

## **Student Teachers' Conception of Research-based Knowledge and Experience of Coherence in a new Teacher Education Program**

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### **Abstract**

In teacher education, research-based knowledge has been heavily politically focused in recent years. The concept is complex when it comes to teacher education, and it may therefore be interpreted differently amongst teacher educators and student teachers. The main focus in this article is to explore how research-based knowledge is discussed amongst student teachers in a new teacher education program, and how student teachers describe coherency within coursework and practical placement periods, with regard to research-based knowledge. Linked to this, the article will address student teachers' self-efficacy. A positive attitude towards research has been connected to strong self-efficacy, since students who develop a positive attitude towards research will also carry out and use research in practice, if they have strong self-efficacy.

**Keyword:** research-based knowledge; teacher education; coherence; self-efficacy; student teachers

### **Introduction**

Lack of coherence in teacher education is heavily debated in international research (Klette and Hammerness, 2016; Heggen and Terum, 2013; Grossmann, Hammerness, McDonald and Ronfeldt, 2008a; Hammerness, 2006). According to Klette and Hammerness (2016), it is not enough to have a vision of what good teaching is, the vision needs to inform program design, curriculum, and pedagogy and to shape what and how new teachers learn (p. 29). The degree to which the vision is shared across the program can matter for how student teachers experience consistency in the teacher education program (Hammerness, 2013). Grossmann et al. (2008a) have a similar approach, emphasizing that coherence refers to the degree to which central ideas regarding teaching and learning are shared by all the individuals involved in educating teachers, and to which learning opportunities are organized, both conceptually and logistically, in respect of those goals (p. 274).

Coherence here refers to both conceptual and structural aspects of teacher education, with a special focus on the relationship between coursework and fieldwork. In coherent

programs, core ideas and learning opportunities, including course work and clinical experiences, are aligned (Darling-Hammond, 2006; Grossmann and McDonald, 2008b). However, the challenge in teacher education programs is that coherence seldom occurs. Zeichner (2010) and Grossmann et al. (2008b) suggest that this is related to teacher educators' lack of knowledge about what it requires to create a coherent professional qualification process.

### ***Research in teacher education programs***

In research into teacher education, research and teaching are often described as fundamentally different from each other (Bronkhorst, van Rijswijk, Meijer, Köster, and Vermunt, 2014). The differences are sometimes described as two cultures with their own individual knowledge and values (Eraut, 2009). These differences are sometimes said to be divergent, with a 'gap' existing between them (Abbott, Tapia, & Greenwood, 1999; Hennissen, Beckers, and Moerkerke, 2017). A well-known dilemma in teacher education is how to integrate theoretically-based knowledge, which traditionally is taught at the university, with the experienced-based knowledge that has traditionally been located in practice (Darling-Hammond, 2006). According to Hennissen et al. (2017), since the 1980s teacher education has tried to develop alternative ways to bridge the gap. Inductive approaches, where practical experience is the starting point for the learning process of student teachers, in contrast to traditionally deductive approaches, where theory comes first, have now been emphasized (Hennissen et al., 2017, p. 315). This is known as the "practice turn" in teacher education; over the past few decades it has created new demands for professional development in teacher education (Mattsson, Eilertsen and Rorrison, 2011; Zeichner, 2008; Smith, 2003). One of these new demands is connecting research with teaching, which, without doubt, heavily influences teacher education today.

The purpose of connecting research-based knowledge with teacher education is, according to The Norwegian Association of Higher Education Institutions, UHR (2015), a way to organize the education to ensure that it is up-to-date. According to UHR, the aim of the education is for the student teacher to develop an understanding of research-based knowledge through different research approaches, and in that way, to obtain a better basis for continuing to update their professional knowledge after their education (the Norwegian Association of Higher Education Institutions, UHR, 2015). Thus, in this strong focus on research in teacher education, the role of research is not clear for teacher educators (Munthe and Rogne, 2015) nor are new tasks, linked to research, that would be important for teacher educators (Geerdink, Boei, Willemse, Kools, and Van Vlokhoven, 2016).

