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## **The utility value of research evidence for educational practice from the perspective of preservice student teachers in Austria – A qualitative exploratory study**

### **Abstract**

*This paper investigates how Austrian undergraduate preservice student teachers evaluate (1) the importance of educational research for teachers in general and for themselves in particular and (2) the impact of different aspects of utility value of research evidence on educational practice. In order to achieve this, a theoretical framework proposing five aspects of utility value (Rossi & Freeman, 1993; Visscher & Coe, 2002; Weiss, 1979, 1998) was transferred to the pedagogical context and served as a basis for the development of an interview guideline and of content-analytical rules for qualitative text analysis.*

*To answer the research questions, 30 guideline-based qualitative interviews with Austrian undergraduate preservice student teachers in their second or third year of study were analyzed using various techniques of Qualitative Content Analysis, in particular, inductive category formation and deductive category assignment (Mayring, 2014). Results of the analysis suggest that the interviewed undergraduate preservice student teachers tend to primarily refer to study-orientated topics (e.g. bachelor theses) when evaluating the importance of educational research for teachers and address the conceptual and instrumental value of research evidence for educational practice. The paper concludes with a critical discussion and derives implications for further research projects.*

### **Keywords**

*Utility value of research evidence; Preservice student teachers; Teacher education; Qualitative exploratory study; Qualitative Content Analysis*

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## **Zum Nutzen von Forschungsergebnissen für die schulische Praxis aus der Perspektive von Lehramtsstudierenden in Österreich – Eine qualitative, explorative Studie**

### **Zusammenfassung**

*Im vorliegenden Beitrag wird untersucht, wie österreichische Lehramtsstudierende (1) den Nutzen von Forschungsergebnissen für Lehrer/innen im Allgemeinen und für sich selbst und (2) den Einfluss verschiedener Nutzenaspekte für schulische Praxis einschätzen. Hierfür wurde ein theoretisches Rahmenmodell bestehend aus fünf Nutzenaspekten (Rossi & Freeman, 1993; Visscher & Coe, 2002; Weiss, 1979, 1998) abgeleitet, welches zunächst in den pädagogischen Kontext transferiert wurde. Diese Nutzenaspekte bildeten die Grundlage für die Entwicklung eines Interviewleitfadens und für die Erstellung von inhaltsanalytischen Regeln zur qualitativen Textanalyse.*

*Zur Beantwortung der Forschungsfrage wurden 30 Leitfadeninterviews mit österreichischen Lehramtsstudierenden in ihrem zweiten Ausbildungsjahr geführt. Die Transkripte der Interviews wurden mit verschiedenen Techniken der qualitativen Inhaltsanalyse, insbesondere der induktiven Kategorienbildung und der deduktiven Kategorienanwendung (Mayring, 2014), ausgewertet. Die Ergebnisse legen nahe, dass die befragten Lehramtsstudierenden überwiegend studienbezogene Themen (z.B. Verfassen der Bachelorarbeit) nennen, wenn sie den Nutzen von Forschungsergebnissen für Lehrer/innen angeben sollen. Für die schulische Praxis sehen sie insbesondere den konzeptuellen und instrumentellen Nutzen von Forschungsergebnissen. Der Beitrag endet mit einer kritischen Diskussion der Ergebnisse und der Ableitung von Implikationen für zukünftige Forschungsprojekte.*

### **Schlüsselwörter**

*Nutzen von Forschungsergebnissen; Lehramtsstudierende; Lehrerbildung; Qualitative explorative Studie; Qualitative Inhaltsanalyse*

## **1. The role of research in teacher education**

Supported by the recommendations of the expert group of the Federal Government for the present and future of education professions in Austria (BMUKK & BMWF, 2010), educational science and research as constitutive elements of the universities of teacher education are in focus and publicly debated. Especially by embedding teacher education on a tertiary level in legislation in 2007 the issue to appropriate educational research literacy for preservice student teachers arises. This raises the question of whether it is appropriate or even necessary to talk about using evidence from research in the context of preservice teacher education.

Exploring the reasons of why (preservice) teachers should use evidence, Taber (2013) points out a fundamental and a pragmatic approach. In a fundamental view, teaching and instructing has to be considered as a profession that requires to act and argue based on evidence. A more pragmatic argument focuses on the preservice student teachers who seek employment.

