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Bridging the gap between research and practice
How teachers use research based knowledge

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Abstract
The article analyses how research-based knowledge is used in practice in an action research project about student dropout. The action research is conducted as research circles with a systematic and organised cooperation between researchers and practitioners, i.e. college teachers. Based on interviews with the teachers, we found that research-based knowledge was used in several ways: as concepts for discussing real-world experiences, as confirmation of the teachers’ practical experiences, as a frame for understanding of praxis, as a way of informing action, as a way of conducting research activities, and as a legitimation of the importance of the practitioners’ performance in their daily work. The teachers used knowledge from previous research as well as knowledge developed during the course of the project. We found that research-based knowledge seems to be more useful for talking about and understanding practice than for guiding practical action. In order to improve the impact of research-based knowledge on practitioners’ actions, researcher together with practitioners should translate research-based knowledge and theoretical concepts into the practice. The translation process concerns specifying how practitioners apply this knowledge in developing their actions. Consequently, action researchers should as part of the research project allocate time – in corporation with practitioners – to transform research-based knowledge into practical actions.

Keywords: research-based knowledge, research circles, research-informed action, translating theories, dropout

Introduction
The gap between research and practice in education has been discussed in several academic articles. The gap has been described as a gap between researchers and practitioner, between theory and practice, between educational research and practice, and between research based knowledge and practice based knowledge. Some researchers have argued that the gap is fruitful and must be obtained because the two perspectives add different perspectives to action, a pragmatic and a critical (Kvernbekk 2012, , p. 204-205). Some regard the gap as a serious problem, which must be bridged in a way that practitioners can get access to research based knowledge (Ulvik, Riese, and Roness 2018). The gap has been analyzed as an epistemological problem (Papastephanou 2014), and it has been analyzed as a gap between different professional cultures (Korthagen 2007). Kemmis pin point this by saying that the problem is “not so much in closing the ‘gap’ between
theory and practice, but in closing the gap between roles of theorists and practitioners” (Kemmis 2009, p. 468).

A literature review on the gap between educational research and practice found four basic problems constituting the gap: educational research yields only few conclusive results, educational research yields only few practical results, practitioners believe that educational research is not conclusive or practical, and practitioners make only little (appropriate) use of educational research (Broekkamp and van Hout-Wolters 2007, p. 204-205). An important reason for these problems is the difference between the two kind of knowledge: practice based knowledge and research based knowledge. Practice based knowledge is closely related to the context and is based on experiences. Research based knowledge is general and expected to be relevant in many contexts. Scanlon used the concept researchers knowledge (or theoretical knowledge) and describe it as a kind of knowledge produced away from the context of practice. “A consequence of the construction of researchers’ knowledge away from practice is that researchers’ findings and recommendations are reported in a specialized language” and that this language is only understood of the researchers, she said. The researchers knowledge cannot merely be translated into pedagogical knowledge because it has a “theoretical and abstract nature” (Scanlon 2018, pp. 18-20).

Action research is a way to bridge the gap. In action research there is an interplay between the researchers and the practitioners. The interplay is based on a principle of equality, and has been characterized as an a democratic community where researchers and practitioners are working together to find solutions on a practical problem (Reason and Bradbury 2008). A literature review shows how action research has been used to improve institutional and curriculum development, to implement new pedagogies, and to training of teachers and staff in educational institutions (Gibbs et al. 2017). It seems to be well accepted, that action research under adequate conditions can have an impact on educational change (Saunders and Somekh 2009; James and Augustin 2018).

Bridging the gap can as mentioned be analyzed from different perspectives. In this article we focus on the relations between research based knowledge and practice.

How to bridge the gap?
As mentioned practitioners, e.g. teachers, have difficulties in using research based knowledge. Different studies have investigated why and what to do to overcome these difficulties.

Flynn states that “the challenge for those wishing to support teachers in matching their practice with research findings is that research is frequently shaped for an audience of academics rather than practitioners …” (Flynn 2018, p. 4). Consequently, she concludes that the researcher must make their own research accessible and translate the result to practical actions. However, this “process of translation of research into practice must include practitioners if it is to be successful” (ibid. 17).

