

6-16-2014

Teaching and Learning Qualitative Research \approx Conducting Qualitative Research

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Recommended APA Citation

Hazzan, O., & Nutov, L. (2014). Teaching and Learning Qualitative Research \approx Conducting Qualitative Research. *The Qualitative Report*, 19(24), 1-29. <https://doi.org/10.46743/2160-3715/2014.1218>

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Abstract

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Keywords

Pedagogy of Research Methods, Qualitative Research Methods, Adult Learning, Higher Education, Technological Research University

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Teaching and Learning Qualitative Research ≈ Conducting Qualitative Research

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This paper presents a teaching framework for a graduate course on Qualitative Research Methods course. The organizing concept of the teaching framework is that teaching and learning qualitative research are similar in essence to conducting qualitative research. The teaching framework is based on ten principles of teaching and learning qualitative research methods that result from the application of ten principles of conducting qualitative research. In other words, teaching and learning a course that deals with qualitative research implements the principles of such research. The teaching framework was constructed during a reflective research that lasted four years. During the course of the study, the researchers-lecturers collected and analyzed various course assignments performed by 62 students, online student discussions, observations made during class, interviews, and occasional conversations with students. The study contributes to research on the pedagogy of research methods in general and of qualitative research methods in particular. Keywords: Pedagogy of Research Methods, Qualitative Research Methods, Adult Learning, Higher Education, Technological Research University

Introduction

Over the past two decades, qualitative research methods (QRM) have become increasingly accepted in the social studies and lately also in engineering fields. This phenomenon may be accounted for the fact that qualitative research helps researchers understand people and their behavior in a social, cultural and economic context. The abundance of literature on the topic of *conducting qualitative research*, therefore, comes as no surprise. Furthermore, we have recently been witness to the appearance on the scene of literature on the *pedagogy of qualitative research methods* that is based on case studies and describes various aspects of the learning process of students in QRM courses. Nevertheless, we did not find in our literature survey any *teaching* framework for QRM courses. In this paper we address this deficiency and present a teaching framework for a graduate course that was constructed while conducting a reflective research on the Qualitative Research Methods course offered by the Department of Education in Science and Technology at the Technion – Israel Institute of Technology.

The organizing concept of the teaching framework is that teaching and learning qualitative research are similar in essence to conducting qualitative research. In other words, *teaching and learning a course that deals with qualitative research implements the principles of such research*. This approach originates in the nature of the teaching-learning process of the subject, which is similar in its complexity to the complexity of the topics studied using qualitative research methods. Such complexity requires the course's teaching staff to guide the students in the process of understanding this research method in a way that is similar to

the way in which qualitative researchers learn about their field of research. Moreover, these teaching principles enable the course instructors to learn, while teaching the course, about their students' perceptions in a way that is similar to the way in which qualitative researchers learn about the research subject.

The study contributes to research on the pedagogy of research methods in general and of QRM in scientific-engineering research universities in particular. Its importance stems from the fact that QRM enable to study people-focused situations in scientific-engineering research.

The paper begins with a literature survey that presents research on teaching QRM, thus establishing the research rationale. The research method – reflective research – is then described and the teaching framework constructed during the research is presented. Finally, we discuss the application of the research results in the context of teaching qualitative research methods particularly in scientific-engineering research universities.

Literature Survey

Qualitative research methods (QRM) are usually used to study social phenomena, situations and processes that involve people, illuminating them from a variety of perspectives. QRM are mainly implemented when researchers wish to investigate environments, situations and processes that cannot be studied using quantitative research methods, such as feelings, attitudes and learning processes.

Planning and conducting qualitative research is indeed a challenging task, but teaching others how to plan and conduct qualitative research is an even more challenging task, especially at a scientific-engineering research university. Researchers who teach courses on QRM at various universities and in diverse disciplines describe the wide range of challenges they face: How to design a course on QRM (Luttrell, 2005; Smeyers, 2008; Tashakkori & Teddlie, 2003); what topics to include in university courses on qualitative research (Drisco, 2008); which texts to choose when teaching qualitative research (Barrett, 2007; Delyser, 2008); what approach to use to teach the contents of the qualitative research course (Hopkinson & Hogg, 2004; Huehls, 2005; McCaslin & Wilson Scott, 2003; Roth, 2006); how to help students cope with their tendency to think in a qualitative manner and how to guide them towards qualitative thinking when required (Booker, 2009; Kelly & Kaczynski, 2007); what teaching method to use when teaching QRM: reflection (Kuhn & Davidson, 2007), a data-analysis program (Walsh, 2003), working in small groups (Postholm, 2008; Roulston, McClendon, Thomas, Tuff, Williams, & Healy, 2008) or poetry analysis (Raingruber, 2009); how to cope with the students' previous perceptions regarding the essence of the research process in general, and of qualitative research in particular (Barrett, 2007; Kelly & Kaczynski, 2007); how to balance theory and practice in the course (Hill, 2007); and whether to require the students to conduct a full study during the course on a topic of their interest (Hazzan & Nutov, 2013; Onwuegbuzie, et al., 2012) or, alternatively, to present them with a research design and let all of the students in the course conduct the same research (Roulston et al., 2008). In this spirit, the literature on teaching QRM includes many reflective articles on the teaching of QRM courses but only a handful of research articles, which usually present a case study of a course taught by the researcher-author.

The literature survey further reveals that lecturers-researchers who teach QRM describe a variety of difficulties students encounter in the process of learning the topic, during which they are required to change their perception and state of mind and shift from a positivist perception to a qualitative perception (e.g. Booker, 2009; Brandao, 2009; Kelly & Kaczynski, 2007). Such difficulties stem from the fact that many graduate students attend

their first course on QRM after they have read or taken several courses on statistics, and some even have experience with quantitative research methods. As Booker (2009) describes it:

Students who are resigned to the absolute benefits of quantitative research have difficulty shifting gears and taking an equally empirical view of qualitative design. They come from fields that are traditionally characterized with positivist orientation. The urge is to deduce, test theory, and observe outcomes. (p. 390)

The difficulty Booker describes is manifested even more strongly among graduate students with technological-scientific backgrounds. Here, for example, is an excerpt from Richards (2011), in which a student in a QRM course is quoted describing her feelings at the onset of the course:

I had never been nervous about a class before, but I was extremely nervous about this one. Qualitative research is a new topic for me. My engineering background did not expose me to this type of research and my lack of comfort for anything that falls into the gray area did not help. (p. 788)

To understand the difficulties involved in shifting from "positivist thinking" to "qualitative thinking," Kelly and Kaczynski (2007) studied students' misconceptions regarding qualitative research. They found that:

At one end of the spectrum, students may believe that qualitative research is not "real research" and that it has no empirical value. On the other hand, students may recognize the value of qualitative research, but may grossly underestimate the knowledge, skills, and effort to conduct fieldwork. Students may also have difficulty in reconciling the orientations of their discipline with aspects of qualitative research. (p. 32)

Following their research and their experience teaching a QRM course, Kaczynski and Kelly advise lecturers to be aware of students' misconceptions, to reflect the students' misconceptions back to them, and to correct them. They also recommend that the teaching of both qualitative and quantitative research methods be integrated equally into undergraduate studies. The importance of this recommendation stems from the fact that qualitative researchers, according to Hill (2007), must have intuition that is based on experience, an ability to observe without passing judgment, openness to let others lead the conversation, an ability to examine events from different perspectives, patience, good memories, organizational skills and courage, an ability to experience ambiguity, an ability to identify patterns, and good writing skills.

The above description stresses and underscores a dilemma: how can a teacher of QRM help students transition from quantitative thinking to qualitative thinking and back (according to research needs) and teach the theories and skills required in order to conduct research, in a course that is usually restricted to a single semester? It seems that there are different approaches to the solution of this dilemma.