On the pragmatic side, teachers, and especially students on course of initial teacher education [...] are increasingly being expected to demonstrate ‘evidence-based’ practice [...] and in many schools it may be normal, or even expected, that teachers engage in research as a part of their work. (Taber, 2013, p. 3)

If we take a closer look at the quote, two different roles in relation to making use of research in teacher education are mentioned, namely, the reception of research and inquiring confrontation with professionally relevant topics for teachers (evidence-based practice) and the implementation of practice research for the purpose of the production of knowledge. Altrichter and Mayr (2004, p. 170) name six different possibilities of interpretation of research in teacher education that contain both mentioned aspects. They argue that there is a consensus in the fact that the reception of knowledge (interpretation 1) and fundamental methodological skills (interpretation 2) should be achieved by all teachers. These two interpretations of research are designated as engagement with research by Borg and include “teachers as readers and users of research” (Borg, 2010, p. 410). The underlying claim is “research orientation” (e.g., Fichten, 2010) of teachers in the sense of a certain disposition that is acquired during studies and is seen as fundamental for continuous professionalization, also known as evidence-based practice (Taber, 2013; Wodarski & Hopson, 2012). A basic assumption in this context is that teachers integrate research results into their work and use it for decision making, in other words they “should not have to depend on others’ assessments of the credibility or usefulness of research; they should be able to read, critique, and evaluate research information themselves” (McMillan & Wergin, 2010, p. v).

For the development of a professional habitus, however, this is inadequate. Active inquiring with relevant questions in the professional field should be complemented, as shown by Altrichter and Mayr (2004, p. 171), in their Interpretation 3 (teacher uses research methods for the analysis and processing of professionally relevant cases), Interpretation 4 (participation in instructed practice research) and Interpretation 5 (practice research) which represent different organizational structures of this examination.

Teacher research, classroom research, or action research are often united under the generic term engagement in research (Borg, 2010) or practical research because they represent very similar concepts (Hollenbach & Tillmann, 2009). They take place during teaching practice at school, appreciate the expert knowledge of teachers, adhere to fundamental rules of scientifically controlled procedures, take place in professional learning communities, and use the results for school and cur-

riculum development. Borg (2010, p. 394), furthermore, argues that “while teacher research is necessarily reflective, reflecting on one’s practice does not automatically constitute teacher research”. He sees action research (Altrichter & Posch, 1990) as a form of teacher research with specific procedures. If teachers conduct action research, it is teacher research, but not every research conducted by teachers is action research. Classroom research is research to be conducted in a classroom. Most research conducted by teachers falls under this label. Exceptions are, for example, mandatory tests (Schildkamp, Lai, & Earl, 2013) because they are conducted in a classroom but do not fall under the label teacher research. Research with the primary focus on the scientific community (Interpretation 6 in Altrichter & Mayr, 2004, p. 171) cannot be considered as a required qualification for teachers. This requirement is addressed to teacher educators. Drawing on this means that pre-service student teachers and practitioners should at least be able to find, critically reflect on, and apply research literature for their specific context. If preservice teachers in general recognize the utility value of research evidence for educational practice, an influence on their motivation to deal with required contents and on their achievement performance in educational research literacy is assumed (Eccles & Wigfield, 2002; Vetter & Ingrisani, 2013).

## **2. The perceived utility value of research evidence for educational practice**

In the wake of the output-oriented controlling of the educational system, the implementation and assessment of national educational standards, as well as international comparative research studies which aim to objectively measure existing competencies, the paradigm of evidence based practice has become established. According to the motto “what works” (Bennett, 1986), it promises experimentally secured and generalizable knowledge about the effectiveness of education policy measures. Moreover, evidence-based education mandates a transfer of this theoretical knowledge into pedagogical practice. However, exactly this transfer from theory to practice can be considered a decisive element in that process because, on the one hand, research must produce appropriate usable knowledge; on the other hand, teachers must be able to find, understand, and transfer this knowledge to their educational practice (Patry, 2000; Astleitner & Herber, 2008; Astleitner, 2007; Tom, 1985).

It is undisputed that there are a number of advantages if teachers use research knowledge for educational practice. Borg summarizes this when stating that teachers

[...] make deeper sense of their work (new ways of seeing), identify ideas to experiment with in their classroom (new ways of doing), extend their discourse for discussing teaching (new ways of talking), validate with a

theoretical rationale what they already do (new ways of knowing), or examine their planning and decision-making processes (new ways of thinking). (Borg, 2010, p. 414)

Further positive effects are the increase of problem-solving abilities, the ability to change perspectives, and the intensification of communication with pupils and colleagues (Zeichner & Noffke, 2001). If teachers themselves contribute to instructed practice research or conduct teacher research, it has been claimed that this, for example, develops teachers' capacity for autonomous judgment (Lankshear & Knobel, 2004), reduces teachers' feelings of frustration and isolation (Roberts, 1993) or allows teachers to become more reflective, critical, and analytical about their teaching behavior in the classroom (Atay, 2006).

