

Factors Influencing Geography Students' Motivation and Their Significance for the Work in a Community-Based Research Service-Learning Course

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Abstract

In this paper, we aim to address the major motivational factors of geography students in general and explore the extent to which these factors were important in working in a community-based research service-learning course. We designed a qualitative interview study as accompanying research to a study project in the bachelor's degree programme at the Ruhr University Bochum. Participation after the end of the course was voluntary; 13 course participants agreed to take part. One area of the interview guideline focussed specifically on motivational aspects. We examined the following research questions: RQ 1 What form does motivation take among participants? What are key factors that drive them in general? RQ 2 What role does motivation play in the work of the study project? The interviews were fully transcribed, and the qualitative data was pseudonymised and analysed by qualitative content analysis using the inductive category formation method. In response to the question regarding different forms of motivation, the following main categories could be identified: "relationship-related motivation", "performance-related motivation", "innovation-related motivation" and "personality-related motivation". The highest code frequency is in the main category of "performance-related motivation" which shows the particular importance of things like setting a goal or achieving your own success through your own effort for the students. Followed by "relationship-related motivation", the second most important. For the work in the study project, the motivation factors with a performance reference are precisely those that are relevant. Relationship-related motivational factors, however, played no role in working in the study project course.

Keywords: Motivation, Student, Student Motivation, Community-Based Research, Service-Learning, Qualitative Interviews, Qualitative Content Analysis

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Introduction

Research on motivation has a long tradition in psychology and education. What exactly is meant by motivation, which factors have a motivational effect and what exactly does this look like? What individual differences exist? These are questions of particular importance to both instructors at universities and colleges and school teachers. For the purpose of this study, we would like to refer to the definition of Ryan and Deci (2000, p. 54), "To be motivated means to be moved to do something. A person who feels no impetus or inspiration to act is thus characterized as unmotivated, whereas someone who is energized or activated toward an end is considered motivated." Classically, a distinction is made between different contrasting types of motivation: intrinsic and extrinsic motivation. Whereby intrinsic motivation is seen in the context of one's own interest, curiosity, enjoyment of a thing or activity, without external incentives or drivers. And extrinsic motivation is seen in the context of external drivers, with a goal to be pursued, a specific outcome, a reward (Eccles & Wigfield, 2002; Ryan & Deci, 2000). This dichotomous juxtaposition of intrinsic and extrinsic motivation is criticised by others. Reiss and Havercamp (1998) and Jackson (1984) (both as cited in Reiss, 2012) pointed out that human motives are not dualistic but have a multifaceted nature. Morris and colleagues (2022) emphasised that on a psychological level, this kind of separation can be suitable, but on the biological, neuronal level, current findings indicate an overlap. In our study, we did not want to follow a simplified juxtaposition of intrinsic-extrinsic either, nor did we want to make a restrictive preliminary decision on motivational factors previously identified from the literature. Instead, we wanted to maintain the greatest possible openness.

Our main goal was to develop a better understanding of student motivation. We pursued two approaches. On the one hand, we wanted to use the research study to look at the phenomenon of student motivation in general and to identify fundamental motivational factors of students. On the other hand, we sought to gain a more specific understanding of which of these factors were particularly important for students participating in our community-based research service-learning project, which focussed on social inequality, poverty, and homelessness in the Ruhr area.

The sub-study on student motivation presented in this paper, which was part of a larger study on the accompanying research of the community-based research service-learning course, was thus divided into two main areas of investigation. We examined the following research questions:

- What form does motivation take among students? What are key motivational factors that drive them in general? (RQ 1)
- What role does motivation play for the students, specifically in the work of a community-based research service-learning course? (RQ 2)

Before introducing the research design and the methods, we would like to briefly address why student motivation was a central aspect of our accompanying research on the community-based research service-learning course. The course was designed as a project-oriented teaching format, planned to last two semesters, took place partly during the COVID-19 pandemic and was developed from scratch as part of a received teaching grant from the Ruhr University Bochum. It combined two teaching formats, the service-learning approach (see for example Furco, 1996) with the community-based research approach, or research-based teaching and learning (see for example Huber & Reinmann, 2019). The 16 students worked together in several project groups. Further information on the teaching concept can

be found in the following publications: Bittner and Kempchen (2024a) and Bittner (2025). Bittner and Kempchen (2024b) provide information on the composition of the course participants.