Roulston et al. (2008), for instance, contacted a conference management center and together they developed a research design in which students conduct interviews and do research that benefits the center as well. Roulston and the center employees jointly developed the outline of the interview and located potential interviewees. The students interviewed, transcribed, and analyzed the interviews, critiqued each other's work, and gave each other

feedback. According to Roulston, there are many advantages to students conducting real research even if they do not develop it themselves and are not emotionally attached to it.

At the same time, as the world becomes more technologically dynamic and many more people are using technology on a daily basis, it seems that QRM can contribute to our understanding of these processes. Hazzan (2010), for instance, suggests that QRM are more suitable for studying many topics related to human aspects of software engineering, such as teamwork, relationships and communication styles, cognitive processes, and management styles. It therefore seems reasonable that graduate students at scientific-technological research universities should be familiar with the qualitative approach and learn it in a way that suits their own characteristics and those of the university at which they are acquiring their research skills.

This paper presents a research during which a teaching framework was developed for a QRM course that emphasizes teaching qualitative research as conducting qualitative research. The course's teaching framework reflects the claim that in order to understand the essence of qualitative research, students must experience its execution and learn about its essence at the same time. The attempt to construct a general theory of QRM pedagogy for scientific-engineering research universities, as presented in this paper, can enhance graduate students' understanding of QRM and, as a result, contribute to the broadening and deepening of the research topics in science and in engineering.

The Research Design

This session presents the research objective and research questions and describes the research population, the research setting, the research tools and the research stages.

The research objective, research question and research methodology

In our Literature Survey, we suggested that the need for a QRM teaching approach at scientific-engineering research universities stems from the fact that QRM can promote scientific and engineering research in ways that traditional research methods in these fields cannot. Therefore, the objective of the research presented here is to construct a teaching framework for a course on qualitative research methods to be offered by scientific-engineering research universities. The *research question* derived from this objective is: *What teaching principles should the teaching of a QRM course at a scientific-engineering research university be based on so as to express the characteristics of both the students in the universities and the universities themselves?*

To achieve the research objective and answer the research question, we conducted reflective research during the four academic years 2009-2010 to 2012-2013, during which we taught a QRM course. According to Alvesson and Sköldbberg (2000), the reflective research process is "a (re)construction of the social reality in which researchers both interact with the agents researched and, actively interpreting, continually create images for themselves and for others" (p. 6). In our case, this approach was implemented in the process of constructing a grounded theory that answers the research question.

The research population

The research population included 62 Technion graduate students who attended the QRM course during the 2009-2010, 2010-2011, 2011-2012 and 2012-2013 academic years. Table 1 presents the number of students who attended the QRM course in each of those years. The majority of the students in the course learn towards a graduate degree (mainly PhD) at

the Technion's Department of Education in Science and Technology. The rest (about one fourth) are graduate students in another Technion faculty (science, engineering, or architecture). Their age range is wide: between 25 and 50.

Table 1: Students attending QRM courses 2009-2013

| Academic year | # of master's degree students | # of doctoral students | Total # of students in QRM course |
|----------------------|--------------------------------------|-------------------------------|--|
| 2010-2009 | 5 | 5 | 10 |
| 2011-2010 | 7 | 6 | 13 |
| 2012-2011 | 8 | 7 | 15 |
| 2013-2012 | 17 | 7 | 24 |
| Total | 37 | 25 | 62 |

The research setting - The "Qualitative Research Methods in Education" course

The course "Qualitative Research Methods in Education" is offered by the Technion's Department of Education in Science and Technology as part of the department's graduate studies. Since this is the only course at the Technion that deals with the subject, students from faculties other than the Department of Education in Science and Technology also attend. The course is offered one semester a year and comprises three academic hours per week for 14 weeks. The first four weeks of the course includes lectures, discussion and group work. Beginning from week 5 of the course, one hour per week is dedicated to student presentations of qualitative research from the literature (two students each week). The last lesson of the semester is dedicated to student presentations of the research they conducted as part of the course work.

For graduate students from the Department of Education in Science and Technology (about 100), this course is compulsory; graduate students from other Technion faculties (about 3,500) may take it as an elective. All students may decide at what stage of their studies to attend the course.

As described below on, during the course the students report on their evolving research and share their internal conflicts, challenges and personal experiences with their fellow course mates. So, to ensure as much mutual and egalitarian exposure as possible, participation in the course requires full attendance, fulfillment of all assignments, and active participation in the class discussions.

Students who attend the course come from different disciplines, have different learning habits as well as different backgrounds and personalities. The learning environment in the course was, therefore, designed so as to enable each student to find his or her own way of self expression. Specifically, the course integrates plenum discussions, group assignments, individual assignments, a joint forum assignment, and reflections.

The course has both a lecturer and a teaching assistant, namely, the authors of this paper. Both of them have a scientific-engineering background from the Technion, and therefore are familiar with the student population and their educational background. The teaching assistant's main job is to interact with the students regarding the course assignments.

Study topics:

The topics taught in the course are those typically taught in courses on qualitative research: the essence of qualitative research, data-gathering tools (interviews, observations, questionnaires), data analysis, reliability and validation, ethical issues in qualitative research, and the application of various qualitative research models. Indeed, the objective of this paper

is not to suggest any change in the course contents but to propose and demonstrate an organizing framework for teaching the course.

Course requirements:

Table 2 presents the course requirements and their underlying pedagogical rationales.

Table 2: Course requirements

| Requirement |
|--|
| Obligatory attendance and active participation (required to receive a grade for the course). |
| <p>55%: Constructing and conducting a qualitative research. The grade is composed of: 50%: A paper describing the research and 5%: Presentation of the research to course plenum</p> <p>During the semester the students conduct a full, small-scale qualitative research and gain experience in all stages of its execution. The students choose the subject of the research, which does not have to be related to their master's or doctoral research. In order to guide the students in conducting the research within the relatively short time frame, students are requested to execute the research according to a time schedule presented to them at the beginning of the semester, as follows:</p> <ul style="list-style-type: none"> - 5 weeks after onset of course - submittal of 1st report - proposal for research subject; - 8 weeks after onset of course - submittal of 2nd report – update of 1st report. After 2nd report is approved, students may not change the research questions or design. <p>Last session of the semester: submittal of paper and presentation to course plenum.</p> |
| <p>15%: Submittal of all homework assignments</p> <p>There are relatively few homework assignment since the students also conduct a full qualitative research during the course and submit bi-weekly reflections.</p> |
| <p>15%: Submittal of five bi-weekly reflections</p> <p>The objective of the reflections is to guide the students in their development as qualitative researchers who are "reflective practitioners" (Schön, 1983, 1987). The requirement to submit the reflections also trains the students in writing an ongoing researcher's diary (see also Principle #6).</p> |
| <p>15%: Presentation of paper presenting a qualitative research. The paper must demonstrate the use of at least 3 qualitative data-gathering tools. Each presentation lasts 30 minutes: 20 minutes to present the paper and 10 minutes for discussion.</p> <p>The requirement to find an article in the literature rather than use a given reading list enables the students to examine qualitative research from a broader perspective and investigate its place in the world of research, what areas of knowledge qualitative research is published in, how qualitative research is presented, and so on.</p> <p>Furthermore, during the execution of the assignment, the students also gain skills in conducting a literature survey, critical reading, and searching for theories that may be relevant to their research topic.</p> |

Each time the course was offered, the classrooms the students studied in were arranged differently¹: In the 2009-2010 academic year, the course was held in a classroom in which the tables were arranged in a large π -shaped configuration. In the academic years 2010-2011 and 2011-2012, the course was held in a different room in which the students sat around a large elliptical table positioned in the middle of the room, with computer stations positioned along the sides of the room. In the 2012-2013 academic year, the students sat around a round table and around additional tables that were positioned around this main table.

¹ We note this since the students attributed significance to the role of physical conditions in creating the course atmosphere (for instance, "A central table around which most of the students sit is an excellent tool for creating maximum interaction between students").

