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Title [Cooperation between research and practice for the development of innovations in an educational design project](#)

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Abstract The cooperation between research and practice is a constitutive element of Design-based Research (DBR). Despite its importance, the process and the challenges of cooperation between these fields are not well studied to date. This paper aims to establish a better understanding of how cooperation among researchers and practitioners can be managed and how cooperation is related to the design and implementation of innovations. For this purpose, we draw on a DBR project as an example, wherein the European model of validation was adapted to the field of geriatric care in Germany. We discuss insights into objectives, abilities, attitudes and restrictions of the cooperating parties referring to the DBR project as an example. We demonstrate how cooperation can help to overcome some of the obstacles in the process of developing innovation in the field. However, we additionally critically examine how cooperation between research and practice can be managed and ignite innovation that over time may have a transformative effect on practices often taken for granted in education. On this basis, we conclude that cooperation promotes mutual learning by both researchers and practitioners.

Keywords Cooperation of research and practice
Design-based Research
Educational innovation
Validation and recognition of prior learning
Relationship management

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Cooperation between research and practice for the development of innovations in an educational design project

Janika Grunau, Bernd Gössling

1.0 Introduction

A general concern – both in practice and in research – is how to increase the acceptance of innovation. As the US-American philosopher of science Thomas S. Kuhn famously remarked referring to Max Planck's review of his academic journey "a new scientific truth does not triumph by convincing its opponents and making them see the light, but rather because its opponents eventually die, and a new generation grows up that is familiar with it." (Kuhn, 1962, p. 151). Despite this somewhat disillusioning observation on innovation in scientific communities, we boldly transfer this thought to innovations in practice: If educational practice was as resistant to change in science as described, the development and implementation of an educational innovation would take a lifetime. As research in the field of organizational change has consistently confirmed, there are remarkably low success rates of around only 30 % (e. g. Burke, 2017). Therefore, we are interested in the conditions and arrangements of cooperation necessary for Design-based Research (DBR) projects to make educational innovations possible.

This paper focuses on the interrelation between cooperation of partners from research and practice as well as the development and implementation of innovations drawing exemplarily on the DBR project *KomBiA*, that focuses on competence validation in German geriatric care (see section 3). The corresponding research question is: *Which role does cooperation between research and practice play in developing the design and enabling the implementation of innovations through a DBR project?*

The example of the DBR project *KomBiA* is particularly suitable for the purpose of this paper because it is based on a stakeholder-sensitive approach including all interest groups of the field, and thus emphasising the aspect of cooperation. Furthermore, there was previously strong resistance against the innovation of validation arrangements in the field of geriatric nursing, thus making the case for developing and implementing innovation under unfavourable conditions utilizing the potential of the DBR approach. This cooperative DBR project involved the researchers on the one hand, and the practitioners on the other hand. The term "practitioners" applies in this context to actors at different levels: To the employees and their employers, both of whom would directly benefit from the competence validation, but also to teachers, politicians, administrators and representatives from advocacy groups, who are relevant stakeholders in the field of geriatric

nursing. Eventually, the fate of the innovation will depend on the acceptance and support of these stakeholders for the developed design.

By dealing with the research question in this manner, we pursue two objectives, a content-related objective and a methodological objective. Regarding the content, we study the cooperation practices in the exemplary DBR project to gain a better understanding of how cooperation shaped the project proceedings and findings. Regarding the methodological objective, we aim to discuss possible consequences of this experience for the arrangement of cooperation in applying the DBR approach generally. The latter is linked to a research gap in the cooperation, the performance and the roles of researchers and practitioners and of the related challenges in DBR as pointed out by Dilger & Euler (2018, p. 5).

2.0 Theoretical background: Cooperation between research and practice in DBR

The cooperation between researchers and practitioners is central in the DBR methodology that aims at the formation, development and implementation of innovative solutions to improve educational practice (Euler, 2014, p. 18; Dilger & Euler, 2018). Cooperation takes place in all of the phases of the circular DBR process, which Euler (2014, p. 20) has described (see Figure 1).