If the question is addressed how this utility value for educational practice can be theoretically differentiated, the context of the reception of performance data provides first indications as follows:

## **2.1 Instrumental value**

A direct influence from research findings to practical actions exists (Rich, 1977). This is also expressed by Weiss (1998, p. 23) as follows: "We expected evaluation to produce findings that would influence what program and policy people decided to do next. They might end a program, extend it, modify its activities, or make wiser decisions." Various authors (Bryk & Hermanson, 1993; Visscher & Coe, 2002; Weiss & Bucuvalas, 1980) agree with this and point out that the instrumental use of research findings rarely or almost never exist in the social science field.

## **2.2 Conceptual value**

Research findings influence the way of thinking and attitudes of an individual, which can have an effect on their practical actions as a consequence (Weiss & Bucuvalas, 1980). According to Kirkhart (2000, p. 9), this addresses "enlightenment and demystification, which captured cognitive impact on appreciations or understandings that did not necessarily lead directly to change in overt behavior". Nevertheless, Nutley, Walter, and Davies (2003, p. 130) emphasize the importance of this specific aspect of utility: "Even if it is not used directly, research knowledge can offer insights and ideas, and new understandings of practice. Indeed, the conceptual use of research represents a substantial and important category." Bryk and Hermanson (1993), as well as Weiss (1998), see a limitation in terms of the actual change in pedagogical practice which can "broaden our understanding of problems and trigger new ideas, but rarely provide specific solutions for school improvement" (Visscher & Coe, 2002, p. 61).

## **2.3 Symbolic value**

Results or information from research are used to substantiate opinions in discussions or to legitimate views (Greene, 1988). “Variously labeled legitimized use, symbolic use, political use, and persuasive use, this application explicitly focused on using evaluative information to convince others to support a position or to defend from attack a position already taken.” (Kirkhart, 2000, p. 10) According to Nutley et al. (2003, p. 130) this aspect of research use is referred to as „mobilization of support“, they also stress the political function of the symbolic value.

## **2.4 Strategic value**

The fourth possibility to use research encompasses the ideas of legitimation in an abusive and manipulative way. Visscher (2008) talks about a strategic value which has to be referred to as unintended and negative. Strategic use of data potentially occurs in the context of educational rankings because they focus on the comparison within school systems, regions or federal states.

## **2.5 Knowledge-enhancement value**

In addition to the values already mentioned Weiss (1998, p. 24) adds a fifth aspect which allows to extend the view. Nutley et al. (2003, p. 130) describe it as “wider influence“, because the impact of this value can reach much wider than the concrete level of the participating institutions. One could refer to it as knowledge-enhancement value. Weiss (1998, p. 24) states that “such influences are by no means commonplace or easy [...] When evaluation adds to the accumulation of knowledge, it can contribute to large-scale shifts in thinking and sometimes ultimately, to shifts in action.”

# **3. Research questions**

Based on the considerations in the first two sections of this paper, we investigated if preservice student teachers in Austria actually see the addressed utility value for educational practice or if they emphasize other aspects. This is of particular importance in Austria because, as mentioned in section 1, the research orientation at the teacher education colleges is quite new. Considering the current discussion regarding this issue, it appears that delimitation problems and status discussions in relation to universities and technical colleges characterize the arguments (Markowitsch & Rosenberger, 2013). The legitimation of the scientific orientation with professionalization in teacher education is often secondary. This fact could possibly play

a role for the interviewed students. Furthermore, the preservice student teachers were directly interviewed regarding their views in relation to the different facets of utility value for educational practice. As a result, the following research questions are addressed:

- How do Austrian undergraduate preservice teacher students evaluate the importance of educational research for teachers in general and for themselves in particular?
- How do preservice student teachers evaluate the impact of different aspects of utility value of research evidence on educational practice?