### ***New and extended tasks in teacher education***

Geerdink et al. (2016) emphasize that university-based teachers are often recruited on the basis of successful teacher experience in schools, and it is a challenge that they now face new and extended tasks. There is a need for professional development for this new double-focused role. Among the new tasks are those of teaching student-teachers to conduct research and supervising student teachers' research (Darling-Hammond, 2016). Although much has been done to meet this new double-focused role, the best and most efficient solution is still unclear in teacher education. Thus, despite belonging to an environment where research should be a natural feature, university-based teachers lack research skills (Lunenberg and Willemse, 2006), as these have not been a prerequisite for university-based teachers (Cochran-Smith, 2005; Smith, 2003).

However, most teacher education programs now organize the curriculum around multiple practical experiences in some type of school-university partnership (Zeichner, 2010). More and more research indicates strong evidence that successful teacher education programs are those where student teachers are engaged in some sort of inquiry or research collaboration project during their teaching practice (DeWeert and Leijnse, 2010). Based on this, it would be likely, and to some extent, some of the same challenges with regard to the new double-focused role as the university-based teachers' experience, also relate to the school-based teachers.

### ***Coherency in teacher education***

According to Day (2000), collaboration between school- and university-based teachers is important, not only for implementing new concepts but also for cultivating cultures in which ideas and criticism are generated. A school's culture of learning can have a great impact on how research-based knowledge is interpreted and welcomed (Day, 2000). Heggen and Terum (2013) claim that, when student teachers perceive coherence between education and professional practice, this strengthens their motivation and subject-oriented identity. The development of a positive attitude towards carrying out and using research is an important prerequisite for student teachers to use research results and conduct research activities themselves as teachers (Van der Linden, Bakx, Ros, Beijaard and Vermeulen, 2012; Hall, 2009). Van der Linden et al. (2012) claim that student teachers who know why and how research is done in school and are convinced of the importance and feasibility of carrying it out, will develop a positive attitude towards research.

### ***Student teachers' research self-efficacy***

Although research by student teachers is considered to be an important part of their teacher education, there are very few studies available regarding the development of student teachers'

research skills, knowledge and attitude towards research (Van der Linden et al., 2012). According to Van der Linden et al. (2012), it becomes more likely that students will not only develop a positive attitude towards research but also carry out and use research in practice if they have strong self-efficacy. Self-efficacy comes from Banduras' concept of an individual's belief in their own capacities. Bandura (1997) defines self-efficacy as 'beliefs in one's capacity to organize and execute the course of action required to produce given attainments' (p. 3). Self-efficacy beliefs are successful predictors of behavior, and they indicate how a person will behave in given situations when having to deal with complex problems. It is believed that self-efficacy is a motivational element, suggesting that positive learning experiences enhance self-efficacy (Bandura, 1977). Bandura (1986) also claims that, through the process of self-reflection, individuals are able to evaluate their experiences and thought processes. They engage in activities and interpret the results of their actions and then use these interpretations to create and develop beliefs about their capability to engage in similar domains. In teacher education, students develop beliefs about their academic capabilities that help them determine what they can do with the knowledge and skills they have achieved and can achieve in the future (Pajares, 1996). Research self-efficacy specifically refers to beliefs about one's ability to carry out and complete tasks associated with research (Bishop and Bieschke, 1998).

### **The study**

This study adds to the international debate on several levels. Firstly, it examines the gap between theory and practice in the context of a teacher education program that consciously attempts to bridge it. Secondly, it contributes to the ongoing debate about teacher educators (university- and school-based), now facing new, extended tasks they might not be prepared for. Thirdly, the study gives student teachers a voice, which is rarely used to ascertain whether teacher education programs achieve their goals (Korthagen, Loughran, and Russell, 2006).

Based on the discussion about research-based knowledge, self-efficacy and coherence in teacher education, an attempt will be made to answer the following research questions:

- What attitude and conception of research-based knowledge do the student teachers in the teacher education programs have?
- How do student teachers discuss the concept of research-based knowledge in the teacher education programs?
- How do student teachers describe coherence within coursework and practical placement periods with regard to research-based knowledge?

### ***Context***

The study was based on a new teacher education program in Norway (2010-2015). The programs changed from being four-year bachelor's programs to five-year master's programs, for students becoming teachers at levels 1-7 and 5-10 in primary and secondary schools. The Norwegian Agency for Quality Assurance in Education (NOKUT) completed a thorough evaluation of the existing teacher education programs in Norway. The conclusion was that existing teacher education in Norway did not make the connection between theory and practice sufficiently well for the student teachers, who stated that the theoretical teaching and the practice appeared to them to be two different worlds (NOKUT, 2006, p. 69). The new teacher training programs seek to integrate theory and practice, using research-based knowledge as the collaborative tool to make this happen, in a project called University Schools (Pilot in the North, 2008).

