Using Video-Diaries in Educational Research Exploring Identity: Affordances and Constraints

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Abstract

To use video in educational research has become more and more common in the last few decades, including methodologies where informants themselves use video-cameras for documentation. The purpose of the article is to discuss affordances and constraints of using video-diaries as a data generation method for investigating students' identity constitution. Video-diaries were recorded as part of a larger project, where the empirical data also included observations and videorecordings of teaching and semi-structured interviews. The noninterference of the researchers during the video-diaries was found to be both a strength, in that students more freely could tell their own stories, and a weakness, in that it put high demands on the students' ability to express themselves in monologue format. An important affordance of the video-diaries was that they contributed to a "thick" data set, both in that they informed our individual, semi-structured interviews and allowed us to quickly move on to in-depth conversations, and in that the students were able to utilize artifacts and show environments of importance to them.

Keywords

case study, methods in qualitative inquiry, qualitative evaluation, micro-ethnography, social justice

Introduction

The use of various forms of video methodologies in educational research has become more and more common the last few decades. The reasons for this are, apart from equipment becoming cheaper, that new video technologies "provide powerful ways of collecting, sharing, studying, presenting, and archiving detailed cases of practice" (Derry et al., 2010, p. 4). However, Derry et al. (2010) point out that use of video research in and on complex learning environments involve certain methodological challenges that researchers need to consider, especially concerning how the technology can be applied, selection of data, choice of analytical framework, and ethics. Today, the access to handy and inexpensive video cameras have opened up for a new use of video cameras: to make the participants use the video camera themselves and make so called video-diaries. This article primarily explores video-diaries (Noyes, 2004) as a methodological entryway to investigating engineering students' identity constitution. As such, the paper makes a methodological contribution to the emerging field of STEM (science, technology, engineering and mathematics) identity research (Archer et al., 2017; Carlone & Johnson, 2007; Holmegaard et al., 2014). This field makes use of sociocultural theories of activity and identity to explore how various

participants relate to STEM, and the consequences of this relationship for their choices, interests, aspirations, and participation (Archer et al., 2015; Brickhouse et al., 2000; Bøe, 2012; Calabrese Barton et al., 2013; Carlone, 2004; Carlone et al., 2015; Gonsalves, 2018; Hazari et al., 2010; H. Mendick, 2005; Walker, 2001). In particular, the field has been very much concerned with understanding issues of inclusion and exclusion, given the underrepresentation of women and minorities in many STEM fields (Archer, Moote, et al., 2017; Mendick et al., 2017). Avraamidou (2019) argues that identity perspectives offer a valuable way to understand participation and non-participation in science, and Carlone and Johnson (2007) consider identity as a powerful way to address questions concerning which individuals are able to adopt and perform science norms and discourses. As such, identity as an analytical

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lens makes it possible to address not only exclusionary practices, but also what is privileged in a certain community. However, a majority of studies focus on the related issues of exclusion and making STEM more accessible to underrepresented groups, rather than illuminating and scrutinizing the norms of STEM practices (an exception being a limited number of studies concerned with the production of masculinity in science, for example Archer et al. (2016) and Gonsalves et al. (2016). To date, the field of STEM identity research has been dominated by studies employing interviews and/or ethnography as data construction methods, and we here report on the affordances and challenges of using video-diaries as a complementary data generation method.

