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# Researching while Teaching: an action research approach in higher education [1]

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**ABSTRACT** *In an interdisciplinary approach to improve faculty members' pedagogic competences in higher education at the University of Innsbruck (Austria), an action research type of programme proved helpful in meeting the participants' needs and interests. After an introductory session, individual projects were initiated, in which the participants undertook different approaches to action research by reflecting on their own teaching situation. As an ongoing evaluative process between individual inquiry-based phases of lecturing and reflective plenary sessions, the programme tried to offer deeper insights into the participants' own practical 'theories' of what they intend to accomplish in the classroom and how they want to achieve these goals. Moreover, through its co-operative design, the action research approach played an important part in organisational development.*

## Introduction

"How can I motivate my students to actually learn what I teach them in my lectures?" "How can I get my students to work more independently?" "How can I include the students' ideas in the planning of my lectures?" "In the medical practicum, I often experience insecurity, fear, defence, chaos and aggression among students. What can I do to improve that situation?" "How can I develop myself towards more co-operation and creativity in my teaching?" Questions like these were often asked when we tried to find out from Austrian university teachers about their problems in higher education. We also learnt from them that conventional concepts in staff development had rarely helped them in getting an answer which would *practically* deal with their problems. Activities aimed at improving teaching usually only had short term effects and rarely involved lecturers in a lengthier process of working on their teaching in higher education. Like the situation in academic institutions in many countries, advancement and professionalisation in higher education in Austria have always been neglected compared to the emphasis put on career development in laboratory work and scientific research. This neglect of teaching has led to observations similar to those which Sykes recently identified in the United States. For him, professors:

- (1) Merely regurgitate the textbook.
- (2) Rely on notes prepared when they were younger, more ambitious, and without tenure.

- (3) Dwell on their own specialties without bothering to translate the material from the arcane jargon of their special.
- (4) Turn their classes into rap sessions, a tactic that has the advantage of being both entertaining and educationally progressive.
- (5) Fail to prepare at all and treat their classes to an off-the-top-of-the-head ramble, leaping from topic to topic in what they think are dazzling intellectual trapeze acts but which usually are confusing, frustrating muddles for the students. (Sykes, 1988, p. 61)

It would be one-sided only to blame the individual lecturers themselves for the little value they place on their activities in the classroom. Career advancement for university teachers is predominantly based on the number of publications in their discipline or the prestige of the international conferences they attend. On the institutional level, an infrastructure for research and supervision in higher education teaching hardly exists and is mainly maintained by committed individuals and a private association publishing the only Austrian journal on higher education, and organising workshops for interested academic staff.

Against this background, in 1986, a senate commission was established at Innsbruck University to deal with this situation and to develop a programme aimed at improving the teaching competence of its lecturers. As a first step, this commission carried out an informal study throughout the university to discover more about the needs and interests of people wanting further incentives for the improvement in teaching. This study was based on previous findings showing that university staff were generally motivated to improve their teaching competences even though their main interest lay in their disciplinary fields of scientific research.

A few words about the institutional context of higher education at Innsbruck University 20,000 students, 1200 full-time faculty, several hundred lecturers from other universities or extramural professional backgrounds, and seven faculties (architecture, law, liberal arts, medicine, social sciences and business studies, theology) each consisting of several independent departments. The size of classes varies according to the popularity of the course. Introductory classes with 500 and more students might have to move out of the premises because there are simply not large enough lecture halls available, but this is the exception. Whereas main lectures usually attract 100–200 students, seminars are limited to about 30 students.

### **In Search of Reflective Practice**

“What I’d like to know now is where I am with my own teaching. Can I say that I teach in a student-oriented, or in a traditional way? Or am I maybe somewhere in the middle? How can I find out more about my teaching?” So runs the question put to us by a university teacher in an interview. Clearly, it may sometimes be impossible to answer this question in a satisfactory way. Moreover, this kind of labelling would not help any further in improving teaching competence at a higher educational level. What is important, however, is getting beyond such labels to an understanding of how lecturers actually do teach, what they actually do in a classroom and what their students do and how they react as a result.

How much do we know about the way students receive our lessons? Do they get the chance to find out about their teachers’ processes of learning and thought? Is there room left for their own thoughts which are essential for their personal and social development? These questions are different from the usual ones. In traditional views, teachers are mainly interested in the students’ *products* such as exam results. The senate commission, however,

saw human *processes* as an integral part of learner achievement. Moreover, it claimed that the result becomes more sophisticated the more we rethink and reinterpret the processes involved in the phase of knowledge creation. If we want to bridge the gap between the products we expect from our students and the social processes leading towards those products, we have to find ways of developing new incentives through reflection in action (cf. Schön, 1983).

