



Tomáš Janík, Inger Marie Dalehefte,
Stefan Zehetmeier (Eds.)

Supporting Teachers: Improving Instruction

Examples of Research-based
Teacher Education

WAXMANN

Tomáš Janík, Inger Marie Dalehefte,
Stefan Zehetmeier (Eds.)

Supporting Teachers: Improving Instruction

Examples of Research-based Teacher Education



Waxmann 2019
Münster • New York

Bibliographic information published by the Deutsche Nationalbibliothek

The Deutsche Nationalbibliothek lists this publication in the Deutsche Nationalbibliografie; detailed bibliographic data are available in the Internet at <http://dnb.dnb.de>

Print-ISBN 978-3-8309-4029-6

Ebook-ISBN 978-3-8309-9029-1

© Waxmann Verlag GmbH, 2019
Münster, Germany

www.waxmann.com
info@waxmann.com

Cover Design: Anne Breitenbach, Münster
Cover Picture: © fizkes/wavebreakmedia – shutterstock
Typesetting: MTS. Satz & Layout, Münster
Print: CPI Books GmbH, Leck

Printed on age-resistant paper,
acid-free according to ISO 9706



Printed in Germany

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, electrostatic, magnetic tape, mechanical, photocopying, recording or otherwise without permission in writing from the copyright holder.

Contents

1	Introduction: On Research-based Teacher Education <i>Tomáš Janík, Inger Marie Dalehefte & Stefan Zehetmeier</i>	7
2	Teacher Professional Development: Theoretical Considerations and Practical Examples <i>Stefan Zehetmeier, Monika Grasser, Andrea Holzinger, Franz Rauch, Angela Schuster & Andreas Wachter</i>	17
3	Content-Focused Peer Coaching: Facilitating Student Learning in a Collaborative Way <i>Annelies Kreis</i>	35
4	3A Content-Focused Approach for Improving Instruction: Developing and Sharing Knowledge in Professional Communities <i>Tomáš Janík, Jan Slavík, Petr Najvar, Marcela Janíková & Martin Rusek</i>	55
5	Linking School's Local Context to Instruction: An Important Characteristic of the In-Service Teacher Professionalisation in School-In <i>Inger Marie Dalehefte & Jorunn H. Midtsundstad</i>	77
6	Developing Core Practices: A Research-Based Framework for Teacher Education <i>Urban Fraefel & Kerstin Bäuerlein</i>	89
7	Video Analysis in Initial Teacher Education: A Promising Approach to Fostering Professional Vision <i>Isabelle Hugener † & Kathrin Krammer</i>	107
8	Lesson Study, Enhanced with Video-based Tasks, in the Education of Mathematics Teachers: Lesson Study in the Middle <i>Nada Vondrová</i>	129

9	Videoclubs as a Form of Professional Development: The Research-based Benefits and the Experience-based Pitfalls <i>Eva Minaříková, Miroslav Janík & Michaela Píšová</i>	153
10	Conclusion: Lessons Learnt from Research-based Approaches <i>Monika Černá</i>	171
	List of Boxes, Tables and Figures	179
	About the authors	181

1 Introduction: On Research-based Teacher Education

Tomáš Janík, Inger Marie Dalehefte & Stefan Zehetmeier

In the last decades, progress in the field of pre-service and in-service teacher education has been evident. New models, curriculum programs and designs have been introduced, and many practitioners and teacher educators benefit from them. Despite these developments, various challenges are shaping the field and call for action. We believe that especially in-service teacher education will contribute to the improvement of instruction in classrooms. However, the “support for teachers” and the “improvement of instruction” are only loosely coupled – the influence of the first on the latter is not straightforward and is mediated by many variables.

Moreover, models of in-service teacher education are usually presented as research-based, but related research is often invisible or fragmented. These challenges – and some others – impelled us to initiate this book publication. It will highlight and discuss models of (pre-service and in-service) teacher education that are genuinely research-based and help to strive for improving instruction in classrooms.

In this introductory chapter, we outline the context for individual chapters included in the book. Then, we introduce individual chapters by highlighting their contribution to research-based teacher education. In chapters 2–9, individual approaches/models/designs of pre- and in-service teacher education developed by the authors (action research, video clubs, lesson studies, and others) are introduced from the practitioner’s point of view and their power, as well as spaces for further development or improvement, are highlighted. The concluding chapter (10) provides a reflective discussion across individual chapters to reveal particular issues that are shaping the field.