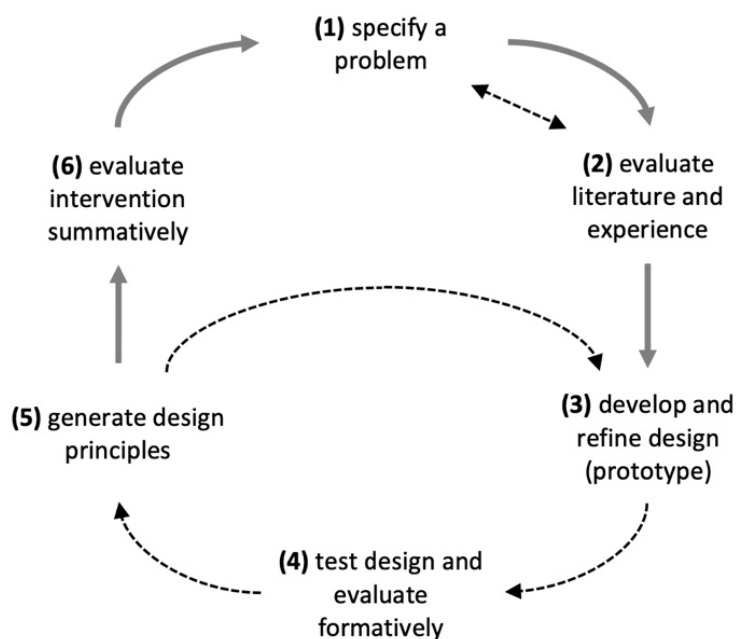


Figure 1. Circular DBR process (based on Euler 2014, 20)

In each phase, practitioners and researchers complete specific activities and fill roles that require cooperation (Dilger & Euler, 2018, p. 6). The formative evaluation and the generation of preliminary design principles may require additional refinement of the design in several cycles. The summative evaluation may result in further specifications and new problems and hence to a new research and development cycle. For the management of the cooperation between practitioners and researchers, Euler (2014, p. 36; 1994, pp. 272 ff.) refers to seven general principles:

- i. Disclosing the pursued objectives
- ii. Developing a basis of trust
- iii. Accepting different values and aims
- iv. Clarifying target agreements and conflicts
- v. Approaching a symmetrical discourse
- vi. Taking the institutional framework conditions and the frequently heterogeneous interests, varying competencies, and divergent degrees of innovation commitment into account
- vii. Cultivating doubt and constructive criticism

These principles can be regarded as ideals of organizing cooperation in DBR projects. However, in order to make these principles work, it is important to clarify how cooperation works among partners with at least partially diverging interests. We therefore refer to organization theory, according to which cooperation is most commonly understood as “a process in which individuals, groups, and/or organizations interact and form relationships for mutual gain or benefit” (Smith et al., 1995, p. 10).

A mutual goal, which serves for the gain and benefit of various partners, needs to be established, especially in cases where the success of the innovation depends on support and implementation by diverse stakeholders, such as care institutions (employers), nursing unions, vocational schools, public health authorities, and training institutes. Researchers are additionally involved in the development and evaluation of the prototype. All these stakeholders, partnering in the DBR, have different organizational purposes, follow different routines and act under specific legal conditions. Cooperation theory can help to better understand how different partners may work together for a common cause. To foster this better understanding, we will first briefly review and then summarize four central concepts on cooperation: social exchange theory, resource-based view, configurational model and interactive network theory.

First, according to social exchange theory, cooperation between two independent parties (individual people, collective actors, organisations, etc.) takes place as long as the rewards of the exchange are higher than the costs (Homans, 1961). Costs include effort, time, and/or money invested into a relationship. Since cooperation implies voluntariness, it usually takes place when said cooperation serves purposes which cannot be achieved alone. These include access to external resources, utilization of objectives and functions of partner organisations, which are different because of organisational specialisation, as well as teaming-up capabilities based on a "domain consensus", which is the degree to which cooperation partners' goals are shared, overlapping or complementary. A key feature of cooperation in this model is a symmetrical relationship among the cooperating parties.

