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Enquiry-Based Learning in Public Health— Opportunities for Application-Led Qualitative Method Teaching

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Key words: qualitative health research; interdisciplinarity; public health; qualitative method teaching; qualitative method learning; didactic methods; master degree

Abstract: The field of public health is characterised by a population and systemic perspective on health, applicability and interdisciplinarity, and a slant towards quantitative and epidemiological methods and methodological pragmatism. This presents specific challenges for the teaching of qualitative methods in public health. In this contribution we reflect on the concept of the two-semester methods seminars in the master of public health course at the School of Public Health at Bielefeld University, Germany. Our teaching is guided by the concept of enquiry-based learning. In our methods seminars, we employ the constructivist teaching method of cognitive apprenticeship to introduce students to the research process. This open approach allows us to respond to different degrees of prior knowledge and levels of competence. With our pragmatic, application-led teaching, we qualify graduates to develop and employ methodological skills in their later academic and practical careers. At the same time, it remains a challenge to sensitise students to the significance and benefits of a wide range of qualitative methods.

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1. Introduction

Qualitative health research stands in a rich methodological tradition (SCHAEFFER, 2002), not least on account of the focus on health in qualitative social research (e.g. GLASER & STRAUSS, 1968; GOFFMAN, 1975 [1963]). Questions around health and disease management, subjective theories of health and illness, and the subjective experience of health services are especially amenable to an interpretive approach when investigating the lifeworlds of users, patients and care providers (OHLBRECHT & MEYER, 2020). Qualitative methods also offer insights into institutional conditions and procedures in health practice and policy (FISHER & HAMER, 2020; ULLRICH, QUEDER, ANDERS, POß-DOERING & NÖST, 2022) and bridge the divides between research, health policy and health practice (DAVIS et al., 2019; STICKLEY, O'CAITHAIN & HOMER, 2022). [1]

While great progress has been made in qualitative methods, the literature on relevant teaching didactics remains scant, to say the least. In the *FQS* debate on Teaching and Learning Qualitative Methods, important markers were laid down fifteen years ago (BREUER & SCHREIER, 2007). After a longer gap, a string of notable contributions has appeared in the past couple of years (e.g. KANTER & MEY, 2021; SCHREIER & BREUER, 2020; SCHREIER & RUPPEL, 2021). We have been able to draw on these in developing our teaching concept for the master of public health at Bielefeld University, in particular concerning cognitive apprenticeship (BREUER & SCHREIER, 2007; COLLINS, BROWN & NEWMAN, 1989; SCHREIER & RUPPEL, 2021). Yet gaps remain in the didactic concepts in specific disciplines. In the present contribution we address this deficit as it relates to public health. We hope this will stimulate discussion and reflection around qualitative method teaching in public health courses and adjacent disciplines such as nursing and therapeutic sciences (BORGETTO & KÖHLER, 2021). [2]

The past thirty years have seen steady growth in the number and diversity of university health science courses in Germany (BLÄTTNER & DIERKS, 2021), as well as the breadth and output of public health research (ZUKUNFTSFORUM PUBLIC HEALTH, 2021). Qualitative research has important societal contributions to make in the strongly empirical and application-led sphere of health sciences, and needs to be anchored accordingly in the corresponding courses. [3]

We begin by outlining the context of public health research and practice and the relevance of qualitative methods (Section 2). In Section 3, we explore the core aspects of teaching and learning in relation to applied qualitative method teaching in public health. Finally, we describe the didactic concept of our two-semester seminar on qualitative methods in health research (Section 4) and consider the associated opportunities and challenges (Section 5). [4]

2. Public Health and the Relevance of Qualitative Methods

As WINSLOW wrote: "Public health is the science and the art of preventing disease, prolonging life, and promoting physical health and efficiency through organized community efforts" (1920, p.30). While the discipline of medicine in particular—and to an extent also nursing as well as therapeutic science—tends to focus primarily on the individual, in public health, a *population and systemic perspective* is adopted (GERLINGER et al., 2012; see also BORGETTO & KÖHLER, 2021): Analysing social determinants of health inequality for specific groups, evaluating health-promoting interventions in schools, workplaces and other settings, and identifying the conditions for embedding "health in all policies" (STÅHL & KOIVUSALO, 2021). [5]