Video-diary has been employed as a data generation method in a variety of contexts, in and beyond education. It is generally argued that the method gives participants an opportunity to present narratives of their own lives (Buchwald et al., 2009; Holliday, 2004; Noyes, 2004). The recording of video-diaries have either been organized in terms of distributing cameras to the participants so that they can make recordings when and where ever they chose (Noyes, 2004) or by setting up a video-diary room in close connection to the activity the researchers want the participants to reflect upon (Cooley et al., 2014; Cotton et al., 2010; Larkin & Jorgensen, 2016). Either way, it has been argued that a strength of the method is that it allows for data to be generated in close connection to the occurrences under study, by, for example, letting students reflect on an ongoing course on repeated occasions during the course (Cooley et al., 2014). The lack of opportunity to probe during the data generation is one of the main characteristics of video-diary as a method, something that is viewed both as a limitation (Buchwald et al., 2009) and a strength (Holmegaard et al., 2014). Azzarito and Sterling (2010) and Cooley et al. (2014) argue that it is possible to produce more authentic stories without the intervention of a researcher and it has also been pointed out that the method is less reliant on rapport between researcher and participants (Larkin & Jorgensen, 2016). Several researchers also highlight that video-diaries can be a way to handle the asymmetric power relations between children and adults in data collection, by giving the children control over the data generation process (Larkin & Jorgensen, 2016). Lundström (2013) and Holliday (2004) both argue that the recording of video-diaries can be an empowering act. However, the possibility for video-diaries to function as empowering in that they allow participants to tell their authentic stories have also been questioned (Piper & Frankham, 2007). Gibson (2005) argues that the researcher is always part of the research, whether present during data generation or not, in that the informants construct their narratives in relation to an assumed interest of the researcher. Jones et al. (2015) also describe how they during the research process had to abandon their original idea of "empowering" participants to freely produce their video-diaries, and instead apply a more guided approach, providing the participants with prompting and structure. Cooley et al. (2014) argue that the pre-planned nature of responses gained during video-diaries can be both a strength and a

weakness. Holliday (2004) discuss how the possibility to watch, edit, and re-record gives participants potential for a greater degree of reflection and Jones et al. (2015) found that the production of video-diaries became more reflective and considered over time, as the participants grew more accustomed to producing video-diaries.

The purpose of the article is to discuss affordances and constraints of using video-diaries as a data generation method that allows for analysis of students' identity constitution in the context of STEM educations.

Method

Research Design

In this article we report from research utilizing video-diaries as a means of exploring students' identity constitution. This work was carried out within the larger research project EPIK (Engineering Project: Identity and Knowledge), which is a 3-year project funded by the Swedish Research Council that explores project work from two different, but inter-related perspectives: the students' learning of professional knowledge and their identity constitution.[1] The project as a whole is set up in the context of engineering educations as currently being transformed, both to attract new groups of students (e.g. women) and to provide the students with broader skill-sets (e.g. team working skills). The argument is typically that the contemporary engineer, apart from having a good conceptual understanding of basic sciences and mathematics, also need to possess generic skills such as creative and critical thinking, problem-solving abilities, and logical and analytical decision-making as well as team-working skills (Sahin, 2010, p. 519). Over the past 10 years, project work has gained increasing popularity within higher education, with the aim of making the students gain "soft skills" as well as better learning outcomes (Muller & Young, 2014; Schech et al., 2017). In this project, a research design was needed that both allowed the detailed capturing of learning events and a deep and prolonged engagement with identity issues. As such, the project utilized an ethnographically inspired research design, investigating two traditional engineering educations: Mechanical Engineering and Construction Engineering at a large, research intense university. Both these engineering educations have a majority of male students (in Sweden 83% of the students in Mechanical Engineering are men, in Construction Engineering 66% of the students are men). The empirical data for the project as a whole consists of engineering education websites, observations of lectures, video-recordings of project work, interviews, and video-diaries recorded on repeated occasions by the interviewed students, see Table 1. The entire data set informed both the research strand focused on students' learning of professional knowledge and the one focused on students' identity constitution, even though the former used the video-recordings of project work as the main data source and the latter the video-diaries and the semi-structured interviews as the main data source. Video-diaries were included in the research design as a means

Table 1. Overview of Data Generation in the Project as a Whole, Outlining the Order of Data Generation (Video-Recordings and Video-Diaries Were Carried Out in Parallel).

Source of Data	Amount of Data
Websites	9 websites
Observations of lectures	8 lectures (20 hours in total)
Video-recordings of project work	11 hours in total
Video-diaries (13 engineering students)	13 diaries, 3 recordings/diary (310 minutes in total[2])
Interviews (13 engineering students)	13 interviews (13 hours in total)

of both allowing students to reflect about their learning in the project close in time to the occurrences and as a means of creating a way for the students to reflect on their identity constitution throughout the course. The project adheres to the Swedish Research Council's ethical guidelines and written consent has been collected from the participants. The student names used in the article are pseudonyms and the description of the university has been left deliberately vague in order to avoid identification. In order to recruit students for the research project two researchers visited lectures in the very beginning of the courses, and invited all students to participate. Out of the approximately 30 students in the Mechanical Engineering programme seven students chose to participate in the research project, and out of the approximately 30 students in the Construction Engineering programme six chose to participate.