1.1 Why “research-based”?

During the 19th century (in continental Europe), the academisation of teacher education resulted in reliance of teacher education programs on academic disciplines (pedagogy, psychology, subject-matter disciplines, etc.) as they arrived at universities (cf. Terhart, 2007; Larsen, 2016 and others). This development was promising as well as problematic. Promising because academisation enables the status of teacher education and the teaching profession to be raised, and problematic because it resulted in the fragmentation of teacher education curricula into specialised subjects that were loosely joined.

During the 20th century, it was gradually acknowledged that teaching professionalism is of a transdisciplinary nature and its grounding in empirical research of practice is necessary – it enables the knowledge base for teachers to be built up, which should signify their progress on the way towards the recognised profession.

Being a recognised profession means – among other things – being a specific form of calling to deal with fundamental soci(et)al challenges and problems that people are confronted with (Stichweh, 1997). The specific nature of a profession is due to its dedication to the knowledge base of the respective academic discipline. This is why preparing students for a profession is connected with academic disciplines that deal – on an empirical and theoretical level – with phenomena that form respective professional fields in practice. The quest for academisation of professional preparation should acknowledge this fact.

Within the academisation of teacher education, the idea of being research-based was of rising importance. A specific kind of teacher education programs evolved within this orientation – labelled “research-oriented”, “research-based” or “inquiry-based”, etc. (Rudduck, 1985; Toom, 1985; Westbury, Hansen, Kansanen, & Björkvist, 2005; Kansanen, 2006; Byman et al., 2009; Toom et al., 2010).

General features of research-based teacher education programmes are as follows. Research is understood here as a stance or perspective that goes across teacher education curricula. As Kansanen (2006) points out, (future) teachers are seen as “producers” as well as “consumers” of research (findings). They are on the way to conceptualising teaching practice – this means that they strive to develop a language for describing, analysing, evaluating and improving teaching practice. As Kansanen (2006, p. 11) summarises:

The aim of research-based teacher education is to be able to make educational decisions based on rational argumentation in addition to everyday or intuitional argumentation. The skill of thinking along the lines of research principles presupposes a general understanding of all-round research methods, as well as a positive attitude towards the research. This means that the teacher is also able to do his/her own research if this is necessary.

To reveal the specific nature of research-based teacher education programs among others, we adopt the distinction based on Kansanen (2006) – see Figure 1.1.

As Kansanen (2006) highlights, four basic types of teacher education programs will result from outlining the structural background in two dimensions (deductive – inductive) and two ways of justifying (intuitive – rational).

If the way a program is justified is intuitive and its structure is inductive, the program may be described as *Experiential*. Activities originate in practice and are based on the student teacher’s own experiences. ... If the student teachers are left on their own, there is no guarantee of any development towards a deeper understanding of the teaching-studying-learning process. ...

The more we add supervision and support to personal experience the closer we approach the *School-based* model. [The model] is seen here as intuitive and deductive, it might just as easily be rational if we presume that supervision meets this requirement. ... This model resembles the well-known idea of apprenticeship. ...