Working in the community-based research service-learning course included a larger proportion of guided or temporarily completely independent project work, which presented the students who were at the end of their bachelor degree programme, with a number of challenges. For the students, working on a project with a larger portions of independent work was new, as well as working together with other students in project groups over the long period of one year and working with non-university project partners, social organisations. Additionally, they faced the challenge of interacting and exchanging ideas with vulnerable individuals, including homeless and formerly homeless people. Also the need to reorganise the study project in accordance with the university's requirements after the outbreak of the COVID-19 pandemic posed specific challenges, for the students and also for the lecturer. Furthermore, technical difficulties, including restrictions and temporary system failures caused by a cyberattack on the university, further complicated the situation. Regardless of these particular incidents, it can generally be said that successful work in a study project over such a long period of time requires a high degree of motivation, volition and stamina. That was ultimately the main reason for dealing with the question of student motivation in our community-based research service-learning course.

Methods

Research Design and Setting

The research study employed a basic qualitative research design to investigate students' motivational factors. The sample for the study consisted of 13 geography students in the bachelor degree programme at the geographical institute of the Ruhr University Bochum, all participants of the community-based research service-learning course "social inequality, poverty and homelessness". The one-year course took place during the winter semester 2019/2020 and the summer semester 2020.

Participants

Of the students participating in the interview study, five were male (38.5 %) and eight were female (61.5 %). The intensive collaboration with the students over the course of a year revealed the high level of diversity within the group. For example, in terms of study interests, origin and social situation, current life situation. Insights were qualitatively recorded in conversations but not documented. The students were between 21 and 27 years old, with 11 of the 13 study participants being between 21 and 22 years old. 11 students were from Germany, two were born abroad. Of the study participants from Germany, all were born in North Rhine-Westphalia.

Data Collection

The data were collected using qualitative interviews. An interview guide was developed in advance, which addressed various topics as part of a more extensive accompanying educational research project. In developing the interview guide for the comprehensive accompanying research study of the community-based research service-learning course, we followed the approach described by Helfferich (2009) and Kruse (2007, 2015). We find the

SPSS method described here to be extremely suitable for developing high-quality interview guidelines that enable structured interviewing while at the same time maintaining the necessary openness of the researcher to the research subject and interviewees, as well as enabling the collection of extensive qualitative data. Of the 12 narrative-generating key questions of the interview guide one of the key questions addressed the topic of motivation. As described, associated maintenance questions and follow-up questions were formulated based on these key questions. For the two research questions which are on the focus of this paper, the following guiding question and one of the associated follow-up questions are relevant:

- Think about what the key factors are that spur you on and motivate you. This doesn't have to be related to the work in the study project, but rather in general, in your university studies, in your private life, in sports. It's easiest to think of a specific situation where you were absolutely sure: I'll give it my all, I'll see this through, I really want this. So, what are key factors that motivate you? What would you say?
- What role has motivation played in the study project so far? Can you give us an example to illustrate that?

The interviews were conducted online using the Zoom conference system during the COVID-19 pandemic, in accordance with the university's regulations for avoiding contact. The interviews were not conducted by the lecturer of the course, who was also the principal investigator responsible for the accompanying research, but by a student research assistant, a master student in geography with a focus on urban and regional development, in order to avoid excessive power imbalances. The interviews were audio-recorded, and a postscript was written. The total length of the interviews (including all 12 guiding questions) was between 32 and 60 minutes. The transcription followed the rules of content-semantic transcription (Dresing & Pehl, 2017). The interviews were pseudonymised.

Data Analysis

Qualitative content analysis following the specific approach of Mayring (2010a, 2010b, 2022a; Mayring & Frenzl, 2019) was undertaken to analyse the interview transcripts. The qualitative data analysis was performed software-assisted. MAXQDA Analytics Pro software, version Release 22.8.0 (Kuckartz, 2010; Rädiker & Kuckartz, 2019) was used because the principal investigator and data analyst of the research study had extensive experience in using this software since 2006. The new AI assistant, which has been offered for some time by VERBI, was not activated and not used. The coding of the text material was done manually. We personally consider the application of the AI tool to be unsuitable for conducting a qualitative content analysis, as well as for other qualitative data analysis methods that go beyond a rough thematic assignment and we see our suspicions confirmed at the moment by initial study results, which point to errors and limitations (Mayring, 2025). Of the various process models described by Mayring (2010a, 2010b, 2022a) the procedure of inductive category formation was used in order to approach the qualitative data with as much openness as possible. The clear meaning component was defined as the coding unit, the minimum size of a text element assigned to a category. As context unit at the beginning the whole text of the respective interview transcript. According to the clearly structured form of the interview guide according to subject areas, this could be corrected after reviewing several interviews to the entire text of the answer to the leading question six. In addition, the level of abstraction was defined for both research questions, which served as "search matrix" when going through the interview transcripts line by line. In this way, categories were gradually formed from the text material. Finally, the categories formed were summarised at a higher level. In doing so,