The resource-based view, secondly, provides explanations for the analysis of asymmetrical relations between parties seeking cooperation (Peteraf, 1993; Wernerfelt, 1984). Resources are seen as scarce and organisations as well as individuals may create competitive advantages by securing scarce resources, which actors in need may tap through cooperation. Cooperation will threaten the single partner's

autonomy, which they will try to prevent by establishing a relationship. In this cooperative relationship, power issues play a central role by developing, avoiding and exploiting given dependencies. Dependencies are stronger if resources from the partner(s) are difficult to substitute. In a cooperative relationship, partners may develop not only unilateral, but also bi- and multilateral dependencies among two or more entities.

Thirdly, the configurational model (Mintzberg & Quinn, 1988), which is mainly rooted in systems theory, provides a better understanding of the influence of cooperation on the internal structures and processes of organisations. Internal coherence is understood as a major factor for organisational efficiency and effectiveness. For that reason, changing environments are not immediately translated into changed organisations. However, external conditions cannot be ignored. Therefore, the process of internal transformation usually takes place as a quantum leap to a new configuration.

Fourthly, interactive network theory (Håkansson & Snehota, 1995) explains the evolution of cooperation as networks, which often start with insignificant exchanges requiring little investment and low trust. However, over time the cooperation itself may develop into a key resource of the participating parties. At this point, maintaining the cooperation may require making substantial investments. The strategic options of a single member in the network depend then on the overall fabric of the network. The network's stability, in turn, depends on the interactions of the participating parties.

In summary, for cooperation to take place in any of these four concepts, the participating parties must at least perceive cooperation as beneficial according to their inherent logic, which is based on organisational or individual objectives, norms and rationalities. Typical benefits sought when entering into a cooperative structure include access to resources unavailable to single parties and generating added value through establishing a consensus and building a network. Cooperation often has a multifaceted nature, displaying symmetrical and asymmetrical characteristics simultaneously. Cooperation may create new dependencies. Therefore, relationship management is important for all participating partners. There may be resistance to change (configurable stability); the degree of pressure and/or the openness for change are important in order to adapt an innovative approach. Networks start with little investment/commitment and a small portion of trust is necessary until they grow into something more rewarding needing substantial commitment and requiring expanded trust.

3.0 Practical reference: A DBR project on competence validation in geriatric nursing

The study on cooperation in DBR refers to a completed DBR project on the joint development and testing of validation arrangements in German geriatric nursing (*KomBiA*)¹. In this chapter, we will describe the project briefly to provide relevant information on its proceedings and to then focus on our experience with cooperation in the project.

3.1 Project description

The project starts by considering the practical problem that Germany currently does not support validation arrangements for assistant nurses in geriatric care by awarding them a full vocational qualification. In the DBR project the European model of validating informal and non-formal learning (CEDEFOP, 2015, pp. 41 f.) was adapted to the field of geriatric nursing in Germany within a cooperative approach of research and practice.

¹ For a full description of this project see the case study on the DBR project *KomBiA* in Gössling & Grunau (2020).

The developed validation arrangement (prototype) aims at supporting employees to obtain certification equivalent to that of a formally certified geriatric nurse by recognizing what they have already learnt predominantly through work experience. Due to their specific conditions and educational experiences, the majority of older geriatric nursing assistants tend not to pursue full-time school-based training, i.e. the typical pathway to a full qualification usually taken by recent graduates of compulsory school (Fitzenberger & Mühlner, 2011; Bilger & Strauß, 2014). New validation arrangements may open a route out of this disadvantaged situation (Gössling & Schulte-Hemming, 2018). In order to gain critical support from all interest groups involved, the project was organised as a design process with constant stakeholder involvement. The design researchers applied a responsive evaluation approach drawing on data collected by interviews, surveys, document analysis and observations (Gössling & Grunau, 2020). Participation in development and design of the prototype were used to generalize findings and create theoretical insights beyond the immediate project context (see Figure 2).