### ***University Schools***

The concept 'University School' builds on the idea of mutual recognition and an obligation to conduct collaborative practice between the schools and the teacher education carried out at the university. The University Schools commit to becoming a practice arena for student teachers in their school practice and commit to involving students in research-based knowledge in general, and in research-based knowledge projects initiated by the university. On the university's behalf, there is a commitment to the development of expertise in the University Schools by means of sharing research knowledge and providing courses for the school-based teachers to become advanced mentors to supervise the student teachers' research projects (UIT -The Arctic University of Norway, 2015). In the five-year teacher education program, student teachers will be introduced to research, and become familiar with it by participating in different research projects in the schools. It is important to add that not all student teachers are placed in University Schools, since only a number of schools that have received this status. Smaller research projects are being performed in the first and second years of the five-year program however, the first larger research project is for the student teachers' bachelor project.

### ***Action research and action learning***

The first larger research-based knowledge project in which the student teachers are involved is the bachelor project, in their third year as students. As part of these BA -projects, student teachers are required to use action learning, which is a variation on action research (Pedler, 2011; Tiller, 2006), as their approach for collecting data. Action learning has three main components: participants that recognize the responsibility for action in an area; a task or a problem the participants themselves identify; and a small group of participants who give each other support

and challenge each other to take action on the challenge or problem (Pedler, 2011). Action learning can be defined as teachers' knowledge of the profession: what they know, what they should do, and what they know works in practice, often with a scientific foundation, which moves beyond personal experience and tacit knowledge (Plauborg, Andresen & Bayer, 2007). With regard to the student teachers' research-based projects, action learning builds on the idea of a process of systematically trying out new ideas and new knowledge in partnership with experienced school- and university-based teachers. The idea behind this is that, as student teachers work on their theses and collect empirical material and write, they will integrate theory and practice in a more effective way than has been done in education before (UIT -The Arctic University of Norway, 2015).

### ***Dialog seminars***

In organizing the student teachers' BA -projects, meeting points for the student teacher, school - and university-based teacher have been important for following up the supervision process of student teachers. This has been done by creating meeting points locally developed and named 'dialog seminars' (Rørnes, 2013). Dialog seminars have a close connection with dialog conferences and the World Café (Thunberg, 2011), which are dialog-based action research methods (Leirvik, 2005). Dialog conferences and dialog seminars are based on the dialog between the different parts of a unit about how to solve a task, a challenge, or a problem and how a process is going to be handled and prioritized. The method takes into account that no one has the correct answer and, in a dialog process, the problem gets mapped and solved at the same time (Leirvik, 2005, p. 10).

## **Methodology**

### ***Methodological background***

This contribution is a part of an action research study, in which the author took the dual role of a researcher, acting to increase knowledge in a research community, and an implementer, being a university-based teacher (Trondsen and Sandaunet, 2009). The theoretical framework for the methods of this study is action research with a constructivist and a symbolic interactionist approach. Mutual for the theoretical approaches of constructivism (Berger and Luckmann, 2004), and symbolic interactionism (Blumer, 1969) is in the underlying idea that the meaning of an action or phenomenon creates and develops in the interaction between individuals or between individuals and things (Järvinen and Mik-Meyer, 2005). In this study, an attempt has been made to analyze the student teachers' understanding and attitude toward research based-knowledge

from the theoretical lens of self-efficacy and coherence. From this perspective, the content (e.g. experience, attitude, action) of what the student teachers express about research-based knowledge, and how the student teachers express their understanding and meaning, is of interest. At the same time, the perspective the researcher takes includes how the student teachers frame and portray their experience of the concept and, also, the sociocultural context of the conversation about the topic (Järvinen and Mik-Meyer, 2005).

### ***Method – Data collection and participants***

This qualitative study is based on data collected in seven dialog seminars, over a time span of two years. I participated as both a researcher and a university-based teacher connected to the student teachers' work regarding the bachelor process. Each seminar had a time span of from four to six hours. Each group session was set to last approximately 90 minutes. The seminars were voice recorded and the recording was transcribed in full length in the original language. The topics for the seminars in the first year were: Action Research and Action Learning, Schools as Learning Networks, The Professional Teacher and Bachelor Students' Presentation Day. In the second year, small adjustments were made, and the seminars were reduced to three with the topics: Action Learning, Bachelor Thesis and Bachelor Students' Presentation Day.