deductive steps were also used in some cases. It turned out that concepts from a model that is actually used to classify values (Charter of Values, cf. Rebmann & Fauth, n.d.) could also be helpful, in a modified form, for describing different forms of motivational factors. So, in some cases, the categories formed were based on the concepts used in this model, which were supplemented by further superordinate categories. Inter- and intracoder reliability is regarded as quality criteria for the approach of qualitative content analysis (Mayring, 2010a, 2010b, 2022a). In the case of our research study, a second review of the interview material was carried out by the first coder to verify the results. In doing so, a final addition was made at the main category level. The main category “relationship-related motivation” was added to the category system and text passages were (re)assigned.

Results

This section comprises of two parts. First, the results of RQ 1 will be provided. Second the results of RQ 2. The presentation of the results follows the approach commonly used in other studies based on a qualitative content analysis, specifically the approach outlined by Mayring (2010a, 2010b, 2022a). The frequencies of categories are given, whereby we limit ourselves to presenting the results for the main categories. In each case, in one table the documents, the interview transcripts serve as a reference, in another table, the coded segments serve as a reference. In addition, we will then present the results of the content analysis in more detail, illustrating them at the level of the subcategories (subordinate level) with sample interview quotations. For ease of reading and comprehension by the readers of this paper, the interview quotations given in the tables are mostly longer than the actual passage assigned to the subcategory in the interview transcripts.

Motivational Factors in General

We will start with the results of RQ 1, this includes the question of the motivational factors that play a role for students in general. The results of the category formation process described in the methods section are shown in Table 1. Five main categories could be formed, these can be seen as a classification system of the motivational factors mentioned in the qualitative interviews by the study participants. For these main categories, the category frequencies are given and sorted in descending order of occurrence: a) performance-related motivation (85 %, 11 out of 13 interviewees), b) relationship-related motivation (23 %, 3 out of 13 interviewees), c) innovation-related motivation (15 %, 2 out of 13 interviewees), d) personality-related innovation (15 %, 2 out of 13 interviewees) and e) other mentions, not assigned (8 %, 1 out of 13 interviewees).

Table 1: Frequencies of Main Categories (Documents With Codes) – Motivational Factors of Students in General

	Documents	Percentage	Percentage (valid)
Relationship-Related Motivation	3	23.1	23.1
Performance-Related Motivation	11	84.6	84.6
Innovation-Related Motivation	2	15.4	15.4
Personality-Related Motivation	2	15.4	15.4
Other Mentions, Not Assigned	1	7.7	7.7
DOCUMENTS with code(s)	13	100.0	100.0
DOCUMENTS without code(s)	0	0.0	-
ANALYSED DOCUMENTS	13	100.0	-

Table 2 shows an alternative representation of the results. Here, the coded segments form the unit of analysis.

Table 2: Frequencies of Main Categories (Segments With Codes) – Motivational Factors of Students in General

	Segments	Percentage
Relationship-Related Motivation	8	21.1
Performance-Related Motivation	23	60.5
Innovation-Related Motivation	2	5.3
Personality-Related Motivation	2	5.3
Other Mentions, Not Assigned	3	7.9
TOTAL	38	100.0

Relationship-Related Motivation

In terms of the main category "relationship-related motivation", students mentioned family, friends and companions, as well as the desire to be independent of other people. Hans-Jochen Löffler, a male student, told us for example, "Probably the biggest standard answer: my family, of course. But also my girlfriend. I just want to try harder, for myself on the one hand and for her on the other, because then we can definitely have a very happy future together." The point of not wanting to become dependent on other people later in life, the wish to be independent, was a motivational factor for Carmen Spieß, a female student, "(...) Independence, i.e. not being dependent on other people. (...) I wanted to be independent and do something that makes me feel good later on. (...)"