Another study on inter-professional action research conducted by teachers and university-based researchers concludes in a similar way as Flynn and stresses the importance of corporation between teachers and researchers. The study points out that the collaborative research must be based on “common relevance, shared responsibility for the research and mutual trust and respect for differences in professional identities and working conditions” between teachers and researchers (Leeman, van Koeven, and Schaafsma 2018).
The use of research based knowledge in a school setting is analyzed by Raaen in a perspective of power. The practitioners’ ability to use research based knowledge is influenced by their lack of power to define what research based knowledge consist of. The practitioners are not sufficiently involved in the defining process, he explains. (Raaen 2017).

In action research as a part of a teacher training program Luttenberg, Oolbekkink-Marchand, and Meijer point out that the teachers’ ability to reflect is necessary to bridge the gap between theory and practice. However, the reflection process is complicated. Consequently, they elaborated the concept of reflection in four domains: moral, artistic, technical, and scientific. Based on these domains they describe how the ability to reflect develops through the action research process. They conclude, that “insight from the framework can be used to make more explicit choices in relation to the course of the action research project, such as giving more or less space to scientific domains of reflection or considering the role of reflection in action research as a means or as a goal, for example” (Luttenberg, Oolbekkink-Marchand, and Meijer 2018, , p. 88).

In a study focusing the interplay between practice and theory it is analyzed how research based knowledge is used by the student teachers. The study focuses on the student teachers outcome when they conducted research and concluded, that the student teachers use theory and research in many ways, and they are both consumers and producers of research. The study concludes that: “Contributing to a positive impact on their outcome were the opportunity to reflect on their own practice, the possibility they have to focus on something they find important, and the change to make their own experiences with particular tool for professional development” (Ulvik, Riese, and Roness 2018).

Based on existing research it seems clear that the relation between research based knowledge and practice is complex. The transformation process from research to practice seems crucial in this relationship. Likewise, research results point out that this transformation process must include an active interplay between researchers and teachers. The teachers’ ability to reflect on this transformation process seems important.

Based on these considerations the aim of this article is to analyze two questions:

- How do teachers use different kind of research knowledge in practice?
- Which conditions support the teachers’ use of research based knowledge?

The analysis will be based on an actual action research project accomplished as research circles.

**The research circle as action research**

Educational action research can have different forms and can be categorized under different models according to the way the research include researchers (James and Augustin 2018).

Action research can be accomplished as ‘learning studies’ described as “a theory-informed and interventionist research practice that focuses objects of learning in order to develop teaching practice” where the teachers collaborate to formulate goals for student learning (Johansson 2017, , p. 169). “In a learning study elements from both the teaching practice and the academic practice matter” (Thorsten 2017, , p. 140). Or it can be designed as ‘clinical research’ as “an academic way to solve practical problems” (Bulterman-Bos 2017, , p. 119). It can be accomplished as ‘teacher research’ as “a way to link educational
academic research and teaching practice aiming at furthering professionalism in teaching, improving teaching practice and extending the knowledge base on teaching and learning” (Admiraal et al. 2017, p. 316). The main purpose in these three examples is to bridge the gap between theory and practice by making the teachers researchers.

In this article, we analyze an actual action research process where the researchers play a central and organizing role. This kind of action research is named ‘research circles’ (Östlund 2008; Rönnerman and Olin 2014). Research circles can be defined as action research with an intensive collaboration between practitioners and researchers imbedded in an organizational structure with a clear division of labor between practitioners and researchers.

The research circles is a way to organize a cooperation between practitioners and researcher for the purpose of finding a solution of a problem. In can be characterized as a ‘collaborative action research’ (Wells 2009; Rönnerman and Salo 2012) and as ‘participatory action learning and action research’ (Zuber-Skerritt 2018).

The research circles are organized as a succession of planned meetings (circle-meetings). At these meetings the practitioners present the practical experiences and practice based knowledge and the researchers present theories and research based knowledge. Between the circle-meetings the practitioners implement and testing of new knowledge and the researchers gather data an systemizing new knowledge. The work in the research circles is spread over a longer period, normally a year or more.

In an educational context it is a meeting between the practitioners in the school setting and researchers from an research institution. The purpose for the cooperation is improving practice in the school setting.

In the research circles two kind of knowledge prevail. Practice based knowledge including knowledge and experiences which the practitioners bring into and develop in the project. Research based knowledge including already existing knowledge and knowledge developed through the research process. In the analysis in this article we focuses on the impact of the two kind of research based knowledge on practice.