Research tools

Table 3 presents the data collected and the research tools used to collect them. At the beginning of each course, we asked the students for their permission to gather data during the course for research on learning qualitative research.

Table 3: Research data²

| | 2009-2010 | 2010-2011 | 2011-2012 | 2012-2013 |
|---|----------------|----------------|----------------|-----------------|
| No. of students in course | 10 | 13 | 15 | 24 |
| Reflections: number of reflections analyzed (total number of words) | 50 (18,866) | 65 (31,838) | 75 (25,449) | 120 (51,367) |
| Events in course - one per student ³ : number of events analyzed (total number of words) | (2,895) 10 | (3,461) 13 | (4,230) 15 | 24 (6,705) |
| Forum: (total number of words written on the course forum) | (3,414) | (20,857) | (7,614) | (16,651) |
| Insights from conducting interview: number of student insights (total number of words) | (4,487) 10 | (7,036) 13 | (6,883) 15 | 24 (17,963) |
| Data gathered using additional tools | | | | |
| Observations | (6,988) 6 | (8,073) 9 | – | – |
| Interviews | – | (3,020) 1 | (6,586) 4 | – |

Research stages

The course was constructed and taught according to constructivist principles. When we decided to consolidate a teaching framework for the course based on reflective research, the teaching principles were developed in an iterative process, whereby new data were analyzed at each stage (content analysis), and the teaching principles formulated in previous stages were updated (Strauss & Corbin, 1990). At more advanced stages, the formulation of these teaching principles was gradually consolidated, in light of the data analysis and according to the research question, to the way they are manifested in teaching QRM, until the teaching framework proposed in the following section was obtained.

To meet the highest ethical standards and to demonstrate to the students how ethical considerations are rooted and should be intertwined in any research process from its onset, in the opening lesson of the course we asked the students' permission to use their homework assignments and reflections for our research. They were offered to be excluded from the research population, and in such a case, were encouraged to email and update the course instructor about their wish; it was assured to them that we will respect their desire without any influence on the course evaluation. We note that none of the students wished to be exempted from the research (see Principle 5 below – Trust).

2 A total of about 670 pages of documents was collected, with an average of 380 words per page (254,383 words in total).

3 In preparation for the first lesson, which addresses data analysis, the students are asked to describe an event that happened in the courses and send it to the lecturer. All of the stories are compiled, anonymously, into a single document. In the session dedicated to data analysis, the students work in groups and are asked to analyze the stories in the document, and if possible, to begin to construct categories. Additional explanation of this assignment is given in Teaching Principle 2.

Research Findings: A Conceptual Framework for Teaching and Learning Qualitative Research

The organizing framework for teaching qualitative research constructed here is based on ten principles whose formulation by us was inspired by qualitative research and which form a conceptual teaching framework for the course (Table 4)

Table 4: Principles of teaching and learning qualitative research

| |
|--|
| Principle 1: The students conduct a full qualitative research. |
| Principle 2: The course serves as the research setting for the students' course assignments. |
| Principle 3: The students present published qualitative research papers to the course plenum and discuss them. |
| Principle 4: The course topics are demonstrated using research students conduct as part of the course assignments. |
| Principle 5: Trust is built between the teaching staff and the students and among the students. |
| Principle 6: Reflection is integrated into the learning process. |
| Principle 7: Course discussions are conducted like interviews. |
| Principle 8: The students are guided to think at various levels of abstraction. |
| Principle 9: Awareness to the researchers' emotions and to their role in the research is raised. |
| Principle 10: A gradual learning process is facilitated. |

According to this framework, teaching and learning a course on QRM implements principles of qualitative research. In other words, during the course, both the lecturers and the students experience a learning process that is similar in essence to the process they experience as qualitative researchers. The lecturers learn about the students' understanding of the content taught in class and update the subsequent stages of the course accordingly, while the students learn about the essence of qualitative research.

This approach to teaching the course stems from the nature of the learning-teaching process of qualitative research, which is similar in its complexity to the complexity of topics that are studied using QRM. On the one hand, this complexity requires the teaching staff to continuously examine the students' understanding in order to steer the course's teaching process; on the other hand, the course's teaching staff must guide the students in learning this research method in a way that resembles qualitative researchers who are studying their research field.

Specifically, while conducting qualitative research, researchers construct their knowledge on the research topic in a gradual manner; they establish their learning on data that comes from different information sources; they listen both to the voices from the field of research and to their own voices and emotions, and during a large part of the process they experience ambiguity. Similarly, according to the conceptual framework for teaching the QRM course, the course instructors must gradually build up their perception regarding the students' understanding in order to steer the teaching of the course. From their perspective, the students undergo a process of learning the concept of qualitative research, which is similar in essence to the process of learning the research topic which occurs during qualitative research.

Thus, the teaching framework described in the paper reflects an analogy between the following three processes, which are all based on the principles of qualitative research (Table 5):

- *Conducting qualitative research;*
- *Teaching a course on QRM* according to the teaching framework presented in the paper, which guides the course instructors to learn about the students' understanding and update the teaching of the course accordingly;
- *Learning QRM* in a process inspired by the teaching framework presented in the paper.

Table 5: The analogy reflected by the teaching framework

| Process | Executed by | Subject of learning/study | Execution principles |
|---------------------------------|---------------------------------|---------------------------|--|
| Conducting qualitative research | Qualitative researchers | The research topic | Qualitative research methodology |
| Teaching QRM | QRM course instructors | Students' understanding | Teaching framework presented in the paper |
| Learning QRM | Students enrolled in QRM course | Qualitative research | Learning guidelines that stem from the teaching framework presented in the paper |

Thus, among other things, the three processes have in common the gradual building of knowledge, learning from different information sources, reflection, and the need to tolerate ambiguity.

We will now present the teaching principles⁴ of the above conceptual framework, and will illustrate them from the perspective of the course instructors as well as from that of the students in the above-described "Qualitative Research Methods in Education" course. Each principle is accompanied by a sentence that reflects its meaning in the context of qualitative research; our research adds to the said principle the perspective of learning and teaching QRM, describing its actual implementation as well as illustrations from students' work.

Principle 1: The students conduct a full qualitative research

Qualitative research is suited for the investigation of certain phenomena and does not contradict other kinds of research. (Patton, 1990)

As described in the course requirements, during the course, the students conduct a full, but small-scale qualitative research on a topic of their choice. The process includes defining the research problem and research objective, formulating research questions, collecting data using at least three tools, analyzing the data collected, and submitting a research report. This assignment is based on the constructivist perception according to which learning processes in general, and learning processes of complex subjects such as qualitative research in particular, should be based on hands-on experience and on active learning. In the case discussed here, this hands-on experience, whereby the students conduct and experience a complete process of qualitative research and do not suffice, for instance, with gathering data

⁴ Teaching principles that form the conceptual framework for teaching the course are (a) interconnected and support the application of each other. We refer in the paper to these mutual relationships; (b) numbered to facilitate referencing them in the paper. This numbering is not indicative of any hierarchy among them or any chronological order; (c) may, or course, sometimes be implemented in other courses in general, and in courses on research methods in particular.

using a single tool, is designed to demonstrate to the students the structure and course of a qualitative research that elosuse to investigate acertain phenomena (Patton, 1990).

To help the students meet this challenge, they are presented at the beginning of the semester with a detailed time schedule that enables them to complete their research in a single semester (see Table 2). The objective of the interim reports the students are required to submit is to focus them and guide them in the execution of the research. As mentioned in the course requirements, the second report is submitted eight weeks into the semester, and after its approval the students are asked to refrain from changing the research questions and research design. This requirement is intended to prevent the students from repeatedly changing the research design and postponing the onset of its execution. The compromise of conducting a full research within a relatively short time period of one semester, which does not enable the researcher to update the research design in light of the data analysis, was discussed explicitly in class. As a result, the instructors suggested that the students use the course's final paper as an opportunity to present an updated research design following the findings obtained in the research they conducted and following the analysis of the process they underwent. Specifically, it was stressed that the evaluation of the paper will refer also to the quality of the explanations the students offer for their research decisions and for the updates they propose for the research design.

