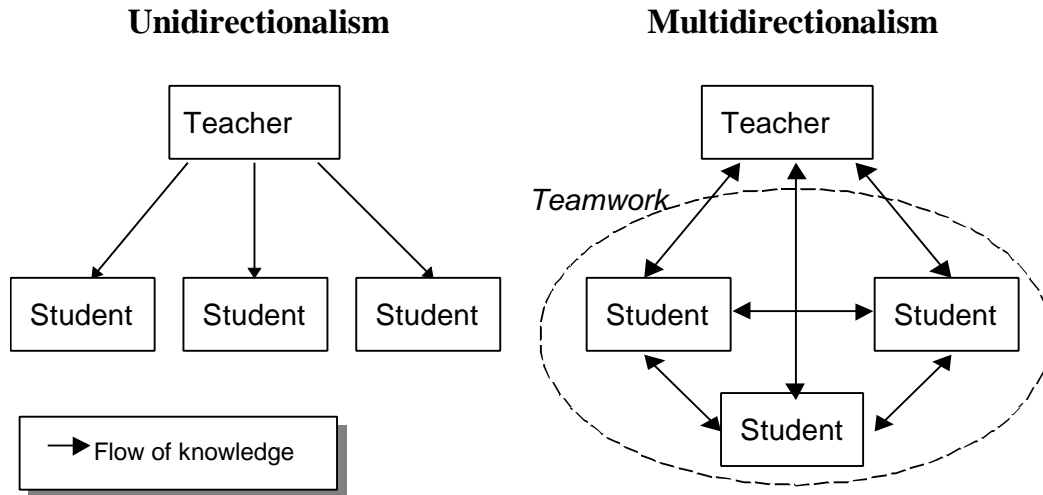
Unidirectionalism　　　　　**Multidirectionalism**

Figure 1: Unidirectionalism vs. Multidirectionalism

3. CASE STUDY: DISTRIBUTED SEMINARS WITH INTERNATIONAL GROUPS

In the context of the international EU-supported Telelearning project APPLAUD (A Programme for People to Learn At University-level at a Distance, [3]), the institute organized and carried through two distributed seminars, based on past experiences by Aiken et. al. [1], [2] with similar courses. These two were held entirely over the internet; the students had to work in groups scattered over different locations:

?　Course 1: A student from the university Linz, the pedagogic academy and a pupil from an AHS (Academic secondary school/upper level) formed a team

?　Course 2: A group consisted of a student from Switzerland, the university Linz and the PADB Linz (Federal pedagogic academy)

The aims of the courses were twofold: First, we tried to find out how to hold courses with distributed and international groups. Second, the participants had interesting topics to work on: Comparative review of homepages of educational institutions (course 1) and finding assessment criteria for CBT (Computer Based Training) software (course 2). The focus during the seminars was on stimulating multidirectional interaction and cooperation between members of a group and between groups (creating a common result).

3.1. Mode of organization

The explanations here are limited to the CBT-course, but the other one was organized in a very similar manner. Generally speaking, personal meetings were „undesirable" and were not encouraged. Instead of this, electronic communication through newsgroups should be the only way of co-operation. To order the contributions in addition to automatic threading, different newsgroups for the course, each of the phases and the individual groups were established. The results of the teams had to be presented on WWW-pages, which the participants created in a joint effort. The course was divided into 3 distinct phases to provide milestones, an important issue for virtual courses that was already recognized through previous experiences by Aiken et. al. [2]:

?　Phase 1 (Solitary work): Each participant received a CBT-software and had to create a list of criteria, with which he had to judge his course. The main aspect in this phase was on the explanation and reasons for his selection. During this time the forming of the international groups for the second phase took place by intensive communication using the newsgroups.

?　Phase 2 (International groups): Groups of four persons were formed with a maximum of two participants from one institution. They discussed the criteria from phase 1 from all of them, exchanged their software and had to agree on a new set of criteria. According to them they had to re-evaluate their programs. The main aim was on the reasons, why to drop some criteria and why to include different ones into the common set (or why a completely new one seems to be so important to be included).

? Phase 3 (All participants together): All participants had to review the results of all the other groups and discuss the differences to their own set. In addition to this, all the criteria were compiled and detailed with explanations by the participants.