Another characteristic of public health is a close connection between research and practice in the sense of generating knowledge to promote health and healthy living conditions (ACHESON, 1988; NOWAK, KOLIP & RAZUM, 2022). Public health research is characterised by practical *applicability*: Developing and evaluating interventions, monitoring health trends, and supplying evidence-based policy advice. This requires interdisciplinary approaches capable of grasping the diverse dimensions. Moreover, most graduates will go on to work in practical fields where they will need the skills to identify and apply research findings in their practical work, and to develop their own practice by applying empirical methods. Public health courses prepare students for the kind of "researching practice" (HANSES, 2012)[1] found in areas such as health monitoring, health promotion and workplace health management. [6]

The third central characteristic of public health is *interdisciplinarity*. Its teaching encompasses a broad set of disciplines in order to prepare students for diverse future roles in academia and practice. The core disciplines include epidemiology, health sociology, disease prevention and health promotion, health services research, and health economics. These are complemented by university-specific specialisms such as nursing science and health communication at Bielefeld University. There is a broad consensus that public health is a "multidisciplinary task" (BLÄTTNER & DIERKS, 2021, p.183). The interdisciplinary approach is typified by a methodological pluralism coloured by the disciplinary backgrounds of the researchers involved. [7]

Despite the significance of quantitative research, public health also retains a strong quantitative and epidemiological tradition (FALTERMAIER, 1997; KELLE & TEMPEL, 2020). STICKLEY and colleagues (2022) found that 85 of the 100 most recent original contributions published in ten leading public health journals were based on quantitative methods. Only four were exclusively qualitative, while eleven employed mixed methods. NIEDERBERGER and PETER (2018) noted that mixed methods contributions in international public health publications frequently treated the qualitative element as an "add-on" to a principally quantitative approach (p.21). [8]

1 All translations from non-English texts are ours.

To this day, moreover, the application of qualitative methods in public health appears to be largely pragmatic (SCHAEFFER, 2002). Following ULLRICH and colleagues (2022), in most German studies on health services, semi-structured interviews and qualitative content analysis have been applied (generally orientated on MAYRING, 2022 [1983]). In their systematic review of studies using qualitative content analysis published in four German-language health journals, NIEDERBERGER and DREIACK (2020) noted that the authors often neglected the interpretive aspect and instead tended to use a hypothetical-deductive logic that is ultimately quantitative in nature. "[T]he extremely limited diversity of qualitative methods currently being used" (DAVIS et al., 2019, p.4) is also criticised in the international public health literature. [9]

We take a critical view of the methodological pragmatism prevalent in public health research, in particular because it obstructs an interpretive approach to complex phenomena (for example coping behaviour of people with chronic conditions). It also impedes new discoveries and obstructs theory development (for example, with respect to disease management). Instead, existing knowledge is merely reproduced or expanded only marginally. On the other hand, we also recognise the benefits of strongly structured methods in multidisciplinary contexts, as they tend to be compatible with quantitative approaches. For example, qualitative content analysis permits numerical outputs, allowing researchers to take (more) accurate account of sociodemographic characteristics. In particular, this enables well-structured research questions to be answered comparatively quickly. Pragmatism of that nature appears acceptable, e.g. to evaluate programmes promoting self-management of chronic conditions where the question of interest is the subjective success or failure of the measure. In the following sections, we lay out how we seek to reconcile these two aspects in our teaching, overcoming the drawbacks and recognising the benefits of a pragmatic approach. [10]

3. Core Aspects of Qualitative Method Teaching in Public Health

In the following pages, we discuss the relevance of the three key characteristics identified above for teaching qualitative methods in public health, i.e. population and systemic perspective, applicability, and interdisciplinarity with a strong affinity for quantitative methods and associated pragmatism. [11]

The significance of qualitative methods for understanding population health and health services is uncontested today, as acknowledged by representatives of scientific societies such as the German Network Health Services Research (BAUMANN, FARIN, MENZEL-BEGEMANN & MEYER, 2016; MEYER et al., 2012). [12]

MUNKO and GERHARDUS (2020) described specific challenges for teaching in the health sciences. These include the interdisciplinary nature of the courses which prepare students for a wide range of careers, and the "permanent tension between the academic, theoretical and methodology-focussed university course and the profiles of many relevant careers which students often expect (however

vaguely) to be practical and application-driven" (p.17). Thus, teachers with very different disciplinary and didactic backgrounds and careers encounter an equally heterogeneous set of students (MUNKO, 2020). [13]

The academics who developed the qualitative methods programme at the School of Public Health in recent years also come from disparate disciplines and career paths.[2] We have worked together to develop teaching concepts that cover the full breadth of research fields. Finding the optimal level of difficulty to neither overtax nor underchallenge students was a central concern. We treat multidisciplinarity as a strength: Our different perspectives on content and methods allow us to develop engaging approaches. Critical questions are explored as the teaching materials are developed in the group of teachers—and articulated by students in their seminars. Collaboration in these heterogeneous groups produces a deeper understanding of the empirical matter. [14]