The students also acknowledge the advantages of conducting a full qualitative research in one semester and the fact that this time schedule compels them to proceed with the research process. Following is an excerpt from a reflection written at the end of the course that reflects this idea:

This is the first time ever that I've been required to conduct a binding research. [...] I feel that the scope and depth of the things we touched upon in the course [are leaving] their mark. When I started working on the research [...] it seemed that it was difficult to distinguish between what is significant, everything feels important, and so the process is slow, calculated, and with iterations. I feel it's very important to exhaust the information that's collected, to find the way that suits me to create and save these data, and to make the most of them; all instead of running after intensive data collection, which might include much more material, but won't enable me to delve into the depth of the questions.

Furthermore, this teaching principle enables students to experience conducting qualitative research while they are still deliberating and unsure as to their ability to conduct research in general, and qualitative research in particular. Indeed, the students too are aware of the contribution of such experience to their self confidence and ability to conduct resaerch, as is evident from the following excerpt, taken from a reflection that was submitted twelve weeks into the course:

I began working on the analysis of the materials for the course's final paper this week. And indeed, I see how things connect, and how I am able⁵ to work according to the same principles of highlighting things for myself in the body of the text, and at the same time write a researcher's diary in a separate file. I see myself coping with this kind of assignment, in a flowing way although it's new to me.

5 Underlines by authors indicate the part of the excerpt that focuses on the point being illustrated.

Principle 2: The course serves as the research setting for the students' course assignments

The qualitative paradigm invites an examination of the research topic from the perspective of the research subjects, in their natural environment, by studying their opinions, attitudes and beliefs. (Denzin & Lincoln, 2000; Shkedi, 2003)

According to the constructivist approach, in order to learn about qualitative research, the students must experience conducting such research. The teaching principle presented here guides the course instructors to focus such research experience on the students' experiences in the course.

For instance, in the context of data analysis, the data that the students analyze are events that they themselves experienced during the course. The instructions for writing about a course event were: "You are to describe an event that happened in the course, during the semester up until the present, and explain why you chose this event." All events submitted by the students over the four research years were analyzed. First, the topic described by the event was identified as well as the reasons for choosing it. Data were concentrated in a table. Then, the data were analyzed according to the frequency of events and of the reasons for choosing them. This analysis revealed those events that were more meaningful for students in the course and the reasons for choosing to write about them.

The two events chosen most often by the students were: conducting observations in the department building, during which the students left the classroom and returned 30 minutes later with their conclusions; and the forum interview construction assignment and its execution (which will be elaborated on later on). The most commonly mentioned reason for choosing an event related to the fact that the event led to learning about qualitative research. This explanation was expressed in statements such as: "I underwent a process," "It caused a 'switch'," "It sharpened an insight," "Qualitative research is beneficial," and "I drew conclusions" and it reflects how the teaching framework presented in the paper indeed contributes to students' learning of the essence of qualitative research.

According to this principle, the course serves as the research setting for the students, who are both studying it and serving as research subjects, and their perceptions, attitudes and behavior are at the focus of the research activity they themselves are conducting. From a pedagogical perspective, this teaching principle enables the instructors to give group assignments since all of the students are involved in the same learning process and are experiencing it together. This teaching principle is especially important in the course on qualitative research, since it enables the students to discern the importance attributed in qualitative research to studying the attitudes of the research subjects in their natural surroundings in a direct manner.

The implementation of this principle together with group assignments will be demonstrated using an assignment the students receive about five weeks into the course. This three-stage assignment is executed over a course of three weeks. The task deals with the construction, execution and analysis of interviews and is presented as part of a study whose objective is *to examine the perceptions of students in a QRM course regarding the essence of qualitative research, at the stage in the course the task is given*. In the first stage, the students work together to construct an interview on the Technion's online course management system (Moodle); in the second stage, they must interview one of their course mates using the interview questions formulated in the first stage; in the third and final stage, the students analyze the interviews they conducted, and present their findings on the course on-line forum.

The interview outlines constructed over the four years during which the research was conducted were highly similar. The sample of the interview questions presented below was constructed by students in Semester I, 2010-2011. The interview was created over five days (26-30 November, 2010) during which 195 forum messages were posted.

- 1. Which aspects of the qualitative research did you connect to, and which did you not connect to?*
- 2. As you see things, what is your position regarding the concept of the researcher acting as the main research tool in qualitative research?*
- 3. According to your perception, can the same research problem lead to both qualitative and quantitative research?*
- 4. To what extent is there room for a structured theory when preparing to conduct qualitative research?*
- 5. What do you think is the unique contribution of each of the two research approaches - the qualitative approach and the quantitative approach?*
- 6. As you see things, what characteristics are necessary in order to be a good qualitative researcher?*

From the course instructors' perspective, this interview outline reveals that the interview questions address various topics discussed in the course, and particularly the characteristics of qualitative research, the research process, and the qualitative researcher's role in the research. It is also evident that focusing the assignment on the course as the research setting requires the students to raise their awareness to what is being taught in class and to improve their understanding of the course contents. As can be seen, from the pedagogical perspective of the course's teaching staff, the assignment of constructing an interview on the forum is one of the course's main assignments that help the instructors grasp the students' mid-semester understanding of the subject.

From the students' perspective, it seems that constructing the interview on the forum, as a assignment that is shared by all of the course students, has a significant role in their learning process. The two following reflections, written eight weeks into the course, demonstrate the students' perception of the forum's contribution to their learning process:

The forum also actually served as an online reflection assignment for me, and during the discussions [...] I arrived at perceptions that I didn't have before or that I perhaps had sharpened.

The discussion on the forum and using the forum as an additional tool for communications between us was productive and enriching. I think that everyone who participated and followed the responses contributed to the discussion in one way or another [...]. All in all it was enriching and very interesting. It was particularly interesting to see the way each student interpreted the research objective and from that tried to extract the research questions. [...] I dare say that the questions made less of a difference, and were a trigger for talking, during the interview, about almost anything we wanted to talk about.

The assignment's potential for student learning is also demonstrated using the data presented in Table 6, which attest to the interest the students had in the assignment and to the extent of their investment in it. We would suggest, for instance, that during the 2010-2011 academic year the forum discussion was relatively more plentiful than in the other three

years. Indeed, in 2010-2011, many of the students mentioned the contribution of the forum to their learning in their reflections.

Table 6: Data on the joint interview constructing forum-based assignment

| | 2009-2010 | 2010-2011 | 2011-2012 | 2012-2013 |
|-------------------------------------|-----------|-----------|-----------|-----------|
| No. of students | 10 | 13 | 15 | 24 |
| No. of words on the forum | 3,414 | 20,857 | 7,614 | 16,651 |
| Average no. of words per student | 314 | 1,604 | 507 | 694 |
| No. of messages | 28 | 196 | 107 | 162 |
| Average no. of messages per student | 2.8 | 15.07 | 11.3 | 6.75 |
| No. of questions in interview | 8 | 9 | 6 | 11 |

Principle 3: The students present published qualitative research papers to the course plenum and discuss them

Qualitative research guides critical thinking about the research methodology used to conduct the research. (Ortlipp, 2008)

As explained in the course requirements (Table 2), the students must present two qualitative researches during the course: the first, from the research literature and the second is the research that they themselves conduct during the course (see Principle 1). At the end of each presentation, the students must present an issue that arises from the research and facilitate a discussion about any aspect of that issue, according to their choice. Thus, from the students' perspective, this teaching principle enables them to learn the fundamentals of qualitative research from various resources – articles from the literature that describe qualitative research and research conducted by their course mates.

