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Action research in initial teacher education: an explorative study

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The aim of the study was to describe students' and teacher educators' practical experience with action research and to identify a number of special points for consideration (opportunities and limitations) which could play a role in putting research into practice in concrete terms in the courses. Students and teacher educators on three Dutch initial teacher education programmes which treat action research as both a means of professional development and a necessary professional qualification were involved. These were programmes for specific teaching levels and subjects in Dutch schools. Four special points for consideration are identified: action research and the educational core qualifications of the profession; difference between action research by student teachers during their initial education and experienced teachers in their own workplace; students' mixed experiences and perceptions of research; and embedded research-based activities in the programme. The authors conclude that action research should be considered from different perspectives: as a professional approach, a body of skills that is needed to make the connection between knowing *that* and knowing *why*; and as a way of improving practice by systematically building up practice-based knowledge.

Keywords: action research; initial teacher education; curriculum development; professional development

Introduction

Initial teacher education courses usually offer prospective teachers the opportunity to gain some experience of doing research, though it is no simple matter to say how they do this. Courses interpret it very differently. The differences concern not only method, but also and especially the objectives that the students are trying to achieve by doing research (Tabachnick and Zeichner 1991; Smylie, Bay, and Tozer 1999; Verkroost 1999; Lunenberg, Ponte, and van der Ven 2006). Sometimes students have to do research in order to master a certain subject; research is then a form of training, a teaching method. On other occasions students do research because an inquiring attitude is seen as an important professional qualification. In that case research is a training objective. Recent developments in teacher education practice have stressed both aspects: the importance of research to bring theory and practice together on the course and the importance of action research as a qualification for lifelong learning in the workplace after the course. Teacher education courses are increasingly basing their approach on action research ideas (Cochran-Smith 1994; Ponte, Ax, and Beijaard 2004), but here too the question of whether action research is a means or an end of the professional development of teachers is one which keeps coming up (Elliott 1991, 1993), and if both functions are on the agenda, how can they be put into practice in the initial education curriculum? These questions were at the heart of the explorative study we are reporting on here.[1]

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We start with a short explanation of action research in the study, followed by a description of the research design. The descriptions of the findings are followed by a discussion section, in which a number of identified areas of particular interest are examined.

Action research

Action research in this study can be characterised as a whole gamut of activities carried out by teachers who are using research to reflect on their own practice and the situation in which they are practising, and – based on the insights they gain from this reflection – are trying systematically to understand and improve their practice and the situation in which they are practising (see Ponte 2002).

Through the process of engaging in action research, teachers gain insights into how they are working now whilst looking forward to their future practice. These insights come about: (1) based on the analysis and interpretation of methodically collected data; (2) in dialogue with others; and (3) with contributions from pupils (or other target groups of their practice) as important partners in negotiation and information sources (see also Arnot et al. 2004; Feldman 2007; Heikkinen, Huttunen, and Syrjälä 2007).

Ponte (2007) formulated five criteria for action research on a master's degree programme for experienced teachers, based on an analysis of action research literature. These are explained below:

(1) Interaction between the application and construction of professional knowledge

Studying one's own practice, according to Ponte (2007), means that learning should be characterised by the simultaneous construction and application of knowledge. By 'simultaneous' she meant that the development and application of knowledge are part of one cyclical process: professionals apply knowledge; they gather information on it; they interpret that information and, based on their interpretations, they develop new knowledge, which they then apply again, and so on. Carr and Kemmis ([1986] 1997, 185) spoke in this connection of 'the dialectic between retrospective analyses and prospective action'.

(2) Interaction between academic and professional knowledge

Action research by teachers, according to Ponte (2007), is based on the idea that theory cannot prescribe exactly how to act in practice. This does not mean that learning through action research is atheoretical and there is no general knowledge that professionals can use. On the contrary, without theory, without distance and abstractions, the knowledge of professionals can get stuck at the level of uncritical experience of everyday events, without consequences for future action. Goodlad (1990, 54), for example, said:

> practice alone is, of course, not enough; without some co-ordinating theory, some inter-connected ideas, purely practical subjects can ossify and degenerate into congeries of rules-of-thumb and obsession with technique. Practice without theory can become basely conservative; theory without practice can become arcane, unintelligible or simply trivial.

(3) Interaction between educational knowledge and methodological knowledge

The ability to connect theories, experience and occupational requirements through the study of your own practice demands knowledge on two levels. The first level concerns educational knowledge about course content, teaching strategy, the pupils, etc. To construct this educational knowledge, professionals also have to develop methodological knowledge; in concrete terms this means knowledge about how to study their own practice. Ponte (2007) calls this knowledge at the second level.

(4) Interaction between individual and collective knowledge

The occupational focus means that learning cannot be focused solely on the personal development of the professionals (Ponte 2007); it also has to contribute to the development of the profession as a whole (Sachs 2002). Professionals can do this by constantly making connections between their personal knowledge and collective knowledge. The first thing to note about collective knowledge is that it is knowledge which is described in such a way that it can be shared with others – for instance, by presenting reality in the form of a model or by ordering and naming aspects of reality in a certain way. Shared knowledge is therefore necessarily abstracted knowledge which is open to debate (Laurillard 1993). This abstracted knowledge can be used not only to improve shared professional practice, but also to critically test and adapt the shared scientific knowledge base.