The assessment of the contributions of the participants from the university used for the credits of the course included the results of the group, the content of the individual webpages, the intensity and behaviour during the electronic discussions and a final oral presentation.

3.2. Advantages enjoyed

During these courses the teachers and the participants identified a number of advantages:

Practice teamwork: Working together in groups allows to overcome the usual result of teleteaching (everybody works on his own) by including feedback, comments and hints from other members of the group. This improves the results and increases both the knowledge (knowing also about the others work) and the skills (cooperation in teams, giving and receiving support, offering constructive critique, …) of the participants.

Easier self-assessment: Comparing the own progress in learning is much more difficult in teleteaching than in conventional teaching as everybody works on his own and receives feedback only from the teacher and not from listening to examinations or statements from other students. In contrast to this multidirectionalism allows assessing the results of other participants and provides an environment where the students can compare the progress of their work, their quality and their achievements. Aiken et. al. [2] described that the students can also build up on the work of others and offer them advice on what or where to improve their results.

Free time management: As pointed out by Mühlbacher [6], Teleteaching can serve to loosen the binding of students to prescribed time and location of courses. As no synchronous means of cooperation or communication were used, all participants were free in their time-allotment and could experience this for themselves. Especially students in their final year appreciated the possibility to avoid having to travel to the university for a single course. The teachers for example could continue the course without interruption, even during periods of absence from the university or from home if there had been no other time available.

Cooperation with different educational institutions: Through cooperation with different educational institutions (teachers training college) or faculties (psychology), different aspects (and also different criteria) were brought into the courses, improving the results. These interdisciplinary seminars allowed all participants an insight into the way of thinking and working of other fields of study and deepened the cooperation between the institutes.

4.2. Problems encountered

A number of difficulties occurred during our series of four courses, some of which will be described and potential or tried solutions pointed out:

Selection of themes: The content of the courses must be especially selected. Rather disjoint topics under a common heading, which are then worked on in groups will result only in a moderate amount of cooperation within the groups (division into subparts and assembling it), but communication between the teams will be limited to the final presentation. In contrast to this, the topics must be closely related or, like in our later courses, just a single question, which is worked on with different materials (books, software, etc.) or from different angles. Only if communication and cooperation between the groups is necessary for the success of the individual group, this communication will be extensive and deep.

Response time: Another critical factor for the success of multidirectional cooperation is the time between contributions to a discussion. Providing a shared context like in a newsgroup (previous contributions are presented in a threaded manner) allows multiple interlocking conversations, but even then the delay between individual contributions or reactions should not be too long else the strain on the memory gets to large and results take a long time. Prescribing rules for the time to and in response to what to answer provided small improvement, but they were not sufficient. One cause of this problem might be, that a large fraction of the participants had no personal computer for the work but depended on restricted access to shared computers dedicated for a larger group.

Presentation of context-changes: An important point to enable multiple conversations is, that changes, updates and additions are marked in the presentation of the context, both for communication and for results. Nobody wants to hunt through a large space of information to find the new additions (and if there are such at all). Icons according to the age of the contributions presented beside the links in later courses helped greatly in our seminars, but a personal marking for each participant would be preferable.

Timeframe: Problematical was, that the participants always tended to be late for the set point of time, when specific results should have been reached. They tended to draw out the discussion and then there was no time left for the decision and the presentation of it. Currently no working solution other than to plan this ahead and leave some time for postponements has been found. In connection with this, shorter response times might help a bit to speed up the discussion and finish this part earlier. Another possibility would be to lengthen the time of the course to a whole academic year, as Aiken et. al. [2] proposed in response to different time-frames for semesters in different countries, which had a disrupting effect in previous courses.

5. LESSONS LEARNT

This paper has presented a practical example of integrating teamwork into Teleteaching and explained advantages and potential problems as we experienced them during our long series of courses.

In our opinion, teamwork is an important additional idea to consider when thinking of Teleteaching. Although there are a lot of problems which make it more difficult than conventional teamwork or conventional teleteaching, both are not mutually exclusive but can be combined as we experienced in our courses.

6. REFERENCES

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