Data Generation

This article focuses on the video-diaries, and the role of these for researching students' identity constitution. In total, 13 engineering students (seven Mechanical Engineering students and six Construction Engineering Students) recorded video-diary entries on three occasions each, during two different 7.5 ETCS courses, that both included project work as a significant component. In each case the data generation took place during a 6 week period (from the observation of the first lecture to the final, semi-structured interview). The lecture observations were carried out by Berge themselves with a Master degree in engineering and, therefore, a detailed appreciation of the educational content and context. The video-recordings of project work and the collection of the video-diaries were carried out by two researchers and a research assistant. The interviews were performed by three researchers, whereof two of them authors of this paper. Danielsson has a Master of Science degree and, as such, both authors have inside experience of STEM educations. Prior to the study, none of the authors had a relationship to the studied engineering educations and/or the involved university teachers.

The students who chose to participate in the research project were given written instructions about the video-diaries through email and video-cameras were distributed to the participating students. The instructions also said that we had anticipated that each video-diary entry would last between 10 and 20 minutes, and that the students could turn off the camera or edit the video as they saw fit. In addition, the instructions also clarified that the students did not need to speak into the camera, but that they could, for example, show a place of importance to them. Following Cooley et al. (2014) we made use of semi-structured questioning during the video-diaries, where the students were asked to reflect upon a number of open-ended questions concerning the themes specified earlier (see Appendix 1). Cooley et al. (2014) argues that the strengths of such approach is that it allows the researchers to direct the recorded narrative to a particular area of interest, while also allowing for flexibility. In each video-diary entry the students were asked to reflect on the project work during the previous week and how the project work was evolving. Further, they were asked to talk about questions related to a specific theme (see Appendix 1). The theme of first video-diary entry was the students' backgrounds (e.g. their parents' occupations). The theme of second one, what characterizes their engineering education programme and the project as a whole. In this video-diary entry, we asked the students if they wanted to tell a future, potential student about the engineer education, potentially in "the format of a short commercial" (Appendix 1). The theme of the third video-diary entry was the students' future career plans. For the third video-diary entry the students were also provided with three different stories about working as an engineer, and asked to reflect about their own professional futures in the light of these (e.g. which story they identified the most with). The stories were collected from the engineering education websites analyzed in the project EPIK (where such stories, either in the form of narratives or interviews, are common) and chosen to represent common professional narratives (Berge et al., 2018). On the websites, the stories included photos of the engineers in question, but we chose to remove these in order to have the students focus on whether they identified with the story rather than the engineer as a person. Further, in the written instructions it was also specified that the video-diaries were supposed to focus on their own thoughts and experiences, hence, there were no correct answers to the questions raised in the instructions. The video-diaries allowed us to gain insight into the students' experiences and work-process in the beginning, the middle and the end of the course, thus contributing to a data generation that is closer in time to the occurrences than retrospective interviews carried out in the end of the course. While it would have been possible to do repeated interviews during the course, this would have entailed more planning on the part of the students and much less flexibility. The students' recordings lasted between 2 and 20 minutes.

For each video-diary entry the students were emailed instructions about what to include (see Appendix 1), and asked to record the diary within 48 hours of receiving the email. We chose to collect the memory cards physically after each recording,[3] to ensure safe data handling. Another possibility would have been to have the students upload their recording to an encrypted file repository, but apart from potential issues with

data safety this would also have given us less control over the data actually being generated. Thus, we considered the advantages with a physical data handling to outweigh the disadvantages in terms of labor intensiveness. While the lack of interference from the researcher during the video-diaries is sometimes considered a strength (Pocock et al., 2009), it has also been argued that the lack of opportunity for researchers to probe is perhaps also the most important limitation with the method (Buchwald et al., 2009). We therefore chose to complement the video-diaries with semi-structured interviews at the end of the course. As such, the video-diaries were used both as empirical data in its own right and as a means of informing subsequent semi-structured interviews. Both the video-diaries and the subsequent semi-structured, individual interviews were carried out within an ethnographic tradition, seeking to understand the shared experiences and practices that develops from shared cultural perspectives (Brenner, 2006). The semi-structured interviews were organized around a number of themes common to all interviews (for example, the project work and the student's role in the project; their perception of engineers/engineering and whether they fit in; their engineering education), but the video-diaries also allowed us to construct individually crafted interview guides for the semi-structured interviews. The semi-structured interviews also functioned as a means of seeking clarifications on what the students had spoken about in the video-diaries.