(5) Interaction between ideological, instrumental and empirical knowledge

Learning for the purpose of professional practice can, according to Ponte (2007), be geared not solely to *instrumental* knowledge (what strategies do we normally have at our disposal and how can we apply them?), but also to *ideological* knowledge (what goals do we essentially want to achieve with our strategies and what are the moral-ethical pros and cons involved?). Both types of knowledge are still essentially concerned with plans, based either on personal or interpersonal knowledge and experience or on existing theoretical concepts and abstractions. To fathom out the practical significance of this knowledge, professionals must constantly make a connection with *empirical* knowledge – that is, with knowledge about the actual teaching situations in which they are engaged in their daily practice.

Action research by these criteria is focused on the professional development of experienced teachers. The question is whether it can simply be applied without adaptation to an initial teacher education programme. Action research, as indicated already, has effects that extend beyond the competences and opportunities for action of the individual teacher. It is by definition embedded in a practical context and as such can be expected to have an impact on individual-professional functioning (the teacher, the course) and on institutional-professional functioning (the school, the profession). That need not be a problem as such, because teacher education courses are working more intensively with schools all the time. The problematic aspects lurk in the multiple demands imposed by action research when it is used as a strategy for professional development, where the professional career path is seen as a constant process of improvement in which professionals are able to continually study and adapt their own individual and collective practice. Research has shown that teachers value this kind of professional development but that they also find it difficult. Action research demands, for instance, conceptual thinking, efficient working, cooperation and long-term planning, things that teachers do not always do as a matter of course in the hectic every-day life at school (Ponte 2002). A professional training programme is rightly expected to prepare students for their professional role. However, courses cannot be held responsible for educating people to become fully competent professionals who perform at their best under optimum condi-

tions. They can 'only' give their students generic initial qualifications. That applies especially, in our view, to research-oriented, reflective practice. Rudduck (1992, 164) put it like this:

> If students are not introduced to the excitement and power of action research during the period of initial teacher education they may not turn voluntarily and readily to such a way of learning later in their career. The likelihood of teachers opting to learn from the thoughtful and critical study of their own practice is greater if such activity has been legitimised during initial education.

The question, of course, is how the courses can achieve these aims.

Research design

Descriptive framework

Our research was centred on student teachers' and their teacher educators' experiences with action research as part of their teacher education programmes. Their experiences were compared with the ideal action research model – as described above – and then related to the real practical circumstances in which the action research took place. The five interactions of Ponte (2007) formed the descriptive framework:

(1) Interaction between the application and construction of professional knowledge.
(2) Interaction between academic and professional knowledge.
(3) Interaction between educational knowledge and methodological knowledge.
(4) Interaction between individual and collective knowledge.
(5) Interaction between ideological, instrumental and empirical knowledge.

Regarding the first interaction, students are not blank canvases when they embark on a course, but what they bring with them is not professional knowledge or systematised and abstract knowledge based on experience in professional practice. Initial teacher education programmes cannot therefore start with the application of professional knowledge as a basis from which to go on to develop new knowledge. The students do not have this knowledge when they start the course; they have to build it up gradually. This can be done by making connections with what they do have – namely, general ideas about what teaching involves based on their own experiences (Kelchtermans 1994). In this sense there appears to be a fundamental difference between action research by student teachers and that carried out by experienced teachers. This also applies to the second interaction – namely, the interaction between academic and professional knowledge. For both groups of teachers this is concerned with the question of how the knowledge component in the course relates to the action component; however, student teachers will ask different kinds of questions from experienced teachers.

With regard to the third interaction, students will come to the course with the expectation that they will learn how to teach and that they will learn what their lessons should contain (educational knowledge, see above). The question is how far they will also learn to see and use action research as a way to continually develop their practice (methodological knowledge, see above). This focus on lifelong learning will be less obvious among student teachers than among experienced teachers.

As far as the fourth interaction is concerned, students cannot be expected to have experience of teaching in an institutional, collective environment, let alone of sharing knowledge in such an environment, as envisaged by the ideal action research model. The question is therefore how far they learn to connect the action research they learn about on the course with the situation at the school where they carry out that research.

Finally, with regard to the fifth interaction, student teachers can be expected to concentrate on the instrumental area of knowledge (teaching skills: what do I have to do?) and not yet on the ideological area of knowledge (setting standards: why do I want to do that?) or the empirical area

of knowledge (do my actions live up to my own standards?). The question here is to what extent the course stimulates them to use their research to develop knowledge in the different areas and to connect the different areas together.

Data-gathering and data-analysis

Three teacher education programmes were involved in this research study. To preserve their anonymity they are referred to as cases A, B and C. Case A was a postgraduate university course, case B was a Bachelor of Education course at a university for professional education and case C was a postgraduate course in visual arts education at a university for professional education.

The first criterion for selection was that the participants reported that action research was a feature of the course and that it was seen as a means and an end and as a necessary professional qualification. No definition of typical action research was used; instead, the definitions used by the departments themselves were accepted. In selecting the programmes we also attempted to have a range of types of programme in order to be able to explore a broader range of experiences. Spread was achieved in the level (postgraduate and undergraduate), institutional setting (higher professional education and university) and general versus specialist professional programmes (art education).