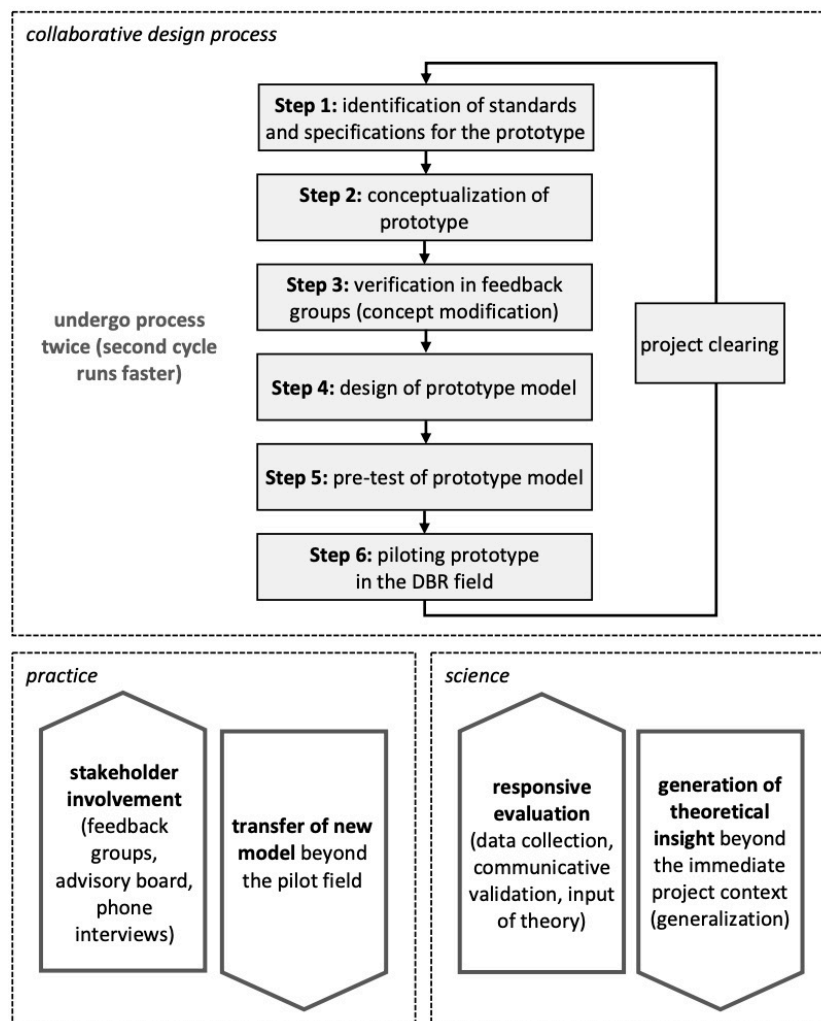


Figure 2. The two-cycle design and research approach of the KomBiA project

Aiming for the development and evaluation of the validation arrangements, representatives from both fields practice and research cooperated by adding their respective perspectives and carrying out their functions. At a macro-level, cooperation took place via project advisory board meetings with representatives of geriatric care facilities, geriatric nursing schools, trade unions and the German Nurses Association. Additional cooperation occurred at the micro-level in workshops about the development of competence evaluations, the validation prototype(s), the assessment tools and methods, and the evaluation of pilot tests. The meetings were accompanied by additional e-mail-based feedback. The project also comprised joint information and counselling sessions with candidates and participants, joint feedback and evaluation sessions with participants and general project clearings with stakeholders in the pilot context (Gössling & Grunau, 2020).

In order to generate additional insights into the cooperation practices, the data collected for the formative and summative evaluation was used for a secondary analysis with this research focus. Further protocolled observations and reflections among the design-based researchers documented in research journals were additionally employed. In accordance with the hermeneutical principle, cooperation theory was applied as a blueprint for interpreting the material (Mayring, 2019).