Analysis

In our analysis of the affordances and constraints of using video-diaries as a data generation method we approached the empirical data collected in the project EPIK, documentation of analysis, and publications from the project as a data set. In addition, this data was contrasted with our previous experiences of working in projects with similar designs and aims, that did not utilize video-diaries. In a first stage, we compared what characterized the video-diary data and the analysis thereof in relation to interview data (e.g. not limited to audio and access to different contexts), and tabulated what we considered affordances and constraints related to these characteristics. This analytical stage resulted in the over-arching categories of "inviting us to different contexts" and "non-interference of the researcher." In a second stage, we focused on what characterized the empirical data as a whole (that is, what the video-diaries had added to and potentially affected other parts of the empirical data. This analytical stage resulted in the over-arching categories of "effective generation of a thick data set" and "gaining access beyond the surface talk."

Findings: Practical and Theoretical Aspects of Using Video-Diaries in Identities Research

Below we present aspects that characterize our approach to video-diaries, with a focus on what can be considered affordances and constraints of the different aspects of video-diaries. We begin with aspects that characterize video-diaries as such

and then present what is achieved by including video-diaries as part of a more complex research design.

Inviting us to different context. The video-diaries gave us possible insights to other environments than traditional video-recordings and ethnography confined to the university context. For example, several video-diaries were recorded in the students' homes, and even in cases where the students were not explicitly showing us their accommodation this figured in the background of the recording. Further, the students also had the possibility to record themselves in other environments. In the case of one student, he recorded his three video-diary entries in his apartment, outside an apartment building, and at the shore of a nearby lake. Another example of this was a student who recorded one of her video-diary entries on her own home, with her young children present in the home (albeit, not shown on camera). This video-diary entry largely revolved around the interviewee's role as a mother, thereby displaying the importance of this identity aspect, in relation to the quite generic question "Tell us a bit about yourself." The interview came to an end when one of her children woke up and she went to care for it. Here we would argue that recording the video-diary in the home, with the children present, enhanced this aspect of her identity, whereas it in the university context might be played down more. As shown in Gonsalves et al. (2019) the student's role as a mother was also highly relevant to her crafting an identity as an engineer, hence what we gained access to through the recording of a video-diary in the home was pivotal to understanding her engineering identity. The possibility to generate data in different contexts could be particularly important in terms of facilitating non-traditional students to bring different aspects of their identity to the fore, given that the university context might not be an arena where they are most comfortable and/or that it most influential to their identity work. By not being limited to audio, the video-diaries also gave the students a possibility to express themselves not just verbally. A potential ethical issue arises, though, in that students may video-record other individuals who have not given consent to being recorded and/or private materials might unintentionally figure in recordings done in their own homes. This was not the case in the video-recordings generated by our students.

Non-interference of the researchers. As previously described, the students were fully responsible for recording their own video-diaries, including the choice of place and time, without interference from the researchers. The role of the researchers were, thus, limited to providing recording equipment and instructions for the video-diaries. The instructions included a number of themes and questions to direct the students' recordings (see Appendix 1). This meant that the students were given considerable freedom in terms of generating their video-diaries; they could just speak into the camera, but could also take a more creative approach and, for example, make use of various kinds of artifacts to illustrate their stories. In a few video-diaries, students, for example, addressed the camera in a more playful way (through the use of props, such as an ice-hockey helmet), something that would not have been

possible in a formalized interview situation. Combining three video-diary entries and a semi-structured interview further meant that we in many cases were able to achieve a high degree of saturation for the individual student, but the lack of researcher interference during the video-diaries also meant that across students these stories could take quite different directions. Thus, data saturation on a group level is difficult to achieve, with so little interference of the researchers.