Source and method triangulation were used to increase the validity of the data. Source triangulation involved a variety of interviews being held with different representatives of the course programmes (course A: interview with the teaching coordinator and the research supervisor; course B: interview with the teaching coordinator and the research supervisor; course C: interview with the teaching coordinator and three research supervisors). In addition, one student from each course was interviewed. The interviews were mainly of an open and explorative nature, guided by a topic list. Method triangulation involved – next to the interviews – the analysis of a number of documents: study guides, research guides (where they existed) and the students' research reports.

The interviews with the representatives of the courses were conducted first. These interviews examined the courses' outlooks on: the education that the course was training the students in; the desirable interpretation of the duties of the teacher as a fully fledged professional; the desirable qualifications that the professional should have; the function of action research; the place of research in the curriculum; and the supervision of the research. At the end of the interview the course representatives handed in pieces of work from three students which had been assessed as amply satisfactory to good. From these three pieces of work the researcher selected the piece that best fitted the ideal action research model described above. The interview with the student looked at their experiences in carrying out the action research based on the student's own piece of work and a list of points for discussion. These interviews covered: choice of topic; familiarisation with the topic; design and execution of the research; questions and uncertainties whilst carrying out the research; learning gains and other gains; contacts with the supervisor and fellow students; and perceptions of and the function of action research in general. Finally, the data from the interviews were supplemented and compared with the information from the documents.

The data were analysed against the action research criteria outlined above. To validate the data, the reports on the interviews were put before the interviewees and the analyses of the interviews and the documents were checked by a second researcher (peer debriefing; see Denzin and Lincoln 1994).

Findings: general description of the programmes and the selected action research assignments

This section describes the setup of the courses in broad terms, to provide a context for the later analyses of experiences. The students' research activities are also described briefly.

Course A: university course leading to a Postgraduate Certificate in Education

The students on course A consisted of graduates who had completed undergraduate courses in different subjects at university. The course was a one-year course. Students had to do a research assignment in the last phase of the course, which was termed 'problem-based design'. The students had to identify a teaching problem that they had experienced themselves and produce an educational design to solve it. Then they had to investigate:

- whether the design worked as they intended;
- whether the problem was solved;
- how the method of resolving the problem worked (reflection on the approach).

The course representatives reported that students often perceived a problem 'as the discrepancy between what they encounter and the standards they have set for themselves'. The analysis was about objectifying this. The course emphasised familiarisation with theory when analysing problems, because 'otherwise students get stuck in their own personal standards'.

The preparation of 'problem-based design' did not take place in a separate course module because, according to the interviewee, 'that can lead to a classic research approach, where the researcher is an objective outsider'. The process involved students gradually learning 'to objectify their own role', which is why the preparation was done in the tutor sessions. First this involved examining situations from practice on a more or less ad hoc basis; later the supervision focused rather more systematically on the student's own role in systematic design. The tutoring took place in groups or with individuals. The curriculum did not include separate methods and techniques modules because, it was explained, 'the student then still looks at research as something separate and not as part of day-to-day practice'. The intention, therefore, was to integrate the traditionally separate elements of design, research and evaluation, though this objective was not always realised according to those involved.

The selected student's 'design' (research) concerned the teaching of Latin in a secondary school where pupils were being prepared for university. She formulated the following questions:

(1) Would the pupils be more motivated and work more energetically if I chose different topics?
(2) Would they continue to be highly motivated if I offered them different types of work and media?
(3) Would their attitude to learning grammar change if I used a text to explain the grammar?
(4) Would their attitude to learning grammar and discussing texts change if I chose different types of tests?

She explained her problem as follows:

> The task was to analyse a problem that we had experienced with teaching. You then had to design a solution and after that evaluate how far your analysis was correct and the problem solved. If not, why not. My problem was a year 4 pre-university class who was not very motivated and was producing sloppy translation work. It could also be problems which affected a whole section or the whole school. It was left quite open. There were all kinds of different problems. Analysing the problem was the most important thing. In my school this class was not generally thought to be unmotivated. They had a reputation for working hard. I saw the situation differently. They had got used to the idea that they had a fairly easy time in the Latin lesson doing their translations and that they did not have to listen to much by way of explanation from the teacher. My idea of a good lesson required more than that and that's where the problem lay. I didn't like the teaching materials either.

The problem experienced by this student teacher was not shared by other staff, therefore, but despite that 'the school mentor still supported me in tackling their motivation and attitude to work'. To find out precisely what the problem was with these pupils, the student kept a logbook

in which she made notes on her observations of the pupils' attitudes. After implementing her design (gradually adapting forms of work and lesson content), she got the students to fill in a questionnaire for evaluation purposes.

Course B: Bachelor of Education course at a university for professional education

Most of the students following course B came from senior general secondary schools. The majority of graduates find employment in the senior secondary vocational education sector. The course was a four-year course. They had to produce a provisional research plan at the end of the first three-year phase. The research project was developed and carried out in the final year.

The aim of the course was to teach students how to research their own practice: to adopt and master a research-oriented attitude toward their own work. In the teaching practice things sometimes turned out differently, according to the trainers,

> because the schools where students were doing their teaching practice sometimes wanted to work on more general problems, of direct relevance to the school as a whole, such as developing a programme for dyslexic pupils. Students also often felt safer choosing that kind of problem rather than studying their own practice.