The teaching of methods in public health and adjacent health-related subjects tends to be regarded as a generic task to be shared throughout the health science disciplines. This offers opportunities to teach a broad range of social science methods and creates space for fruitful discussions but raises the challenge of presenting different research methods on an equal basis. While epidemiology, demography and health economics tend to concentrate on population-based qualitative statistical methods, health sociology and health services research are more likely to combine quantitative and qualitative methods. The skew towards the quantitative in public health disciplines is also reflected in the curriculum at Bielefeld University where considerably more teaching time is allocated to quantitative than to qualitative methods in health research. In their compulsory modules, public health students receive 4.5 credits for qualitative methods; on the quantitative side they receive 4.5 credits for quantitative methods and 9 for epidemiology and biostatistics. [15]

BREUER and SCHREIER (2007, §21) laid out five central aspects of qualitative method teaching in the social sciences which structure our discussion of the opportunities and challenges in the public health context. These are 1. didactic procedures, 2. institutional contexts, 3. fit between personality and method, 4. the role of qualitative methods in socio-scientific practice, and 5. digital forms of distance learning. [16]

2 Dr. Gundula RÖHNSCH participated in the original conceptual development process. We also wish to thank the other teachers involved in qualitative method teaching in recent years for their engagement in the developing the programme and their productive critical opinions: Daria BULA, Helen EWERTOWSKI-SELLE, Marcus HEUMANN, Katharina NIEDLING, Dr. Christiane TILLY, Dr. Cornelia WEIß, Dr. Margret XYLÄNDER and Dr. Manuel ZIMANSKY.

3.1 Didactic procedures

The predominance of quantitative research in public health leaves comparatively few openings for didactics of qualitative methods, and makes it harder for students to acquire a comprehensive understanding. In light of the interdisciplinarity of public health and the heterogeneity of the qualifications, it is vital to teach practical qualitative methods in the master degree. We follow a paradigmatic approach that guides teachers and students towards a population- and practice-led perspective. Graduates should be able to apply the acquired knowledge in relevant fields of practice. [17]

We regard process-led group formats as ideal in this context. Working with small seminar groups allows continuous dialogue and proximity between teachers and students (BREUER & SCHREIER, 2007, §25) and facilitates application-led approaches. We believe that it is productive for students to learn qualitative health research methods through practical application, by experiencing the entire research process and reflecting on the enquiry-based learning. This also allows us to draw on students' personal experiences and interests and more effectively track and support their progress. [18]

3.2 Institutional contexts

For health science teaching, structures need to be created to cover a range of different methods and methodologies. Yet methodology is often treated as a generic issue that should be integrated into the subject modules. As outlined above, qualitative methods tend to play a subsidiary role in the compulsory modules of the master course at the School of Public Health at Bielefeld University. Broader anchoring in the curriculum is therefore vital. This could be accomplished by offering compulsory elective modules that permit the students to broaden and deepen their knowledge. However, our experience with elective seminars is mixed, as they tend to attract those who are already specifically interested in the topic. For that reason, we believe it is important to systematically anchor qualitative methods in the modules of the various public health disciplines. This could create a stronger connection between the practical relevance of public health research and the acquisition of methodological skills. However, integrating methodology throughout the curriculum requires those involved in the relevant subjects to make compromises in the design of their modules and teaching processes to give greater weight to qualitative skills. This would introduce students to a broader spectrum of methods, which they could then apply to relevant research in their empirical master theses. [19]

3.3 Fit between personality and method

According to BREUER and SCHREIER (2007, §32) favourable preconditions for teaching and learning qualitative methods include social competence, openness, self-reflection, tolerance of ambiguity, conflict culture and creativity. The importance of these key skills is not restricted to research; they are highly relevant across the public health professions. How can teachers encourage students with limited enthusiasm for interpretive research to explore this field? Permitting choice of content and techniques is helpful for optimising the personal fit between student and research instrument. The more structured methods (such as content analysis) represent an obvious and easily accessible bridge, especially for novices. The question of fit between the teacher and the methods they teach is also relevant. Exploring and experiencing the qualitative research process (as an example) in depth offers students and teachers the opportunity to seek a personal fit and pursue personal interests—as opposed to learning in abstract terms about a prescribed range of methods. As we have observed in our work, application fosters a deeper understanding of qualitative research practice and eases the learning of additional methods later in the degree course. [20]