Performance-Related Motivation

The main category "performance-related motivation" is particularly well represented. The following subcategories located at a subordinate level belong to this main category: setting a goal, identifying with a task / work / cause, interim results / interim status, continuous work, own happiness through own effort, own success through own effort and deterrent effects. Interview quotations that exemplify these subcategories are given in Table 3. In the discussion here, we will limit ourselves to the presentation of the particularly frequently occurring subcategory "setting a goal."

The study participants frequently mentioned that setting a goal, having a goal and working towards a goal is a great motivating factor for them, whether it be in their university studies, or previously at school, in sports or in life in general. Our interview partners illustrated this with a variety of examples. Nico Gunf, a male student explained, "Yes, just having a goal in what you do. I think, as I said, that in terms of motivation and psychology, setting yourself a goal when you do things is very important anyway. If you have a goal, you are automatically more motivated and willing to do the whole thing, to tackle it and work to the maximum to achieve that goal, provided you really want to achieve it. Of course, it makes sense to set a goal that you really want to pursue with all your heart. If not, then somehow the goal has missed its meaning. That's for sure, and you can apply that to almost every situation in life. (...) " He turns out that achieving the goal is a prerequisite for the next step in life is particularly motivating. "(...) or a bachelor's thesis, for example. I know I have to hand it in by such and such a time, and that's important in the final paper. Or let's say I would like to do a master's degree now, then I would have to go into the job afterwards, and then my final grade is certainly important somewhere, and since it doesn't count that much now either, but

it's still what you can see, which is also relevant for exams afterwards, then of course I have a goal to get a good grade, to do a good job somehow, to be able to take the next step afterwards. (... incomprehensible, computer sound) The overarching goal of getting a good job later on, where I'm happy, and to do that, of course, I have to deliver, so that I can really get to where I really want to be." Ludmila Mude, a female student, reported on her experiences with motivation in her university studies, "And the goal itself, so that I can achieve it, because it is also a source of satisfaction in itself. And now, as in my studies, I want to graduate at the end, to have the CPs registered. That sounds so banal and also so/, I always feel that way, I'm so sorry to say it: I just want the CPs, but that's why you study the module. So, yes. And what motivates me/, (well, but the word)/, no driving forces/?"

Innovation-Related Motivation

The main category "innovation-related motivation" includes the following subcategories: own interest and personal growth (through tasks). Both subcategories each occur in one interview. Carmen Spieß told us when we asked about the factors that motivate and inspire her, "And yes, to pursue my true interest. So when I imagined that I started studying geography, even though I didn't have to. That was my desire, and I said, I'll do it, I'll see it through. Because it was tied to my interests, which I had as a child, but also in the further course." Rosi Trupp, a female student, emphasised, "(...) So what motivates me most is to grow as a person, to broaden my own horizons. If you stay in the same place, you don't grow beyond yourself. And if something doesn't challenge you, it won't make you stronger. That's the motivation behind what I do."

Personality-Related Motivation

The main category "personality-related motivation" is divided into the subcategories curiosity and believe in yourself / own self-confidence. They each appear in one interview transcript. Berta Schleich, a female student, explained the importance of self-confidence as a motivating factor, "And you should always believe in yourself. So you should never lose faith in yourself or think you can't do something just because of something, but everyone has their own strengths. And everyone is good in their own way and can do things. Even if, for example, one person takes longer than the other, there is always this motivation and what you can really achieve in the end, I think (unintelligible, rustling at the microphone) more work for it."

Other Mentions, Not Assigned

In addition, the interviewees also mentioned faith and food as contributing to motivation.

Overview of the Category System for Research Question 1

Table 3, 4 and 5 show the entire category system that was developed for research question 1 as a result of the qualitative content analysis that was carried out.