As teaching and learning are interrelated in the effectiveness of education, lecturers *and* learners have to be involved in this reflection on what is going on in class. Only then can we find out about the gap between what is taught and what is learnt in higher education. This reflection can be compared to a kind of research process, which has been defined.

As the study by classroom teachers of the impact of their teaching on the students in their classrooms. The basic premise of classroom research is that teachers should use their classrooms as laboratories to study the learning process as it applies to their particular disciplines; teachers should become skillful, systematic observers of how the students in their classrooms learn. (Cross, 1988, p. 3)

These findings as well as previous attempts at improving college teaching were discussed by the members of the senate commission representing different faculties of the university. As an answer, the commission started to design a suitable framework for a pilot programme to satisfy the faculty's needs and expectations. The concept developed tried to meet the following requirements, which came out of the initial analysis. It should:

- (i) take as its starting point the needs and interests of everybody involved, that is students and teachers irrespective of their disciplinary background;
- (ii) give teaching the same status as is usually given a research interest;
- (iii) aim at a longer involvement leaving enough space for reflective activities;
- (iv) meet the participants at the very point at which they presently stand in their teaching;
- (v) include the students' reactions in the formative evaluation procedures;
- (vi) make use of the participants' on-going teaching commitments and use them as a base for further reflections;
- (vii) follow a co-operative design which is not subordinate to the usual practice of disciplinary thinking within a monadic, isolated approach; and
- (viii) strive for continuing self-evaluation practices which enable the individual to look at his or her teaching as an on-going research activity.

An approach taking all these aspects into consideration requires an ambitious design and large-scale supervision. Therefore, the proposed programme was modelled along Schön's idea of *reflection-in-action* (cf. Schön 1983, 1987) and the concept of *action research* in order to turn an initiating consultation into an on-going process of improving professional practice under critical reflection. Reflection-in-action and action research are "simply a form of self-reflective enquiry undertaken by participants in social situations in order to improve the rationality and justice of their practices" (Carr & Kemmis, 1986, p. 162). Action research concepts have so far had many application in a great variety of fields such as management and personnel training (Whyte, 1964), administration and organisation development (McGill & Horton, 1973), and particularly in the context of schooling (Hustler *et al.*, 1986; Oldroyd & Tiller, 1987; Gregory, 1988; McKernan, 1988; Altrichter & Posch, 1990) and teacher training (Goswami & Stillman, 1986; Elliott, in press). Although "[t]alk of promoting teachers' based action research in schools as a process of educating teachers to be reflective practitioners is sweeping through faculties of education in universities across the world" (Elliott, 1989, p. 1), this concept has only recently been applied to the improvement of practices of higher education [2].

In order to further explore this action research idea in higher education a pilot programme was proposed in the winter term 1986/87 at Innsbruck University, interested faculty and students being invited by the Vice-Chancellor to take part in a preparatory meeting. This served as a kind of introductory workshop to the higher education project 'Researching While Teaching' (RWT) [3]. It was difficult, however, to make this title transparent and present the philosophy behind it, as described above. Therefore, included in the written introduction to the first meeting was a statement of philosophy and purpose, which is summarised by the following questions and answers.

*What is RWT?*

It offers an opportunity to gain new insights into one's own practical theories that monitor one's teaching and learning. In this sense, it can be seen as research based in-service training which directly improves and modifies one's teaching practice.

*How does RWT work?*

In joint meetings, interested university teachers are confronted with practical methods of collecting and analysing data on teaching in higher education and are encouraged to apply these methods to their own teaching practice.

*What is RWT for?*

It provides the university lecturer with a deeper understanding of what he or she intends to accomplish in the lecture room.

*Who is RWT for?*

For everybody who is interested in adopting the role of a researcher into one's own teaching with the aim of improving it.

About 50 faculty members and graduate students across the disciplines represented at the university attended the introductory meeting to learn more about the action research project RWT. There they were first asked to express problems, difficulties and worries in their own university teaching, in order to find a basis for a common objective for research into the processes underlying that teaching. This was done in the following way: each participant received a sheet of paper containing an illustration of a full-page-sized magnifying glass. Inside the magnifying glass, each person expressed his or her problems, fears or expectations concerning their teaching. Some expressed themselves in a short text, as can be seen from the following examples. Other lecturers freely associated by drawing pictures, which expressed particular problems of their 'artists', as can be seen from the following examples (Fig. 1).