3.4 The role of qualitative methods in socio-scientific practice

The health sciences are characterised by problem-driven applied research. Many of our graduates move on to work in practical fields, for example in NGOs, health insurers, healthcare organisations and local government. In these roles, it is often necessary to read and understand qualitative studies, prepare project funding proposals, and communicate with representatives and users of healthcare systems. Teaching qualitative methods through application enables students to learn communication techniques, to develop their ability to observe social processes, and to reflect on their own position—all of which are key skills for professional practice, whether or not it involves a research component (RAAB, MEY, KUNZ & ALBRECHT, 2021). As VÖLTER (2008) laid out for the field of social work, the research skills must be adapted to the professional context. In the context of health sciences, this would mean, for example enabling graduates to understand the personal experiences of clients in counselling contexts and to translate these into needs-based development of process and structure. KELLE and TEMPEL (2020) identified "exploring the factors behind health-relevant behaviour to arrive at findings that possess greater explanatory power than statistical correlations between variables" (p.1130) as the major benefit of application of qualitative methods in health monitoring. This is relevant at all levels from local (e.g. planning service provision) to national (e.g. implementing a health insurer's health promotion programme). [21]

3.5 Digital forms of distance learning

Although online learning plays a growing role in public health teaching (e.g. ALEXANDER, IGUMBOR & SANDERS, 2009; McNABB et al., 2021), we believe that its usefulness for learning and exploring qualitative methods is very limited. Online learning should only be used as a supplement because complex tasks such as conducting a coursework research project require intense discussion and reflection in small groups. In-person contexts where students discuss face-to-face and are forced to address group conflicts (rather than hiding in black boxes on online conferencing applications) are much better suited. This is not specific to public health, and also applies to other courses employing enquiry-based learning. At the same time, digital tools (such as Moodle platforms) are certainly useful for organising student groups and communicating with teachers. [22]

To sum up: The five central aspects identified by BREUER and SCHREIER (2007, §21) are helpful for reflecting on our teaching of qualitative methods. In practical application we must always consider the three key characteristics of public health: population and systemic perspective, applicability, and interdisciplinarity. Enquiry-based learning represents a useful framework for application-oriented teaching of qualitative social research, where teachers and students explore practice-led perspectives on health science issues. Especially in a field that is characterised by interdisciplinarity with a strong emphasis on statistical methods, we need to institutionalise qualitative research in the curriculum. In the context of qualitative methods, enquiry-based learning encompasses interview techniques, observation and reflection of one's own role —all of which also benefit graduates who go into professions outside of academia. In-person teaching enables direct personal exchange on the complex aspects of qualitative research; online learning can offer a useful supplement, but is no substitute. [23]

4. Examples of Practice From the School of Public Health at Bielefeld University

In this section we will take a closer—and self-reflective—look at the qualitative methods seminars in the master of public health course at Bielefeld University—in the spirit of BREUER and SCHREIER's call for "clarification and explication of the respective qualitative-methodological model of knowledge production" (2007, §3). [24]

4.1 Structural conditions

In our method seminars, we tread the fine line between epistemology and pragmatism. As an interdisciplinary course, the master of public health includes students with different undergraduate degrees, i.e. (academic) health professionals and health scientists, but also biologists and sociologists, for example. Some of them have studied qualitative methods in their bachelor degrees, while others have not. We also have significant numbers of practice-oriented students who have already completed a vocational qualification in a

health-related field or wish to qualify for a specific field of practice (for example, workplace health management, health insurance management, health policy). Those who make health policy decisions and develop and implement health-oriented programmes require an understanding of scientific methods. In reality, the application of scientific methods in professional contexts is often practice-driven and pragmatic. The population-oriented emphasis in public health tends to direct attention to collective rather than individual experiences. [25]

Pragmatic communication of qualitative methods is well suited to the needs of a heterogeneous set of students, but we also wish to explore the interpretative and epistemological aspects. Students work in small groups to choose a research question, gather data and conduct analysis. In order to create the space for enquiry-based learning, we restrict ourselves to a small number of selected methods which are explored in depth through application. In other words, imparting a proper understanding of the research process—which the student can then apply in other contexts –is more important than providing a comprehensive overview of all the methodological approaches. [26]

Organisationally, our seminars on qualitative methods represent half of the public health methods module (4.5 out of 9 credits) alongside quantitative methods. The fundamentals of each are taught in separate parallel seminars, in which the respective potentials and difficulties are addressed. The seminar closes with a unit on mixed methods, underlining the possibilities to combine the two approaches. [27]