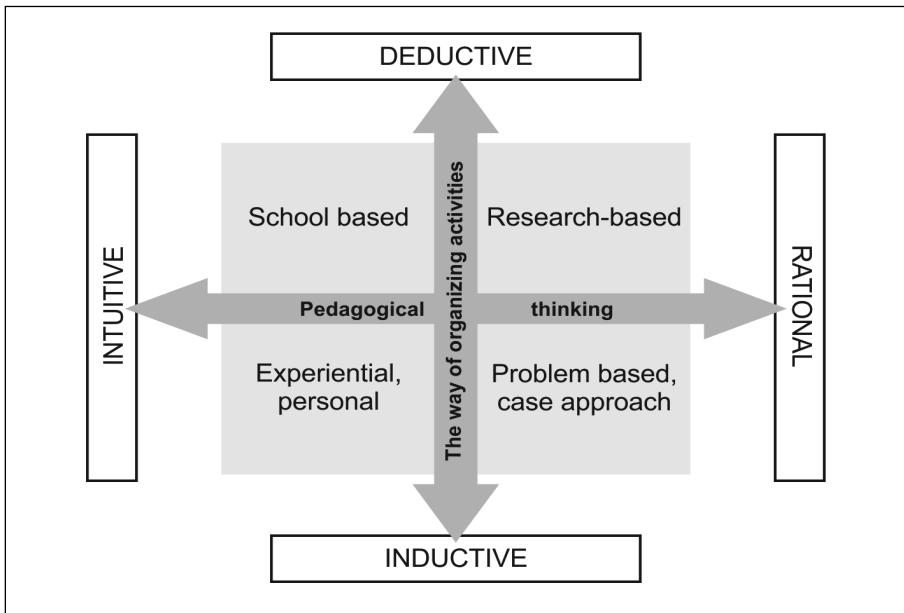


Figure 1.1. Approaches to constructing teacher education programs (Kansanen, 2006, p. 19 – adapted according to Toom, 2013, p. 6)

The content of a program may be built on *cases*, problems or other selected units. These units are thought to cover all the essential topics required in teacher education. As it starts from practice, it is inductive by nature. If the whole program is built in a systematic manner it could be called rational. ...

If the program is built deductively and justified rationally an appropriate organizing idea might be a *Research-based* program. In practice, it means that all courses and units are integrated in research-based thinking. ... All stages deal with an integrated combination of theory, practice and research-based justification. (Kansanen, 2006, pp. 18–20)

To sum up, we outline some perspectives on teacher education being research-based. First, the phrase “research-based” is used to indicate that respective approaches are developed in close connection with research on instruction and instructional quality. Data (especially video data), as well as findings from this kind of research, are used within teacher education to illustrate various aspects of teaching and learning practices, and to stimulate teachers’ professional vision/thinking regarding possible ways of dealing with particular classroom situations. Second, it is believed that the idea of researching one’s own practice from the perspective of its improvement is typical for and inherent to specific approaches to teachers’ professional development. It means that proponents of these approaches are dealing with professional situations in a way that is similar to research. They are investigating their practice (using description, analysis, evaluation) and providing and implementing suggestions for improvement of practice. Because they are professionals, they justify their

decisions using the appropriate language of their profession. Third, it is acknowledged that the development of research-based teacher education programs is also research-based. Research is here to accompany and support teachers, teacher educators, and researchers when developing and testing forms of teacher education models, programs, etc.

1.2 How “research-based”?

As stated earlier, academisation means – among others – linking teacher education with research. Various types of research and various types of linkage could be of relevance in this context. For example, using action research allows for a combination of reflection and networking within teacher professional development programs (see Rauch, Zehetmeier, & Erlacher, 2014).

Professional development of teachers can be reflected in the four dimensions of action and reflection as well as autonomy and networking (see Llinares & Krainer, 2006). This perspective is inspired by Krainer (1994, 1998), who suggests a holistic and integrated view of teacher development support in these four dimensions of teachers’ professional practice:

- Action: the attitude towards and competence in experimental, constructive and goal-directed work.
- Reflection: the attitude towards and competence in (self-)criticism of one’s own actions.
- Autonomy: the attitude towards and competence in self-initiating, self-organised and self-determined work.
- Networking: the attitude towards and competence in communicative and cooperative work with increasing public relevance.

These dimensions can be used to describe teachers’ activities in professional development programmes and to explain their learning in this context. Krainer (1998) highlights that “each of the pairs, ‘action and reflection’ and ‘autonomy and networking’, express both contrast and unity, and can be seen as complementary dimensions which have to be kept in a certain balance, depending on the context” (p. 308). In particular, Krainer (2002) highlights the “promotion of reflection and networking as key interventions” (p. 12) in teacher professional development programs.

Increasing challenges for the teaching profession (e.g., output orientation, mandatory quality evaluation, and development, changes in society) have resulted in an increased demand for corresponding professional development programs and an adequate theoretical framework (Posch, Rauch, & Mayr, 2009). In particular, there is a need to critically reflect on teachers’ activities (actions), to nurture an ability and readiness for further development of teachers’ actions in response to the outcome of the reflection process, as well as to justify such needs. Competent,

professional action in complex situations hence requires concomitant research and learning processes. And inversely: professional learning requires the experience of acting in complex practical situations. From these perspectives, professional action and professional learning coincide in one stream of professional development. As professional learning happens in practical situations, which in turn are seen to require research, reflection and further development, knowledge and skill development go hand in hand with practical situational development (Altrichter & Posch, 2009).