A detailed manual was available for formulating and developing research questions and the stages that make up a research plan. The manual contained lots of practical examples. The manual was based on the traditional empirical cycle. Students were not given any separate training in methods and techniques. In practice, the system of research-oriented practice did throw up some problems. The interviewees reported that 'respecting the methodological rules was often difficult'.

The student in question initially had the idea that 'the school should get something out of my research', but the school came up with an idea that did not appeal to him. Eventually he came up with a topic that was closely connected with his own attitude to work – namely, poor planning of work. He felt that this topic was relevant to everyday practice because 'traditional whole-class teaching is being used less and less'. His research question was: 'Does good planning affect the outcomes of my teaching?'.

According to this student, choosing a topic was 'the biggest problem and I also see that among my fellow students. I found doing the research itself interesting, but the concrete details, producing a report and so on, I could have done without that. I am not a great fan of that'. He divided the class of 21 pupils into five groups. Each group had to do a market research assignment. The pupils kept a logbook and used this as the basis for their weekly 15-minute meetings with the student teacher. At the end of the project the logbooks were assessed and the work assignments produced by the pupils were marked. The student's conclusion was that 'good planning resulted in the pupils producing better pieces of work'.

Course C: course leading to a Postgraduate Certificate in Education at a university of professional education

Students on this course had a background in pre-university secondary education. The course (visual arts education) was a four-year course. The work placement in the third year had several purposes, one of which was to prepare the students to choose a theme for their final piece of work, which was part of the work placement (specialisation phase) in the fourth year.

The course coordinator saw the upper secondary school teacher as a 'practising and pragmatic intellectual who is not merely occupied with the day-to-day business of teaching, but who also thinks and acts innovatively and has a research-oriented approach. He/she develops the subject and engages in personal professional development in interaction with colleagues'. The point of

departure for an inquiring approach is different, according to the interviewees, from the empirical-analytical tradition: 'The point of departure is the personal knowledge and experience of the student. Students are expected to use their own knowledge and experience to make a contribution to the development of the field. This is known as the action research approach'. To prevent a split developing between the fine art and teaching sides of the course, supervision of the students was integrated in the final phase of the course, focusing on both occupational domains.

The final research project had a twofold objective: 'It had to contribute to the student's reflection on his/her own practice and to improving that practice, but it also had to contribute to the development of the subject; which is why it was necessary to broaden the chosen theme by carrying out a literature study'. There were two phases to the research design. At the end of the third year the student had to decide on a topic and have a general idea about how the research would be carried out. They would use this to choose a work placement school for the final phase in the fourth year, which involved four hours a week over eight weeks.

The student had a clear view on the objective of her research: 'to acquire initial skills in identifying and also resolving problems in practice for myself'. She reported that the preparatory phase in the third year 'went well; on the placement you had to look to see whether your original question was relevant and then continue to refine it'. The student's question at the end of the first phase was about motor skills:

> In visual arts subjects, pupils are often judged on their motor skills, while their expressive qualities are not assessed at all. That annoyed me. On my placement I noticed that pupils had no idea about stagnations in the learning process. The pupils had to choose a theme and then make progress in the expressive process. They did not reflect and they never looked back at their earlier work.

In the end the research question was formulated as follows: 'How can I make it clear to my pupils that it is not about taking separate steps on a learning pathway but about setting goals and reflecting on earlier experiences?' A publication by Vermunt (1992) gave the student the idea that learning style might be the explanatory factor. Via three rounds of questionnaires she 'did indeed come to the conclusion that learning style, motivation, reflection and success are interconnected'.

Findings: description of experiences in the light of the five criteria for action research

This section describes the practical experiences that emerged from the interviews in the light of the five action research interactions described earlier. The three courses are described separately for each interaction.

Interaction between the application and construction of professional knowledge

Course A

The course aimed to teach students that 'design and implementation' (to be compared with 'application of knowledge') and 'research' (to be compared with 'knowledge-construction') are integrated activities and that they are also cyclical. The objective was to 'allow students to objectify their own ideas (which took concrete form in the research design) by testing the problems they had formulated and the effectiveness of their own design against reality'. The teacher educators were aware that 'this was an ambitious aim that was by no means always achieved'. The course did not offer the students systematic supervision and guidance to prepare them for the design, implementation and research. These matters could be dealt with in the individual tutoring sessions but it was up to the students to take the initiative.

The student in our study 'found that [her] design worked'. The design itself did not, however, incorporate any tests and she also failed to test her ideas against reality during implementation. Afterwards she could conclude that her insights and ideas did stand up to reality. She found 'that

there was a difference between my own beliefs and ideas and those of others, including the pupils, but that was actually a matter of unintentional learning and looking back on it afterwards. It was not built in'.

Conclusion. The clear intention of this course was to make a connection between the application of knowledge ('design and implementation') and knowledge-construction ('research'). The student achieved this to some extent. She applied knowledge (she produced a design and implemented it) and she constructed knowledge (she came to new insights), but there was no cyclical process of design, application and research.