## 4. Methods

To answer the research questions, 30 guideline-based qualitative interviews were conducted with Austrian undergraduate preservice student teachers in their second or third year of study at the University of Education, Salzburg between October 2015 and December 2015. The interview guideline was developed based on the theoretical background outlined in section 1. To start the interview, students were asked to share their thoughts, including relevance, expectations, advantages and disadvantages, on a lecture on research methods which they have to attend in their fourth semester. The subsequent questions addressed the students' experience with research up to this point, the expected utility value of educational research for their future work, and possibilities to successfully integrate research into their educational practice. Lastly, the interviewees were asked for their suggestions on how educational research could improve the quality of schools, teaching, and education. The interviews were conducted by other preservice student teachers as a part of a methods course. All students received an introduction to the topic, detailed interview training, practical training, and the prescribed interview guideline. This approach might be criticized for using inexperienced preservice student teachers as interviewers because problems regarding the conducting of the interview and the integration of specific demands may occur. On the other hand, the chosen approach could be advantageous in relation to the problem of social desirability as students responded to their fellow students.

The recordings of the interviews were literally transcribed (Mayring, 2002) and analyzed using Qualitative Content Analysis (Mayring, 2014; Mayring & Fenzl, 2014). Based on the data at hand, the content analytical technique of inductive category formation is appropriate to answer the first research question on how the interviewees evaluate the importance of educational research for teachers in general and for them in particular. In this procedure the categories are being developed inductively based on the text material along a selection criterion determined by theoretical grounds. In addition to the selection criterion the content analytical rules for inductive category formation require the specification of a level of abstraction, on which categories are phrased (Mayring, 2014; Mayring & Fenzl, 2014). In this



study we categorized all text passages, in which “interviewees reported on any possible positive implication of educational research on one’s studies or on the job” (selection criterion). Whenever this selection criterion applies, a new inductive category was formulated or the text passage was assigned to an already existing inductive category. Categories were formulated as “concrete aspects on how educational research positively affects one’s studies or the job” (level of abstraction). The result of the analysis is the category system with the inductively developed categories and the corresponding frequencies.

Using a deductive coding guideline is the suitable content analytical technique to answer the second research question on which aspects of utility value are addressed by the interviewees when they are unaffected by theoretical knowledge about possible aspects of utility. This technique, also referred to as deductive category assignment, requires the fixing of rules within the theory-driven construction of a coding guideline, consisting of category definitions, anchor examples, and coding rules (Mayring, 2014; Mayring & Fenzl, 2014). Based on the theoretical background outlined in section 2 of this article, a deductive coding frame was developed to classify preservice student teachers’ evaluations of the impact of different aspects of utility value of research evidence on educational practice. For each interview, every single text passage referring to an aspect of utility value addressed by the interviewee was assigned to one of the categories in the coding guideline. The result of the analysis is the frequency of found deductive categories. For reasons of better readability, the coding frame is presented together with the results in section 5 of this article.

For both techniques, the coding unit, which is the smallest component of the material that can be coded (sensibility), was linked to a clear meaning component (seme) in the text. The context unit, which serves as the background for the coding decision, was the respective interview. By definition, the recording unit is linked to all documents for inductive category formation and to the single document in deductive category assignment (Mayring, 2014). For both techniques, multiple coding of categories in a document was counted. Text analysis was performed with the online tool QCAmap (Mayring & Fenzl, 2013; Fenzl & Mayring, 2017). The interviews, which were conducted in German, were transcribed and categorized in the original language; the results were translated into English.

To check the quality of the results of the analysis, an intercoder agreement was performed. To do so, a randomly selected subset of ten interviews (33 % of the entire material) was categorized by a second researcher (intercoder) with respect to both research questions. For inductive category formation, the intercoder was provided with the plain, uncategorized text material along with the selection criterion and the level of abstraction, as well as the content analytical units (coding, context, and recording unit). For deductive category assignment, the intercoder received the uncategorized text material, the coding guideline, and the content analytical rules. In the conclusive coding conference, the coded text material of the primary coder and the intercoder was used to compare each marked text passage and its assigned category for consensus. To count as a match, a text passage marked by the prima-



ry coder and the intercoder has to coincide in terms of the denoted core statement in the text material, and either in terms of the meaning of the assigned inductive category for inductive category formation or in terms of the assigned deductive category for deductive category formation. Subsequently the intercoder-agreement in terms of the percentage of agreed and non-agreed text passages was computed separately for both research questions.

## 5. Results

The sample consisted of 24 female and 6 male Austrian undergraduate preservice student teachers with an average age of 22.36 years (standard deviation: 2.95 years; 2 missing), of which 15 were in their third and 15 in their fifth term of a major degree at the University of Education, Salzburg. Thirteen students attended the program for elementary schools, 10 were in the degree courses for new secondary schools, and three attended the special education course.

### 5.1 Results from inductive category formation

The answer to the first research question on how Austrian undergraduate preservice teacher students evaluate the importance of educational research for teachers in general and for themselves in particular is provided by the category system found by inductive category formation of the text material (see Table 1).

Based on the selection criterion stated in section 4 of this article, a total of 353 text passages were categorized in the 30 interviews. Given the absolute or relative frequency of categories, which include multiple counting of categories per text document (interview), the students attribute the greatest importance of educational research to the extension and utilization of knowledge (147 mentions or 41.6 %). This topic contains attaining knowledge on scientific research (B2; e.g., “I hoped to learn more about how to question theories, how to analyze questionnaires and how we can integrate them in [sic] our bachelor thesis.”), the extension of pedagogical knowledge of students through the engagement with research and research results (B8; e.g., “That you stay informed about new published research and that you put it into practice as a teacher.”) and the utilization of research results to justify different strategies in educational practice (B13; “Simply that I do not act as I just like to [sic] but that there is an underlying theory behind it.”). Moreover, interviewees evaluate the importance of educational research most relevant for their studies (101 mentions or 28.6 %), in particular in terms of preparing to write scientific papers and a thesis (B1). The following statement illustrates this aspect: “Because it [research knowledge] is a kind of topic identification for the bachelor thesis. You deal with it [research knowledge], you learn how to develop a questionnaire and that is very important for the degree.” As a third topic, the students mention the importance of educational research for their future work as teachers at school (97

**Table 1:** Results from inductive category formation of the 30 transcribed guideline-based interviews conducted with Austrian undergraduate preservice teacher students

Category	Category Title	Absolute Frequency	Relative Frequency	Number of interviews	Percent of interviews
extension and utilization of knowledge		147	41,6 %		
B2	attain knowledge on scientific research	55	15,6 %	25	83,3 %
B8	engagement with research extends pedagogical knowledge	53	15,0 %	27	90,0 %
B13	utilization of research results to justify educational practice	31	8,8 %	16	53,3 %
B18	engagement with research extends general knowledge	8	2,3 %	5	16,7 %
relevant for studies		101	28,6 %		
B1	preparation for writing scientific papers and theses	84	23,8 %	26	86,7 %
B7	extends the range of qualification	11	3,1 %	9	30,0 %
B15	a means of professionalizing studies at the University for Education	6	1,7 %	5	16,7 %
relevance for teachers at school		97	27,5 %		
B6	qualifies to conduct research in class	36	10,2 %	21	70,0 %
B16	research results support modification of educational practice	28	7,9 %	19	63,3 %
B10	encourages (self-)reflection of one's educational practice	14	4,0 %	13	43,3 %
B5	important to evaluate the quality of education, teaching, and schools	9	2,5 %	7	23,3 %
B19	to discuss different strategies in educational practice with others	6	1,7 %	6	20,0 %
B3	teaching pupils how to conduct research	4	1,1 %	3	10,0 %
necessity for particular professions		8	2,3 %		
B12	important for university teachers	4	1,1 %	4	13,3 %
B14	relevant for jobs dealing with education policy	2	0,6 %	1	3,3 %
B17	important for researchers	2	0,6 %	2	6,7 %
Total		353	100,0 %		

mentions or 27.5 %). This includes becoming qualified to conduct research in class (B6), i.e.,

[...] that I am able to conduct research in my professional field I would say. If you maybe teach for some years and you develop a new learning technique, then you want to conduct research on that method or you make a study on [sic] that.

and the impact of the engagement with research and research results on the reflection (B10) and modification (B16) of one's educational practice.

I think research is extremely important for me personally, for my students, that you can honesty reflect yourself, you reflect your teaching [sic] and the current stage of the learning of the kids you know how your methods work, how that works [sic] what I want to teach my kids.

When evaluating the importance of educational research for teachers and for students by means of the number of students mentioning a specific aspect (excluding multiple counts of categories per document),

- the extension of pedagogical knowledge of students through the engagement with research and research results (B8; 27 out of 30 students or 90 %),
- preparing to write scientific papers and a thesis (B1; 26 students or 86.7 %),
- attaining knowledge on scientific research (B2; 25 students or 83.3 %) and
- qualifying to conduct research in class (B6; 21 students or 70 %)

rank among the most frequent categories. Summing up, educational research is most important with respect to the extension and utilization of knowledge from the student's perspective. While the relevance of educational research for studies is mainly restricted to the aspect of preparing to write scientific papers and a thesis, the relevance for the future work as teachers is multi-faceted, including the ability to reflect and change one's educational practice and the capability to conduct research at school.

The result of the intercoder agreement for inductive category formation showed congruent categorizations of the primary coder and the intercoder for 107 out of a total of 130 text passages that had to be categorized according to the selection criterion. The resulting agreement of 82.31 % suggests a good objectivity of the results.

## 5.2 Results from deductive category assignment

While the resulting category system in inductive category formation emerges step by step during the analysis, where categories are being developed inductively based on the text material, the deductive coding frame is developed based on theoretical grounds ahead of the analysis. In the latter case the result of the analysis is the fre-

Table 2: Coding guideline for deductive category assignment

Category & Titel	Definition	Anchor examples	Coding rules
C1: instrumental value	[...] research findings or the analysis of research data are used to consider alternatives for pedagogical practice and a direct influence on educational practice exists (Rich, 1977)	(1) [...] to design classes differently (2) [...] to get away from unproductive teaching concepts (3) [...] to learn about methods which can be used in class	only categorize text passages that provide an indication of a direct change in practical actions, including the development of new teaching methods, regardless of whether the text passage refers to the utilization of existing research findings or to conducting research in class oneself
C2: conceptual value	[...] research findings or the analysis of research data influence the way of thinking about, the understanding of, and the attitude towards pedagogical practice, which can have an effect on educational practice (Weiss & Bucuvalas, 1980)	(1) [...] to get a better or broader theoretical understanding of methods and contents used in practice (2) [...] to gain new ideas and insights into teaching and educational practice	only categorize if the text passage is related to pedagogical knowledge and aspects of school or teaching; otherwise C5
C3: symbolic value	[...] research findings or the analysis of research data are used to reflect subjective theories and to substantiate opinions on educational practice in discussions or to legitimize one's educational practice, e.g. in a conversation with other teachers or the school administrator (Greene, 1988)	(1) [...] to legitimize one's educational practice to parents or other teachers (2) [...] to establish a basis for argumentation to convince others of a taken position referring to practical actions in class	
C4: strategic value	[...] research findings or the analysis of research data are used abusively or in a manipulative manner, e.g., in the context of studies and tests of school achievement (Visser & Coe, 2002)	(1) [...] educational practice concentrates on those students where the most 'profit' can be gained (2) [...] to develop indicators that allow for selective student admission	
C5: knowledge enhancement value	[...] research findings or the analysis of research data add to the accumulation of knowledge and are used to broaden one's view and horizon (Weiss, 1998)	(1) [...] to satisfy one's curiosity (2) [...] to up-skill and to continue one's education	only categorize if the enhancement of knowledge in general is addressed by the interviewee; if the text refers to pedagogical knowledge related to aspects of school or teaching, categorize C2

quency of the found deductive categories. The deductive coding guideline for this study, which was developed based on the theoretical background outlined in section 2 in this article, is depicted in Table 2.

The category statistics resulting from deductive category assignment (see Table 3) provide an answer to the research question of how Austrian preservice student teachers evaluate the impact of different aspects of utility value of research evidence on educational practice.

**Table 3:** Frequencies of the deductive categories on utility values found in the 30 transcribed guideline-based interviews conducted with Austrian undergraduate preservice teacher students

Category	Category Title	Absolute Frequency	Relative Frequency	Number of interviews	Percent of interviews
C1	instrumental value	25	30,5%	15	50,0%
C2	conceptual value	26	31,7%	16	53,3%
C3	symbolic value	12	14,6%	6	20,0%
C4	strategic value	0	0,0%	0	0,0%
C5	knowledge enhancement value	19	23,2%	12	40,0%
Total		82	100,0%		

Based on the coding guideline outlined in Table 2, a total of 82 text passages were categorized in the 30 interviews. Given the absolute or relative frequency of categories, which include multiple counting of categories per text document (interview), the students believe that conceptual value of research evidence (C2; 26 counts or 31.7 %) and instrumental value (C1; 25 counts or 30.5 %) are most relevant. The following statements illustrate these two aspects:

The sense is probably simply that you can connect the theoretical knowledge and the practical knowledge [sic]. That you can combine both well and that I just can use research for my teaching practice. (conceptual use; Interview 15)

If research shows that kids are only able to stay concentrated for fifteen minutes then I will modify my teaching that I will have a concentration phase for these 15 minutes and then to provide some variety. (instrumental use; Interview 12)

Students, furthermore, mention knowledge-enhancement value (C5; 19 mentions or 23.2 %; “Educational theory is constantly changing and we will never stop learning.”) and symbolic value in the interviews (C3; 12 mentions or 14.6 %; “Therefore you could link it to parental work maybe somehow. That you justify everything better or so.”), but do not refer to strategic value (C4) at all. When students were confronted with this aspect of utility value directly, most of them refrain from using research evidence abusively, which is illustrated by the following text passage:

This is not an issue for me, as I would never use any research findings abusively. Of course, it depends on the person whether somebody would take

action in this direction. But myself, I would not misuse research to, e.g., have students stay away from exams. (Interview 3)

The numbers of students mentioning an aspect of utility value (excluding multiple counts of categories per document) yields the same picture. Conceptual value of research evidence (16 mentions or 53.3 %) and instrumental value (15 mentions or 50 %) are most relevant for the students, followed by knowledge enhancement value (12 mentions or 40 %) and symbolic value of research findings (6 mentions or 20 %). Summing up, regardless of considering multiple counting of categories per text document (interview), the students consider conceptual value and instrumental value of research evidence to have the greatest impact on educational practice, with the two aspects being equally important.

The result of the intercoder agreement for deductive category assignment showed congruent categorizations of the primary coder and the intercoder for 22 out of a total of 27 text passages that had to be categorized according to the coding guideline. The resulting agreement of 81.48 % suggests a quite strong objectivity of the research results.

### **5.3 Integrating the results from inductive and deductive analysis**

If we finally bring together the results of the inductive and the deductive analyses, it appears that some of the mentioned categories in relation to the importance of educational research can be integrated in the different aspects of utility value. Thus, the deductive category instrumental value (C1) extends over the inductive categories B16 (research results support modification of educational practice) and B6 (qualifies to conduct research in class). On the other hand, the inductively formulated category B8 (engagement with research extends pedagogical knowledge) covers aspects of the conceptual value (C2) and the knowledge enhancement value (C5) of research evidence. Moreover, the statements of the inductive category B18 (engagement with research extends general knowledge) represent the knowledge enhancement value (C5). The symbolic value (C3) however primarily consists of statements associated with the inductive category B13 (utilization of research results to justify educational practice).

## **6. Conclusions, implications and limitations**

In accordance with Vetter and Ingrisani (2013) we found that the undergraduate preservice student teachers in our sample thoroughly recognize the utility value of research evidence. This became particularly clear when they were talking about school development and curriculum development and about diagnostic tasks of

teachers. However, an orientation toward utility value in the structuring of teacher education implies firstly clarity on what constitutes this utility value and secondly on how this utility value can be communicated and taught in an accessible way (Vetter & Ingrisani, 2013, p. 330). The results from our study provide some insights into the answers to these two questions.

In detail we may conclude based on the results from inductive category formation (see Table 1) that the undergraduate preservice student teachers in our sample believe that attaining knowledge on educational research helps them to get prepared for scientific work, which most of the respondents believe to be vital for their studies as well as for their future work as teachers at schools. On the one hand, knowledge on scientific research supports the students in their efforts to comply with scientific standards throughout their studies, which became a highly relevant issue since the embedding of teacher education on a tertiary level in Austria. On the other hand, the majority of students in our sample is convinced that engagement with educational research and research evidence extends their pedagogical knowledge. This includes firstly to stay informed on latest findings and developments in educational research and secondly to put these developments and findings into practice in the classroom. These findings are also reflected by the results from deductive category assignment, where the majority of students in our sample consider conceptual value and instrumental value of research evidence to have the greatest impact on educational practice. While the former includes the ability to reflect one's educational practice, the latter also comprises the ability to modify one's pedagogical practice and thus to act based on research evidence. Hence, our findings from both inductive category formation and from deductive category assignment are in line with previous claims that teachers are increasingly being expected to demonstrate evidence-informed as well as evidence-based practice in the classroom through the engagement with educational research (Borg, 2010; Taber 2013). However, it should be critically noted that the instrumental use as well as the conceptual use may sometimes be assessed as rarely relevant in practice because the necessary prerequisites are only seldom found or research knowledge hardly provides specific solutions for school improvement or teaching practice. Hammersley (2004, p. 138) gives some reasons for that, such as the general falsifiability of research, the conflict between generalizable knowledge as a result of research, and the need to find specific solutions for a practical problem, as well as the fact that pure factual knowledge can never be a sufficient basis for practical action. He summarizes "[...] that professional practice cannot for the most part be *GOVERNED* by research findings because it necessarily relies on multiple values, tactic judgment, local knowledge, and skills" (Hammersley, 2004, p. 138, emphasis added by the authors). Cordingley (2004, p. 83) complements this idea when stating that "there will always be a skilled professional job to do in interpreting the relevance of and implications of evidence for a practioner's own setting". Borg (2010, p. 411, emphasis is taken from the original) explains the resulting conceptual clarification, as follows: "In response to such critiques, the term evidence-INFORMED practice is often preferred to evidence-BASED practice; it still allows for a contribution of re-



search knowledge to classroom practice without implying that this contribution is an unmediated one.”

Moreover, Weiss (1998, pp. 23–24) mentions four conditions which increase the probability that instrumental use arises: (1) the implications of the research findings should not be comprehended controversially and not lead to conflicts of interest within the system, (2) the necessary modifications can be implemented within existing structures, (3) no changes regarding human resources, budgets or leaders are necessary, and (4) an organization or company is in a crisis and nobody has a “better solution”. In any case, a knowledge transfer from theory to practice must be provided by the teacher. This knowledge transfer is nontrivial and has to overcome high hurdles within the practical implementation. Borg (2010, p. 410) states that engagement with research makes four fundamental erroneous assumptions:

- Teachers have access to published research.
- Teachers want to read published research.
- Teachers need to read published research.
- Teachers have the time to read such material.

These assumptions are applicable to teachers who engage in research, “[...] but they do not hold true for the majority of [...] teachers in schools around the world” (Borg, 2010, p. 410). In order to motivate teachers to read and use scientific publications, certain points are important. Teachers need fewer technical explanations, but instead support in understanding the theoretical background and the often only implicitly underlying assumptions of the research. Furthermore, a continuous opportunity to exchange teachers’ understanding of the scientific publications and the transfer to teaching practice would be desirable (Zeuli, 1994, p. 54). According to Borg (2010, p. 415), the willingness of teachers to deal with scientific research results may be increased if the results

- are relevant to teachers’ context, concerns, interests and priorities;
- provide detailed descriptions of classroom activities which teachers can relate to their own work;
- build on what teachers already know;
- are congruent with teachers’ beliefs and values;
- make clear and feasible recommended changes to practice.

A research study by Beycioglu, Ozer, and Ugurlu (2010) shows that about one third of the teachers interviewed have not seriously dealt with research results since the beginning of their teaching activities. However, it has been shown that teachers take a positive stance on research and would like to be more involved in research (Beycioglu et al., 2010, p. 1092).

Another noticeable point is that the students in our sample did not refer to strategic value at all. When they were confronted with this aspect of utility value directly in the interviews, most of them refrain from using research evidence abusively. On the one hand, these findings could be attributed to the problem of social

desirability as students might know that this aspect of utility value is unintended. On the other hand, it could be possible that this aspect is not relevant from a student perspective because typical examples of a strategic use of data potentially occur in the context of educational rankings. These assessments focus on the comparison within school systems, regions or federal states and therefore can't be considered to be part of students' horizon of experience. Based on the findings of Visscher and Coe (2002, p. 65) one can for example think of the following strategic actions of schools:

- concentrating on those students where most 'profit' can be gained;
- selective student admissions;
- removing 'difficult' students;
- concentrating on the indicators to the exclusion of other qualifications;
- teaching for the test;
- consciously depressing baseline test scores to obtain high value-added scores.

The list of different aspects of utility value originating from the perspective of our interviewed preservice student teachers does not enable a stereotype classification into different groups. Nonetheless, it may provide the foundation for the reflection or the critical discourse of students' attitudes in lectures. Reflecting and discussing student attitudes towards the importance of educational research for teachers and towards the impact of research evidence on educational practice early on in the undergraduate studies may help to remove possible fears and concerns of students and thus promote the development of a research orientated habitus for their future teaching profession.

In the future, it would be interesting to investigate which students mention which aspects of utility value and if or how these aspects contribute to the development of research-oriented habits as a major objective for modern teacher education.

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