1.3 Teachers as consumers and producers of research

Effective ways of professional development rely on exploring and changing teachers' practice. The academisation of teacher education has caused a stronger demand for teachers' ability to think and act as researchers. This kind of professional development is based on the philosophy and practices of *action research* (Elliott, 1984; Hollingsworth, 1997). The overarching professional principle is the reflective practitioner (Schön, 1983) who, individually and in a team, strives to continuously develop the quality of instruction and school, as well as of the governing framework (Posch et al., 2009). Action research aims at empowering teachers and teacher groups to cope with the daily challenges of classroom work by themselves, and to carry out and assess innovations, i.e. to further develop their professional practice on a long-term basis. Ultimately, action research is designed to expand the collective knowledge of the profession (Stern, Townsend, Rauch, & Schuster, 2014).

One classic example of teachers developing instruction and an approach closely related to action research is the *Lesson Study*. It originates in Japan, but is now used in different variations all over the world. In this approach, in school-based professional development groups, teachers work together on research problems and questions they have identified from their own practice (bottom-up) or which are initiated by policymakers (top-down), primarily with a focus on student learning (and not on the teacher) within a classroom context. The whole teacher group is responsible for the outcome. A typical lesson study has eight steps and can be described as a problem-solving cycle (Stigler & Hiebert, 1999) – see Table 1.1

In this way, teachers do research related to their practice and context. They have access to important knowledge about the teaching context and the students in their class, and they see situations from a practitioner's point of view. Thus, they can contribute to professional development and a kind of knowledge in another way than researchers do. In this respect, researchers and practitioners complement each other with knowledge.

The chapters in this book are a selection of ways to undertake pre-service and in-service professional development. The approaches show a rather diverse range of methods and techniques that aim to inspire and encourage researchers and practitioners in their developmental work for improving instruction.

Table: 1.1. Steps in the problem solving cycle (Lesson Study)

1) Defining the problem	Identifying a research problem and deciding on a learning goal.
2) Planning the lesson	Comprehensive literature review and collection of materials.
3) Teaching the lesson	All teachers prepare but finally one teacher teaches the lesson. The others observe, make notes, maybe a videotape.
4) Evaluating the lesson and reflecting on its effect	The group meets subsequent to the lesson. The teacher in action starts outlining his/her perspective, the others comment and reflect critically.
5) Revising the lesson	The teachers rethink the lesson based on the experiences, reflections, and students' reactions. This may lead to other methods, materials, etc.
6) Teaching the revised lesson	The revised lesson is taught in another class. The classroom is crowded because external experts and/or all members of the school faculty are invited as observers.
7) Evaluating and reflecting again	The teacher in action starts outlining his/her perspective, the school faculty takes an active part in the reflection and evaluation focusing on more general issues.
8) Sharing the results	Publishing reports, inviting teachers from other schools as observers.

1.4 The content of this book

We start with the chapter (2) by Zehetmeier et al. The authors focus on concrete initiatives for the professionalisation and continuing education of teachers. They introduce the university training courses PFL (Pädagogik und Fachdidaktik für Lehrer/innen: Pedagogy and Subject Didactics for Teachers), ProFiL (Professionalität im Lehrberuf: Professionalism in the teaching profession), and BINE (Bildung für Nachhaltige Entwicklung: Education for sustainable development). For each of the three training courses, both the theoretical and conceptual background and results from the evaluation and accompanying research are presented. In addition, graduates of the programs report on their activities and experiences as well as on the effects of their program participation. In this chapter, it is evident how research interacts with the development, implementation, and improvement of respective training courses.