Course B

The course aimed to teach students how to research their own practice: 'they had to develop a research-oriented approach to their own practice'. According to the course staff, both the students and the schools where students were doing their teaching practice attached 'a great deal of value to research into more general problems in the schools, such as developing a programme for dyslexic children'. The course staff, however, continued to stress that the student's own practice had to be the main focus of the research. Demands were made on the methodological aspects of the research and the teaching programme emphasised this. The student was initially encouraged by the work-placement school to choose a topic that the school had something to gain from. He was happy with that idea, but as the suggested topic offered him no prospects, he decided to work on a topic that was closely connected with his own approach to his work: lack of planning. His research was purely observational, however. Several groups of pupils were observed and their approach to working was described and assessed but there was no reflection of the student on his own practice. Because of this it was not really possible to speak in terms of simultaneous application and construction of professional knowledge. The student therefore saw the research 'as a separate activity at the end of the course'.

Conclusion. There was little focus on the construction of knowledge in this research project. The behaviour of the pupils was assessed, while the function of research with regard to the student teacher's own practice remained undefined. The student could have asked questions such as: What kind of knowledge am I lacking? Why do I want to know this? What could I do next if I had that knowledge? In other words, there was a clear focus on the student's own situation but not on his practice. Consequently, the intended gains could not be unequivocally placed in a cyclical process of knowledge-construction and application.

Course C

The course took the line that action research should contribute to students' reflecting on their own practice and improving it. The teacher 'should not be merely occupied with the day-to-day business of teaching, but a practising and pragmatic intellectual who also thinks and acts innovatively and has a research-oriented approach. Action research had to teach students to learn from their experience'. The course emphasised this view all the time.

The student had a clear idea of the purpose of the research, which was 'to acquire initial skills in identifying and also resolving problems in practice for myself'. The choice of topic came from her own practical experience – namely, that students were assessed not on the progress they made in their expressive skills but on their motor skills. Nor, according to the student, did the pupils themselves have the idea that they could make progress in their expressive capacity by reflecting

on earlier work. The aim of the research was to understand and resolve this problem. There was interaction between knowledge-construction (literature study, interviews with pupils, questionnaires) and development of practice (adapting lessons, trying something new) and conclusions were drawn from this. The research steps and instruments used were not fixed in advance but considered in the light of their usefulness for solving the problem. Nevertheless, the student did make a strict conceptual distinction between research and practice, because, as she said, 'in principle you can get everything from the literature and then apply it in practice'.

Conclusion. The course envisaged action research as a strategy to educate students to become critical professionals who learn from their own practice, but it did not apply a specific model based on a cyclical process of knowledge-construction and knowledge-application. This student did experience professional growth through reflecting on her experience, but in her case it was more about learning to understand a phenomenon than about learning how to apply knowledge she had constructed herself in other situations.

Interaction between academic and professional knowledge

Course A

There was a great deal of emphasis on students objectifying their own practical experiences on this course. The students observed how pupils learn and develop. Sharing their experiences and testing them against theory placed their subjective opinions and judgments in a more general framework. This whole process was referred to as 'working on a work theory through reflection'. The work theory was a body of experiences, opinions and knowledge. Students themselves were largely responsible for developing the work theory in their work groups. The course did therefore attach high value to the interaction between academic and professional knowledge, but the interviewees felt that 'it was difficult to teach students to look at and think about being a teacher from the perspective of teaching and learning. Their subject matter usually dominated their thinking. Given the previous educational background of some students, that is hardly surprising'.

The student found the theoretical content of the course on teaching strategy and behaviour not very comprehensive. 'Suggestions were made' and they were encouraged 'to reflect on our own experiences and use theory, but that was separate from the problem-based design'. Because of this she paid little attention to theory in her research and said that the research process was 'largely intuitive'.

Conclusion. Academic knowledge was conceived in this course as an objective anchor point against which individual students can test their own ideas about being a teacher. In this sense the course did involve interaction between academic and professional knowledge. However, the students had brought about this interaction through independent work. As a result, the student in the study suffered from the lack of structural content in this area and did not make the most of the opportunity to do independent work.

Course B

Teaching theories and models were not built into this course, so as far as this area was concerned there was no systematic presentation of academic knowledge. Various theories and models could be discussed on an ad hoc basis, with an emphasis on the direct instruction model. There was a lot of emphasis on 'circumstances in the school that may hamper or encourage learning'. Theoretical reflection was based on 'situations and experiences contributed by the students'. The

course did therefore attach value to the interaction between professional knowledge and academic knowledge, but left it to the students to bring this about.

The student's perception of the research was that it did not involve much interaction between academic and professional knowledge. The research was in fact unrelated to both the curriculum content of the course and his experiences as a student teacher on placement. He experienced the research project as 'a formal requirement that did not involve systematic reflection'.

Conclusion. Academic knowledge was conceived as a palette of opportunities, to be considered depending on the students' experience. The link with the research was not made explicit and so it was left open whether the intended interaction would come about or not. In the case of the student in question, it did not.

Course C

The interviewees reported that the course placed a lot of emphasis on 'embedding the process of producing the final project in both practical experience and theory'. The preparation of the action research took place after the first practical placement and involved careful selection of a teaching practice school by the student and looking in some depth at theory geared to the students' requirements. As the course took the position that 'the action research should also make a contribution to the development of the subject (visual arts education), it should always be embedded in theory (via a literature study)'.