Specifically, for their first presentation, the students must find an article in the literature that describes a qualitative research and present it to the course plenum. This process includes searching and browsing through the relevant literature, analyzing the research presented in the chosen article in order to decide whether or not it is suitable for presentation as a qualitative research, processing the paper for presentation, and finally, they must exhibit critical thinking by formulating a question for discussion. In the discussions themselves, the students are exposed to the opinions of their course mate on the essence of qualitative research in addition to being encouraged to think about the issue raised for discussion. The following two excerpts illustrate the students thoughts about the contribution of the assignment to their understanding of the essence of qualitative research and the method of its execution.

The first excerpt is taken from a reflection written ten weeks into the course and it demonstrates how searching for an article contributed to the student's understanding of the status of qualitative research, reinforced his critical thinking, and deepened his insights regarding the execution of research:

I was surprised at how difficult it was to find an article that meets the assignment requirements. I looked in the fields of sociology, ethnography and ethnology. I also wanted it to be relevant for me and I looked for articles that have to do with the Israeli society. I was sure I would find an article fairly easily and would have to choose the most interesting article from among those. [...] Most of the studies used one research tool. There was another

difficulty, which was to find an "organized" article that had a research problem or research objective and research questions.

The second excerpt, which is taken from a reflection written twelve weeks into the course, reflects how searching and presenting research from the literature, including questions for discussion, promoted the students' understanding of the complexity of the research process as well as their critical thinking skills:

It is very difficult (mentally, not physically) and very interesting to present other people's research!!! Interesting because you're exposed to the method of thinking of the person who wrote the paper or conducted the research. [...] On the other hand, the subject is challenging because while reading (and, of course, in light of all the stages we went through in the course so far), there's criticism regarding the article: the method of execution, the methodology, the research population, the data analysis, and even the conclusions. In my personal estimation, the course participants (including myself of course!!) underwent a process of learning about the essence of qualitative research, so much that they possess the tools to critic the existing research (they no longer simply read and accept for granted).

As mention, the students' second presentation of qualitative research, which is done during the last session of the semester, consists of a brief presentation of their own research, after which they raise a subject for discussion and discuss it with their class mate for about ten minutes. Data analysis reveals that most students raised issues related to the subject of the research they conducted in the course rather than issues that relate to the essence of qualitative research. For instance, in Semester I of the 2010-2011 academic year, suggested topics included: *What can be done to minimize violence in schools? Is it appropriate to expose grade school children to cultures and beliefs that are different from their own? What do you think about equality in education? Is it our role, as a society, to prepare pupils to become future citizens or future scientists?* Only a small proportion of students suggested discussion questions that deal with qualitative research, for example: *Is the research design suitable for achieving the research objectives? What place does qualitative research have in the community of quantitative research?*

From our perspective, as the course instructors, we were surprised by this phenomenon, which caused us to ask questions about the students' understanding of the course content, similar to the questions asked during the execution of a qualitative research, when an unexpected phenomenon appears. In this case, we tried to explain the phenomenon in several ways⁶:

- a) The students are interested in the topic of the research they conducted since they chose the topic, and so they choose to discuss *it* rather than to delve into the essence of qualitative research;
- b) The students are at one with the research design they executed and so the topics raised for discussion address their research topic;
- c) The students do not feel secure enough to raise issues that deal with qualitative research, and so they choose to discuss subjects about which

⁶ It is of course possible to examine the phenomenon in a follow-up study. Nevertheless, it suffices to present the phenomenon and compare it to the conducting of qualitative research in order to demonstrate the ideas presented in this paper.

they have more confidence, since they are the ones who chose the research subject;

- d) The students perceive the research process as a means, and so choose to focus on what they perceive as the focus of the research.

Nevertheless, the fact that the students focused on issues that do not deal with qualitative research, but rather with the subject of the research they conducted emphasizes the importance of Principle 2 – The course serves as the research setting for the students' course assignments – which requires the students to focus on the process of learning QRM.

Principle 4: The course topics are demonstrated using research students conduct as part of the course assignments

There is special significance, in qualitative research, to studying topics to which the researchers have a personal affinity. (Coffey & Atkinson, 1996)

According to this principle, the subjects discussed in the course are usually illustrated using the research that the students conduct during the course, and whose topics are chosen by the students, as mentioned earlier. For instance, in the session on formulating research problems, the formulation process of a research problem is demonstrated using the research problem featured in the research of one of the students. Similarly, when learning about the formulation of interview questions or when constructing a questionnaire, the discussion focuses on an interview or questionnaire constructed in one of the students' researches. Furthermore, the principles of conducting interviews in qualitative research are demonstrated using interviews that the students conduct as part of their research. It is important to emphasize that the students are those who propose their research topics for discussion. Cumulative experience shows that as the semester progresses and the students are increasingly exposed to the contribution of such discussions to their research, more and more students express interest in having their research discussed in class.

From the perspective of the course instructors, these discussions enable to discern how students – both those whose research is being presented and those participating in the discussion – construct their research design, how they articulate about the research, and what their approach is to the research. Furthermore, such class discussions enable the course instructors to learn about the students' progress in their individual researches in preparation for presentation time at the end of the semester.

It seems that in addition to the discussions' contribution to the learning of the students whose research is being discussed, they contribute also to the learning of those students' course mates. The students, too, recognize the contribution of these discussions to their learning of the course contents. Following are two excerpts that reflect this; the first was written about two weeks into the course and the second about two weeks later:

It's interesting to sit and listen to people with a lot of experience talk about their activities and studies and describe their research. It's inspiring and it gives new ideas.

The idea of discussing research done by one of the students in class is very productive and is an excellent exercise through which one can learn how to articulate properly and hear others' opinions and articulations. We can learn from other people's research and correct things in our research.

In addition to gaining a general understanding of qualitative research through this teaching principle, its implementation also contributes to a better understanding of certain ideas that are manifested in qualitative research. In the following excerpt, for instance, which is taken from a reflection written six weeks into the course following the execution of a class assignments, the student refers to his understanding of the concept of "the researcher as a research tool":

In a very interesting class assignment, each student was asked to help formulate a research question for a subject raised by one of the students. Surprisingly, every one of the students ("researchers") proposed a completely different question for the same research objective. This exercise clearly reflected to me the meaning of the sentence "the researcher as a research tool." I understood that if different researchers were to conduct research with a predefined objective that was identical for them all, completely different researches would undoubtedly be obtained, as numerous as the number of participating researchers. This is indeed an interesting message regarding the significance of qualitative research.

It also turns out that implementing this principle supports the implementation of Principle 5 that talks about building trust between the teaching staff and the students and among the students themselves. The following excerpt, for instance, which is taken from a reflection written four weeks into the course, shows how working in a group on the formulation of the research objectives and questions for two of the student researches contributed to the writer's learning and how this discussion led to her decision to bring her research up for discussion:

I benefited mainly from the exercise and practical experience with the real research projects of the group members. The group effort to define the research objective and research questions of two of the researches illustrated to me the difficulty of accurately defining and the need to find the appropriate, exact terms [...] The joint group effort to define the research questions also illustrated to me the possibility of contributing to and benefiting from a group discussion. [...] The practical meaning is that I plan to raise internal conflicts that I've been having during my research for discussion and discuss them in a group setting.

This kind of sharing during the semester also contributes to the last session of the course in which the students present their research to their classmates (see Principle 3). Specifically, presenting the research to their course mates during the semester enables the students to arrive at the final presentation at a more mature state, and enables their classmates to better understand the research context of the subject presented after being exposed to part of it in the course of the semester.