Participating in the seminars was a requirement for completion of the student teachers' bachelor degree, and the school-based teachers were invited to the seminars. The numbers of participants in the smaller group sessions varied; on average there were ten. The participants in the groups were mostly third-year bachelor students training to become teachers in grades 1-7 and 5-10, as well as two to four school-based teachers, and one to three university-based teachers. To ensure anonymity, no names are mentioned, and the data has been cross-collected from student teachers, training to become teachers in grades 1-7 and 5-10. The data for the project are collected according to the rules drawn up by the NSD -Norwegian Centre for Research Data.

### ***Researchers' reflection***

In the beginning of the dialog seminars, the research project was presented, and the purpose of participating in the group explained. Having the dual role as researcher and a supervisor (Trondsen and Sandaunet, 2009), was important for gaining entry into the field, since an external researcher observing the seminars could risk indirectly influencing the openness of the participants. However, being this closely involved as a researcher in any project is challenging when it comes to maintaining analytical distance. Keeping a research log after each meeting helped me in this process.

### ***Analyzing the data***

The empirical material collected from the dialog seminars over two years has been systematically organized and analyzed. The process of analyzing involves classifying text excerpts into categories that are thematically connected (Halkier, 2010). A Stepwise Deductive-Induction (SDI) method has been employed (Tjora, 2013). This method involves an inductive stepwise process of working the material into categories. Important categories for this study were research-based knowledge, students' understanding of attitude to action learning/action research, and students' description of research understanding in schools. In the next step, the analytic process was conceptualized with the theory, in a deductive feedback process (Tjora, 2013). The material was then coded further, supplied with memos from a research log, and conceptualized into variables for this study. Student teachers understanding of attitude to the concept of research-based knowledge, research self- efficacy, students' description of research-based knowledge in practice and coherence became important variables.

### **Results and discussion**

The aim of this study was to address questions about the kind of conception and attitude student teachers have about research-based knowledge, and whether student teachers experience coherence as a consistent approach to the concept of research-based knowledge, within both coursework and school practice. The findings are organized in two parts. Firstly, how student teachers describe coherency to the concept of research-based knowledge, within both coursework and practice is addressed. Secondly, student teachers' attitude to and conception of research-based knowledge is presented.

#### ***Student teachers' descriptions of coherence in the concept of research-based knowledge***

As mentioned in the introductory chapter, according to Labaree (2003), school-based teachers often have misconceptions and negative opinions of the usefulness of research in education; and when student teachers are introduced to research, they are likely to have different views on what research is, and what use it would have for them as future teachers (Labaree, 2003). In analyzing the material from the dialog seminars, the same understanding came to conclusion. In one of the dialog seminars, the question was debated: what is research-based knowledge? One of the student teachers stated:

“Research-based knowledge: that is research and development, right? That is quite a scary word -you know- when you are saying you are going to do research out in the



schools [in the student teachers' school practice] – you are right away getting a stamp on your forehead”

The student teacher is trying to explain that, if you say you are doing research as a student teacher out in the schools, you are not fitting in or even you are not taken seriously. The expression ‘stamp on your forehead’ indicates the notion of standing out in a crowd. The student teacher concluded by saying: “It will take time - it is all about development work [in the schools]”. The student teacher explained that, in her experience, there was no focus on research in schools, only on development work when the topic had come up in her school practice. This indicates an understanding that research has a different position in schools where development work is more strongly emphasized.

Based on what the student teachers had witnessed of school-based teachers during practicum experiences, they reported concerns that the school-based teachers have a different understanding of research-based knowledge than that which they were introduced to at the university. This came up several times in the seminars and is echoed in the following statements. In one dialog seminar, a student teacher explained: “I am not against research in schools -but when we are out in our school practice and are told ‘we do not do research here; here we do learning’, you know - [facial expression interpreted as frustration]”. In this particular dialog seminar, the student teacher continued, relating and explaining what had happened in her practical placement period, and her interpretation of why this happened:

“They [school-based teachers] said, ‘So now you are going to revamp the schools? Right, we give you two to three years’...It is just that it is so many fancy words [connected to research], and that might necessarily be the way to go[in schools]...there is a reason it is called action learning and not action research, right? The curriculum states explicitly that teachers don’t look upon themselves as researchers - and then, if research-based knowledge is not introduced in the schools, it can soon just be looked upon as just another concept to deal with”.