The video-diary data is to a very high degree a co-creation between interviewees and researchers, giving significant agency to the interviewees. In a semi-structured individual interview an interviewee who strays from the interview guide is usually led back to it by the interviewer, in the video-diaries we of course had no such possibilities, which can be considered both a strength and a weakness. For the interviewee who has an important story to tell that does not neatly fit into the interview guide this, however, presents an opportunity to tell this story without interruption from the interviewer. In the final video-diary entry we asked the students to reflect on their future career trajectory in the light of three stories about engineers provided by us (see Appendix 1). One student, however, did not perceive any of the stories as relevant to himself and his professional future and instead told a story about his father:

> Well, eh, I feel that I don't really identify with any of these stories. But, I have another story that I, eh, identify with: my dad. He comes from a poor family, and when he was young he went to a study counselor and said that he wanted to study and they said "you don't have what it takes." And that gave him, at least partly the strength to carry out an education. Right now he works abroad, with ship construction. That's sort of what has been my inspiration, partially. In the future I would like to work abroad. (Gustav, video diary)

This is an example of how the un-directedness of the video-diary allowed for an important story to be told, that may not have come forward in a more structured individual interview. However, the lack of conversational support in the video-diary approach turned out to be difficult to handle for some students. In particular, a student with Swedish as her second language, who was relatively at ease with the conversation in the individual interview situation, had noticeable difficulties with the monologue format of the video-diary. In a dialogic conversation, including interview conversations, it is common to express yourself without complete sentences, with other conversations partners filling in, interrupting or finishing sentences. Hence, in the individual interview this student received much more conversational assistance, making it easier to express herself despite a relatively limited vocabulary. Thus, the monologue format of the video-diaries can be quite demanding, in terms of being able to craft a narrative without much support, and overall many of the video-diaries turned out to be shorter than we had indicated in our instructions. Further, given that the video-diaries to a large extent are monologues, there is not a clear recipient of the narrative being presented and, hence, it can be difficult to know who a student is positioning themselves in relation to.

Effective generation of a "thick" data set. The project data as a whole consisted of observations of lectures, video-recordings of project work, interviews, and video-diaries. Together, this diverse data set covered different aspects students' identity negotiations in relation to engineering as well project work in engineering education. Thereby, a "thick" data set was generated (Marcus, 1998). A strength of integrating three video-diary entries into our ethnographically inspired study was that these recordings functioned as a complement to several other means of data generation, both gaining the students' individual perspectives and reflections on the lectures observed and project work video-recorded as well as informing the final interviews (as will be discussed in the next section). For example, in one project group the four students provided very different interpretations of the occurrences during the same video-recorded project work sequence.

Each video-diary entry focused on a different facet of the students emerging engineering identities. Consequently, it was possible to through the combination of the three video-diary entries and the subsequent individual interview gain insight into varied aspects of the students' identity negotiations. Given the complexity of identity negotiations, as something that both involves sense of self and also linked to group memberships (Wetherell & Mohanty, 2010), "thick data" is needed in order to allow for nuances to develop. The use of video-diaries also facilitates data being generated in different contexts, hence potentially bringing situational identity performances to the fore. While the study did not have a longitudinal design, it was possible to discern pronounced changes in the students' reflections regarding the project work even when following them during such a short time period. Arvid and Björn (all names are pseudonyms) worked well and were satisfied most of the time, but Calle felt like he was a failure (and the fourth student Danne did not care that much). Yet, in the video diaries from this group, there was also a clear pattern that all four students became less satisfied with their design and called it "simple" as the course evolved, as they were constantly contrasting their own work to the work of other student groups. This change in the students' perspectives would not be possible to distinguish if we had not collected data on repeated occasions during the course.

In general, recruiting informants for research projects can be difficult, especially so if the data generation demands a lot of investment in terms of time and energy on the part of the informants. As such, the freedom of recording the video-diaries when and where the students chose were of pivotal importance for making the data generation less labor intensive for the participating students. This was particularly important given the characteristics of the teaching activity we sought to document; during project work students are free to plan large parts of their own time and much work might take place outside of the usual teaching hours. Following them through traditional ethnographic methods would therefore only

have been able to capture part of their project work participation.

In summary, the logistics of distributing instructions for the video-diary entries and collecting the video-diaries after the recordings required quite a lot of planning in order to make it as smooth as possible for the participating students. Still, the video-diaries provided an effective and less labor intense way of complementing the other data generation methods in comparison to scheduling and performing repeated individual interviews.