Content-focused Peer Coaching is introduced in chapter (3) written by Kreis. It is an approach which fosters the collaborative processes of professional development between teachers. The aim of this approach is the development of teaching

competencies between collaborating peers, with a strong focus on the improvement of student learning and understanding with respect to specific content. Content-focused Peer Coaching has been applied and empirically explored with in-service teachers, as well as pre-service teachers. The author describes how Content-focused Peer Coaching can be adopted for the professional development of in-service and pre-service teachers. Examples of implementation in different contexts of teacher education (Switzerland, Germany) show perspectives of how to scale up the approach in an educational system.

In the next chapter (4), Janík et al. introduce the 3A CFA: Content-Focused Approach, which involves annotating, analysing and altering teaching-and-learning situations (captured on video) and changing them for the better – and therefore striving for instructional improvement. In this framework, the authors highlight how working in professional communities, teachers and teacher educators can make use of didactical case studies to produce and share pedagogical (content) knowledge for the improvement of instruction. The core of supporting teachers lies here in revealing examples of “didactic formalisms” and examples of “didactic excellence” to provide a horizon for discussing instructional quality. This effort is supported by a video-based e-learning environment (DiViWeb) and focuses explicitly on the transformation of instructional content. It is research-based in the way the members of professional communities study teaching-and-learning situations and strive to generalise findings from particular case studies to come up with ideas for instructional improvement that they can utilise in practice.

In chapter (5) Dalehefte and Midtsundstad present an in-service teacher professional development program School-In for enhancing the collective capacity of schools, awareness of expectation structures and conditions for students’ inclusion and learning. In Norway, decentralised in-service teacher education is becoming more and more popular. Also, in School-In, the teaching staff is trained in their own school environment; thus, it is a school-based program. The chapter focuses on a part of the program that aims at enhancing teachers’ competencies in utilising the local context of schools in instruction because research has shown that the local context in various subjects offers possibilities for improving inclusive and learning processes for all students. How schools define their own focus area of development and the way teachers develop measures to improve instruction are inspiring aspects for teacher educators and a model for in-service teacher professional development. The program, in which the teachers both consume and provide research, aims at contributing to future teacher education and courses for in-service teachers.

Fraefel and Bäuerlein present a research-based framework for teacher education in chapter (6) that emphasis core practices in education. This is introduced as an alternative to the dominant competence approach in German speaking parts of Switzerland. The authors highlight what is expected from professional teachers and what activities teacher candidates have to learn within this concept. They also present different formats and tools supporting these professional practices (internships with co-teaching, formative portfolios and the supportive use of video, etc.). The

students go through four phases to build up an internalised set of core practices. A video portfolio consisting of students' collected materials of videos, lesson plans, documents etc. completes the course and is assessed with a rubric in a summative evaluation. Finally, the authors present encouraging first findings from the course evaluation.

In chapter (7) by Hugener and Krammer the implementation of the intervention project VideA ("Video Analysis in Teacher Education") is introduced, which was devised to investigate the design elements, conditions, and effects of case-based learning. The authors compare the use of videos from the participating student teachers' own and other teachers' classrooms concerning the promotion of the participants' professional vision of three basic features of effective teaching (goal clarity, teacher support, and learning climate). They give a detailed description of the procedure that guided the video analyses and describe the tools that supported the facilitators in planning and implementing video-based learning settings in the second semester of a teacher preparation programme. They report on what the participating student teachers and facilitators thought of this approach to learning and which elements of such settings they considered to be particularly important to their learning processes.

Vondrová in her chapter (8) adopts a domain-specific perspective, namely one of mathematics education. First, she makes explicit what types of teaching she advocates in her programme. Second, she describes the main features and various implementations of Lesson Study and Video Clubs as depicted in literature and outlines their empirically evidenced influences on teacher learning. Third, she proposes how a Lesson Study cycle can be enhanced with video-based tasks at its beginning and towards its end and she illustrates one implementation of such a programme. Finally, Vondrová discusses some prerequisites for and obstacles to the implementation of Lesson Study and Video Clubs, based on the work of others and her own.

Minaříková, Janík, and Píšová in their chapter (9) focus on continuing professional development courses for teachers of English as a foreign language. Inspired by video clubs (as introduced by Sherin and van Es) and other such programmes, they prepared and implemented a similar course. They present the story of developing video clubs for English as foreign language teachers and the lessons they learned through their implementation and evaluation. The authors believe this will be of interest to teacher educators who organise similar courses or wish to do so in the future. They introduce their approach, focusing on its theoretical grounding, and the benefits and pitfalls as they encountered them. To provide deeper insight, they illustrate their account with examples from the accompanying research they conducted.