This introductory exercise with the magnifying glass served as the focal point which would later be observed and analysed in the RWT project. Moreover, the symbol of the magnifying glass has been used as a logo for all correspondence as well as the informal papers and publications throughout the project, which should remind the participants of this initial phase. The sheets with the completed magnifying glasses were then hung up on the walls and studied by everybody, leading to lively discussions among the participants. The 'public' display of everybody's expression of their interest areas in the classroom not only helped to reassure people that nobody was alone with his or her thoughts, but it helped to deal with problems and worries lecturers had in particular. This is, for example, indicated by

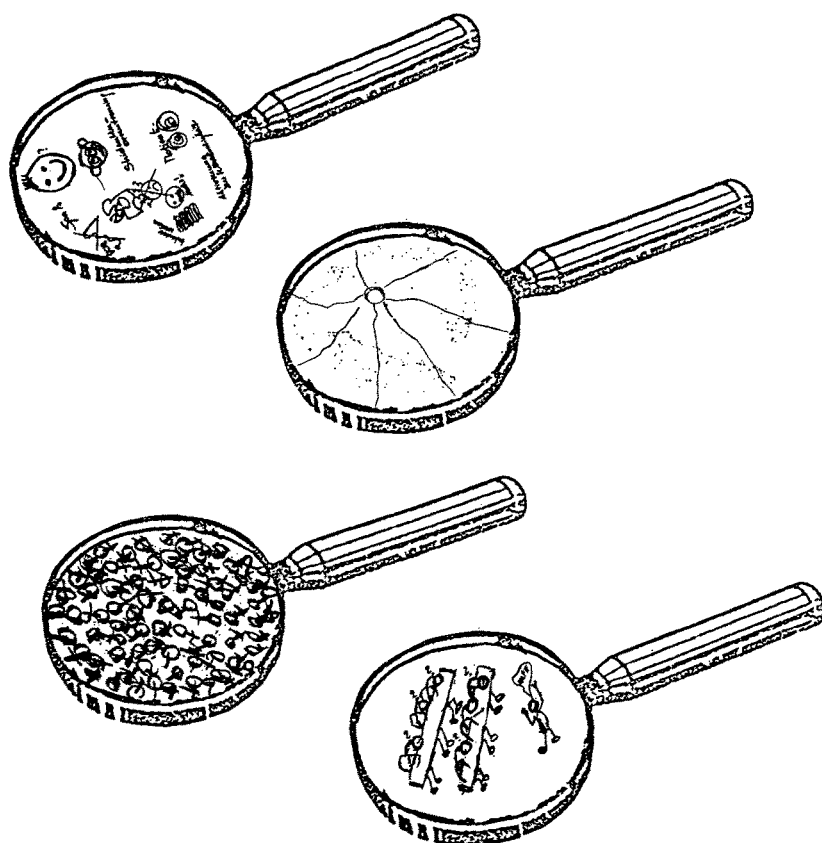


FIG. 1. Examples of participants' drawings.

the following statement from another participant: "I feel uneasy here. Perhaps I expected something different, or perhaps I'm just not mentally prepared for this exercise". The texts on the wall also stimulated lively discussions on lecture practices in general. These discussions were used by the members of the faculty development group (formed out of the original senate commission) to shift the university teachers' attention to a more systematic analysis of what was actually going on in their classrooms.

### **Instruments for Action Research Activities**

As most of the participants had not had previous experiences with reflective teaching through classroom research, an approach had to be found which allowed both an effective individual consultancy and a convenient application in the lecturer's own classroom situation. A good example of such simple and yet highly effective advice on improving one's teaching is described in Wilson, who quotes a physics teacher's description of his 'minute paper' method:

I give my students about a minute to write answers to two questions. Four or five times during the term I come to class two minutes early. I write two questions in the corner of the board: (1) What is the most significant thing you learned today?