Qualitative methods are taught in seminars of about twenty students across two semesters. Here we follow the recommendations of SONNTAG and colleagues (2017), who suggest that groups of five to twenty-five participants are optimal for enquiry-based learning. Over the two semesters, this amounts to forty-five 45-minute sessions (plus 75 hours of private study). The unit was originally conceived as a lecture series accompanied by unsupervised group work, but has been converted into a seminar format in order to facilitate enquiry-based learning. The great engagement of the participating teaching staff and the establishment of an *academic lecturer* position in the faculty has enabled us to significantly increase the available teaching capacity and ensure close supervision of the seminars. [28]

During the *first semester,* the seminar is scheduled as a biweekly double session (90 minutes). It begins with an introduction to the qualitative social and health research process, including purpose, applications, and a brief overview of methodologies. Symbolic interactionism and phenomenology are examined in greater detail. We also explain the circularity of qualitative research and the ethical and privacy implications in the field of health sciences. In the seminar series, we concentrate on semi-structured interviews (expert interviews, problem-centred interviews, episodic interviews), group discussions and focus groups, and use lectures to provide relevant input. The students explore the different methods for gathering verbal data through required reading and practical exercises related to health research. Over the course of the semester, the students work in small

groups (four to eight members) to choose and prepare a health-related research question and a guide for the selected type of interview. The topics emerge in a multi-stage process involving initial interest, feedback from other seminar participants and teachers as well as literature research. The first semester ends with submission of a piece of assessed coursework in the form of a research plan (structure: research question, ethical reflection, research design, field access and sampling, and a first interview guide). Although this is a group project, our examination regulations require that individual students be identified as responsible for specific parts of the work. [29]

During the *second semester,* the seminar is scheduled as a weekly double session (90 minutes). Building on the basics learned in the first semester and detailed feedback from the teachers on their project outlines, the seminar participants now realise their research projects. The workgroups analysed the gathered data in research workshops. Our lectures provide a general overview of the potential analysis strategies (category-based analysis, conversation analysis, discourse analysis, narrative analysis, objective hermeneutics) and touch on quality criteria in qualitative social research. The lectures also go into greater depth on qualitative content analysis (KUCKARTZ & RÄDICKER, 2022), grounded theory methodology (STRAUSS & CORBIN, 1996 [1990]) and thematic coding (FLICK, 2018). We provide general reading lists for private study and discuss selected health studies in the seminar. In their workgroups, the students discuss the suitability of the proposed analysis methods and choose which is to be used to analyse their data. They work together to develop a categorising system. The second semester closes with an assessed ten-page term paper (prepared individually by each student). [30]

In both semesters, we focus primarily on providing a practical introduction to research, alongside imparting knowledge through lectures, basic literature and selected health studies. In the latter, we seek to draw on the experience of the teachers and—where applicable—also the students. Depending on their bachelor course, the seminar participants may already have knowledge and experience of empirical research that they can share with the others in the full seminar or in the workgroups. This allows practical experience to be distilled into general strategies for dealing with challenges (for example with respect to recruiting student participants). [31]

We evaluate the seminar anonymously in the middle of the semester in order to receive feedback in time to adjust the subsequent sessions, if necessary. According to past evaluations, the participants especially value the combination of theoretical and practical issues, the comprehensive teaching materials which are useful for private study and revision, and the close collaboration with teachers and in the small groups. We now provide an overview of the teaching methods and didactic principles. [32]

4.2 Teaching methods and didactic principles

The seminar adopts the strong practical orientation of the public health course as a whole. In the enquiry-based learning that lies at the heart of our didactic principles and our teaching stance,

> "the learners shape, experience and reflect on the process of a research project, which is oriented on gaining knowledge of interest to others and which they pursue or participate actively in through all its main phases, from developing the research questions and hypotheses to verifying and presenting the results" (HUBER, 2009, p.11). [33]

Our overarching concept is enquiry-based learning as described by HEALEY and JENKINS (2009) and HUBER (2009) in which students conduct a piece of research from start to finish under supervision. Specifically, we apply the constructivist teaching method of cognitive apprenticeship (COLLINS et al., 1989) which takes account of students' different needs and prior knowledge and combines practical with theoretical knowledge. We also reference the German debate on teaching qualitative methods (SCHREIER & BREUER, 2007; SCHREIER & RUPPEL, 2021). Cognitive apprenticeship is a form of collaboration between teacher and students where the latter are introduced to the scientific community and familiarise themselves with research processes (KAUFMANN, 2019). Later, in professional life, this experience will be helpful for realising projects at the interface of practice and research. [34]