Table 3: Category System With Sample Quotes – Motivational Factors of Students in General

<p>Relationship-Related Motivation</p> <ul style="list-style-type: none"> • Family <u>Sample Quote:</u> "But actually, family is the most important thing." (<i>Ludmila Mude, female, age: 21</i>) • Friends <u>Sample Quote:</u> "Family, friends, my boyfriend." (<i>Ludmila Mude, female, age: 21</i>) • Companion <u>Sample Quote:</u> "But also my girlfriend. I just want to try harder, for myself on the one hand and for her on the other, so that we can definitely have a very beautiful future together later on." (<i>Hans-Jochen Löffler, male, age: 21</i>) • Independence from other People <u>Sample Quote:</u> "Independence, i.e. not being dependent on other people." (<i>Carmen Spieß, female, age: 27</i>)
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Table 4: Continuation - Category System With Sample Quotes – Motivational Factors of Students in General

<p>Performance-Related Motivation</p> <ul style="list-style-type: none"> • Setting a Goal <u>Sample Quote:</u> "So for me, I think that's just the goal. I need a goal in mind. Something I can work towards, so I can motivate myself. For many years of my life, I did athletics. And especially then, for example, in sprints or something, you really have the goal in mind. And then you just really said, okay, I want to achieve that as quickly as possible." (<i>Enno Roskoth, male, age: 21</i>) • Identifying with a Task / Work / Cause / Topic <u>Sample Quote:</u> "Well, it's definitely something you stand behind 100 percent. You can say, okay, be it related to an exam, I absolutely want to pass it so that I can take this exam next semester. (...)" (<i>Maria-Luise Haase, female, age: 22</i>) • Interim Results / Interim Status <u>Sample Quote:</u> "One factor, for example, would be if you have some kind of interim result or status that shows you how far you or the group has progressed, depending on the case, and you are exactly as far as you had hoped or even further. And everything is going well." (<i>Alfons Eberth, male, age: 21</i>) • Continuous Work <u>Sample Quote:</u> "And to get to the point where I know exactly what I have to do. And that is to work consistently, every day a little bit more. I think that's what motivates me." (<i>Norma Girschner, female, age: 22</i>) • Own Happiness Through Own Effort <u>Sample Quote:</u> "Yes. Yes, sport, right? Well, I think that's just the best example. I could tell you a lot about it now, but I think that would take too long. I notice it myself when you don't do something for a while and then maybe let yourself go a bit and then start again and you realise: Oh, why did I actually stop? It's so much fun. And you immediately see goals and you feel different too." (<i>Amelie Scheibe, female, age: 21</i>) • Own Success Through Own Effort <u>Sample Quote:</u> "And that with some failure rates of over 50 percent, you were one of those who had passed with a perfectly reasonable grade." (<i>Wolfram Wagner, male, age: 21</i>) • Deterrent Effects <u>Sample Quote:</u> "Where you then perhaps just saw other students who had taken it less seriously or who thought it would somehow work out. And then it didn't work out after all." (<i>Wolfram Wagner, male, age: 21</i>)
<p>Innovation-Related Motivation</p> <ul style="list-style-type: none"> • Own Interest <u>Sample Quote:</u> "And yes, to pursue my true interest. So when I imagined that I started studying geography, even though I didn't have to. That was a desire of mine and I said, I'll do it, I'll see it through. Because it was tied to my interests, which I had as a child, but also later on." (<i>Carmen Spieß, female, age: 27</i>) • Personal Growth (through Tasks) <u>Sample Quote:</u> "(...) So what motivates me most is to grow as a person, to broaden my own horizons. If you stay in the same place, you don't grow beyond yourself. And if something doesn't challenge you, it won't make you stronger. That's the motivation behind what I do." (<i>Rosi Trupp, female, age: 22</i>)

Personality-Related Innovation

- Believe in Yourself / Own Self-Confidence
Sample Quote: "Curiosity, definitely." (*Carmen Spieß, female, age: 27*)
- Curiosity
Sample Quote: "And you should always believe in yourself. So you should never lose faith in yourself or think you can't do something just because of something, but everyone has their own strengths. And everyone is good in their own way and can do things." (*Berta Schleich, female, age: 22*)

Table 5: Continuation - Category System With Sample Quotes – Motivational Factors of Students in General

Other Mentions, Not Assigned

- Faith
Sample Quote: "And otherwise, faith also gives me strength." (*Ludmila Mude, female, age: 21*)
- Food
Sample Quote: "The factors, for me it's also food, I have to say. Well, if you eat while you're doing it, (with some?) things go much better." (*Ludmila Mude, female, age: 21*)
- Not Specified / Unspecific
Sample Quote: "A lot. These key factors support me. And that's why the study project has gone so well so far. Clear statement." (*Ludmila Mude, female, age: 21*)

Motivational Factors in the Community-Based Research Service-Learning Course

In the following, we will now turn to the results for RQ 2, i.e. the question of which motivational factors were particularly important for the students when working in the community-based research service-learning project. Table 6 shows that the two main categories 'relationship-related motivation' and 'personality-related motivation' which emerged as results of the coding process for RQ 1 are not represented in relation to the results for RQ 2. The results can be summarised as follows: a) performance-related motivation (75 %, 6 out of 8 interviewees), b) innovation-related motivation (25 %, 2 out of 8 interviewees) and c) other mentions, not assigned (13 %, 1 out of 8 interviewees).