In the individual chapters, the authors provide examples of research-based teacher education. Various approaches are presented and discussed to highlight how we as teachers, teacher educators and researchers can facilitate the improvement of instruction. A reflective discussion on particular chapters is introduced

in chapter 10, written by Černá. In her chapter, valuable insights into the developments and challenges of research-based teacher education programs are provided.

We can conclude that approaches to teacher education that are based on research – i.e. stemming from and informing research back – represent a specific type of supporting professionalism in teaching. The phrase “research-based professionalism” could be used to touch the core of this approach. It is led by an ambition to improve instructional practice. It is case-based but with an aim to operate on a general level. It is community-based, and it makes use of cooperation among teachers, teacher educators, and researchers. It goes beyond intuition towards a high level of expertise in teaching, and therefore it requires an elaborated professional language and professional knowledge base. Hopefully, this book will help pave the way towards the ambition that research-based teacher education signifies.¹

References

- Altrichter, H., & Posch, P. (2009). Action Research, Professional Development and Systemic Reform. In S. Noffke & B. Somekh (Eds.), *Educational Action Research* (pp. 213–225). Los Angeles: Sage.
- Byman, R., Krokfors, L., Toom, A., Maaranen, K., Jyrhämä, R., Kynsälähti, H., & Kansanen, P. (2009). Educating inquiry-oriented teachers: Students’ attitudes and experiences towards research-based teacher education. *Educational Research and Evaluation*, 1, 1–13.
- Elliott, J. (1984). Improving the quality of teaching through action research. *FORUM* 26, 74–77.
- Hollingsworth, S. (1997). *International Action Research. A Casebook for Educational Reform*. London: Falmer Press.
- Kansanen, P. (2006). Constructing a research-based program in teacher education. In F. K. Oser, F. Achtenhagen, & U. Renold (Eds.), *Competence Oriented Reacher Training. Old Research Demands and New Pathways* (pp. 11–22). Rotterdam & Taipei: Sense Publishers.
- Krainer, K. (1994). PFL-Mathematics: A teacher in-service education course as a contribution to the improvement of professional practice in Mathematics instruction. In J. Ponte & F. Matos (Eds.), *Proceedings of the 17th PME International Conference*, 3, 104–111.
- Krainer, K. (1998). Some considerations on problems and perspectives of in-service Mathematics teacher education. In C. Alsina (Eds.), *8th International Congress on Mathematics Education: Selected Lectures* (pp. 303–321). Sevilla, Spain: S.A.E.M. Thales.
- Krainer, K. (2002). Lernen im Aufbruch – ein Innovationsnetz als Chance. In K. Krainer, W. Dörfler, H. Jungwirth, H. Kühnelt, F. Rauch & T. Stern (Eds.), *Lernen im*

1 The authors express their gratitude to all anonymous reviewers, proof readers and other supporters who provided valuable comments and helped to improve individual chapters.