The actual case: research circles on drop out

The data collection and the analysis in this article are based on an actual action research project accomplished as a research circles. The project aim is to reduce drop out among young adults in a vocational training program. The focal point of the project is the decision processes among these young adults and the possibilities for the teachers in the vocational college to intervene in these processes. The underlying premises is to develop knowledge which teachers can use to reduce the drop out rate in the schools.

The actual research project is organized in three parallel research circles located in different regions in the country. In each research circle 10 to 15 practitioners from five different schools participate. Totally 35 practitioners and four researchers are part of the project. Six circle-meeting have been accomplished over a period of two years. At each circle-meeting five to 15 practitioners and two researchers participate. The researchers visit the schools once between each circle-meeting.

The practitioners’ task is to accomplish the activities at the schools in the phase between the circle-meetings. The purpose of these activities is to bring down the dropout rate. The researchers’ task is to organize the work in the research circles, to bring in relevant existing research based knowledge in the project, and to collect and analyze data produced in the project.
Each circle-meeting is organized according to a scheduled agenda which includes: presentation of relevant research based knowledge, presentation of the practitioners experiences from the activities at the schools, and discussion of the relevance of the research based knowledge in relation to the practitioners experiences.

**The research based knowledge**

The aim of the action research project is to reduce drop out among young adults in a vocational training program. In relation to that purpose it seems essential that teacher should know something about the reasons for dropping out. Likewise, it would be useful for the teachers to know what motivates the young people to stay in the school system. To guide the young students it could be useful to know more about how the student reflect in a situation when they consider to leave the school.

Consequently the researchers introduced research based knowledge about reasons for dropping out of or staying in school. The presentation was based on knowledge gathered of Rumberger and Rothermund (Rumberger 2011; Rumberger and Rotermund 2012) and supplemented with result from national research programs. To present research based knowledge on motivation the researchers presented the theory on self-efficacy. Findings suggest that self-efficacy is positive correlated to retention (Bandura 1997, chap. 10; 1986, chap. 9). To expand the perspective the researchers introduced the self-determination theory and elaborated the three central concepts: inclusion, competence and autonomy (Deci and Ryan 2000). To shed light on the students’ consideration in the process of dropping out the researchers introduced the ‘teetering-theory’. The theory describe how the student vacillated between two positions: to stay or to leave and how they use different strategies to find a way to take the final decision (Lessard et al. 2008).

In discussion of the quality of action research it is generally agreed that the outcome of the research process need significance. ‘By significant we mean having meaning and relevance beyond their immediate context …’ (Bradbury 2015, p.8). To secure this significance a method is needed and Smith outlines some requirements for this process which include systematic data collection and testing the inferences (Smith 2015). “It is still important that the work of Educational Action Research make a substantial contribution to our understanding of the larger field of education” (Brydon-Miller, Prudente, and Aguja 2017, p. 445).

Under the headline “building educational theory through action research” Elliot discuss the content of the concept educational theory. Has writes: “Educational action research ‘findings’ will take form of ‘universal rules of thumb, which I would regard as elements in a theory of education” (Elliott 2009, p. 35).

To fulfill the requirement of creating a significant outcome of the action research process beyond the immediate context, the project have included a data collecting process focused on drop out activities. We have developed a special survey technique where student each week respond to a questionnaire containing four question. Based on the survey-data graphs of the student development was sketched. The survey-data were supplemented with interview with student to give information on the reasons for the development of the graphs. Totally, this data collection give a picture of different student’s decision making processes in relation to drop out. We found that these processes can be divided in four categories: The positive development, the stable process, the turbulent development, and the negative development. (These results are presented in two articles. The first
one on patterns in the decision processes (Aarkrog et al. 2018), the second on the four categories (Wahlgren et al. 2018). The results from these analyses were presented for the teachers at circle-meetings.

The teachers have participated in the data collection by interviewing the students about their reactions to the various activities concerning drop out. As part of that, the teachers are introduced to various types of interview techniques used by the researchers. This kind of knowledge is part of the research based knowledge.

Summing up, the teachers were introduced to two types of research based knowledge: Knowledge existing before the project began and developed by other researcher, and research based knowledge developed in the research circles by the involved researchers, including the methodological knowledge. The question which we analyze in the next paragraphs is: How is this research based knowledge used by the teachers?