Gaining access beyond the "surface talk". Apart from functioning as empirical data in its own right, an important purpose of the video-diaries was to inform the interview guides for the final semi-structured individual interviews. During the individual interviews, we were able to ask for clarifications and further developments of issues arising (for example, more in-depth questions about the communities the students grew up in, but also clarifications concerning the students' contradictory accounts of the project work, in their video-diary entries). A challenge in any interview situation is to encourage a non-talkative interviewee to talk and produce information about the themes of the interview, "without injecting yourself so much into the interaction that you only get a reflection of yourself in the data" (Bernard, 2000, p. 196). Here, information gained through the video-diaries provided important entryways to effective probing during the final interview. During the first video-diary one of the students briefly touched up how he was not interested in staying in his childhood community, despite that the chances of getting a well-paid job there were good, something he developed more fully during the final interview:

> Well, most people from [industrial town] don't chose to go on to higher education. It's a lot about [to work in the local industry], and it's a lot of money in that too. But, I don't like the work environment and it can be pretty rough. So it would have be quite nice to come back as a trained constructor and be the boss of your old colleagues. That wouldn't have been boring at all, it would have been quite fun. You got to be able to dream a little too.[4] (Björn, interview)

Overall, we did not perceive Björn as particularly talkative, yet he did open up during the final interview, something the above quote is an example of. This, we would argue can be attributed to a combination of the effective probing made possible by the information shared in the video-diaries and that the video-diaries had prompted him to start thinking about issues related to his engineering identity trajectory. Thus, having recorded three video-diary entries meant that when the students entered the interview situation they were already acquainted with the research interests of the project, which in some cases resulted in that the interview conversation could deepen more quickly. An example of this was the interview with the student we call "Arvid." In the video-diaries Arvid had talked about how his background had shaped his educational choices, shared quite a lot of detail about how his group had worked with the

project, and talked about plans for the future that involved working with sustainable energy. Hence, when the semi-structured interview commenced, not only was the interviewer already quite familiar with Arvid, but what was even more noticeable was that Arvid was cued in to our research interests. Without much prompting, Arvid shared stories of how he was different from the majority of the engineering students, in particular regarding what we have analyzed in terms of masculinity constructions (Danielsson et al., 2019). Arvid himself had access to a language that made it possible for him to verbalize his feelings of alienation as related to gender (for example, "a boyish jargon" in the excerpt below), but, moreover, he also seemed cued into that this was something we as interviewers were most interested in him expounding upon:

> Well, one of my first impressions when I got here, it was a lot of snow mobiles and stuff. Those kinds of interests, like . . . a lot of engines, motocross and the likes . . . Kind of boyish jargon. So because of that I haven't been hanging out that much with my class mates. It's so much "the drunkest wins" and "your-mum-jokes." (Arvid, interview)

For Arvid, who did perceive himself as different from the majority of his peers, it was relatively easy to reflect on and verbalize the norms of the engineering student community. This is well in line with how Davis and Wagner (2005) have argued that it can be more difficult for individuals who fulfill the norm to get sight of it and reflect upon how it affects one's own identity constitution. However, we would argue that the format of the video-diary, with the repeated instances of talking about their engineering trajectory and their relationship to engineering also assisted students who do fulfill a large part of the norm (such as Björn) to reflect on their identity constitution and, thereby, contribute to an understanding of how insideness is constructed. Consequently, video-diaries as a data generation method can be useful as a means of getting sight of what is privileged in a community, contributing to, for example, the emerging scholarship on the production of masculinity in science (Gonsalves et al., 2016).

Summary

In summary, we found video-diaries to provide highly valuable data for gaining in-depth understanding of students' identity negotiations, even though the video-diaries and interviews were carried out during a comparatively limited period of time. Provided that identity is understood as performative, rather than a psychological trait of an individual, it is important to utilize data generation methods that are aligned with this theoretical stance and does not operationalize identity as something that can be neatly captured in multiple-choice questions.