(2) What question is uppermost in your mind at the end of this class session? Then I go ahead and give a 49-minute presentation. One minute before the bell rings I tell the students to take out a piece of paper, sign it, and answer the two questions in one minute. When the bell rings I ask them to pass their papers to the aisle. I walk down the aisle and pick them up. I originally started this as a way of taking attendance and would simply give the papers to my readers to check off the names. Later, I started reading the papers and they, of course, do provide excellent feedback on whether the students are understanding and whether there are important questions to which I should respond. (Wilson, 1986, p. 199)

In Wilson's programme on faculty development, ideas such as the one quoted above were collected in the form of a notebook which was then used as a pool of 'ideas' in consulting client teachers. Researching into one's own teaching can be instantly applied and will therefore have immediate effects. Moreover, it can cause little extra work in addition to the regular preparation of classes, but provide the teacher with valuable feedback on students' understanding (cf. Schratz, 1989). The techniques applied to evaluating one's teaching must therefore be simple, otherwise, quite understandably, lecturers either will not start or they will very likely soon give up their attempt of self-evaluating their teaching. In what follows I present some simple techniques that a lecturer can use either on his or her own or together with a colleague. The aim of these techniques is to make lecturers more aware and sensitive to their own teaching processes without causing them to be judgemental about them. The end in view is not evaluation of products but an analysis of the diverse factors that influence teaching and learning. There is a great variety of different 'instruments' which can be used in getting information on the teaching learning situation. The more open they are, the more complex the findings will be.

In the first plenary meeting, the participants in the RWT programme were presented with a brochure providing suggestions and support material for the documentation of, reflection on and exploration into, their ongoing teaching commitments. The brochure contained suggestions in the form of support material for self-study purposes similar to the 'minute paper' mentioned above. This led the participants to document, reflect on and explore their ongoing teaching commitments [4]. The following overview gives an idea of the most common instruments for researching into one's own teaching. The participants were encouraged to familiarise themselves with different techniques so as to sensitise towards their own strengths and weaknesses.

### *Instant Feedback*

The instant feedback technique is a simple way of getting a quick and individual response on certain aspects of the teaching-learning process in written form. This information will help the lecturer in assessing further steps in the approach taken so far, especially if it is different from that in other lectures (cf. Wilson's example above). Its simple procedure and its multiple usability makes this technique a valuable evaluative instrument. Students are usually very motivated in giving their views on how they conceive certain aspects in the teaching-learning process. Moreover, its use also signals to the students that the teacher takes their reactions seriously, especially if he or she presents the results to them in class afterwards. Using the immediate feedback technique can also serve as a good introduction to engaging further, more elaborate evaluation practices in class, since it does not interfere very much with the actual teaching. It would not be advisable to use this technique all the time to gain further insights into one's teaching effects.

### *Questionnaire*

The questionnaire is one of the simplest and therefore most often applied methods used in evaluation procedures. The lecturer asks the students to respond to given questions. These relate to areas of investigation in the teaching-learning process. Questionnaires represent a popular way of getting answers to specific questions. They should not be used for process evaluation if multiple-choice questionnaires are the regular instrument for testing subject matter achievement. The major weakness lies in its limitation when only certain options for answering the questions are given. For this reason, it is a good idea to get students to write down a sentence indicating why they opted for that particular statement. Through such subjective comments, the lecturer will get a broader view on each question.

### *Sentence Completion*

This is similar to an open questionnaire. The lecturer chooses certain aspects he or she wants to gain specific information on. This time, they are not formulated in question form but are embedded in phrases indicating the beginnings of evaluative statements. The open-ended sentences give the students the chance to respond according to their own interpretation of what has been asked for. Because of their openness, the answers usually give a broad view of how the individual aspects of the teaching-learning situation have been perceived by the students. Therefore, it is difficult for the lecturer to 'standardise' the results. The sentence completion technique has a more immediate effect than the questionnaire, since it provides richer information on the individual's experience. Especially when used in an *ad hoc* evaluation and dictated right out of an immediate teaching situation, this technique can provide valuable feedback for the current situation in class. It can easily be adapted to any orientation in process evaluation (understanding, reactions, feelings, opinions, values, etc.). The completed sentences can be used with great success in stimulating partner or group discussions in class.

### *Open Letter*

In everyday life, letter writing usually is a very specific form of communication. Similarly, letter writing can be used to evaluate certain aspects of the teaching-learning process in general. The purpose for doing so can be a problem in class which the lecturer has tried to deal with, but has not been able to resolve alone. Writing an open letter to the class (or a group) could help in getting more background information and support from the students. Letter writing is a useful technique to be used if talking about things has not proved helpful in getting feedback on teaching. For some lecturers, the personal style of this medium might be an unusual approach in a classroom situation. Students are generally very motivated if they are treated seriously in this way and are confronted with the university teacher's concerns for his or her class. This has often deepened the relationship between lecturer and learners.