According to Heggen and Terum (2013), the connection between theoretical and practical elements is of great importance for student teachers with limited work experience, and it also contributes to student teachers’ sense of comprehensibility, manageability and meaningfulness and, thereby, to their attitudes, values and aspirations (p. 665). The school’s culture of learning can have a great impact on how research-based knowledge is interpreted and welcomed (Day,

2000). Van der Linden et al. (2012) emphasize the need to address the development of the student teachers' confidence in conducting and using research. There is a need to include self-efficacy as an aspect of student teachers' attitude, because it influences students' behavior in a positive or negative sense (Van der Linden, et al. 2012, p. 405; Bandura, 1997, 1986, 1977).

### ***Understanding of the concept 'research-based knowledge'***

In one seminar, the conversation about doing research in schools came up, and one student teacher expressed: "Why are we using a phrase [research-based knowledge] that people associate with something that has to be done according to certain methods and with appropriate tools?"

The student teacher explained further:

"I now know that it [research-based knowledge] is not necessarily numbers and statistics and grand research projects - so, for me, I would have liked to remove research-based knowledge and just have named it 'improvement work'. Because research-based knowledge is connected with these huge development projects which spend millions on research - to use a word that has a negative association is not good - it can be there that the resistance [I interpret it to mean resistance to research in schools] comes from".

Another student teacher in the group agreed with this and added that research-based knowledge has to be initiated:

"I just wanted to say that I agree with what [student teacher 1] said - that about research-based knowledge being a big word that can scare...but I am also thinking when research is being forced on you from the Department [Department of Education and Training], the local government and so on; you do not get so motivated [to do research]. That is why research should come from inside [the school] and you can join in if you feel like it."

Hall (2009) argues that school-based teachers need to develop an understanding of research on their own, for research to be implemented in professional practice. School-based teachers need to develop their research interest in a free and democratic process (Postholm and Moen, 2011); if this is not the case, and the process feels enforced, it may not be incorporated into practice (Postholm and Moen, 2011). According to Bandura (1977) self-efficacy is believed to be acquired through four sources: a) performance experience, such as previous successes or failures; b) vicarious experience, which includes observational learning and imitations; c) verbal persuasions, such as feedback; and d) emotions, where positive effect leads to greater self-efficacy. Experiences (a) and b) are believed to be the most influential factors. Taking this into account,

experience in conducting research is vital for developing research self-efficacy among school-based teachers.

***Student teachers' own interpretation of the concept 'research-based knowledge'***

Close to the end of one of the seminars which had a focus on research-based knowledge, there was a consensus in the group that research-based knowledge in schools should not be something initiated from outside the schools but, rather, smaller project that teachers do, for instance action learning projects. One student teacher explained:

“Do we talk about research in or research on the school? When I hear ‘research-based knowledge’, I think about someone coming and doing research on us. What we [as teachers] are going to do out in the schools is learning and development-based knowledge. Then we steal a little bit from action research and a little bit from action learning - that sounds less scary and more manageable for the teachers.”

Van der Linden et al. (2012) claim that ways in which society uses the concept of research in other settings, such as marketing or medical examinations, might have an impact on student teachers understanding of research. There is a need to address student teachers' preconceptions of research since it might influence the development of their attitude towards research. By analyzing the data, it came to conclusion that for the student teachers, research was understood synonymous with action research/action learning. As previously mentioned, action learning, is the required strategy for the student teachers' bachelor projects, and therefor emphasized in the program. Since student teachers having little experience with research, an interpretation could be that the student teachers leaning to conclusion of action learning making more sense in school, where they have more experience in and knowledge about this strategy.

Another student teacher explained this about research-based knowledge:

“I know it is a term that is used in several documents - when it is about getting funding for projects, everybody uses the term so they can get money for their project. And then I think it is a misunderstood concept - why not just call it a development project, then it relates to the case. I know it is all about professionalization of teacher education so the teaching profession can gain status...but I do not think more terminology and what feels like an increased work burden [for the teachers] is the way to go.”