Implications for Future Use of Video-Diaries

While we do consider that some caution need to be taken regarding the positions of video-diaries as providing authentic

stories (Azzarito & Sterling, 2010; Cooley et al., 2014) and empowerment (Holliday, 2004; Lundström, 2013) we still found this data generation method as highly valuable in terms of generating data that allow for an analysis of students' identity negotiations. In particular, we found video-diaries and final interviews as useful complements to another, in that video-diaries allow for an increased participant agency in co-generating the data, whereas final interviews give a possibility to deepen aspects from the video-diaries and ask for clarifications. Our semi-structured approach was a way to balance participant agency and researcher probing, and all three video-diary entries had about the same amount of structure provided by the interview guides. In retrospect, though, it could have been beneficial to move from a high degree of structure in the first video-diary entry to more open questions in the last (Brenner 2006), as participants typically get more acquainted to the format over time and thus are able to produce more reflective diaries (Jones et al., 2015). Such a design could also yield more extensive diaries, as the limited duration of the video-diary entries recorded in our study was a limitation.

It is sometimes difficult to know who the participant is positioning themselves in relation to video-diaries, and this can also vary between recordings. For example, Noyes (2004) found that the children in his study sometimes addressed the camera as a confidant or friend, sometimes as the researcher. It is most likely that the adult participants in our study at least to some extent were addressing us as researchers in their video-diaries, in accordance with how the participants in Gibson (2005) anticipated the assumed interest of the researcher. Still, a possibility is also to a higher degree ask the participants explicitly to address a particular audience, like we did when we in the second video-diary entry asked them to address a potential future student with a short advert for their educational programme.

In accordance with previous research, we chose to name the recordings "video-diaries," when introducing it to the participants. The name "diary" clearly indicates that sharing of personal stories are encouraged, but this might also make certain students reluctant to participating. For our particular group of participants (most of them younger, adult men) it could have been preferable to use a notion with less personal connotations, such as log books or oral notes, especially as we were predominantly interested in their educational and professional trajectories.

Appendix 1

Video-diary entry 1: Your background and your student life

Introductory question: What have you worked with in the project during the last week?

Who are you? Tell us about your background and your way to engineering education, for example, where you are from, how you ended up in [University town], what your parents do for a living, if you've previously studied or worked and why you have chosen to study an engineering education.

Tell us about what it's like to be a student in [University town] and in the [construction or mechanics] engineering programme. Describe a typical week. Also, tell us about, for example, your living situation, what you do in your leisure time and what a typical weekend is like.

Video-diary entry 2: Your project and the engineering education

Introductory question: What have you worked with in the project during the last week?

Tell us about your project as a whole, both what you are working on but also how you work together as a group. What do you think that the project adds that cannot be learned in another way? What do you consider yourself bringing to the project? Also, tell us about a situation during the project work when your learnt something.

If you were to describe your engineering education to someone who is thinking about enrolling—what would you bring to the fore? If you would like, you can tell us about the education in the format of a short commercial.

Video-diary entry 3: The engineer and your future

Introductory question: What have you worked with in the project during the last week?

Below you find three different people's stories about working as an engineer. The stories have been collected from engineering education websites. Read the stories and use the questions below to reflect upon them before you record your diary.

In which of the stories do you mostly recognize yourself? If you don't recognize yourself in any of the stories, is there another story you identify yourself with? If so, tell us about that story!

What are your thoughts about your future? What would you like to work with? Maybe you have a concrete idea about a company you'd like to work in or what type of role you'd like to have in the company—tell us about it! Try to be as concrete as possible.

Story 2

I work as a consultant in an international company called WSP. It is one of the leading companies in Sweden regarding infrastructure. My main task at work is to help clients to develop different solutions concerning, for example, the design of a road or a cycle lane. Since the company is international, there are possibilities to work abroad. Right now, I am developing new parking spaces for IKEA in Russia. The education is 3 years and gives the possibility to continue to a Master degree.

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Notes

1. Results from the project (concerning both development of professional knowledge and identity constitution) have previously been reported in, for example, Berge et al. (2017, 2018), Danielsson et al. (2019), Gonsalves et al., 2019.
2. Video-diary entries lasted between 2 and 20 minutes.
3. A research assistant was partly responsible for doing this.
4. Quotes have been translated from the original Swedish, with the aim of preserving meaning rather than being verbatim translations.

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