### *Journal Book*

A journal, in this context, is a personal document which is usually written to record thoughts, impressions and also feelings about certain situations or events. In the past few years, journals have also been used in a wide variety of educational settings (Abbs, 1974; Fulwiler, 1987; Holly, 1987). Such professional journals are not identical with the diaries



people, especially teenagers, write in their personal lives. Nor do they resemble notebooks which just carry abbreviated notes to be remembered. Journals borrow from both of these forms of expression. They deal with personal issues their authors care about and they are concerned with notes that refer to professional experiences. Their use in evaluative contexts contributes a lot to the self-reflection processes, since writing itself, through its distancing effect, is a reflective activity. Writing in a journal is different, however, from writing for an audience. It is more personal, informal and colloquial, as well as leaving more room for the unpredictable. Since journals carry the mental modes of individual experiences, they usually throw light on rather personal aspects of the teaching and learning experience. Therefore, the writer is usually the only one to read it.

In higher education, journal books can be used by lecturers to document important aspects of one's teaching experience. This will not only enhance reflection on one's own professional development but also stimulate collegial discussion. Like a personal diary, the contents of a journal always remain private unless its author agrees on a different arrangement. It is possible for both teachers and learners to get involved in journal writing. For both of them, journal books are a suitable instrument to stimulate awareness of the underlying agenda in class. Moreover, writing a journal book can contribute to making learners more dependent on self-evaluation and to making teachers more self-reflecting. Writing and reading a journal can be time-consuming for all concerned. This, of course, depends on how much time one is willing to give to the task. Students should not force themselves to write immediately after each lesson, but they should learn to see the value of writing down their impressions. To do so, they could be encouraged to write down motivating experiences and find out what made those so worthwhile.

### *Classroom Observation*

Even among university teachers with extensive classroom experience, we have noticed a lot of anxiety about being observed. We found that this feeling originated in negative experiences of being assessed by supervisors in the past. In our case, classroom observation has to be used in a non-threatening atmosphere, which should help lecturers to gain deeper insights into their own teaching experiences. It is important to invite a person of trust, a fellow lecturer or another person of personal choice who understands her or his commitment to be supportive to the university teacher under observation. If lecturers can overcome the first phase of feeling irritated by being scrutinised, classroom observation feedback offers an excellent way of getting additional information on certain aspects of the teaching and learning process. Sometimes university teachers encounter difficulties in finding suitable partners for the observation, since it is time-consuming for an external observer to get to the university or college for just one lecture during a day. Therefore, an arrangement often works out best which is set up among colleagues who observe each other regularly. This will build up a situation of shared meaning that helps to work towards continuous professional growth and personal enrichment on an individual base and towards organisational development on an institutional level, especially when several members of staff are involved in mutual class visits. (See also the concept of collegiality in Elton & Pope, 1989.)

### *Audio-visual Recording*

The taping of lessons with audio-visual media has assumed a great number of forms in the analysis of teacher and learner interaction. The great advantage of audio and video recordings is the long-term availability of the 'frozen' actions. Lectures can be watched (in

the case of video recordings) or listened to (in the case of audio recordings) again and again. This usually makes it possible to discuss details from a certain distance, which often helps lecturers to look at their performance more critically. Generally speaking, the visual image has the great advantage of recording extra-linguistic features such as body language and other non-verbal behaviour of both lecturer and students, interactional patterns, classroom situations, etc. Audio-visual recordings are powerful instruments in the development of a lecturer's self-reflective competence. They confront him or her with a mirror-like 'objective' view of what goes on in class. Moreover, class recordings which are kept for later use, can give a valuable insight into an individual teacher's growth in experience over years. Setting up the equipment for a lecture's recording and going through the various analysing phases requires a lot of time. For this reason, this type of activity can never become an activity considered on a day-to-day basis. It will only be applied on special occasions. Nowadays, many staff development units offer external support for such activities, which makes it easier for the individual lecturer to apply this technique in his or her attempts at evaluating teaching and learning.