Principle 5: Trust is built between the teaching staff and the students and among the students

As part of maintaining the rules of research ethics in qualitative research, a relationship must be constructed based on trust between the researcher and the subjects. (Christians, 2000; Sabar Ben-Yehoshua & Dushnik, 2006)

Trust, which students often refer to as "a friendly atmosphere," is established between the teaching staff and the students and among the students themselves in several ways. First, as mentioned at the beginning of this paper, free listeners are barred from participating in the course to ensure that all participants air their internal conflicts, difficulties and thoughts about their research. This requirement is important also, for instance, when implementing Principle 4, which refers to demonstrating the course topics using the students' research works. The following excerpt, written at the end of the semester, illustrates this:

The atmosphere of togetherness and the lifting of barriers is very important since people expose their half-finished work in class and its important to have a supportive atmosphere.

Second, the fact that the students' assignments refer to the course as the research setting, with the students being both researchers and subjects (see Principle 2), also contributes to the building of trust, which enables the students both to share their attitudes towards the course with their course mates and be exposed to their course mates' attitudes. The following excerpt, which is taken from a reflection written ten weeks into the course, refers to the contribution of this principle to the course atmosphere, to learning qualitative research, and to the relationship between the two:

Apparently there's something in the subject of the course that causes an atmosphere of social openness (at least for me). It may indeed be related to the nature of the course. In the course we're constantly required to analyze ourselves, our perceptions. In other words, we're more exposed. And it's possible that this feeling of being exposed also causes social closeness. Therefore, it may be possible to learn something from it about the nature of qualitative research, about your feeling when you hold such perceptions and conduct research according to them, a feeling of being exposed, of being close to the research participants.

As the course instructors, we attribute importance to the special friendly atmosphere that is created during the course since it leads to the construction of closeness and trust, which are ever important when conducting qualitative research, as illustrated by the above quote. Following is another excerpt from a reflection written about four weeks into the course, in which this idea is expressed using the phrase "a feeling that people care":

I succeeded in thinking about my thought process in general, and it makes me feel good. I'm also happy that there are people around me who are going through the same process, and we also talk about our problems in class – that really enables one to stop a moment and think about what I'm thinking of, and that too gives a feeling that people care.

The following reflection, written twelve weeks into the semester, illustrates this idea in the context of the assignment in which students were requested to analyze events that they experienced in the course. The student quoted here links the contribution of the class atmosphere to the learning process:

I could suddenly see my work vis-à-vis others. What I receive as opposed to what others receive. [...] I discovered that [...] there was an aspect that arose [...] of a social atmosphere. In other words, what I wrote several reflections

ago about the social interaction in the course (as opposed to other courses) and about the atmosphere in the course – now gained volume, took up a dimension. It is not only me.

This principle is possibly an outcome of other teaching principles that, according to the organizing framework for teaching the course, also implement the principles of qualitative research, which among other things are supposed to enhance trust between the researchers and the research subjects. Thus, like when conducting qualitative research, which when executed properly builds trust between the researchers and the subjects, a similar process of trust building takes place when QRM are taught according to teaching principles that stem from the qualitative research.

Principle 6: Reflection is integrated into the learning process

In qualitative research, the researcher's diary is a tool that encourages reflective thinking. (Shkedi, 2003)

As mentioned, reflections are part of the evaluation students in the course undergo. The requirement to submit reflections is presented to the students at the beginning of the semester in a very open manner; all they are told is that they are to submit five out of seven bi-weekly reflections in which they must describe their thoughts regarding the course. The explanation does not specify issues to be addressed in the reflections nor does it specify any required length. No additional explanations are provided other than the above, even when students ask specific questions about the nature of the reflections. This requirement is presented in such a way so as to get the students used to accepting things without a given framework; a skill that researchers conducting qualitative research should acquire and implement (for instance when listening to interviewees or when searching for a theoretic framework in which to organize research findings). Nevertheless, the students are told explicitly that their reflections must address the learning process they are experiencing in the course and that the reflections provide an opportunity to think about course-related issues they wish to work out. From this perspective, even students who regarded the reflections as a means of recapitulating the lesson, without elaborating or delving deeper, learned from the mere recapitulation.

From a pedagogical perspective, as is evident from the examples presented so far, the reflections enable the course's teaching staff to learn about the students' understanding of the subject of qualitative research, as well as about their views, internal conflicts, and directions of thought to which they refer in the context of this kind of research. From the students' perspective, the reflections continue to the learning process beyond the class or course assignments. Some of the students' reflections addressed this contribution of the the reflections to their learning process and thus, in fact, the reflection itself was the subject of a reflection. Following are two excerpts that illustrate this point. The first reflection was written ten weeks into the course:

As time passes, the reflection tool proves itself as a tool that enable to close gaps or to raise questions that remain open, while conducting a personal discussion about what we experienced in class. I usually leave the classroom feeling that I haven't fully exhausted the subject and later, I (more or less) close the open ends through the reflection.

In the second example, which was written eight weeks into the course, the student analyzes what she wrote in her reflection and explains how this analysis led her to define her perception of qualitative research:

The categories I addressed these past two weeks following different events that happened in the Qualitative Research Methods in Education course [are]: Reflection, learning process, and the qualitative research as perception. This enables me to derive a general insight about my perception of qualitative research: Qualitative research is a reflective learning process that deals with perceptions and includes listening, an "incubation" period.

Principle 7: Course discussions are conducted like interviews

Interviews in qualitative research are based on asking open questions, listening, reacting to words used by the interviewees and asking for interpretations, refusing to provide examples on request, and refraining from expressing criticism. (Fontana & Frey, 2000)

According to this principle, the lecturer conducts course discussions that are inspired by open interviews as are used in qualitative research, guiding the students to think about the topic under discussion and to critic it. Specifically, this principle encourages listening with attention to students' choice of words, focusing on certain words and asking for clarifications if required, and reflecting the students' statements by repeating their utterances. In addition, out of an awareness to the students' learning process and in the spirit of qualitative research, reactions to students' words are not judgmental, and when it is impossible to ignore criticism, such is replaced with a request from the other students to address what was said. Furthermore, not all questions have answers, and in many cases questions that students ask the lecturer are redirected towards the rest of the students as an invitation to discuss the issue.

For instance, instead of responding to a student's request for examples in a certain context, the request is redirected towards the class. On the one hand, this encourages the students to think about the meaning of what is being said, and on the other hand it enables the course's teaching staff to learn about the students' perceptions in the said context. The following excerpt was written about four weeks into the course and it calls attention to the contribution of this teaching principle to the students' learning:

Many questions in class are raised openly and many times I find myself surprised by the answers my classmates give. Sometimes I can't understand the connection between the question and their answers, not because there's no connection, but because I'm thinking about certain things and it's hard for me to imagine other answers. This method of teaching opens up an in-depth and interesting dialog and opens up new avenues of thought.

It should also be noted that when no student rises to the challenge and silence is cast over the classroom after the lecturer uses the words of one of the students as an invitation to discussion, the students' attention is called to the implementation of this approach in interviews: when the interview goes silent, the interviewer must wait until the interviewee answers, and must not be deterred by the silence and break it.

Despite the advantages of holding a discussion of this kind, it seems that it is unsuitable for some students, who found the bi-weekly reflections to be a more appropriate tool for voicing their opinions on the subject. The mere expression of criticism reveals that

the students feel safe to voice their criticism, and so Principle 5, which refers to building trust between the course's teaching staff and the students, is manifested. Following is a critic written eight weeks into the course that addresses the method of conducting course discussions as interviews:

I very much enjoy the class discussions. I feel that there are bits of information scattered around me and all I have to do is simply gather them and save them for future use. Nevertheless, I sometimes need to get a simple and straight answer, rather than an optional answer that is hidden within a whole discussion. In fact, most questions I ask are answered with a "What do you think?" Such a question undoubtedly has a strong effect on us and it leads us to discussions, but sometimes all I want is just one small and simple answer.