3.2 Analysis of cooperation in the DBR project

A distinctive attribute of DBR is the cooperation between research and practice as mentioned above. In opposition to more traditional research, where the researchers distance themselves from the research object, the development and research process draws not only on empirical findings and theoretical insight, but also on the knowledge and intuition of experienced practitioners (Euler, 2014, p. 18). In *KomBiA*, numerous practitioners were involved in the development and evaluation cycles. Besides the potential candidates for a validation arrangement – the nursing assistants – stakeholders from political and institutional contexts participated in the design and review process. The recruitment of the stakeholders was based on the relevance of their function in formal vocational qualification.

With cooperation theory (section 2) in mind, it can be said that the perceived benefit of cooperation depends on the partners' individual rationalities and objectives. For this reason, the objectives that guided the parties beyond their shared working goal(s) must be described in more detail. The objectives may be summarized as follows (Table 1).

Table 1.
Cooperation parties and objectives in the DBR project

Cooperation parties		Objectives
Research	DBR researchers	<ul style="list-style-type: none"> disclosing and understanding the political, legal, institutional, socio-economic and educational conditions for the implementation of validation arrangements in the field identifying design principles for the development of context-sensitive validation arrangements by participating in a stakeholder-sensitive design project receiving funding for research activities by engaging in a cause that is publicly financed gaining access to the field as an area of research promising publishable findings
Practice	Political actors	<ul style="list-style-type: none"> working towards the implementation of validation procedures according to European Council recommendations testing a prototype of validation arrangements to gain input for the establishment of future legislation not yet in place for the validation of competences in geriatric care
	Project management agency	<ul style="list-style-type: none"> investing the available resources according to the (political) funding conditions
	Teachers at schools for geriatric nursing (also serving as the examination body on behalf of)	<ul style="list-style-type: none"> involvement in and thereby co-shaping validation processes as an innovation that is relevant to their educational field

the health authorities)	<ul style="list-style-type: none"> ensuring validation processes do not undermine given school-based qualification standards civil commitment to a group largely excluded from existing qualification pathways
Employers (geriatric care facilities)	<ul style="list-style-type: none"> accessing new supplies of skilled labour enhancing existing human resource development measures
Older employees / nursing assistants	<ul style="list-style-type: none"> receiving recognition for their work (experience) and learning in geriatric care gaining the opportunity to use an alternative progression route into skilled work suitable for their demands (applies only to a subgroup of experienced nursing assistants)
Trade unions	<ul style="list-style-type: none"> opening new career prospects for formally low-skilled assistants ensuring that the validation prototype is legally watertight from the perspective of employees and their ambitions towards increased professionalisation
Nursing associations	<ul style="list-style-type: none"> safeguarding running professionalisation processes quality assurance for the validation arrangement

The development and testing of the validation arrangement ran on the hypothesis that these objectives allow for a channel of shared concern: make validation arrangements for experienced assistant nurses work in geriatric care through joint design activities.

Cooperation can be better understood by identifying the resources and advantages that become available for cooperating parties only by participating in the cooperation. In this case, by cooperating with practitioners to pilot validation arrangements not yet available in geriatric care, researchers could gain access to a field which might be locked without the benefit of others, too. Practitioners, especially those employing geriatric care facilities, profit from potential new pathways to attract and train professional staff. For practitioners who thought of designing innovations like this on their own, cooperation has an added value because the conceptual input by the researchers, moderated design cycles, and resources for evaluation activities are added. Furthermore, innovations can be labelled as a 'scientific project' and thus gain additional credibility. In this case, only the researchers also benefited from (partial) project-funding.

The divided benefits demonstrate how cooperation displays symmetrical and asymmetrical characteristics simultaneously. Depending on the respective constellation of objectives, the commitment to the joint cause may vary, creating power inequalities. At one point in the project the ownership (and subsequently the management) of one of the geriatric care facilities changed, and with it the organisational priorities and declining priority given to the design of the validation system.