Analyzing the material from the dialog seminars, there is an indication that the concept of research is not clear enough for either the student teachers or the school-based teachers.

Zeichner (2010) emphasizes that there is a great disconnect between what student teachers are taught in campus courses and the opportunities for enacting this in practice in school placements (Zeichner, 2010, p. 91). Grossmann, Hammerness, and McDonald (2009) claim that a solution for integrating research-based knowledge in practice is to shift the focus in teacher education, from what historically has been a curriculum organized by knowledge domains, to a curriculum organized around the practices of the profession. Shifting the focus will require stronger collaboration between school-based teachers and teacher educators and refine core practices for teaching and skills in research.

### ***Coherence with regard to research-based knowledge***

In one seminar a student teacher reported the need for mutual understanding of the concept:

“I was attending this meeting [name] with school-based teachers and teacher educators..., and it became clear that there are many different interpretations of the concept and, I mean, I think it is important that we all have a mutual interpretation of the concept.”

The student teacher claimed there is a need for mutual understanding of the concept; this is similar to what Grossmann et al. (2009) emphasize, that there is a need to develop a more programmatic research, which, over time, will develop a common tool and language. When the student teachers address the importance of a mutual interpretation of research-based knowledge, it could indicate a sense of lack of coherency.

### **Conclusion**

One conclusion from analyzing the conversations from the seminars clearly indicates that student teachers' conceptions of research-based knowledge are diverse, and they lack a mutual understanding of the concept. The results could also indicate a lack of understanding among student teachers of coherence between the theoretical and practical parts of teacher education, in the concept 'research-based knowledge'.

Student teachers' concern that the school-based teachers do not emphasize the concept of research-based knowledge came up several times. According to Berger and Luckmann (2004), measuring how institutionalized a concept is, depends on the relevance of the concept for the collective sector. If only few structures of relevance are mutual for the larger sector, the extent of the institutionalized concept will be less (Berger and Luckmann, 2004, p. 92). Since the student teachers' understanding of research-based knowledge is unclear, and their notion of the concept

is understood differently in practice (the larger sector), this could indicate that the concept is not institutionalized in the teacher education.

According to Hammerness (2006), coherence in teacher education refers to both the conceptual and structural aspects of teacher education, with a special focus on the relationship between schoolwork and fieldwork (p.1242). Student teachers' self-efficacy regarding research appeared low, which could be an indicator of lack of coherency between what was thought and focused on at the university and what they experienced when in practice. Heggen and Terum (2013) find that coherence also seems to contribute to student teachers' sense of comprehensibility, manageability and meaningfulness. The findings in this study could indicate that the student teachers experienced a lack of meaningfulness. What was considered important from the teacher education program did not necessarily have the same importance in practice. This could indicate the issue of university courses and the schools not having a mutual or clear understanding of research, and a need to work together with the school-based teachers to develop such. Even though dialog seminars were created for the purpose of collaboration between the student teachers, school- and university-based teachers, with regard to the student teachers' action learning projects, they were still initiated by the university and thereby not self-initiated or an understanding of research developed on their own. Grossman et al. (2008b) find that field supervision can provide an important factor for linking coursework and fieldwork with regards to coherency in teacher education.

### ***Concluding remarks and limitations of the study***

The main message in this study is the need for a clear and mutual definition of what research-based knowledge is, and should be, even in new teacher education programs, who strongly emphasize the concept. Student teachers' conception of research-based knowledge is fragmented, and they claim that there is also a lack of understanding of the concept in schools. This could indicate that the teacher education program did not appear coherent to the student teachers.

It is important to add that the findings are based on the third year of a five-year teacher education program. The concept of action learning was relatively new to the school-based teachers and to the student teachers (Steele and Danielsen, 2014), and that must be taken into account. Jakhelln, Bjørndal and Stølen (2016) found that, after working with the master thesis, in the fifth year of the program, student teachers felt research-based knowledge to be more relevant for teaching, and they reported feeling proud of their own work for the master thesis. A follow-up study should be performed since this could indicate that, after two more years into the program, and

through conducting research themselves, the student teachers become more familiar with research, and, thereby, develop a stronger research self-efficacy. A new study should also include school-based teachers' research self-efficacy in the University Schools, since this present study indicates a lack of coherence between the theoretical and the practical aspects of the program.

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