Principle 8: Students are guided to think at various levels of abstraction

Grounded theories are constructed in qualitative research by bi-directional transition between several levels of abstraction: data-categories-theory. (Glaser & Strauss, 1967)

According to this principle, the course discussions address the importance of examining the research topic at different abstraction levels that reflect the generality of the discussion. Thus, for instance, in the context of data analysis, the transition between abstraction levels refers to a bi-directional transition between research data, the categories into which the data are classified, and the organizing framework or grounded theory that is constructed during the research.

In their reflections, the students refer to the challenge involved in transitioning between different abstraction levels and to the way in which such transition can contribute to

- a) to their learning of course contents, and
- b) to future research they may conduct, as illustrated respectively in the following reflections written towards the end of the course:

In the last lessons, Orit [lecturer and first author of the paper] repeatedly emphasized the different levels of abstraction required for data analysis, and she especially noted the importance of being aware of the transition between different abstraction levels. I think this is a very interesting insight that is true and relevant for every learning process. The message I take away from it is that it's also important to look at every learning process from above and understand where – in the different abstraction levels – we are in terms of the process.

When we were working in groups [on the analysis of events that occurred in the course] it was hard for us to go higher than to describe the categories. We held many discussions about the method of constructing the categories, the transition from the word level to the category level, and the definition of the categories. [...] I felt a kind of block, a lack of understanding of how to transition and get there. [...] I have faith that when I get to the stage of sitting with material and organizing it into organizing framework, I'll be able to do it.

From the course instructors' perspective, these attempts to ascend and descend in terms of abstraction levels reflect the students' ability to progress in grasping the essence of qualitative research, which is, in fact, its objective – to begin with bits of information and to gradually construct a grounded theory (Glaser & Strauss, 1967). In other words, when lecturers invite the students in the course to think at different abstraction levels, the students' response to the invitation constitutes a kind of feedback regarding both the students' perception of the essence of qualitative research in general and of the essence of a grounded theory in particular, and regarding the students' ability to conduct this type of research.

Principle 9: Awareness to the researchers' emotions and their role in the research is raised

Emotional labor is part of the research process in general and of qualitative research in particular. Feelings of ambiguity and of lack of clarity are an essential part of the research process. (Coffey, 1999; Dickson-Swift, James, Kippen, & Liamputtong, 2009)

The emotions researchers have while conducting research are discussed in the course in a variety of contexts. Among other things, emphasis is placed on the idea that learning to *conduct* research involves enhancing awareness to the researchers' emotions and acquiring skills that enable one to cope with such emotions so that they do not interfere with the research but rather advance it. Specifically, in the context of qualitative research, ambiguity and lack of clarity are emphasized as dominant, natural and even essential emotions. Furthermore, the possibility is raised that in the absence of these emotions while conducting qualitative research, the actual interest the researchers have in the topic studied should be examined.

The place of emotions in the course of qualitative research is given special attention in the course in a reflective lecture given by the course's teaching assistant (the second author of this paper), in which she describes how her awareness to her emotions during her doctoral research contributed to the research in general, and to the data analysis in particular. It turns out that the explicit addressing of emotions in this lecture impressed the students and, as a result, several of them mentioned expressions of emotions in their research and even expressed their feeling towards the subject. The following reflection, for instance, was written ten weeks into the course:

Another viewpoint that is also exceptional, albeit human, [is] the involvement of emotion in the field of study. Researchers naturally refer to their research as a "protégé" and will sometimes do their best and utmost due to their strong wish to deepen and advance the research. There is no doubt that the selected topic should be close to their heart and hence the connection to emotion. If up until this stage of the course we had heard Orit as an experienced and skilled researcher with an outstanding ability to maintain a frozen, reserved expression when posing questions, we are now seeing Liora talk about a different situation. I, personally, can identify very easily with her as an inexperienced researcher, at the beginning of my journey into research of this kind. I must note that I left the session with mixed feelings and even curiosity regarding the final results that Liora will obtain at the more advanced stages of her research.

Following is an example of a reflection written at the end of the semester, which refers to the place of emotion in the research process:

Liora's part on emotions was fascinating. The researcher's feelings and experiences as a legitimate research tool is revolutionary. It is something that is the inverse of the scientific research paradigm.

One of the emotions explicitly discussed in the course is the feeling of ambiguity, the experience of which is challenging for the students in the course. It is important to note that this emotion accompanies any research (not only qualitative), but the research culture of qualitative research gives legitimization to discuss such emotions. The feeling of being in the dark is difficult for students, especially considering their professional background – scientific-technological education, which is characterized, among other things, by a field of knowledge that is based on clear rules and laws. Two students describe the inner conflicts they are coping with in their reflections:

It's still a little unclear to me - if I don't know what I'll find and maybe I don't know what I'll be looking for, then how can I formulate the research objectives and research questions? Also, if I've formulated the research objective, how can I explore with an open enough mind, since I have to respond to the research objective...

I'm aware that the ambiguous style is very hard for me. It's easier and more convenient when there's a "recipe" and clear instructions what to do. I've discovered about myself, that in life also, I have a hard time with ambiguity and with things that are not known in advance. But this is, in fact, the nature of qualitative research. You embark on a journey but you have no idea where you'll end up and I have to get used to it. [...] I approach the work with butterflies in my stomach, a feeling of fear mixed with excitement. The research is very important to me and close to my heart, I hope I'll succeed in using the tools I've learned and finish the research with clear and helpful conclusions.

To support the students' process of learning QRM, which according to the organizing framework presented here for teaching the course is similar in essence to the process that takes place in qualitative research, the course instructors must be aware of the students' difficulties in coping with such emotions and address the legitimacy and necessity of experiencing them both while learning QRM and while conducting research. Addressing this issue explicitly apparently helps the students cope with uncertainty – an emotion they are not used to experiencing in the context of research processes – as can be seen in the following reflection that was written about eight weeks into the course:

I very much connect to the talk about the uncertainty in the process of qualitative research. In the interview exercise, it seems that the interviewer noticed it and mentioned it as one of her insights. This is apparently the reason I took Orit's words to heart, when she said in class: "You have to live in peace (and even enjoy) the feeling that we don't know where it will end up... we don't know what we'll achieve in the end... but with correct guidance the 'wow' moment will arrive. You must believe it..."

From the course instructors' perspective, explicit reference in the course to the researchers' emotions reveals the meaning the students attribute to emotions in the execution of qualitative research in general, and the students' perception of the role of emotions in the research process in particular.

Principle 10: A gradual learning process is facilitated

In qualitative research, researchers construct a grounded theory in a gradual learning process in which the details of an initial, ambiguous picture accumulate, sharpen and are refined in the course of the research. (Glaser & Strauss, 1967)

The objective of the course is to provide the students with a setting in which to learn QRM. Due to the complexity of the subject, the learning environment must guide a gradual process of learning of the subject, taking into consideration the students' backgrounds in general, and their scientific-engineering background in particular, like in the case described here.

Most students start this course, on the one hand, knowing very little, and in many cases nothing at all, about QRM, and on the other hand, after studying quantitative research or statistical methods in some framework or another (high school or higher education). During the course they undergo a learning process that begins for most of them by comparing their previous knowledge with the new knowledge; continues in forming connections to the new knowledge, including experiencing the different style of thinking required in this discipline and using different research tools; and ends in the execution of a full research. As is evident, these stages parallel the learning stages of researchers conducting qualitative research, in the context of the research topic of course.

Indeed, the students report on gradual learning of QRM and their execution, as is reflected, respectively, in the two following examples, written about eight and six weeks into the course:

Internalization of a different paradigm is a process in which one has to re-organize all of the accumulated knowledge about the essence of scientific research, and know how to match a paradigm to the research. Thinking about a research in two parallel paradigms enriches the understanding of the essence of science.

Conducting the interview and observations and the research process in general was fascinating and even fun. The learning process was indeed gradual and this was manifested in the nature of the interviews I conducted (there was an improvement in the form of the interview, I corrected questions or re-formulated them in order to better clarify my intentions).