Constructivist learning theories originated in the 1970s in the work of Jean PIAGET, who underlined the importance of learning through (personal) experience in interaction with environmental factors (NEUBERT, REICH & VOSS, 2001). As constructivist learning theories and neurological findings show, it is important for students to guide their own learning processes and build on their prior knowledge (SIEBERT, 2014). One option for doing so is cognitive apprenticeship (COLLINS et al., 1989) developed in the late 1980s. Here, complex problem-solving is learned through demonstration and supervised hands-on experience (rather than mere observation): "Learners ... are not empty vessels waiting to be filled, but rather active organisms seeking meaning" (DRISCOLL, 1994, p.360). In application, cognitive apprenticeship (COLLINS et al., 1989) is characterised by interactions in which the expert guides the novices' acquisition of complex knowledge and then withdraws when the novices are capable of learning on their own. Alongside the communication of specific knowledge and associated control and learning strategies, cognitive apprenticeship can encourage individual learning and enable students to apply what they have learned to other tasks (COLLINS & KAPUR, 2022). In particular, it can foster long-term learning processes. [35]

4.3 Cognitive apprenticeship as didactic method

In the following discussion, we describe our teaching approach in terms of implementation of *cognitive apprenticeship* (COLLINS et al. 1989). COLLINS and KAPUR (2022, pp.160-162) identified six steps: 1. cognitive modelling, 2. coaching and 3. scaffolding initiate the learning process. In the next steps—4. articulation and 5. reflection—subjects are made aware of their own cognitive processes. In Step 6, exploration, the acquired knowledge is applied to other questions. In Table 1 we provide an overview of the steps and examples of application in our seminar. Subsequently, we describe our experience with the method in greater detail.

Steps of cognitive apprenticeship	**Description**	**Implementation in qualitative method teaching**
Modelling	"Modeling involves an expert performing a task so that the students can observe and build a conceptual model of the processes that are required to accomplish it" (COLLINS & KAPUR, 2022, p.160).	Teachers describe their own research experience, for example, using sampling strategies, interview guides, empirical data.
Coaching	The teacher supports the problem-solving process by "offering hints" and "feedback" (ibid.).	Exercises on other implementation of qualitative research, for example, ethical questions. Also, instructions on individual steps of the research process.
Scaffolding	"Scaffolding refers to the supports the teacher provides to help the student carry out a task" (ibid). It is orientated on the learners' needs, allowing the individual steps required to complete a complex task to be assembled like scaffolding (TABAK & REISER, 2022).	Students independently develop a research plan with teacher's feedback on each step.
Articulation	Learners learn to articulate their knowledge, reasoning and problem-solving processes. The teacher is available for consultation.	Regular presentation of group work with peer feedback.
Reflection	Students reflect critically on their problem-solving processes in dialogue with teachers and other learners.	Regular progress reports, group work on interpretations, feedback from peers and teacher.

Steps of cognitive apprenticeship	**Description**	**Implementation in qualitative method teaching**
Exploration	The acquired knowledge can be applied to other tasks. Students can identify their own topics and questions and possess the tools required to solve problems.	The acquired skills are successively applied during data analysis and can be used in other courses and in the master thesis.

Table 1: The steps of cognitive apprenticeship and their implementation in qualitative method teaching (based on COLLINS & KAPUR, 2022, pp.160-162) [36]

Cognitive modelling is particularly relevant in our context. Students learn how to deal with challenges through the teacher's verbalisation of their own research experience, e.g. using teachers' empirical materials and interview guides as examples. Where relevant, we supplement exercises from research practice, for example, in discussions about ethical questions or challenges in recruiting participants. [37]

Coaching and *scaffolding play a central role in our didactic concept.* In the first semester, the students work in small groups to prepare a research plan in which they lay out a health-related research question, reflect on the ethical challenges involved, select an appropriate method, describe the associated sampling strategies and field access, justify the survey design, outline the interview process, and draft an interview guide. We provide the students with concrete instructions in a work schedule that lists specific requirements (content, timeline). In the area of sampling and field access, for example, we suggest that they plan field access and selection of interview partners on the basis of the following questions:

- Who is being asked?
- What characteristics should study participants have?
- What structure should the sample have?
- How and where are the subjects to be contacted and recruited?
- Where might field access problems arise, and how can the challenges be addressed? [38]

Alongside the work schedule, students have opportunities to discuss with their teachers during the seminars. As a rule, we plan each seminar with 45 minutes for input and 45 minutes for supervised work on the projects. We provide basic reading and comprehensive sets of PowerPoint slides with which the students can prepare the units. The small size of the seminars allows us to provide detailed guidance as the students prepare the projects. We proceed incrementally to allow the participants to create their own plan and structure for their research project. [39]