In addition, the practical partners' authority and freedom to act varied. This applies for example to school principals, who are more or less experienced and established in their practical setting. Researchers may master conceptual and evaluative issues faster than the practitioners, who in turn have ownership over what happens in their field. This is to say, striving for symmetric communication in a hybrid field such as a DBR project may be idealistic. It is more common to see an interconnected web of asymmetrical relationships.

In a situation of new dependencies threatening the autonomy of the parties involved, relationship management becomes crucial. The relationship management in the DBR project can be described following the principles of responsive research (section 2), which is about 'the creation of conditions for an open, constructive and trusting cooperative relationship' (Euler, 2014, p. 36).

- i. *Disclosing the pursued objectives:* The objectives mentioned earlier were mutually disclosed in an ongoing meta-communicative process. Among the core partners, informal communication was used to frankly communicate what remained a 'hidden agenda' in more formal settings (e. g. pressures in the context of owner shift framing the actions of practitioners or restrictions to time allocations because of teaching and other research responsibilities framing the actions of researchers). Disclosure of pursued objectives sometimes also occurred very openly and strategically, for example when trade union representatives advocated for the preservation of vocational standards as a key demand from their perspective or when researchers insisted on forms of data collection, which are not necessarily needed for design purposes, but rather for compliance with scientific standards.
- ii. *Developing a basis of trust:* Trust is the product of exchanges with others which were/are perceived as beneficial. The degree to which the participating partners developed trust varied greatly. This led to the development of a core group with a high level of reciprocal trust and peripheral partners who perceived similar experience as less beneficial and trusted the overall enterprise of the project less, which was usually expressed in limited commitment to the collaborative design work.
- iii. *Accepting different values and aims:* Those who could experience the differences of the partners as a benefit for themselves tended to be more accepting towards different values and aims. The field analysis and the different objectives show that this applies to all stakeholders. The low- and unskilled older employees, already by not attending school-based training later in life, indirectly challenge the established qualification system and those who back it, i.e. school teachers and principals, and employers hiring graduates. Experienced nursing assistants further challenged resistance against change by demanding that their informal and non-formal learning should be recognized after many of them had worked in geriatric care for years. Those who tended to see these demands as unacceptable or not viable, were more likely to reduce their commitment to the common design goal in contrast to those who could imagine these individuals becoming an interesting group for adjusted courses to close skill gaps and as potential candidates for

alternative assessment, in which they would be able to demonstrate their professional competence. The same applies to those employers who were willing to support assistants in their learning and development endeavours through educational leaves and additional instructors facilitating workplace learning. This, however, does not mean that all experienced nursing assistants were eager to participate in upskilling. Numerous of them resigned themselves to their role, sometimes daunted by the prospect of the additional responsibilities that come with being a registered nurse. Moreover, representatives of the nursing association could be separated by the degree to which they recognize routes of professionalisation beyond formal schooling – particularly in light of current professionalisation efforts linked primarily to academization (Friese 2017). Those who were open to accepting different values and aims also changed their view and their way of performing the functions for which they were responsible. This applied mainly to the core group of the DBR project, which tapped new opportunities through their participation.

- iv. *Clarifying target agreements and conflicts*: Before the first prototype of a validation arrangement was designed, four fundamentally different approaches were developed, presented at a project board meeting, and evaluated according to each partner's demands and objectives. After an intensive discourse, the model proving to be the most promising became the initial prototype. A continuing prominent conflict is over the potential cannibalization effect of validation arrangements for the school-based qualification pathway. This concern was regularly raised throughout the project. One result of these arguments was to distinguish the validation model from school-based training and make validation attractive (not easier) for those, to whom formal schooling is not a viable option for further education (Gössling & Schulte-Hemming, 2018). Conflicts like these required meta-communication, role clarifications and expectation comparison.
- v. *Approaching a symmetrical discourse*: This is largely an ideal. In fact, the communicative situations were asymmetrical in many ways as described above. However, making constant effort to align communication practices closer to the ideal of a symmetrical discourse helped to accomplish shared goals in the DBR project.
- vi. *Taking the institutional framework conditions and the frequently heterogeneous interests, varying competencies, and divergent degrees of innovation into account*: As the DBR project was based on experiences and research findings from past projects with similar focuses and approaches (e. g. Bals et al., 2011), the researchers were familiar with institutional framework conditions, varying competencies and divergent degrees of innovation commitment in this specific field, which are reflected in the problems of accepting different values and aims mentioned above.
- vii. *Cultivating doubt and constructive criticism*: The discursive project culture of the core group in the project, including meta-communication about intentions, systemic clashes and processes of interaction in which earlier versions of the prototype were reworked, is the result of participating and benefiting from the project. As mentioned before, this does not apply to all of those who initially participated.