- Aufbruch: Mathematik und Naturwissenschaften* (pp. 13–20). Innsbruck: Studienverlag.
- Larsen, J. E. (2016). Academisation of teacher education: Sites, knowledge cultures and changing premises for educational knowledge in Norway and Denmark. In A. Hoffmann-Ocon & R. Horlacher (Eds.), *Pädagogik und pädagogisches Wissen/ Pedagogy and Educational Knowledge* (pp. 211–228). Bad Heilbrunn: Klinkhardt.
- Llinares, S., & Krainer, K. (2006). Mathematics (student) teachers and teacher educators as learners. In A. Gutiérrez & P. Boero (Eds.), *Handbook of Research on the Psychology of Mathematics Education. Past, Present and Future* (pp. 429–459). Rotterdam: Sense Publishers.
- Posch, P., Rauch, F., & Mayr, J. (2009). Forschendes Lernen in der Lehrerfortbildung – Die Universitätslehrgänge „Pädagogik und Fachdidaktik für Lehrer/innen“ und „Professionalität im Lehrberuf“ an der Universität Klagenfurt. In B. Roters, R. Schneider, B. Koch-Priewe, J. Thiele & J. Wildt (Eds.), *Forschendes Lernen im Lehramtsstudium* (pp. 196–220). Bad Heilbrunn: Klinkhardt.
- Rauch, F., Zehetmeier, S., & Erlacher, W. (2014). 30 Years of Educational Reform Through Action Research: Traces in the Austrian School System. In T. Stern, A. Townsend, F. Rauch, & A. Schuster (Eds.), *Action Research, Innovation and Change. International perspectives across disciplines* (pp. 27–42). London, UK: Routledge.
- Rudduck, J. (1985). Teacher research and research-based teacher education. *Journal of Education for Teaching*, 11(3), 281–289.
- Schön, D. (1983). *The Reflective Practitioner*. London: Temple Smith.
- Stern, T., Townsend, A., Rauch, F., & Schuster, A. (2014). *Action Research, Innovation and Change: International and Interdisciplinary Perspectives*. London & New York: Routledge.
- Stichweh, R. (1997). Professions in modern society. *International Review of Sociology*, 7(1), 95–102.
- Stigler, J., & Hiebert, J. (1999). *The Teaching Gap. Best Ideas from the World's Teachers for Improving Education in the Classroom*. New York: Free Press.
- Terhart, E. (2007). Universität und Lehrerbildung: Perspektiven einer Partnerschaft. In R. Horlacher & R. Casale (Eds.), *Bildung und Öffentlichkeit: Festschrift für Jürgen Oelkers zum 60. Geburtstag* (pp. 203–219). Weinheim: Beltz.
- Toom, A. L. (1985). Inquiring into inquiry-oriented teacher education. *Journal of Teacher Education*, 36, 35–44.
- Toom, A., Kynäslähti, F., Krokfors, L., Jyrhämä, R., Byman, R., Stenberg, K., Maaranen, K., & Kansanen, P. (2010). Experiences of a research-based approach to teacher education: Suggestions for future policies. *European Journal of Education*, 45(2), 331–344.
- Toom, A. (2013). *Research-based teacher education: Finnish perspective*. Paper presented at the University on Helsinki on March 19th 2013.
- Westbury, I., Hansen, S. E., Kansanen, P., & Björkvist, O. (2005). Teacher education for research-based practice in expanded roles: Finland's experience. *Scandinavian Journal of Educational Research*, 49, 475–485.

2 Teacher Professional Development: Theoretical Considerations and Practical Examples

Stefan Zehetmeier, Monika Grasser, Andrea Holzinger, Franz Rauch, Angela Schuster & Andreas Wachter

Teachers play a key role in the school system. They operate in a central position between various levels: teaching and school, students and parents, individual schools and the education system. There are also high expectations placed on teacher qualifications and competencies. In order to support and qualify teachers, initiatives for advanced teacher training and support systems for teaching innovations are offered, with the implicit or explicit goal of developing a secure school and teaching quality.

The courses available from the IUS (Institut für Unterrichts- und Schulentwicklung – Institute of Instructional and School Development – Alpen-Adria-University, Klagenfurt) aim at the promotion of reflection and networking. The theoretical frameworks of the courses are based upon the ideas of action research (e.g. Stenhouse, 1975; Altrichter, Feldmann, Posch, & Somekh, 2008) and the systemic approaches to educational change and system theory (e.g., Willke, 1999).

In these courses, teaching and school development are interconnected. Starting points being competencies and interests of the participants plus current developments in the Austrian school system. Participants predominantly direct their own learning process by choosing and organising the questions and key aspects of their work in accordance with the development processes of their particular school. Equal weight is given to theoretical-methodological foundations and experiential learning as gleaned from their own work. Teachers are introduced to methods of action research, and they bring these methods into practice during their course of study and on completion, write about their experiences in reflective papers and master's theses.

This chapter focuses on concrete initiatives for the professionalisation and continuing education of teachers: the university training courses PFL (Pädagogik und Fachdidaktik für Lehrer/innen: Pedagogy and Subject Didactics for Teachers), ProFiL (Professionalität im Lehrberuf: professionalism in the teaching profession), and BINE (Bildung für nachhaltige Entwicklung: education for sustainable development). Both theoretical and conceptual backgrounds including results from the evaluation and accompanying research are presented for each of the three training courses. In addition, graduates of the programs provide a report of their activities and experiences as well as the outcomes of their participation in the program.