The student made constant links between the professional literature and her practical experiences. She tried to find answers in the literature to questions about 'how to motivate pupils to develop their expressive skills'. This was mainly about asking questions in order to get explanations: Why do the pupils not …? Many of her fellow students were, according to her, 'content as soon as they had found or developed a useable research instrument, but I was more concerned about knowing exactly where the problem lay'.

Conclusion. The course emphasised the objective of achieving interaction between academic and professional knowledge in the final project. Academic knowledge was conceived as a starting point for exploration that would lead to professional growth, in which the students had to find their own way. This approach based on self-direction fitted in well with the student's own approach to study.

Interaction between educational knowledge and methodological knowledge

Course A

Because the course wanted to avoid students seeing 'design, implementation and research as a qualification alongside qualifications that are necessary for classroom teaching', the curriculum did not include a separate module on methods and techniques. A number of general design principles were presented. Learning to objectify their own role, developing their own skills as teachers and working on their own 'work theories' together made up an integrated whole that was put into practice in work groups and through working on study tasks. The assumption prevailing in the course was that this would bring about interaction between educational knowledge and methodological knowledge.

The student was of the opinion as a teacher you need research skills in order to 'work out for yourself what is going on in the class and how you can improve it'. She felt that her project had had a learning effect, especially at the level of educational knowledge, but also at the

methodological level. With regard to the latter, she did feel that knowledge about 'how a problem should be formulated and how facts should be gathered and analysed' was lacking. She had no experience of social science research at all. Because she felt that the research process 'went well and I had regular contact with my supervisor' despite this, she experienced few problems. She learned 'how to make further progress in [her] development and [she] now feels up to teaching a class on [her] own'.

Conclusion. The course instructors feared the development of a systematic divide between the two levels of knowledge. The notion of 'work theory' represented an attempt to bring about integration. The function of the research can be seen in this respect as the empirical testing of the work theory. The student lacked methodological knowledge but had good subject knowledge: 'I made the best of what I had and was satisfied with the result'. The learning effect at the level of educational knowledge (about learning and teaching) seems to have been greater than the learning effect at the methodological level.

Course B

At the beginning of the course, materials were provided about formulating research proposals and some elementary knowledge about methods and techniques was gained. Respect for methodological rules was highly prized. No explicit link was made between the teaching of methodology and teaching in the field of educational knowledge.

The student experienced the research project as an isolated activity, separate from other parts of the curriculum. He became aware 'that doing research can be at odds with good teaching'. For instance, he stated that 'a strict experimental approach may be the best research strategy, but it cannot always be combined with a sound teaching approach in practice'. He also indicated that he thought that the course conceived research too narrowly: 'systematically finding out as much as possible about your workplace, initiating conversations to find out how things are at the school, is also research in my opinion'.

Conclusion. The course coordinator saw the two levels of knowledge as rather separate matters. While the first did have some bearing on the second, practical integration was not well developed. The student therefore experienced learning to do research and learning to teach as two separate activities.

Course C

The course coordinator indicated that students had to master educational knowledge 'through their own professional development, the key to which is the development of an educational philosophy'. That was not achieved by offering isolated educational knowledge. Students were constantly asked about their educational philosophy and they also had to develop this in their research: 'What contribution can doing research make to my professional development?' was a frequently recurring question.

The student in our study felt that her choice of research instruments was always in the service of her search for answers to questions of an educational nature. Nevertheless she would have appreciated more knowledge about research techniques, because 'then my research would have progressed more efficiently'. Somewhat contradicting that was her statement that 'next time I would approach my research less formally and put more trust in directly recognising patterns in my teaching'.

Conclusion. The course was explicitly striving for interaction between educational knowledge and methodological knowledge. This interaction was seen as an ongoing development principle of professional education through encouragement and self-direction. The student's views were somewhat ambiguous. While she did take the interaction between the two levels of knowledge as a starting point for her research, she also indicated that she did not consider methodological knowledge to be so important for her future work as a teacher.

Interaction between individual and collective knowledge

Course A

There was no shared forum where students could present and discuss their research. Moreover, the course instructor had difficulty 'directing the collaboration with the teaching practice schools toward collective design and getting them to a stage where they could support and facilitate practical learning in the school. Evidently those working in the field attached little value to learning at the workplace'. In future, the course aims to place more emphasis on sharing knowledge and on the contribution that individual students can make to the school or to the profession as a whole.

The student reported that she had to work on the project on her own from the beginning to the end. There was 'emotional support in the school but that was unrelated to the design activities as such'.

Conclusion. Students were not systematically encouraged to share their knowledge with fellow students and present and future colleagues. In its cooperation with the teaching practice schools, the course had difficulty making a connection between the development of individual knowledge by the students and the development of collective knowledge in the schools. It is hoped that more attention can be given to this in future. For the student, the whole process was a strictly individual matter.

Course B

The course encouraged cooperation and communication between the students about their research, but no structural measures were taken to achieve this. No provision was made for evaluation, through a post-mortem, for instance. The schools were not seen to be offering much support to the students in their research activities: 'schools are mainly interested in the students' contribution to the teaching'. Because of this, the research was not usually embedded in the context and it did not form part of the knowledge-construction in the school as a professional community.