**The research method**

To describe and analyze the impact of the research based knowledge on the teachers’ way of thinking and acting two sets of data were collected. The first one is a systematic collecting of knowledge end the end of the circle-meetings. The other one is based on interview with the teachers.

The procedure in the first data collection was to ask the teachers at the end of the third and the fifth circle-meeting to reflect on what they have learned in the project and how the research based knowledge has contributed to that learning. The participant were asked to reflect on the following two questions:

- What do you think is the most important learning from the project?
- How has the circle-meetings contributed to this?

The teachers were asked to write down their reflections individually. After that, they were asked to present their reflections to a college coming from their own college to deepen their understanding. At the end, the pairs presented the results of their reflections for the rest of the members of the research circle.

The researchers gathered the answers and analyzed the data. Some answers were related to the practical experiences developed in the activities at the school, some were related to the discussion of the experiences at the circle meetings, and some were related to the presented research based knowledge. Based on that information a method for the second and more systematic data collection was developed.

The second data collection is based on interviews with teachers from each school. It includes 12 interviews. Five interviews were made with a single teacher, six with two teachers and one with three teachers. The reason for these differences was practical.

The first theme in the interview was open and focused on the general outcome of the work in the research circle. The teachers were asked to respond on the following: “Please tell me what outcome you have had from the work in the research circle”. Based on the answers on this question, the teachers were asked more systematically to relate to the different form of knowledge presented in
the circles: practical experiences with activities, collective sharing of experiences and research based knowledge.

The next theme in the interview was to elaborating the teachers’ answers. To obtain that, the teachers were asked to exemplify their opinions and not least to give examples of the impact the new learning might have had on the their practice. If e.g. the teachers had first answered that they were very inspired by the ‘teetering-theory’ (see above), they were asked what they meant by “inspired”, and to explain, what inspiration meant in their daily practice. We also asked the teachers, why they found some kinds of knowledge more useful than others.

All the interviews were recorded. The answers were summarized and significant passages were written down in extenso. The total data materiel includes information of the use of practice based knowledge as well as information about the use of research based knowledge. In this article we only focus on the latter.

We have analyzed the data-material to answer the first research question: How do teachers use different kind of research knowledge in practice? The procedure followed these steps: First we wrote down all sequences containing statements about research based knowledge. Secondly we developed a number of categories that should be exclusive and inclusive. Thirdly we placed the statements in these categories. Fourthly we chose examples illustrating the different categories to be presented in the article. In order to answer the second research question: Which conditions support the teachers’ use of research based knowledge? we counted which kind of research based knowledge the teachers frequently and seldom mentioned. Secondly, we analyzed the teachers’ reasons for using or not using the research based knowledge.

Findings

The teachers’ use of research based knowledge
In general, the teachers are very satisfied to learn about the theory and the research based knowledge presented in the project. The teachers express an interest in leaning new theory. They consider the theory ‘inspiring’ and useful.

Based on the data material it is possible to derive the following functions of the research based knowledge in the research project:

- The theory provides the teachers with concepts to exchange experiences
- The theory confirms the teachers’ experiences
- The theory provides the teachers with a frame for understanding
- The theory guided the teachers work
- The research based knowledge trains the teachers in research activities
- The theory legitimates the teachers’ action in the school based setting.

In the following paragraphs we elaborate the findings.
The theory provides the teachers with concepts to exchange experiences
A vital part of the work in the research circles is the teachers’ exchange of experiences. In parts of this process the exchange is based on concepts from the teachers’ daily practice, in other parts theoretical concepts are used.

An example of the first kind of practice based exchange of experiences is a discussion about the differences between the students’ ability and willingness to act. This discussion is based on some positive experiences from one of the schools collected before this research project. Some of the schools use these two concepts to talk about the students’ drop out processes. As mentioned of one of the teachers: “We have stolen the concept ‘can-will’ because we find it useful for the teachers at our school”.

The concept ‘teetering’ is an example of a theoretical concept with impact on the discussions of the new experiences is the. This concept rather precisely describes the students’ process in the situation when they decide whether to stay in or to leave the educational program. One of the teachers express it in this this way: “It is important with a common language when we talk about drop out. The more we meet, the more we develop this language. The concept ‘teetering’ makes possible to talk about what is really going on in the minds of the students”. Another crucial theoretical concept is ‘inclusion’ as a part of the motivational theory used in the project. This concept is the focal point when the teachers discuss what they do to prevent dropout.