Table 6: Frequencies of Main Categories (Documents With Codes) – Relevant Motivational Factors that Played a Role in the Community-Based Research Service-Learning Project

	Documents	Percentage	Percentage (valid)
Relationship-Related Motivation	0	0.0	0.0
Performance-Related Motivation	6	46.2	75.0
Innovation-Related Motivation	2	15.4	25.0
Personality-Related Motivation	0	0.0	0.0
Other Mentions, Not Assigned	1	7.7	12.5
DOCUMENTS with code(s)	8	61.5	100.0
DOCUMENTS without code(s)	5	38.5	-
ANALYSED DOCUMENTS	13	100.0	-

Table 7 presents the results when the code segments are used as unit of analysis.

Table 7: Frequencies of Main Categories (Segments With Codes) – Relevant Motivational Factors That Played a Role in the Community-Based Research Service-Learning Project

	Segments	Percentage
Relationship-Related Motivation	0	0.0
Performance-Related Motivation	7	70.0
Innovation-Related Motivation	2	20.0
Personality-Related Motivation	0	0.0
Other Mentions, Not Assigned	1	10.0
TOTAL	10	100.0

Performance-Related Motivation

The main category 'performance-related motivation' contains the subcategories set(ing) a goal, identifying with a task / work / cause and creating added value for partners, whereby the subcategory 'setting' a goal occurs most frequently, in four of the interviews. The subcategory 'creating added value for partners' could be assigned to text passages in two interviews.

Lotte Heinrich, a female student, told us answering our question about what role key factors that motivate her have played so far in the project work, "Yes, well, in a project it's also important to follow through on the goals you set. I just think that it's the same thing that the project is also followed through, and all the tasks are completed, yes, on time and on schedule." And Rosi Trupp also emphasised the importance of the motivational factor of setting and pursuing a goal for the successful work in the community-based research service-learning project, "We never lost sight of our goal. And it was very critical at times, and I was also very pessimistic about further collaboration. But we thought, no, we've come this far and we can't stop now. That's not an option. Instead, we just keep going. Even when it's hard."

The collaboration with non-university partner organisations in community-based research or service-learning projects is a special feature of these teaching formats. In our study project, we worked with three social organisations that are active in the field we were dealing with theoretically in the course. Enno Roskoth, a male student, highlighted the motivating effect of creating added value for the partner organisations and expressed it as follows, "And on the other hand, there is also the added value that you then have, if applicable. Which you can then, so to speak, convey to your partners. These are factors that motivate me. Yes, due to the situation, at least the one aspect is no longer relevant. And yes."

Innovation-Related Motivation

For Carmen Spieß and Rosi Trupp, the own interest and personal growth were not only fundamental motivating factors but also played a role in their work in the community-based research service-learning project. Carmen Spieß explained, "Yes, and the interest has remained. So yes, but it is also somehow a duty to decide. I admit that too." Rosi Trupp discussed the tasks and challenges that have arisen as a result of the COVID-19 pandemic, "And of course the coronavirus has presented us with certain challenges. But you can only grow from them. It has made us stronger. We have found solutions to the problems. And if you tackle it all, you solve it all."

Overview of the Category System for Research Question 2

Finally, the category system for research question 2 is given in Table 8 for the sake of completeness. As with Table 3-5, the interview quotations are usually longer than the actual coded text passage to facilitate easier reading and provide more comprehensive insights into the content.