The student felt that the 'course treated the research too much as an isolated activity, although there were formal and informal exchanges with fellow students'. School staff did not participate in or cooperate with the research.

Conclusion. In this case too, the student had to follow an individual path. This course coordinator saw this as a shortcoming, but there were no plans to do anything about it.

Course C

The research supervisors did not report putting specific emphasis on cooperation or sharing ideas during the research process, but did attach great value to sharing knowledge with fellow students and colleagues after the research projects were completed. The students had to give a presentation

on their work to the other students, in which 'they had to explain how their philosophy on their subject and their skills had developed, how far their research process had been adequate and how it could have been done differently and better'.

The student reported that cooperation with fellow students during the research had not been very intensive but nevertheless was important. At the final presentations she discovered that others often had experienced the same problems with carrying out their own research. In future she would like to place more emphasis on collaboration.

Conclusion. Bringing this form of interaction about was considered important on this course and sharing knowledge with colleagues was encouraged through the compulsory research presentations. Less effort was made to facilitate interaction during the actual research activities.

Interaction between ideological, instrumental and empirical knowledge

Course A

The course coordinator considered it important that students formed their own views about good education and that they tested these views against the views of others (ideological area of knowledge). An analysis of the standards they set for good education was therefore an important element of the course; including the design component. No substantive frameworks were given to which the standard for good education (and therefore the teacher's professionalism) could be related. Nothing was said in the interviews about the relationship between the standard and the methods and procedures to be followed to reach that standard (instrumental area of knowledge), nor about testing it in practice (the empirical area of knowledge).

The student regretted the absence of a systematic focus on testing 'her own standard of good education against the standards of others'. She often doubted whether her own view was correct: 'I test it against practice, in the sense that I constantly assess the effects of my steps on the pupils. If it goes well, I see that as confirmation that my standard is right'. She discovered that the standards she set did not always correspond to those of other teachers.

Conclusion. The course paid little explicit attention to the relationship between the different areas of knowledge as such: what normative views existed, what instruments were there to realise them and how did that work in actual practice? It was also unclear exactly what was meant by standards of good teaching: Were these standards to be found in objectives, insights into practical situations, instrumental skills or a combination of these? Whether the student had made any progress by producing her design therefore remained unclear.

Course B

The course did not offer any normative ideal picture of good education or good teaching in practical terms. The respondents designated this as 'an eclectic perspective: it is about teachers being able to adjust to concrete practical situations. After all, there are major differences between schools, classes and subjects'. No evidence emerged from the interviews that students were being encouraged to link the ideological area of knowledge to the instrumental and empirical areas of knowledge.

The student had problems choosing a topic. In the end, what it came down to was that 'I tied in with a problem that I have always had myself as a pupil and as a student, namely poor planning'. Interaction between the different areas of knowledge played no role in his choice of topic. His standard of good teaching arose out of his own experience as a pupil.

Conclusion. The course restricted professional standards to a good fit between the students' professional knowledge and the context in which they were gaining experience. The meaning of different beliefs and views about education in practical terms was hardly touched upon. Consequently, the student did not have a framework to help him to choose a relevant theme.

Course C

Course C also operated from the principle that the standards for good teaching should be formed through students reflecting on their own experience. The purpose of the research was to elicit reflection and to find solutions; however, this did not involve explicitly discussing the distinctions and connections between the different areas of knowledge with the students.

The student characterised her approach in these words: 'I put my question as "What does not go well, how I can explain it and what can I do about it?" That was the guiding principle of my work'. In her research, the emphasis was on explaining (and understanding) things that caught her attention and things that seemed to her to be undesirable, the latter being an intuitive judgement.

Conclusion. The course coordinator considered it important that students acquaint themselves with and reflect on the areas of knowledge and how they are related to each other, and develop their own professional skills in the process, but the course did not provide any clear structure through systematic interaction between the areas of knowledge.

Discussion: problems and perspectives

The aim of this explorative study was to describe the practical experiences of students and teacher educators engaging in action research. It was hoped that this description would result in the identification of a number of special points for consideration that could play a role in putting research into practice in concrete terms in initial teacher education courses. The study explored the experiences of students and teacher educators on three programmes which treated action research as both a means to professional development and a necessary professional qualification. Four special points for consideration are discussed in this final section of the article.

Action research and the educational core qualifications of the profession

We saw that none of the three courses placed systematic emphasis in the research on what we call the educational quality criteria for teaching and the teaching profession: what is a good school, good teaching and a good teacher? These questions presuppose knowledge of educational theories; educational philosophies and educational research (see also Martin 2005). This includes, for instance, knowledge about concrete phenomena of schooling and education, teaching methods and their effects on pupils, and the relation between school, child and society. It is obvious that teacher education courses are not able to offer the whole canon of knowledge of educational theory or to discuss the areas of dispute between all educational traditions and paradigms. Nevertheless, it is remarkable how far the courses have distanced themselves from this canon of knowledge, replacing it mainly with independent work procedures: students had to develop their own work theory, develop a research-oriented approach, and monitor their own professional development for themselves. A procedural interpretation of the concept of action research could reinforce that, certainly when accompanied by a 'neglect' of the interactions between the areas of knowledge, the levels of knowledge and the academic and professional knowledge. Action research is then at risk of becoming an empty, formal, procedural skill, making courses vulnerable to the accusation that with action research they are taking yet another

step away from the substance of the core qualities of the teaching profession. This could put them at risk of fostering a culture in which 'all they know nowadays is how you have to look things up'.