Cooperating parties may show resistance to change (configurable stability) as a necessary step towards the implementation of an innovation in a specific context. The degree of outside pressure, for example a perceived lack of qualified staff on the labour market, may in some cases increase the degree of openness to an extent to which the participants in the DBR project may become alienated to their partners outside the project context. Openness and closeness therefore need to be balanced if DBR shall lead to transferable innovations.

Cooperative networks may start with little investment/commitment and only a necessary amount of trust until they grow into something more rewarding needing substantial commitment and requiring established trust. The DBR project *KomBiA* confirmed this assumption as all of the most productive partners already cooperated before the start of the project through previous design activities. This suggests that the skills and competences necessary for cooperating in a DBR project with a challenging objective require learning. This learning may take place through participating in DBR, through other change and innovation projects or also by making cooperation for innovation part of the professionalisation of practitioners in their fields.

4.0 Conclusions

The DBR project analysed in this paper revealed how the cooperating partners changed as a prerequisite to make the newly developed prototype work. This means that the participating employees, care managers, HR representatives, teachers, trade union representatives and researchers went through a process of mutual learning while they were cooperating in their joint project. This led to new insights, abilities and attitudes: Some of the experienced employees participating in the validation pilots realized new learning opportunities for themselves. While they did not see school-based learning as a feasible pathway for their vocational progression, they agreed to guiding counselling sessions to further increase their work-related learning activities beyond what is typical for this group, which tends to be excluded from participation in lifelong learning. The perspective to gain recognition for the competences acquired predominantly at the workplace through the proposed validation model was referred to as a motivating factor. The participating care managers and HR representatives of the employer side made additional investment to support the participation of older employees with low or without formal qualification as a registered geriatric nurse. During the development of workshops, teachers at schools for geriatric care with extensive experience in formal examinations realized how a more skills- and competence-based assessment could be performed and developed new assessment methods. Trade union representatives started to support an alternative progression route for employees taking their interests and overall (working) life conditions into consideration. At the end of the project, representatives from the regulatory authorities showed interest in piloting new legislation for the recognition of geriatric care competences, which are not currently available in this field. The researchers not only participated in this process, but gained new insights into the

design principles and the implementation of cooperation management on which the DBR project was based. This was verified through responsive evaluation accompanying the full project (Gössling & Grunau, 2020).

For the DBR methodology in general, these findings highlight that cooperation may support the development and implementation of innovations that initially met strong resistance. Experiences in the discussed project suggest that cooperation among practitioners and researchers must be organized and managed in a way that it becomes a learning and qualification experience for those engaged if their design and research efforts are to bring forth innovation that works in their respective contexts.

It has to be considered, however, that the section of the field, in which the *KomBiA* prototype made progress towards the validation of skills and competences in geriatric care, was limited to the immediate DBR context. For this section of the field only, it could be demonstrated that innovation is possible. What Thomas S. Kuhn has pointed out for scientific progress – new paradigms first appear among small groups of researchers mainly at the periphery, but if successful in solving existing problems, they transform the scientific mainstream over time – may also apply to innovations in practice implemented through cooperation of practitioners and researchers. When a solution to unsolved problems works, even only in a limited area, it can have the potential to transform general paradigms.

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