An important issue to understand the consequences of the use of the theoretical concepts is the use of the concept ‘decision-processes’. This concept focus on the process leading to drop out, not on the reasons to drop out. This twist is important because it aims the teachers’ attention in quite another direction compared to other project focusing on the causes leading to drop out. One of the teachers reminds us clearly on this important point by saying: “The fact that we now are talking about decision-processes and not just about drop out, have changed the focus in our work at the school”. And formulated more generally: “Now we think much more about what is going on in the heads of the student than before.”

The research based knowledge confirms the existing practice
One of the findings in the project is that the student’ decision processes in relation to drop out can be categorised in four types: The positive development, the stable process, the turbulent development, and the negative development. Each type represents specific characteristics that can be described in a specific graph. The four graphs systematize practice in the college. The data from the interview show, that some of the teachers find the result interesting, however well known. One of the teachers says: “For me as a practitioner there is nothing new. I can recognize the description of the decision processes from my daily contact with the students. What you have found in your research corresponds to what I already know. However, it is now described in graphs”. The research based knowledge do not bring any new knowledge to that teacher. She has been confirmed in her way of perceiving the students and the students’ decision making in relation to drop out. However she now see these processes in the light of graphs. The teachers more intuitive experiences have been placed in a theoretical framework which focuses on the process dimension (the graphs). Another teacher says: “I am rather good at meeting the students from my daily experiences. However, when I learn the theories, I feel assured that I am doing the right thing. The theories
confirm my practice.” Another teacher says: “I have not changed the way I talk with the students, but I start my guidance earlier in the process”.

The research based knowledge confirms the teachers practice – with a twist. The practitioners get a more focused view on the practice, e.g. seeing the drop out as a process, not as a sudden decision.

The research based knowledge provides a frame for understanding
The data show that the teachers use the research based knowledge is as ‘a frame for understanding’ their practical experiences. Thus, the research based knowledge gives a perspective on the teachers’ way of thinking and acting. The teachers repeatedly tell us that the theory has been ‘inspiring’ and that it has taught them ‘to perceive things in a new way’. One teacher express it like this: “What I have learned in this project is a scientific work method and a mindset to understand drop out.”

The four categories of students’ decision processes mentioned in the preceding paragraph is an example of the use of research based knowledge as a frame for understanding. The four categories have played a significant role in the teachers’ way of thinking about dropout. Although many of the teachers already have some experiences with these four types before the project, they used this research based knowledge as a theoretical framework for understanding. A teacher says: “I have got another focus on the students. Based on knowledge from the research circles I now understand that students’ situation must be seen as different types of drop out process.”

Another teacher tells us: “The paper on teetering-theories has been discussed many times in our team of teachers and counsellors. It has been ‘translated’ to our practice and relates very well to our understanding of the importance of the social relations in the classroom.” And a teacher express the positive feelings related to the new way of thinking: ”Now I reflect much more on my job as a counsellor. It has given me new energy, and have had a positive impact on my daily work in the school. You can say that it makes my guidance more meaningful.”

The research based knowledge offers the teachers a way to understand the importance of the need to focus on the differences on students’ decisions processes. It make them thing in another and more focused way.

Research informed action
In the interview, there are few examples of research informed actions. By research informed actions we mean that the teachers act in a new way and explain this way of acting based on research results.

One of the few examples is expressed on this way by a teacher: “The four categories of students’ decision processes are important because they give us a tool for giving the students the right treatment according to the needs. It can be used, because we can recognize the different types in practice. It gives us some possibilities to act more differentiated towards the different students”.

Another example is given by another teacher: “Each time I have been to a circle-meeting I have received a tool. For example the scheme on teetering strategies. It gives meaning because it is concrete and directly related to practice. When I sit in a situation and have to guide a student, I can follow the guidelines in the scheme. Sometimes I do change the scheme a bit.”
It is remarkable that the few examples relates to ‘empirical’ concepts developed on basis of research based knowledge. They do not relate to theories.

The research based knowledge trains the teachers in research activities
The teachers have gained knowledge and skills in collecting data as part of the project. They use this knowledge when talking to or guiding their students: "We have used the student interview guides that have been developed in the project”, a teacher says. Another teacher expresses that the interviews have inspired him to talk to the students in a different way: “We have become more aware of the students' formulations when they make explanations in the interviews.” Thus, the actual interview technique give new insight into the way to talk with students.