At the beginning of each session, each study group reports its progress and associated challenges (*articulation*) and receives feedback. As mentioned above, each member of the group is responsible for one section of the research plan (as required coursework). The group members decide collectively who is responsible for which section. The responsible person keeps minutes of the group discussion and presents a draft text for discussion and approval. Finally, the written proposal is checked and revised by the group during the semester break to produce a stringent concept for realising the study. [40]

In order to stimulate *reflection,* the teachers critique the research plans after the first semester and may advise revisions before the field phase begins. In the field phase for each group, participants are recruited for two to four semi-structured interviews[3] per group and the interviews are transcribed verbatim. During this phase, the teachers are available to advise. [41]

Before the interviews take place, we conduct interview training in the seminar. Role-playing also provides an opportunity for the students to trial their interview guides. In parallel to the field phase, we address analysis strategies in the seminar. Finally, *exploration* comes increasingly to the fore in the coding and interpretation phase. We run small research workshops led by teachers, discuss coding in the workgroups and plenary sessions using excerpts from the transcripts, and offer assistance in interpreting the data. [42]

The seminar ends with an optional presentation in which each group has the opportunity to present its project, laying out the research question, the process, its coding trees and/or thematic structure, the challenges of the methodological approach, and thoughts on topics for the individual term papers. For example, one project was about students' perspectives on the university's health promotion programme. One group member looked at the interviewees' views on the offers, another examined the significance of visibility of offers. The individual topics were discussed in advance on the basis of the collectively developed coding tree (KUCKARTZ & RÄDICKER, 2022) and/or the thematic structure (FLICK, 2018). The students are encouraged to exploit the entirety of the data in their topics for deeper investigation. [43]

The individual research questions are frequently discussed and revised in dialogue with the teachers. After submission, the term papers are graded by the teacher. The prescribed structure of the term paper corresponds broadly to an original empirical contribution in article format, with a research question and discussion of the relevance of the study, justification of the research question, justification and description of the methodological approach (including distribution of tasks in the group and individual contributions), interpretation of the data, and description of the results. Unlike the usual research and term papers, the paper for our seminar concludes not with a discussion but with a reflection on the

3 In theory, the students could have conducted and analysed a group discussion or focus group, which are also addressed in the first semester. However, given their lack of experience in conducting group discussions, this has not proved feasible in recent years.

methods used. The term papers frequently also comment on the benefits and challenges of working in a team. [44]

Altogether cognitive apprenticeship (COLLINS et al., 1989) leads to flexible and application-oriented method teaching by communicating specific relevant health science research practice (especially our own). Students are given two semesters to develop a research question, design their own research project, and learn and reflect on the steps required to realise it. We support the students with hints, feedback and advice, while encouraging them to work increasingly independently as the project progresses. [45]

Students then have opportunities to deepen their knowledge about the qualitative process in research-oriented modules in the third semester (e.g. "Strategies of health services research in nursing" or "The practice of rehabilitation research") and in the colloquia and research workshops of the fourth semester of the master course (including learning additional data gathering and analysis strategies). [46]

5. Reflection on the Teaching/Learning Process

5.1 Qualitative method teaching in the field of public health

Employing enquiry-based learning and cognitive apprenticeship in our teaching allows us to address the core characteristics of public health: Population and systemic perspective, applicability, and interdisciplinarity. Having students realise and reflect on their own research projects helps them to anchor qualitative methods within health science research and practice. Alongside the application-orientated perspective, we have found practical experience of empirical methods in small groups to be helpful for learning, as it creates space for the heterogeneity of students' prior knowledge and specific subject combinations. Peer support, regular feedback and sharing of research experience (cognitive apprenticeship) ensures a close fit between learners, teachers and methods. This is evidenced by the students' positive evaluations, high participation rates and engagement. We also see great interest in qualitative methods in the subsequent semesters, in particular, in the empirical master theses. [47]

Students are introduced to a practice-oriented perspective on methods through an applied project on a topic of their own choosing. Controlling their own learning processes allows them to acquire empirical skills, as well as experience in project management, communication and reflection. These abilities are also crucial for careers in practical fields. [48]