### *Interview Triangle*

This is similar to the visit of an outside observer but with the refinement that an extra person participates in conducting the interview triangle. It derives its name from the following constellation: a person of the lecturer's choice, who visit a class, tries to gather information on a certain question or problem, usually brought up by the lecturer. After the external person (E) has interviewed the lecturer (L) on the issue at hand, he or she tries to gain corresponding information from the students (S) (see Fig. 2). This will help the lecturer to find out how the students encountered certain situations in class from the learner perspective. This might contrast with the university teacher's perspective. Interview triangles involve the most effort in evaluating teaching and learning processes. However, they help the teacher most in getting additional information on specific problems or areas of interest. Especially when there is a recurring phenomenon in class, for example a motivational problem, the use of the interview triangle will be a valuable tool in finding out details on the source of the problem. It allows lecturers to assess particularly those dimensions of the students' experiences that underlie the learning situation in the present. They can focus the external person's attention on the very students or problem areas that are involved or might have been involved in a certain issue that is relevant to the university teacher.

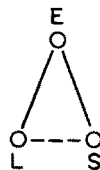


FIG. 2. The interview triangle.

### **From Supervision to Reflection in Action**

After the initial presentation and discussion phase of the project, it was suggested that the participants in the action research project undertake independent, small research tasks such as observing certain aspects of the teaching process, looking at the students' behaviour,

getting instant feedback in the classroom, and so on. The members of the senate commission, who had previous experience in faculty consultancy, provided them with some practical tools outlined above for the analysis and documentation of their teaching processes. It was important for the faculty to use the instruments and techniques collect in the brochure arranged thematically, according to the following principles: the participants' motivation gained from the first session should be channelled; as little extra work as possible in the preparation of their teaching should be occasioned; immediate results from the first application of new techniques in the classroom should be evident; confidence in the individual faculty member as a 'researcher' of the affected individual's teaching should be instilled; and feedback material for the following plenary session should be provided to the 'teacher researcher'.

During several plenary sessions in the following weeks, the participants in the pilot programme presented the findings from the ongoing research activities in their lectures or seminars. The findings were then discussed in the plenum or small groups according to the thematic areas and problems arising. These meetings served two main purposes. On the one hand, they insured that the participants did not completely have to fall back on their own resources in dealing with problems or questions which might be expected to arise in the course of their first attempts. On the other hand, the exchange of experiences among the participating faculty members encouraged everybody to try out different and even more challenging 'research' approaches in their classes.

In the sessions during the first plenary meeting, most of the participants brought back questionnaire results to be discussed. The first plenary indicated that different forms of questionnaires were the most popular, and were often the only methods of getting feedback from students to have been previously used. These results had to be dealt with in a serious way. The following discussions soon showed, however, the weaknesses of such quantitatively-oriented research instruments. These discussions proved to be a valuable source for sensitising the participating faculty about qualitatively-oriented forms of classroom research. This shift could be characterised as one from traditional positivist approaches to the acceptance and use of phenomenological methods and techniques (Fetterman, 1988).

It seems appropriate to discuss the findings at this point, since they suggest at least a twofold socialisation experience, which has to be taken into account when engaging faculty in action research. First, the forms of evaluation procedures which most university teachers were confronted with in their own careers, both as learners at various levels of schooling and as teachers in different institutional settings, can be described as summative evaluation. Therefore, the focus of interest was seen mainly in the outcome rather than the process (i.e. what is going on during teaching as interaction). Second, the research methods used almost exclusively in most of the teachers' own academic disciplines can be identified with a quantitative paradigm, which emphasises objectivity gained through 'valid' data rather than the subjective realities of human perception.

In the first few plenary sessions, it was necessary to support the participants in their move from their socialised forms of summative thinking towards more formative views of research in their own classes. That means, they were asked to concentrate more on what happens during the course rather than what the students produce in a final examination [5]. Smyth (in press) argues that teachers have to 'critically' confront their work in the classroom, that is, in the act of teaching itself. "The starting point lies in teachers theorising their own practice in ways that involves them in coming to see how their own understandings have become limited and distorted by non-educational forces, such as institutional structures and political constraints" (p. 10). In this sense, action research is at the same time a political process which is geared towards a change in professional practices and an attempt to improve the teaching at the same time that it is being analysed.

It was helpful at the beginning, therefore, not to answer such questions (as the ones referred to above) that teachers brought into the plenary meetings. Conscious of the additional research initiatives applied in class, the participants rather tried to question more specifically what actually happens in their teaching. This led to an ongoing reflection process along the following lines: "What happened? Why did it happen? What was my role? What beliefs did my actions reflect? Did my actions reflect beliefs and assumptions about which I was not aware? Did the consequences of my actions raise doubts or reinforce my beliefs? How should I act in the future on the basis of what happened?" (Posner, 1988, p. 26).