The risk of 'just pretending'

Interaction between the application and the construction of knowledge turned out not to be easy to achieve. The student on course A appeared to have the most success, the student on course B adopted the role of observer, and the main gain made by the student on course C was a better understanding of how pupils behave. The students did not have the idea that their research activities would give them insights that they could experiment with in their teaching and vice versa. This brings us to another problem. In the literature on action research, the concept of 'application' has a specific meaning, referring to the step from knowing to being able or from knowing to doing and vice versa (Carr and Kemmis [1986] 1997; Elliott 1991). However, experienced professionals seem to have a different perception of what 'application' in action research means than students doing their initial training (Wahlstrom 2007). Experienced professional practitioners can be expected to measure its worth by the extent of observable improvements in practice in the class or in the school (institutional-professional improvement). The student teachers in this explorative study, on the other hand, seemed to measure its worth in terms of growth in their individual skills and an increased sense of security with respect to their own practice (individual-professional improvement). Development of practice and individual learning seemed to be two different categories for trainee teachers. They can go well together, but that is not to deny that the function of action research in an initial teacher education course is different from its function as part of the work of experienced teachers.

With a one-sided emphasis on individual learning – without the prospect of improving practice – there is the risk that students on the course will see action research as 'just pretending', will not be committed to it, and will regard it as just one last difficult feat that they have to pull off to get their diploma. They may just go through the motions of being a researcher – doing as if – because the action research takes place in an unrealistic context and it will not have any consequences for educational practice. This risk could be avoided by using action research to bring about close cooperation between students on the course and more experienced teachers in the schools. Such cooperation could enable students to focus their action research on the primary teaching and learning process in the school, the teaching practice could form the touchstone for the value of practice-based research, and the student could be challenged to reflect on the contribution of research to curriculum development at departmental or school level.

Mixed experiences and perceptions of research

The sense of 'just pretending' can be further reinforced by another factor: the educational background of the students. Students on the three courses came from different backgrounds – senior general secondary school, pre-university secondary education and university. Students who have already studied for a degree can be expected to have had some research experience, but this certainly does not mean that they have experience with the type of research we are discussing here. Consider the difference, for example, between the research backgrounds of a graduate in foreign languages, a maths graduate and a history graduate. These disciplines have very different approaches to research which are expressed, for instance, in beliefs about the relationship between theory and practice, the epistemological paradigm and the research strategies used. Students are therefore introduced to doing research in their own fields in very different ways

and that means that they will have very different expectations about the research they are to do as part of a teacher education course. Nor does it seem wise to attribute their previous knowledge and experience simply to whether or not they have studied at university. Students without a degree may have relevant research experience, while students with a university background may have been socialised in a research tradition that is antagonistic towards the ideas of action research. In addition to this, differences between individuals can of course also play a significant role. Following Prosser and Trigwell (1999), we therefore emphasise the need for explicit consideration to be given to the students' individual experiences and perceptions of knowledge and knowledge-construction. If these experiences and perceptions remain unspoken, misunderstandings will be inevitable. Here too there is a risk that students will reduce the research process to the use of instruments that they need to fulfil the requirements of their course. As this is usually concerned with ideas developed by individuals, the research process needs to have many opportunities for individual supervision and guidance built into it, according to Prosser and Trigwell (1999).

Course curriculum and teaching methods

Procedural research skills should, as we stated earlier, always serve to further the development of educational core qualities of the profession (see, for instance, Elliott 1993). That is why making the research project an isolated unit in the study programme is not the obvious course of action in our view. There are many ways that research-based activities could be embedded in the programme. Research-based assignments could be included in the course modules, for example: systematic observation of the interactions between a teacher and pupils when the teacher is preventing or resolving discipline problems. What does theory have to say about this? How can you observe that in practice and how do you read these situations? Students can also be asked to try something out and then systematically analyse their experiences. The training process could therefore make use of and be linked into systematic observation of practice and analyses carried out by the students themselves. These could be regarded as minicycles between theory and practice. Action research can in this way be considered from different perspectives: as a professional approach, a body of skills that is needed to make the connection between knowing *that* and knowing *why*; and as a way of improving practice by systematically building up practice-based knowledge. Action research would then be thoroughly embedded, both at the level of the curriculum and at the level of teaching methods on the course.

In addition to these minicycles, students could work systematically on timely preparation of a more or less fully fledged action research project, as happened in course C. One consideration behind this is that when action research is 'saved until last', feedback to the course, which we consider to be desirable, is no longer possible. If students do a small-scale preliminary study first, they have the opportunity to practise formulating a problem and conceiving a research design, without any problems that arise leading to the whole research project being stranded. Moreover, this approach allows the course to convey to the students the message that, as we stated in the introduction, the professional career path can be conceived as an ongoing process of transformation in which professionals are considered to be able to research and adapt both their own practice and the collective practice of the profession.

Note

1. This study was commissioned by the national EPS project *Flankerend Onderzoek*. EPS stands for Educational Partnership. The aim of the project was to modernise Bachelor of Education programmes. For EPS publications, see: www.leroweb.nl under 'publicaties'.

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