Interdisciplinarity within the health sciences continues to represent a challenge (see Section 5.4 on how this applies to teachers). In our faculty, the curriculum is skewed towards quantitative methods—even though qualitative approaches are crucial to understanding the health of the population and of individual groups. In particular, questions about the subjective experience of sickness and health and the design of need-based interventions require qualitative research if they are to be answered adequately. At the same time, we must employ strategies that

permit us to abstract from the individual case if we are to properly grasp the aspects of population and system. Coding methods (content analysis, thematic coding, grounded theory) are especially well suited for this approach. In their projects, the students most often chose qualitative content analysis which is rule-based and comparatively easy to apply. [49]

In recent years, we have been able to improve the framework for teaching and learning qualitative methods in our faculty. Increasing teaching capacity allowed us to develop and refine enquiry-based learning concepts and convey techniques and strategies. Compared to the earlier lecture-style teaching, we have been able to improve the learning environment by reducing the size of seminar groups and introducing cognitive apprenticeships. Our experience shows crucial benefits where students are able to experience the entire research process from start to finish, working independently but under supervision, and with continuing support. [50]

5.2 Relationships

Following DAUSIEN (2007, §22ff.), we understand our seminar—at least in its practical phases—as a "social learning space" for "shared practice" where reflection, confidence and (scientific) professionalism are promoted. According to DAUSIEN, the reflexive character arises through ongoing consideration of the methods employed and the interpretation of the material, in which "the constructiveness and productiveness of one's own research ... is explicitly included" (§5). The knowledge and experience that "researchers' instruments and perspectives ... produce the object of research" and that the "object of research and the research method ... influence one another" (ibid.), creates a meaningful theory/practice nexus. The students gain confidence in their own research competence. This requires a framework of trust in the seminars enabling the students to discuss the practical, ethical and methodological challenges and find adequate solutions. The teachers follow their learning processes, provide pointers and offer support. Our role shifts in the course of the process. At the beginning, we are experts and purveyors of knowledge; later we withdraw to advisory and observing roles. The aspect of assessment means that creating confidence in the teaching/learning situation is not a trivial matter (given the hierarchical relationship between teacher and student) and requires effort outside the seminar context, too—for example, through personal availability and offering detailed feedback on the individual stages. Teachers need to be vigilant for interpersonal conflicts in the small groups. We should moderate and advise, but also intervene in problematic group dynamics with clear guidance, if necessary (e.g. mediating disputes or reassigning groups). [51]

5.3 Relevance for later career

Acquiring methodological skills enables students to experience themselves as "competent members of the local scientific community" (DAUSIEN, 2007, §12). At the same time, they acquire scientific skills that are also required in professional contexts. Despite the practical orientation of public health, it remains a challenge for teachers—who spend most of their time in the university context—to

demonstrate the significance of qualitative methods for later professional practice outside of academia. The free choice of topic allows students to explore fields relevant to public health and deepen their knowledge. We use our own practical experience and our cooperation with practice partners to convey the significance of qualitative health research for professional practice. We also recognise the great potential of application of qualitative methods for promoting key skills (interviewing decision-makers and target groups of public health, reflection, teamworking etc.) for later professional practice. [52]

5.4 Exchange among teachers

Regular reflection among the teaching team is also necessary. In view of the different traditions and ways of thinking, agreeing to shared content and methodological approaches is an ongoing challenge. We sometimes found this to be strenuous—but always enriching in the context of a constructive atmosphere. Over the years, many individuals have contributed to the shared teaching materials. We seek to ensure consistency between the parallel seminars through close coordination before, during and after the semester and regular revision of the PowerPoint slides, which are available for all to use and adapt. We seek dialogue amongst the team and with colleagues from other disciplines in order to learn from each other, to address the need for methodological training in the field of public health, and to refine and improve our offers. Aside from the seminars described here, however, the anchoring of qualitative methods in the master of public health at Bielefeld University remains tenuous. In the later semesters of the existing curriculum, we and other teachers must deepen and expand the basics introduced at the beginning. This refers in particular to application-orientated modules on health services research and seminars to develop more complex study designs and research funding applications. [53]

6. Conclusion

Empirical research skills represent a crucial aspect of public health teaching but qualitative methods are not yet adequately reflected in teaching (or in research). One illustration of this is the difference in teaching time devoted to quantitative and qualitative methods in the School of Public Health at Bielefeld University. Our didactic concept for the master of public health at Bielefeld University revolves around small groups of students exploring the qualitative research process by conducting a piece of research. We supervise the process and frequently provide active support when they begin gathering and analysing their data. This approach has proven to be productive in multiple respects, as reflected in student evaluations and feedback discussions. Maintaining the quality of our seminars is a matter of permanent development work and reflection. We hope to stimulate discussion about successful teaching of qualitative methods in health-related courses and more broadly. [54]

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