After the first phase of working together as a whole group in plenary arrangements, different working groups were formed to enable the participants to follow a certain area of interest using action research methods more extensively. The groups were arranged by areas of interests, and they then set themselves short- and medium-term research targets. In order to avoid overextending themselves, the groups met with competent members of the advisory commission, who accompanied and supervised them if necessary, although most of the practical research into their own teaching was done by the individual group members. It is important to stress that everybody participating took responsibility for his or her classroom interventions.

It is not possible to describe all the phases the individual working groups went through during the action research project. It was in particular the different dynamics caused by the workshop atmosphere in the respective group that determined its progress. Since there are no results in the conventional sense that can be verified for several other situations, I want to offer a selective view into some of the groups' activities which I consider to be of general interest.

One of these small groups, for example, tried to tackle the problem of lectures with mass audiences, in particular the problem of assessing the students' performances since many university teachers are unhappy with the present practices. Moreover, traditional assessment strategies support a hidden curriculum that requires students to learn mainly facts rather than what constitutes their meaning in a broader context. Therefore, assessment techniques have to be seen in close connection with the learning processes themselves.

At first, interviews were conducted with a number of students to find out about their learning strategies for an exam. The results were then discussed in the working group, leading to an analysis of the alternatives to solely fact-oriented forms of assessment. The working group developed new assessment forms, which were tried in different disciplines and the results discussed thereafter. By using the advantages of case studies in different assessment situations, participants understood that assessment strategies can gain in depth if they are modelled along real life demands. Similarly, exams in group arrangements led to a more intensive argument between students and teacher. In addition, log books provided a tool to deal with the affective part of the learning process and highlighted aspects that had often been neglected in previous discussions.

Another small group tried to work on the effect of the use of audio-visual aids in lecturing, apparently a common problem regardless of the disciplines the participants came from. There were two perspectives which seemed to be dominant in the work of the group: one perspective looked at the audio-visual media as instruments for making the lecture more effective (for example, by means of using the overhead projector or video facilities); the other perspective aimed at using the audio-visual media as a supporting device to evaluate one's teaching performance.

The group members consisted of six to 10 university teachers from the following disciplines: mathematics, physics, medicine and educational studies. Apart from the individual research activities in class, the group met about three times per term for about 2 hours.

The first feedback on the effects of teaching was achieved with the help of simple questions to which students responded regarding certain concerns of the individual teachers, such as: What do the students like most/least? When is it most difficult to follow the lecture? What do the different media contribute to the learning process?

After the discussion of the data in class and the analysis of the results in the group, one group member's lecture was videotaped and first discussed in the small group. The findings of this discussion were used to create a more elaborate questionnaire referring to the class taped previously. The results from this questionnaire were discussed with the students in class and in the respective department afterwards, so as to make use of data with a broader range for organisational development. The following feedback from a member of this small group may give a more authentic view of the working of this approach.

Originally, I only took part at the meeting in the project because as a member of the university senate I felt obliged, just like lots of those other burdensome commitments one has to take part in without ever gaining any personal profit. However, soon I noticed that in this group people did not merely talk about various questions of higher education at our university from a theoretical perspective, but that the opportunity arose for improving my own teaching. First it was important for me to discuss with colleagues and students in an unembarrassed and relaxed way. Moreover, I had had the desire to watch myself in my own teaching for some time. During one session in our small group one of my lectures was videotaped. Together with the other members of this group we developed a questionnaire to get further information from the students. Eventually, the results of this survey were discussed with my students and colleagues at the department.

This work has had some positive effects on my teaching. Certainly, knowing about the observation has had some effect on my lecture preparation. I now take more care than I did previously. The viewing of my lecture on video and the analysis of answers from the questionnaire have given me further help in improving my teaching. Now I'm getting more pleasure out of my teaching, which has also had some positive effect on the atmosphere in class. Thus I have succeeded in a way to take out some stress from maths teaching at our faculty, and the success has even been noticeable in the students' achievement so far. (Translation by the present author)

### **Towards Ongoing Researching while Teaching**

In the pilot phase described here, a guided build-up from plenary meetings to group sessions and self-study activities was initiated in order to support the participants in their self-reflective research. There were no set rules for the allocation of time in the individual phases. We found, however, that it takes the participants considerable time to be comfortable with this new research domain. This should be allowed for in the programme design.