The fact that the interview guides and data collection methods are concrete tools precisely make them applicable in practice.

As a side effect of being part of a research project, the teachers have developed a more systematic way of evaluating the activities: “We have begun to evaluate our efforts much more. It takes time, however we have good experiences with it”, a teacher says.

The theory legitimate the teachers action in the school based setting
Finally, the research based knowledge has the latent function for the practitioners in relation to the school settings. It can be used by the teachers to convince the management that it is important to use resources on activities on preventing drop out, because they are a part of national research project: "Based on the research results, we can convince the leaders that it works”. Likewise, the practitioners from another school say: “The fact that we participate in this project has meant that we can better argue with the management. Now they accept our activities because we are part of a research project… so now there is support all the way up to the deputy director for our proposal! ”

Thus, collaboration with the researchers about an actual problem at the college legitimizes that the college spent time and resources on the project.

Which conditions support the teachers’ use of research based knowledge?
We found that both kind of research based knowledge, the one produced by other researchers before the project, and the kind produced by the involved researchers in the project play a role for the teachers practice.

There are differences between the different kinds of research based knowledge used by the teachers. In the interviews two topics are mentioned more frequently than others. The teetering-theory and the categories of the students’ decision processes are mentioned rather frequently. The reasons for dropping out and the two different motivational theories are mentioned more seldom. In general, the more theoretical parts of the research based actions are mentioned (and used) much less than the more empirical parts of the research based knowledge.

In the interviews, the teachers explain the different usage of research based knowledge. If the teachers are going to implement the theoretical knowledge, the knowledge must be translated to
practice. The researcher had to show how to use the theory in relation to the actual problems. This translation is a part of the research process.

An example is the presentation of the self-determination theory where the three central concepts, inclusion, competence, and autonomy were introduced. Although the teachers found the theory relevant and interesting, they have difficulties with remembering the content of these concepts, and they were not able to relate the concepts to the students’ actual situations. The teachers do not find that these theories was (sufficiently) transformed to practice.

If the research based theories shall have an impact on the teachers action, the theories must be transformed to practice in a process where both researchers and practitioners participate. The transformation process must be explicit and apparent as a part of the research process. One of the teachers spell it out like that: “It is important that you don’t present the theory for its own sake. The theory must be implemented in relation to what we do in the schools.”

The reason why the teetering-theory is perceived as useful is that the transformation process from the theoretical concepts (teetering) to practice is much easier compared to that of the self-determination theory. The teacher can recognize the teetering situation from the daily practice.

Concerning why the categories of the students’ decision processes were used by the teachers, the explanation is something different. The explanation is that the teachers were involved in the data gathering process and therefore had a more personal and active relation to this part of the research based knowledge.

The ways and extend of using the theory vary. Almost all the teachers find theory as such “inspiring”, as mentioned. However, the teachers use the total amount of theory to a very different degree. There are different reasons for these variances.

The first one is that teachers in general are not used to working with theory in a more systematic way. They find it difficult, as a teacher says: “I would like to have more theory so I can be better at applying the theory. However, I am afraid of applying the theory in a wrong way”. However, some teachers are more used to working with theory than others.

The second reason for the variance is that some teachers are more focused on finding practical solutions to the drop out problem and they do not find that the theories can assist them very much in finding good solutions. They perceive it difficult to use the research based knowledge and are not sure it is worth the effort.

The third reason is that there are differences between the way the (four) researchers work with theory together with the teachers at the college. The more the researcher explicitly train the teachers to transform and to implement the theory to practice when they visit the schools, the more the teachers use the theory in that particular college.

An interesting finding in this project is that the research based knowledge seems to be more useful as a tool for thinking and talking about practice, than as a tool for guiding practical action. I the project teachers use the concepts from the theories to talk about the actual actions, and they use the research based knowledge to confirm the way they act. To some extent they use the research based knowledge as a frame for understanding. To a small extend they use the research to inform their way to act and to explain why the act in a new way. However, there are some important exceptions.
The teachers use the categorisation of students where they were involved in the data gathering process, and the use the methodological training, in some intent to guide their actions in the school.