2.1 The university training course PFL: Pedagogy and Subject Didactics for Teachers (Pädagogik und Fachdidaktik für LehrerInnen)

The university training courses from IUS “Pedagogy and Subject Didactics for Teachers” are examples of teacher education, which target the promotion of reflection and exchange among teachers and to facilitate collaboration over a longer term (see Posch, Rauch, & Mayer, 2009).

Currently there are PFL course tracks for German, English, Mathematics and the Natural Science subjects. A central theme throughout the course is action research, which should aim to serve teachers as a tool for further development of their teaching competencies. Teachers learn about action research methods and then test them in practice. They then document their experiences in two reflective papers: a short paper, which deals primarily with classroom observation and data collection, and a further study, in which any change in participants teaching methodology is described and evaluated utilising action research methods.

These courses appeal to all teachers who redefine their teaching methods, who set a goal to engage student mindsets and who also have an interest in current didactical questions. Teachers have the potential to further develop their personal strengths, and to discuss and test new knowledge regarding subject didactics. PFL’s paramount objectives are primarily the continuing development of instructional quality and the expansion of teacher competencies as contributions for building professional knowledge.

Essential to the mindset which PFL should convey is a philosophy of appreciation for the teaching profession and reflexive reasoning. This initiates an intense self-examination of one’s own actions, although initially creates an anxiety, but by the completion of the course, teacher experience results in an invigorated self-confidence and increased motivation.

Especially valued by participants is the availability of professional exchange between instructors from the various school levels and types, and the process-oriented self-directed learning in workshops which, in the natural science course of study, frequently focus on experimentation. Interdisciplinary work in Biology, Chemistry and Physics is also a principle practiced both by the participants and the instructor team.

To regularly review the quality and appropriateness of the program, there is, firstly, accompanying research by the scientists from the Institute of Instructional and School Development, and, secondly, evaluation measures by the course team, such as morning reflection during the seminars, written seminar feedback at the end of each seminar week, or cross-case analyses of course studies. Morning reflection and seminar feedback primarily serve to direct learning and work processes, accompanying research and study analyses, deliver data of the entire training course or to respond to specific questions.

The accompanying research showed that the participants were very satisfied with the course of study (Müller, Andreitz, & Mayr, 2010). The cross-case analysis of the PFL Natural-Sciences-course studies for primary and secondary school instructors, concentrated on questions about the action research process, for example, action research project starting points, the involvement of students and questions regarding the degree to which the results of the study were expected. This showed, among other things, that teachers have maintained a variety of approaches to their action research projects that they consciously selected and further developed particular content from the seminars and they consistently ran through the action research processes, which subsequently yielded starting points for the next steps of further development for their teaching. The majority of participating teachers achieved unexpected and surprising results. It were exactly these unexpected aspects of their actions as teachers that often demonstrated paths to change and further development.

2.2 The university training course PFL: A graduate's perspective

Pupils are expected to be prepared both independently and socially by the educational system. In a fast changing society, the attitudes, values and interests of learners change, creating major challenges for the Austrian education system. Experience has shown that fulfilling these new requirements succeeds most readily through appropriate continuing education opportunities for teachers. With the four-semester-long university course PFL, the IUS makes an important contribution to the professionalisation of teachers. The basic concept of the seminar series was to support teachers willing to try new techniques over the longer term through the development processes.

Teaching development was also relevant for the primary school in St. Veit an der Glan. Teachers from this school took part in the seminar series from 2012 to 2014. Through their participation in the seminar series, a development process was put in motion, which stimulated team processes, and reflection processes about each teachers own teaching, about projects and their own teaching personality. The seminar series time-tested analysis discussion proved especially effective and also by using this method, problems in natural science instruction were identified. Through the analysis discussion, a method was introduced which allowed a pragmatic approach to these problems; particularly in connection with collegial feedback. Problem areas in pedagogical work came to light and raised questions in a research-and-discovery approach in natural science teaching. Initially at the St. Veit school, the role of the communicative processes in research instruction needed to be analyzed. Therefore, the following questions were of interest: