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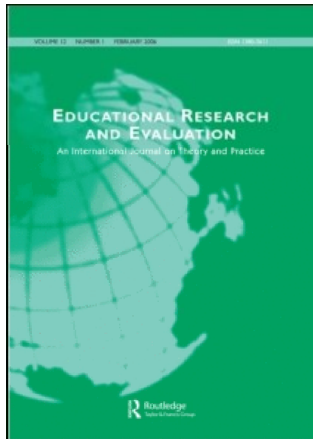


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The Gap Between Educational Research and Practice: A literature review, symposium, and questionnaire

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In the heated debate on the gap between educational research and practice, participants often defend single solutions based on monocausal problem analyses. This article aims to improve the quality of the debate by encouraging participants to take a many-sided perspective. To this purpose, we first reviewed the literature and developed an inventory of the problems, causes, and solutions that have been determined in relation to the gap. The literature review constituted a basis for a symposium and questionnaire, which was completed by participants of the symposium in advance. Different groups took part in the symposium, including researchers, teachers, teacher trainers, and policy-makers. The questionnaire indicated that, on average, these groups showed remarkable consensus about the existence and causes of a gap between educational research and practice. At the symposium, participants took a multisided perspective and considered various solution strategies to close the gap as complementary.

Introduction

As gaining knowledge that benefits educational practice is one of the ultimate goals of educational research, one would expect practitioners (teachers, policy-makers, publishers of educational materials, among others) to use the knowledge gained by educational research. However, both researchers and practitioners observe the existence of a gap between educational research and practice. They agree that it is possible and necessary to improve the use and usability of educational research (e.g., Burkhardt & Schoenfeld, 2003; Gore & Gitlin, 2004; Hargreaves, 1997; Kennedy, 1997; Levin, 2004; Levin & O'Donnell, 1999; National Research Council [NRC], 1999, 2002). But opinions differ greatly on the causes of the gap and on the measures that should be taken to close it. For instance, whereas some argue for large-scale

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experiments that are strictly controlled by researchers, others make a plea for small-scale studies in which researchers and practitioners work together on an equal basis. Under the various problem analyses and solutions lie different values that are attributed to, for instance, scientific knowledge, practitioners' expertise, national and local policies on research into and improvement of education, and experimental and descriptive research (cf. Hammersley, 2002; Phillips, 2006).

The debate on the gap between educational research and practice is taking place in many Western countries (Levin, 2004; Hammersley, 2002) and has a long history (Lagemann, 2000). At present, the debate is, however, remarkably intense (Levin, 2004) and dominated by monocausal analyses. When a certain cause has been determined, there is often a plea for the extensive and radical application of a single solution that is supposed to close the gap. Other solutions are then regarded as incompatible (Corno, 1999). The domination of monocausal analyses may be well explained by the political context of the debate (Hammersley, 2002). Central government in the USA, for example, has created controversy by opting for a radical evidence-based policy. Government grants for educational innovations must be based on large-scale experiments, which are the only forms of research that can count on government subsidies (see Berliner, 2002). Although in other countries national policies regarding the research-practice relationship are more moderate (Levin, 2004; Hammersley, 2002), political choices, such as the assignment of budgets, remain delicate and often lead participants in the debate to defend single solutions, thereby ignoring the history of the debate and the many other solutions that have been proposed (Hammersley, 2002).

Monocausal analyses could be one of the causes for the existence of the research-practice gap. Indeed, we assume that the adoption of a many-sided perspective by participants will help to improve the quality of the debate and will eventually contribute to closing the gap (cf. Corno, 1999). One important condition for a many-sided perspective is that participants in the debate know about the various problems, causes, and solutions that have been identified in the literature in relation to the research-practice gap. Another condition is that the different groups concerned participate in the debate, a condition that currently is not satisfied because the debate is often dominated by researchers, while practitioners only rarely take part (Gore & Gitlin, 2004). A many-sided perspective could also be encouraged when participants in the debate know the opinions of the different groups. This article is aimed at developing conditions that encourage a many-sided perspective of participants in the debate on the supposed research-practice gap by means of a literature review, a questionnaire, and a symposium.

The domain of relevant literature on the relation between educational research and practice is vast and has diffuse borders. For our review, we did not aim at complete coverage and studied a selection of the literature. This selection includes influential opinion papers from educational journals and advisory reports from central educational policy agencies in The Netherlands and the USA. The selected literature was used to develop, in an inductive way, a comprehensive inventory of the problems, causes, and solutions concerning the research-practice gap.

Our inventory builds in part on existing inventories (e.g., Burkhardt & Schoenfeld, 2003; Gore & Gitlin, 1994; Hammersley, 2002; Levin, 2004; Levin & O'Donnell, 1999). To increase the comprehensiveness of our inventory, we have attempted to avoid any preference for single solutions. Although Dutch publications comprise an important part of our review, we feel that the review may have international significance, because international literature is also included (these publications will be highlighted here; for a more elaborate version of the review, including Dutch references, see Broekkamp & Van Hout-Wolters, 2006) and none of the categories of our inventory pertains exclusively to a Dutch context. Likewise, we present to an international audience the results of the Dutch questionnaire study and symposium.

Before developing our inventory, we decided upon three conceptual issues (cf. Levin, 2004). First, we defined "educational research" broadly as the structures, processes, products, and persons that are part of the systematic development of knowledge of education, and "educational practice" as the structures, processes, products, and persons that are directly involved in teaching in educational institutions, determination of local and central educational policies, and development of educational tools. So our definition of educational research includes pure basic research, pure practice-oriented research and all forms in between (cf. Furlong & Oancea, 2005; NRC, 2002; Stokes, 1997). Second, we acknowledged that "researcher" and "practitioner" are ambiguous terms, because they may refer to roles (e.g., a teacher conducts research) or professional identities (e.g., a teacher as someone who possesses expertise in the field of teaching). Third, we distinguished funders and mediators, two roles or professional identities that are more or less in between the researcher and practitioner (cf. Levin, 2004). Funders of educational research often not only use research but also determine thematical or methodological criteria to give direction to the research they finance. Mediators "translate" the original research reports and—through "secondary" research reports, policies, teaching materials, and professional development programs—distribute them among a broader public, including practitioners (Hammersley, 2002).

Our literature review constituted a basis for organizing a symposium and designing a questionnaire, which was completed by participants of the symposium in advance. Consistent with our objectives, different groups took part in the symposium, including researchers, teachers, teacher trainers, and policy-makers. This allowed us to examine their opinions on problems and causes identified in the literature (by means of the questionnaire). Moreover, we could, tentatively, test our hypothesis that by providing this mixed group with a multisided problem analysis (by means of the questionnaire) and each others' opinions (by showing the results of the questionnaire), they would be encouraged to take in many-sided perspectives when discussing problems, causes, and solutions (while participating in the debate).

Below, an inventory of causes and problems will be presented, followed by an inventory of solution models for closing the research-practice gap. Following these results, which we developed from our literature review, we describe results of the

questionnaire study and symposium. Finally, we evaluate the various results in light of our goal to contribute to the quality of the debate on the supposed research-practice gap.

Literature Review: Problems and causes

In the literature, we identified four basic problems that constitute the supposed gap between research and practice. Each problem is explained by a variety of causes. Some problems and causes relate to the production of research, others to the practical use of research or a combination of both (see Appendix). Below, we explain problems and causes in an integrated way (for a more elaborate explanation, see Broekkamp & Van-Hout-Wolters, 2006).

The first basic problem is that *educational research yields only few conclusive results*. According to the critics, only rarely is the validity of educational theories confirmed by unambiguous and thorough evidence (Kennedy, 1997). Experimental effects are often absent, insignificant, or dependent on numerous conditions and nuances (Labaree, 1998). The low number of conclusive results is not only due to the complexity of education (see Berliner, 2002) and the marginal amount of research compared to other applied disciplines such as medicine (see Burkhardt & Schoenfeld, 2003). It may also be caused by the narrow and one-sided focus of researchers. A great deal of research, for instance, focuses exclusively on cognitive aspects of learning and gives little attention to affective aspects or to the broader context in which learning takes place. Furthermore, the technical quality of the conducted research is often unsatisfactory (Levin & O'Donnell, 1999). This is, among other reasons, because scientific norms are not always respected, the competence of researchers may be limited, and researchers may not have enough insight into and control over the educational environment in which they conduct their research (Gore & Gitlin, 2004). Another explanation for the often unconvincing results is that researchers make too little use of the theories, results, or tools from earlier research (Labaree, 1998). This is due to a lack of good reviews, high degrees of specialization, conflicting research perspectives, fashions in research, language barriers, and reward systems that oblige researchers to compete instead of cooperate (Burkhardt & Schoenfeld, 2003). The result of all this is that researchers keep on re-inventing the wheel and that research makes little progress (Levin & O'Donnell, 1999; cf. NRC, 2002).

A second basic problem identified in the literature is that *educational research yields only few practical results*. Plainly, if results of educational research are inconclusive, they cannot indicate "what works" in practice (Levin & O'Donnell, 1999). Moreover, when there is unambiguous evidence for "effective methods" (e.g., teaching strategies), this does not imply that the results have practical value. Sometimes, evidence states the obvious or relates to problems that are too insignificant or too remote from the context of interest (see Hammersley, 2002; Levin, 2004). This latter complaint refers in particular to older research, which was often performed in artificial contexts and focused on questions that are

only marginally related to the problems that practitioners experience (Glaser, Lieberman, & Anderson, 1997; Nuthall, 2004). As Shulman observed in 1997, "in recent years, . . . the site of much education research has shifted from the laboratory to schools and classrooms" (p. 94). This change of context involves many changes, including more collaboration between researchers and practitioners. When effective, such collaboration helps researchers to understand and control local educational contexts (Boostroom, Jackson, & Hansen, 1993). However, it remains very difficult to obtain conclusive evidence for effective methods across these contexts (Berliner, 2002). On the other hand, methods suggested by research do not require evidence obtained across different contexts in order to be practical. Practitioners can test the value of methods themselves and select what is usable and inspiring. This is, of course, also true for other kinds of research results, such as conceptual frameworks, tasks, and assessment instruments. According to the critics, a more explorative use of results, however, may be discouraged for various reasons: Tasks are too few in number for the compilation of a curriculum; meaningful use of tools such as tests and computer supported-learning environments demand an expertise that is too much to expect from most practitioners; and the accessibility of research results may be limited because of the impenetrable jargon used in reports (Gore & Gitlin, 2004), a lack of well-organized databases (Willinski, 2001), or a lack of systematic reviews and secondary research reports that summarize results in a practice-oriented and objective way (Hammersley, 2002). In other words, there are too few easily accessible results available which, when applied, could be expected to make a substantial contribution to the enhancement of education (Gore & Gitlin, 2004).

A third basic problem according to the literature is that *practitioners believe that educational research is not conclusive or practical*. In an interview study by Gore and Gitlin (2004), teachers considered research to be inaccessible, irrelevant, and unreliable. According to these teachers, advice from researchers should be ignored, because researchers do not know what really goes on in a classroom (for similar results see Fleming, 1988; cited by the NRC, 1999). Besides teachers, there also appear to be many politicians that have a negative view of educational research. In an American study by Kaestle (1993), pronouncements from and about politicians indicated that this group saw little progress in educational research and had the impression that its results were trivial or inconsistent. The negative opinion of the practitioners on research is justified to the extent that research does not offer conclusive, accessible, and practical results (Burkhardt & Schoenfeld, 2003). But their opinion may also be formed by ignorance or political factors, such as the envy felt by teachers when they compare their status and working conditions with researchers (Gore & Gitlin, 2004). Indeed, it has been argued that many practitioners are too negative on research and ignore its potentially useful results (e.g., Hammersley, 2002; NRC, 2002).

The fourth basic problem observed in the literature is that *practitioners make only little (appropriate) use of educational research*. Considering the negative view that practitioners have of educational research, it is not surprising that they make little use of it (e.g., Burkhardt & Schoenfeld, 2003). But apart from these negative perceptions,

other factors may also play a role. Practitioners—at least some of them—should be trained to access information about research results (e.g., through reading research articles), and to critically evaluate and test them. Furthermore, practitioners should receive support from their organizations for actively using research in the form of time, money, assistance, and, ultimately, collaboration (e.g., Burkhardt & Schoenfeld, 2003; Gore & Gitlin, 2004). The limited fulfillment of these conditions may not only explain why the vast majority of practitioners do not actively use the results of research, it may also explain why some use research in sloppy and inappropriate ways. For instance, assessment tools developed in scientific ways are sometimes used for wrong practical objectives, and conclusions from research are interpreted incorrectly. This may happen inadvertently, but there are cases in which political motives lie underneath. From the 1993 study by Kaestle it appears that politicians, when quoting research results, frequently cite studies in a biased way that suits their purposes best. When practitioners do not make active use of research, they can still be influenced by it in a more indirect way: through professional development programs (e.g., curricula of initial and post-initial teacher training courses), teaching tools (e.g., text books and tests), and educational policies (on a national and local level). According to the critics, these “media” are not well utilized, because potential mediators (e.g., teacher trainers, publishers, and policy-makers) do not use effective strategies to implement insights from research or are not favorably disposed towards research in the first place. Moreover, hardly anyone expects them to use research (cf. Burkhardt & Schoenfeld, 2003). Whereas in the medical sector specialist knowledge and arguments are required, in education personal experience and personal arguments are considered to be sufficient (Benton, 1999).

These four basic problems are closely related. For instance, Burkhardt and Schoenfeld (2003) point out that a lack of conclusive and practical results have led many practitioners and funders to hold a negative view of educational research. As a result, these parties are only marginally interested in supporting new research, which further undermines the chances of obtaining relevant results (p. 3). According to these authors, the negative vicious circle that widens the gap, can, however, be turned into a positive one, when the right measures are taken. This brings us to our inventory of solutions.

Literature Review: Solutions

The literature provides numerous solutions for closing the gap between research and practice. Often, these solutions are reversals of one supposed cause for the existence of a gap. For instance, authors conclude that there is a shortage of experimental studies and argue for more of these studies. Other solutions address multiple causes and sometimes multiple basic problems. The broader strategies for improving the connection between research and practice may be grouped into four models (cf. Burkhardt & Schoenfeld, 2003; Shuell, 2005).

In the *Research Development Diffusion Model* (RDD model), practice-oriented research expands on fundamental research (see Burkhardt & Schoenfeld, 2003).

Ideally, this process results in research which investigates whether the knowledge developed from earlier phases of the process is applicable to realistic educational situations. But, since the model is built on the assumption that only few practitioners pay attention to research, let alone carry it out, the RDD model assigns a central role to mediators, who select, combine, and adapt research results. Next to the “translation” of research (development), the mediators also have a function in the distribution of research results (diffusion), for instance, through the publication of teachers’ guidelines, or of the results of practice-oriented reviews in professional journals. Eventually, it is expected that, by development and diffusion, the likelihood is increased that practitioners apply insights from research and improve educational practice.

The *Evidence-Based Practice model* (EBP model), like the RDD model, describes the systematic application of research results in educational practice. However, whereas the RDD model includes diverse research results (e.g., descriptive theories and learning tasks), the EBP model is exclusively concerned with empirical evidence for effective methods (i.e., “what works”). Moreover, the EBP model demands that the value of methods in relevant practical situations has been proved. There are two possibilities here. The first is that practitioners conduct research themselves to find out what works in their own educational situation (cf. Altrichter, Posch, & Somekh, 1993; Hargreaves, 1997). The second possibility is that practitioners make use of methods which, on average, have been proved to be effective for a representative group of other practitioners. The most rigorous but also most difficult way to obtain such evidence is to conduct randomized experiments, where educational institutions are randomly assigned to instructional conditions (Levin & O’Donnell, 1999; Slavin, 2002). Adherents of strict variants of the EBP model say that only randomized experiments provide relevant evidence, which they think is necessary to maximize the effectiveness and transparency of educational practice (see Berliner, 2002). To defend their position, they refer to health care, where strict versions of the EBP model are increasingly becoming the norm (Goossens, 2004; Hammersley, 2002).

The *model of Boundary-Crossing Practices* (BCP model) describes the value of combining tasks from different professional domains (cf. Gröhn & Engeström, 2003). A first possibility here is for one person to combine tasks. A teacher may, for example, carry out research in his own teaching practice (cf. Altrichter et al., 1993). Another possibility is that people from different professional backgrounds work closely together. In The Netherlands, so-called “Academic Schools” have recently been introduced, in which professional teachers (in training or experienced), policy-makers, and researchers work together, in the context of a secondary or primary school, on the design of innovative education, professional development, and/or research (in other countries, other terms such as “Training Schools”, “Beacon School”, or “Professional Development School” have been used to indicate a similar concept; see Hopkins, 2001). This kind of cooperation may blur roles of researchers and practitioners. Teachers may, for instance, contribute to the formulation of research questions, and researchers may be involved in teaching. According to adherents of this model, boundary-crossing practices may contribute to a better

connection between research and practice in at least two ways. In the first place, a link is formed between research knowledge and practitioners' professional knowledge. In the second place, the practical conditions for the implementation of practice-oriented research are improved.

The model of Knowledge Communities (KC model) assumes that links between research and practice are established in professional networks that have the aim of making the participants – a group of people sharing an interest or passion – profit from each other's expertise and to generate new knowledge (Hammersley, 2002; Wenger, 1998). Collaboration may be carried out via the Internet or face-to-face, on a small scale or on a large scale, intensively or less intensively, in a formal or in an informal way, directed locally or centrally, and so forth. Diverse professional groups may participate, including researchers, teachers, policy-makers, mediators and/or funders of research. Basically, mutual influence of research and practice will be the most effective when the collaboration is intensive, the professional background of participants is heterogeneous, and the activities concern not only the exchange of knowledge but also activities in boundary-crossing practices.

In the literature, the four solution models are often contrasted. The RDD model and the EBP model, which emphasize, respectively, the importance of "translation" of research results and the application of strong research evidence in practice, are considered to be based on a one-sided influence of research on practice. The BCP model and the KC model, which both emphasize the importance of collaboration between researchers and practitioners, are considered to be based on interactive influences of research and practice. In fact, however, all models leave many questions unanswered, and the specific applications of the models determine whether they are complementary or opposing. We refer to questions such as: Which themes and problems are investigated? To what extent is the collaboration between researchers and practitioners equal? Which generalization claims does the research make? Which degree of professional development is demanded from researchers and practitioners?

Regarding the selection of solution models, and, eventually, the determination of concrete measures to close the gap between research and practice, various policy decisions will have to be made. In making these decisions, the different views concerning the possibilities of generalizing knowledge and exerting control over practice will have to be taken into account (Doyle, 1997; Phillips, 2006). On one side, there are the positivists, who believe in the capacity and single goal of scientific research to discover the general principles that would explain educational reality. They are also optimistic about the possibilities of improving education by using knowledge of these principles. On the other side, there are the postmodernists, who prefer the stimulating effects of exchange of knowledge to (systematic) research; they think that attempts to generally know and control education are doomed to fail, because each situation is different. The positivists will opt for the EBP model, the postmodernists for the KC model. However, there are also more moderate views of knowledge, such as post-positivism and the "moderate enlightenment approach" (see Hammersley, 2002; NRC, 2002; Phillips, 2006). Adherents of these views assume that educational phenomena differ greatly in the degree to which generalization is

possible; they think that more centralized control of educational phenomena may be useful in one case and not useful in another. Moreover, they emphasize that, apart from evidence for effective methods, education may profit from other results of educational research (e.g., conceptual frameworks). Consistent with the more moderate views of knowledge, the four solution models are complementary rather than conflicting. Moreover, to accommodate the different views within the debate, it seems necessary that educational research and practice adopt and develop the four models simultaneously and, when possible, in integrated ways (cf. Corno, 1999).

A Symposium and Questionnaire

A symposium was organized in October 2006 as a joint initiative of several educational institutes of the University of Amsterdam and the Professional University of Amsterdam to present and discuss the findings of the literature review (see www.kohnstammsymposium.nl). The participants had been asked beforehand to complete a questionnaire. Questions asked participants to give, on a 7-point scale, their opinion on propositions (see Table 1) that covered most of the problems and causes that we inventoried from the literature (see Appendix). For practical reasons, however, we limited the number of items to 24, which we attempted to formulate as concisely and concretely as possible. Questions were adapted after a first try-out in our own research group. Revisions included decomposition of some of the combined questions into separate questions and the reformulation of “practitioners” into “practitioners and policy-makers” (many respondents appeared to have a different conception of the term “practitioners” than we used in our review).

The invitations to participate in the symposium and the request to fill in the questionnaire on the Internet were distributed nationwide among various groups of people involved in education and/or research. In all, 160 persons completed the questionnaire, including about 130 persons who participated in the symposium. The respondents included various groups: 51 educational researchers, 32 managers or policy-makers, 20 teacher trainers, 19 teachers, 12 students of educational science, 5 designers of teaching materials, and 2 teachers-in-training. Nineteen persons were outside these categories; they were, for instance, working in the field of journalism.

On average, the respondents agreed rather than disagreed with the critical statements from the literature ($M = 4.3$). However, as shown in Table 1, the extent to which they agreed with the literature varied per statement ($2.3 \leq M \leq 5.7$). Furthermore, all items showed considerable differences among the respondents ($1.2 \leq SD \leq 1.8$). On the other hand, differences in opinion were not related to the various groups. On average, the groups held remarkably similar opinions, as shown in Figure 1 for the four largest groups of respondents.

The symposium lasted for 2 hours and was divided into two parts. The first part concentrated on problems and causes of the supposed gap between educational research and practice. After a presentation of the questionnaire results, a reaction prepared beforehand was given by four representatives of different groups

Table 1. Questionnaire statements and descriptives

Questionnaire items	<i>n</i>	<i>M</i>	<i>SD</i>
<i>Problems that constitute a research-practice gap</i>			
1. Educational research has not yet produced important scientific knowledge.	158	2.72	1.70
2. Educational research has not yet produced practical applications.	158	3.04	1.72
3. Educational practitioners and policy-makers have a low opinion on educational research.	151	4.76	1.51
4. Educational practitioners and policy-makers do not apply the results of research.	153	4.67	1.62
5. Educational practitioners and policy-makers use research haphazardly and irresponsibly.	146	5.02	1.32
<i>Causes that relate to research</i>			
6. Educational research cannot yield useful results because education is too complex.	157	2.32	1.57
7. There is far too little educational research.	147	4.21	1.81
8. Educational research does not ask the right questions.	138	4.16	1.64
9. There is no connection to speak of between the various studies on education.	137	4.47	1.53
10. The scientific quality of educational research is usually poor.	138	3.54	1.54
11. Reports on educational research are inaccessible.	150	4.55	1.55
<i>Causes that relate to the use of research</i>			
12. National educational policy is not based on research.	144	5.13	1.55
13. Teacher training colleges do not base their curricula on research.	130	4.80	1.50
14. Teaching materials (textbooks, tests, etc.) are not based on research.	142	4.53	1.56
15. Consulting educational research is not standard with educational practitioners and policy-makers.	146	5.38	1.54
16. Virtually nobody of the educational practitioners and policy-makers has the skills to apply scientific results.	147	4.50	1.65
17. Educational practitioners and policy-makers do not get the time and the means to use the results of educational research.	144	5.40	1.28
<i>Causes that relate to research and the use of research</i>			
18. Educational practitioners and policy-makers carry out research themselves very rarely.	144	5.42	1.48
19. Educational practitioners and policy-makers very rarely cooperate with researchers.	141	3.45	1.58
20. There is no collaboration on equal terms between educational practitioners, policy-makers, and researchers.	133	5.14	1.22
21. The desire to cooperate on equal terms is non-existent with educational practitioners, policy-makers, and researchers.	119	3.91	1.48

(continued)

Table 1. (Continued)

Questionnaire items	<i>n</i>	<i>M</i>	<i>SD</i>
22. There are no facilities for equal cooperation between the educational practitioners, policy-makers, and researchers.	133	5.06	1.43
23. Current educational research could contribute much more to the field than is generally assumed.	148	5.68	1.36
24. Educational research contributes much less to the field than is generally assumed, even when it continues to develop and the results are used optimally.	143	2.13	1.43

Note. *n*=number of participants that answered the question, *M*=average scores per item, *SD*=standard deviation. 1="I don't agree at all", 7="I agree completely". Total number of respondents is 160. Missing answers indicate no answer or the option "no opinion". The structure of the questionnaire (indicated in italics) was not shown to the participants. For all items, answers varied from 1 to 7, except for item 20, which had 2 and 7 as extreme values.

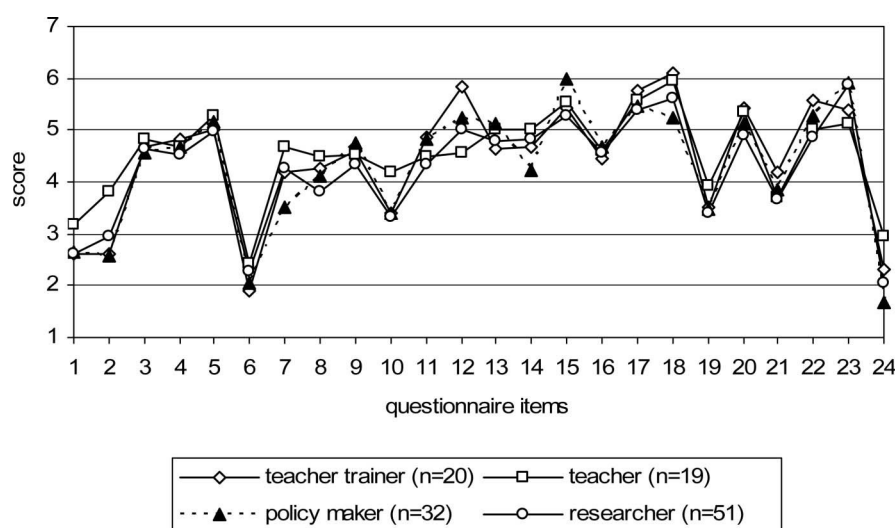


Figure 1. Average questionnaire scores for the four largest groups of respondents

(researchers, teacher trainers, school directors, and national policy-makers). These reactions were followed by a plenary discussion with the audience. The second part focused on solutions for closing the gap. Again, accounts by the different representatives, this time shorter, preceded a plenary discussion.

In the first part of the symposium, we observed that the problems and causes mentioned in the questionnaire were repeated rather than analyzed in depth. In the second part, we observed a more fruitful discussion when participants focused on the coherence of different solution strategies, in particular in relation to Academic

Schools (see our explanation of the BCP model). Though this concept is often associated with the BCP and the KC model, its interpretation at the symposium involved all four models. Consistent with the BCP and the KC model, participants thought research projects should be initiated at the level of individual schools in particular. More consistent with the RDD and EBP models, however, they also argued for embedding the research conducted at Academic Schools within the literature of both practice-oriented and basic research. It was also argued that newly obtained results should be distributed on a broader scale than the single schools and that practitioners who carry out research or read research occasionally (this may involve teachers-in-training, teachers, and school managers) need to develop a professional research attitude. In addition, collaboration with professional researchers was considered to be necessary, in order to bring technical skills and a broad knowledge of research literature into the project. At the same time, the participants of the symposium warned against a possible domination of professional researchers. They agreed that the professional knowledge of practitioners and of researchers are to be considered complementary and of equal value. In conclusion, attention was drawn to the practical requirements necessary for all people concerned, such as enough time, money, and career perspectives.

Discussion and Conclusion

According to the review, a rather problematic relation exists between educational research and practice—the literature indicates a serious gap. This result, however, should be qualified in at least four respects. In the first place, the review provides an inventory; the authors of single publications do not endorse all critical statements (they often concentrate on a very limited amount of problems and causes). In the second place, many authors, for political and rhetorical reasons, exaggerate the gravity of the problems and causes that constitute the gap (and subsequently argue for only a single solution that might close it). Thirdly, the literature describes the opinions of the specific authors—usually researchers. There is only little research that checks whether these opinions are shared widely. Fourthly, opinions about the connections between research and practice may not correspond to reality. As an example, research may have a larger impact than people realize (see Hammersley, 2002).

In order to prevent redundancy with our analyses of problems and causes, our review of solutions concentrates on four general models for closing the gap between research and practice. These models, however, reflect the way in which solutions are presented in the literature on an abstract level only. This is because authors make their general solution approach seldom explicit. They usually limit themselves to a concrete description of a solution, such as a plea for more randomized experiments, or more action research by teachers. On the other hand, only few of the solutions described are concrete enough for direct measures.

The review then offers neither sufficient evidence for the existence of a serious gap between educational research and practice, nor ready-for-use solutions. But it does

present a starting point for a more profound many-sided problem analysis, the underpinning of this analysis with empirical evidence, the analysis of coherent solution strategies, and, finally, the development of concrete measures. The first three of these functions have been tested at a symposium and in a related questionnaire study.

The questionnaire was designed in the first place to provide symposium participants with a many-sided perspective of the literature, which we assumed to be beneficial to the quality of discussion. The goal of assessing the opinions of the different groups was only secondary. Therefore, we did not engage in systematic questionnaire design, which, for instance, would have made it necessary to examine the reliability of measurements with a larger item pool. Moreover, we settled for negative propositions and did not seek a balance between negative and positive statements. This made it clear for respondents that the statements concerned problems and causes as identified in the literature. However, the negative formulation could have directed respondents to endorse critical statements. Finally, we decided not to examine participants' views of solution models by means of the questionnaire, because we wanted to keep the theme of solutions fully open for discussion at the symposium. Future research that examines opinions about the research-practice relationship could, however, extend the questionnaire with items that assess respondents' preferences for solution models. Our questionnaire could be taken as a starting point for further development, thereby profiting from the many-sided analysis of the literature.

Despite its limitations in design, the questionnaire in its current state has yielded interesting results, which deserve further examination. Most remarkably, and unexpectedly for us, they suggest that there is not only broad consensus about the existence of a gap, but also that the respondents – a diverse group of people involved in educational research and/or practice – agree on the particular problems and causes of the gap. Such consensus is easily obscured when listening to discussions, because participants will often mention different problems and causes as they attempt to create a problem analysis on the spot. And it is also obscured when focusing on differences between individuals, which are substantial. However, when aggregating views across individuals, whether they represent the same or different professional identities in the debate, it appears that similar weight is assigned to the causes and problems identified in the literature.

The discussions that took place on the Academic Schools showed that the participants of the symposium analyzed the coherence of problems and possible solutions. This was consistent with our expectation that taking the questionnaire would prepare them for a deeper level of analysis. What was unexpected was, however, that the participants spent most of the first part of the symposium on creating a problem analysis on the spot. Apparently, the participants felt the need to first confirm the relevance of problems and causes before moving on, during the analysis of solutions, to a deeper level of analysis. In a similar Dutch symposium that we co-organize this year, we will examine whether participants can be guided to a fruitful discussion of solutions for closing the gap more directly. Specifically,

participants will form different groups, and each group will be asked to prepare a short presentation of a coherent set of solutions for closing the gap from a particular perspective (e.g., the perspective of a policy-maker, the perspective of a teacher).

The discussion in the second part of the present symposium on Academic Schools indicated that the participants did not make definite choices between the solution models but considered the models to be complementary for solving the various problems and causes. We recognize that the group of participants at the symposium is probably exceptionally motivated for establishing links between research and practice and are therefore not representative for the typical practitioner or researcher. However, we think that the multisided approach of this group may set an example for the debate and the political measures that may follow from it.

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Appendix: Inventory of Problems and Causes Identified in the Literature as Constituting a Gap Between Educational Research and Practice

- I. *Problems that constitute a research-practice gap*
 1. Limited number of conclusive results of educational research
 2. Limited number of practical results of educational research
 3. Undervaluation of educational research by practitioners
 4. Limited and inappropriate use of educational research by practitioners
- II. *Causes that explain the research-practice gap*
 - A. *Causes that relate to the production of research*
 1. Complexity of education
 - a. Value-laden nature of education
 - b. Limited availability and commitment of participants in research
 - c. Ethical constraints in conducting research
 - d. Variety of educational programs
 - e. Multilevel structure of education
 - f. Diversity of participants in education
 - g. Dynamics of education
 2. Limited size of educational research
 - a. Marginal funding
 3. One-sided choice of research questions and designs
 - a. Underrepresentation of specific themes, including, for instance:
 - i. Affective aspects of learning
 - ii. Educational subject domains such as history
 - b. Underrepresentation of practice-oriented research, including, for instance:
 - i. Studies in realistic classroom settings
 - ii. Studies that develop local, context-specific theories
 - iii. Studies on questions derived from practical problems
 - iv. Studies that develop powerful tools for educational practice
 - v. Studies on practitioners' professional knowledge
 - vi. Studies on the effect of educational policy or educational materials
 - c. Underrepresentation of specific research methods, including, for instance:
 - i. Randomized experimental studies
 - ii. Design experiments
 - iii. Narrative studies
 4. Fragmentation of research
 - a. Specialization
 - b. Out-dated research perspectives
 - c. Conflicting research orientations
 - d. Fashion

- e. Disagreement about conceptual frameworks and assessment instruments
 - f. Limited size of research projects
 - g. Reward structures that stimulate competition and discourage collaboration among researchers
 - h. Underrepresentation of studies that replicate previous studies
 - i. Underrepresentation of studies that re-analyze data of previous studies
 - j. Lack of well-organized databases that include original research data and research instruments
- 5. Limited technical quality of research
 - a. Disregard of scientific criteria by researchers and the research community
 - b. Underdeveloped research competencies
 - c. Limited technical training and guidance of researchers
- 6. Inaccessibility of research reports
 - a. Lack of well-organized databases
 - b. One-sided presentation formats of research
 - c. Limited rhetorical quality of research reports
 - d. Lack of systematic reviews
 - e. Lack of “secondary” research reports that translate original research reports (including reviews) for practitioners
 - f. Lack of pressure and rewards for the development of secondary research reports
- B. *Causes related to the use of research*
 - 1. Limited, inappropriate, and ineffective use of possibilities to diffuse research results by means of policy, professional development programs, and the publication of teaching materials
 - a. Limited equipment, stimulation and support for potential mediators to actively use research (see 2)
 - b. Financial or political interests
 - c. Ineffective implementation strategies for educational innovation
 - 2. Limited equipment, stimulation, and support for practitioners (including potential mediators) to actively use research
 - a. Lack of pressure and rewards
 - b. Lack of support from own organization
 - c. Underdeveloped competencies for active use of research (including a positive attitude towards research)
 - d. Limited training and guidance for active use of research
 - e. Limited collaboration between practitioners
- C. *Causes related to the production and use of research*
 - 1. Limited number of practitioners who conduct research
 - a. Lack of pressure and rewards

- b. Lack of support from own organization (where the practitioner works)
 - c. Underdeveloped competencies for conducting research
 - d. Limited training and guidance for conducting research
 - e. Limited collaboration between practitioners
- 2. Limited cooperation of practitioners with researchers
 - a. Lack of pressure and rewards (including the fulfillment of practical goals)
 - b. Lack of support from own organization
 - c. Disturbance of educational practice
 - d. Negative views on research and/or educational innovation
- 3. Limited (equal) collaboration between researchers and practitioners
 - a. Lack of pressure and rewards
 - b. Lack of support from own organization
 - c. Underdeveloped competencies for specific tasks
 - d. Physical distance of organizations
 - e. Conflicting interests
 - f. Power and politics
 - g. Resistance to giving up autonomy
- 4. Unrealistic perceptions of the research-practice relation
 - a. Limited quality of the debate
 - b. Lack of empirical research on the research-practice relation