Discussion

A main purpose of action research is to qualified solutions of actual and important problems in practice. To improve the quality of the solutions, research based knowledge must implemented in the action research process. The researcher must bring new and relevant knowledge into the research process and the practitioners must “read and understand the relevant research in the actual area” (Persson 2008, , p. 11). However, as pointed out by Flynn “Research evidence indicating how and why teachers might actually use research to inform their practice is limited” (Flynn 2018, , p. 1). Based on an empirical study she shows the complexities inherent in translating research into practice. The difficulties in connecting research and practice have been documented in many settings (e.g. in Korthagen, 2007) and described above.

As mentioned, different reasons have been provided to explain why it is different to connect research based knowledge and practice (Broekkamp and van Hout-Wolters 2007). It is generally agreed that one of the main reasons is the different nature of research based knowledge and practice based knowledge. The research based knowledge is general and not related to a specific context. Despite these epistemological difficulties, we found that the teachers use the research based knowledge in many different ways. This result correspond with the findings in another study on the relation between theory and practice (Ulvik, Riese, and Roness 2018).

In the research project on drop out presented in this article the research based knowledge includes theory about the reasons to drop out, motivational theory and theory on decision processes. It also contains knowledge about the different decision making processes and knowledge about research methods. However, we found that the various kinds of knowledge were applicated in different ways.

A number of studies point to different aspects of the research situation that can promote and improve the process of connecting theory and practice. E.g. “motivation, trust, mutual respect, and resources” are important conditions for improving the success of action research (James and Augustin 2018, , p. 333).

In this project, we found that a way of bridging the gap between theory and practice is to translate the theory to practice. The researchers must transform the research based knowledge to practical actions. However, it is important that the practitioners participate in this transformation process. We found that one of the most frequently applicated research results was the categories of the student decision processes. We explain this by the fact that the teachers participated in developing of these categories. The teachers contributed to create the research based knowledge. Opposite to that, we found that when the theory was not explicitly translated in a collective process the use of the theory was limited.

In the project, we found an exception from the need for participating in developing the theory, the teetering theory. This theory was used and mentioned by many of the teachers. The reason is that this theory is translated beforehand. It is a theory using concepts from practice. The visual picture
of teetering or staggering between different positions seems to be immediately understood and used by the teachers. In accordance with the theory of transforming knowledge to practice (Lancaster, Milia, and Cameron 2012; Dreer, Dietrich, and Kracke 2017) the theoretical knowledge was used, because there was identical elements between the theory and the practical used.

We only found few examples of situations where the research based knowledge was used as an informed guide to action. Particularly the more general theories do not function as guidelines. For instance we were surprised by the fact that very few aspects of the motivational theory played an active part in the teachers’ way of acting. The reason could be that we do not spend sufficient time and resources on making these theories applicable. However, we do find it challenging to discover a way to bridge the gap between the more general theories and practical actions.

**Conclusion**

In this article we have focused on the relation between research based knowledge and practical actions in a school context where teachers work with activities to reduce drop out.

We have found that research based knowledge is used in several ways: as concepts to talk about experiences, as confirmation of the relevance of the teachers’ experiences, as a frame for understanding, as a way of informing the actual actions, as a methodological tool, and as a legitimation of the importance of the process.

We found that the practitioners have used both research based knowledge produced of other researcher before this study, and research based knowledge produced of the researchers involved in the project.

We found, that the research based knowledge seems to be more useful as a tool for thinking and talking about practical actions, than as a tool for guiding practical action. However, there are some important exceptions. The teachers use the categories of students because they were involved in the data collecting process, and they use the methodological training, to some extent to guide their actions at the college. To improve the impact on the practitioners’ understanding and on the guidelines for research informed actions the research based knowledge must be translated to practice by the researchers in cooperation with the practitioners.

The more the research based knowledge is translated to practice – explicitly as a part of the cooperation between the researchers and the practitioners – the more of the theoretical knowledge will be used in practice.

We found that the more the practitioners have been part of developing the research based knowledge the more they use this knowledge.

In a traditional research process, operationalization of the scientific concepts serve as way to connect these concepts to the empirical practice. In action research, the theoretical concepts must be translated to actual actions in relation to the solution of the actual problems. This transformation process can be seen as a pedagogical situation, where the researchers take the initiative to the translation and involve the practitioners to be active in the process.
As a consequence it is important that the researchers in action research are trained in order to be able to transform research based knowledge to practical actions together with the practitioners. This pedagogical process must not be neglected in actions research.

References