Once they have experienced their classroom as a valuable resource for assessing the teaching and learning process using their own documentation instruments or evaluation methods, the participants, improve their own teaching by becoming more reflective about what is occurring in the interaction between the students and the teacher. The basis for this increased reflectiveness is an assessment of the learning process from both the teacher's and students' perspective.

At whatever level a student learns—to execute a particular performance, or kind of performance, or way of designing a performance, or way of learning—her evolving

practice depends significantly on how she assesses her own learning. And the evolution of a coach's practice also depends on his ability to assess his own and his students' learning. Hence, coach and student, when they do their jobs well, function not only as practitioners but also as on-line researchers, each inquiring more or less consciously into his own and the other's changing understandings. (Schön, 1987, p. 298)

The plenary sessions, which occurred less often in the second phase, were still necessary at that point and contributed to an exchange of ideas on a broader level. The aim of these meetings was no longer to provide introduction or supervision; instead, they became a kind of 'market-place' for the exchange of experiences. Like conference meetings in their disciplinary fields where researchers go to present their latest research findings, meetings on this level had action researchers discuss their latest findings in their teaching research across the disciplines. In this phase, plenary meetings also served as a base for collecting documents from the individual research activities by individuals and small groups. In this sense, they had the character of editorial meetings for the discussion of materials to be included in the working papers meant for distribution. These documents have meanwhile been published (in German) so as to make them available to a wider audience (Klug & Schratz, 1988).

The plenary meetings had another important function. They not only helped to open up individual classrooms to a wider audience of colleagues in other disciplines, but they also provided the participants with a broader view of what instruction originally meant to them. Looking at higher education from a reflective point of view and getting feedback from students helps in assessing the curriculum and leads to a more developmental view of teaching. Reflective teachers who have taken part in an action research programme of this kind serve as change agents in a transformation process, which "involves an examination of basic premises about the clientele, aims, teaching-learning approaches, and curriculum for the institutions" (Apps, 1988, p. 14). Thus, institutionalised teaching and learning becomes part of organisational development, which is particularly vital in times when institutions of higher learning are feeling increasing pressure from the public and are therefore faced with the challenge of maintaining quality.

After assessing the first phase of the programme 'Researching While Teaching' at Innsbruck University, it can be said that this kind of action research approach to teaching in higher education is not only a valuable experience for the individual participant. Looking into one's own lecturing practice through the eyes of a researcher is a challenging task for both faculty and students if they are willing to venture into this "rich and virtually untapped resource for the improvement of teaching" (Cross, 1987, p. 6) and learning. Although the extra work sometimes meant spending more time on the actual teaching, most participants gained satisfaction out of this approach, as can be found by example in the following statement of a participant in the project: "By dealing more intensively with my teaching commitments, I got more joy out of them, which also contributed to the good mood I felt in class".

Moreover, through the ripple effect of attracting more and more people in a department or institutional unit, this approach helps in making reflective teaching a vital part in organisational development. In this sense, developing collaborative self-reflection about teaching experiences can turn such an action research process into an "exercise in ideological deconstruction" (Elliott, 1989). This means that the lecturers' experience of class research was grounded in actually attempting to facilitate their professional development and not in theoretical inputs by experts of teaching in higher education. By doing so they generated their own *practical theories* in action research. Only through reflection in the group or

plenary sessions the theory embedded in the researching while teaching practices came to light, which helped the participants to see this as a valid theory of teaching and learning for their own instruction.

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#### NOTES

- [1] Based on a paper first presented at the First Lilly Conference on College Teaching West at Lake Arrowhead, California, 17–19 March 1989 (Schratz, 1990), and a revised paper presented at the Seventh European Workshop on Staff Development in Higher Education at St Georgen, Austria, 9–14 June 1990.
- [2] Apart from the project described here, a similar programme has been developed and applied as ‘Classroom Research’ by Patricia Cross and Thomas Angelo at the University of California, Berkeley.
- [3] This is the English translation of the original *Forschendes Lehren* which gets closest to the idea expressed in the German title.
- [4] Pat Cross and Tom Angelo have prepared a similar collection to help individual faculty members engage in classroom research, which is called *Classroom Assessment Techniques. A Handbook for Faculty*. It can be obtained from the National Centre for Research to Improve Postsecondary Teaching and Learning (NCRIPAL), School of Education Building, University of Michigan, Ann Arbor, MI 48109, USA.
- [5] In order to fulfil the requirements students at Austrian universities usually take a final examination in each course.

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