Specifically, the students add and compare old knowledge and new knowledge. Similar to qualitative researchers who usually begin their research by reading what is known about the phenomenon they are studying, the students begin the process of learning and constructing their knowledge about qualitative research based on their existing knowledge regarding research and search for a way to connect to new content. It seems that the current knowledge to which the students refer does not have to be quantitative research, and can be the discipline they come from (e.g., architecture) or the world of engineering, as illustrated below:

The first question that bothered me before I set foot in the classroom for the first lesson, had to do with the nature of qualitative research, although architecture, the field I come from, enables one to be exactly in that place – between the physical, the understood and the clear, and the vague place.

I studied electronic engineering as an undergraduate and I'm used to thinking in numbers. And so, often, when I met with my supervisor, it was hard to understand the essence of qualitative research [...]. After reading Naama Sabar Ben-Yehoshua's book it [seemed] to me that I understood the characteristics of the research. But when I was asked to explain what qualitative research is, I discovered that I hadn't properly internalized its characteristics and unique features and it was hard for me to express and articulate them properly. Now I'm not able to say for sure that I understand what qualitative research is, but I'm in the right direction.

We note that the comparison with quantitative research, with which students are more familiar, has appeared in most of the years as one of the questions in the interview the students construct during the course (see Principle 2). For instance, in the 2011-2012 academic year, one of the interview questions was: *What do you think characterizes the applications of qualitative research compared with the applications of other kinds of research you are familiar with?*

At the end of the course, students report on the process they have undergone in the course, as the following excerpt from the final course reflections shows:

Last week's session completed the picture for me. I can even define it as a "cognitive upheaval." Up until now I had treated research as a process that ended in a clear result. As a result of the course and the different experiences, I now see a different picture. Qualitative research, in its mere subjectivity, can sometime present a more "correct" picture. The mere fact that qualitative research enables better expression of variance in perceptions, causes qualitative research to be less conclusive. For years I had expected research to be unequivocal, but actually, like in real life, in many cases things are not conclusive.

From a pedagogical perspective, we also mention the contribution of the style in which the course discussions were held (see Principle 7) to the gradual construction of knowledge. This style enables the students to learn the course content gradually, since such a process is guided by their questions, internal conflicts, and mutual addressing of each other's questions. The following reflection, for example, written in the last week of the semester, explicitly addresses the gradual construction of knowledge that is done jointly by all of the students through class discussions, among other things:

I think, and I thought this even before the course, that no book can teach as well as a teacher who's doing constructivist teaching in class. I feel that the knowledge that we acquired in class was constructed together through processes of lectures, discussions and our exposure to research.

Summary

This paper presented an organizing framework that was constructed as a grounded theory for teaching and learning qualitative research as part of graduate studies at a research-engineering research university. This organizing framework is based on ten principles for teaching and learning a course on qualitative research that were derived from the analysis of four years worth of data.

The organizing framework that was constructed as a grounded theory presents an analogy between three processes: conducting qualitative research, teaching a course on qualitative research, and students' learning of the principles of qualitative research (Table 5). In the summary we will discuss two of this organizing framework's properties and the contribution of the research that led to its construction.

Properties of the organizing framework

1. The relationships between the ten principles of the organizing framework: (Figure 1) illustrates the fact that the teaching principles that comprise the organizing framework are not independent from one another but rather reinforce one another. This is significant since these principles form the basis of the organizing framework for teaching QRM, and as such, must be linked to one another in order to construct together a coherent conceptual framework. It is important to mention that not all of the reciprocal relationships that exist between the teaching principles are depicted in Figure 1; we illustrate only some of them so as to reflect the diversness of the relationships between principles that form the infrastructure for the grounded theory.+

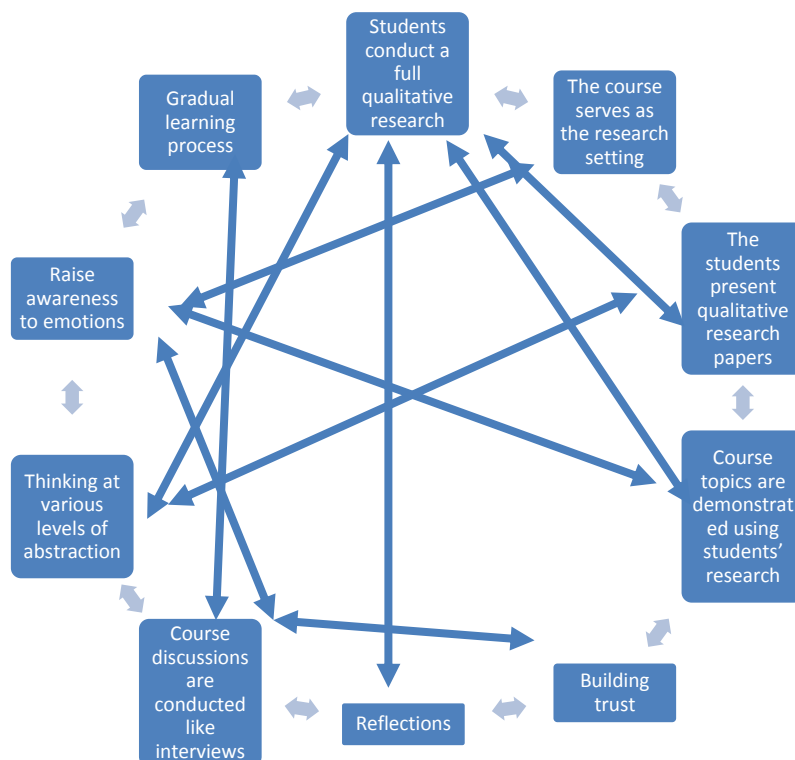


Figure 1: Reciprocal relationships between the basic principles of the grounded theory

2. **Suitability of the teaching framework to the content studied:** The teaching framework presented in the paper is designed to support the learning process of the course content. In addition, the teaching and learning principles for the course on QRM presented in the paper reflect the suitability of the teaching approach to the subject studied. In the case of the course described here, this suitability is manifested by reflecting the spirit of qualitative research in its teaching. Another case that illustrates suitability of the teaching process to the teaching content is when constructivist methods are used to teach the subject of constructivism. Since we are dealing with teaching at a scientific-research university, we note that studies may also be found that deal with the teaching of engineering content and which implement the same idea. For instance, Dubinsky and Hazzan (2005) illustrate this idea in the context of teaching software development methods. In the case of software engineering, suitability is demonstrated between the execution of an action research, software development methods, and principles for teaching the topic of software development methods. Thus, in addition to being a teaching method, the teaching of the course on qualitative research, which is inspired by qualitative research, also serves to demonstrate the principles of conducting qualitative research to the students.
3. **The framework challenges:** As can be seen, the teaching framework deserves the instructors' attention both during the lessons and between them. Therefore, it cannot be duplicated or recorded and then offered to big population. In addition, the instructors should be open to and accept students' frustration, who expect clear Yes/No answers, but instead are invited to an open discussion.

The research contribution

The importance of the research presented here stems from the fact that the use of QRM has, in the past decade, expanded from the social studies to additional disciplines in which QRM were not previously accepted practice (e.g., geography, Delyser, 2008) as well as to technological and engineering fields (e.g., software engineering, Dittrich, 2007). Therefore, the QRM learning-teaching framework presented in the paper may contribute to the design of QRM courses in universities in general and in scientific-engineering research universities in particular. Such training, which also includes qualitative research methods, may guide graduate students to seek research topics that are different from those currently pursued in scientific-engineering disciplines. Thus, the teaching framework constructed in the research described here for a graduate course in a scientific-engineering research university, may support the implementation of these research processes.

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Article Citation

Hazzan, O., & Nutov, L. (2014). Teaching and learning qualitative research \approx Conducting qualitative research. *The Qualitative Report*, 19(T&L 1), 1-29. Retrieved from <http://www.nova.edu/ssss/QR/QR19/hazzan1.pdf>