Table 8: Category System With Sample Quotes – Relevant Motivational Factors That Played a Role in the Community-Based Research Service-Learning Project

<p>Performance-Related Innovation</p> <ul style="list-style-type: none"> • Setting a Goal <u>Sample Quote:</u> "Yes, well, in a project it's also important to follow through on the goals you set. I just think that it's the same thing, that the project is also followed through, and all the tasks are completed, yes, on time and on schedule." (<i>Lotte Heinrich, female, age: 22</i>) • Identifying with a Task / Work / Cause / Topic <u>Sample Quote:</u> "And because you've dealt with a topic that you really stand behind, that you're interested in, you work much harder for it, you put a lot more into it. You'd much rather spend time on it than on things you don't like so much. Where you don't stand behind it." (<i>Maria-Luise Haase, female, age: 22</i>) • Creating Added Value for Partners <u>Sample Quote:</u> "On the other hand, there is also the added value that you might have. Which you can then, so to speak, communicate to your partners. These are factors that motivate me. Yes, due to the situation, at least the one aspect is no longer relevant. And yes." (<i>Enno Roskoth, male, age: 21</i>)
<p>Innovation-Related Innovation</p> <ul style="list-style-type: none"> • Own Interest <u>Sample Quote:</u> "Yes, and the interest has remained. So yes, but it is also somehow a duty to decide. I admit that too." (<i>Carmen Spieß, female, age: 27</i>) • Personal Growth (through Tasks) <u>Sample Quote:</u> "And of course the coronavirus has presented us with certain challenges. But you can only grow from them. It has made us stronger. We have found solutions to the problems. And if you tackle it all, you solve it all." (<i>Rosi Trupp, female, age: 22</i>)
<p>Other Mentions, Not Assigned</p> <ul style="list-style-type: none"> • As in the Rest of the Study Programme <u>Sample Quote:</u> " Yes, well, the project work is still a part of my studies and a part of the path I have to take. So it plays a normal role, like everything else. " (<i>Ludmila Mude, female, age: 21</i>)

Discussion

In summary, our findings showed that student motivation is a complex and multidimensional phenomenon. There are several motivational factors among students, which in general, however, also played a very specific role in the work in the university course we examined. Motivational factors that fall under the umbrella term 'performance-related motivation' are of particular importance. Especially the subcategory 'setting a goal'. With the introduction of the tiered study structure, shorter study durations, the goal orientation of students has certainly increased. It was striking that motivational factors falling into the main categories 'relationship-related motivation' and 'personality-related motivation' were only mentioned as general motivational factors. And not explicitly recognised for the project work in the university course. It is not possible to interpret why this is the case at this point, due to the small number of cases and the lack of statements on research question 2 in some interviews.

Strengths and Limitations

The results obtained in our qualitative research study provide a new perspective to the existing research on student motivation. We tried to maintain the greatest possible degree of openness when conducting and analysing the data in accordance with the qualitative research paradigm. Kruse (2007, 2015) speaks of the central principle of openness in relation to qualitative interview research. This also means that we did not conduct a preliminary orientation towards common classifications of motivational factors that are well documented in the literature. This is one of the study's key strengths, as it enabled categories at a lower level that are very close to the available text material and at the end a new category system

developed through the process of inductive category formation which can supplement existing classification systems.

Some limitations of our research study were encountered. One is that the number of study participants is small. This is a consequence of the course size limitation. No parallel courses with the same content focus and teaching design were offered. Qualitative interpretative studies have normally a small number of cases compared to quantitative studies (T. Smith, 2009), even if the pure number of cases is not a clear demarcation criterion between qualitative and quantitative research (Mayring, 2001). This, results among other things, from the overall objective of investigation differing from quantitative studies, different paradigmatic views in qualitative and quantitative research (Bryman, 1988; Creswell & Creswell, 2018; J. K. Smith, 1983; Mayring, 2007), different research strategies (Witt, 2001), the different data collection approaches and designs (Bryman, 1988; Creswell & Creswell, 2018), the nature of the analysed and produced data (Bryman, 1988), different sampling strategies (cf. Sandelowski, 1995) although there is also an ongoing debate on the significance of the generalisability of qualitative research findings (Osbeck & Antczak, 2021). Nevertheless, larger case numbers than our research study has are recommended, especially for qualitative studies using content analysis as the primary analysis method (Mayring, 2022b), an approach that combines both qualitative and quantitative analysis steps (Mayring, 2012). Regarding the second research question examined, it was found that out of the 13 qualitative interviews in total, no codes could be assigned in five interviews. This resulted from an interviewer error. The corresponding follow-up question relating to this research question was not asked in the five relevant interviews. This can probably be attributed to the inexperience of the interviewer, who conducted her first qualitative interviews as part of this research study. Despite the interviewer training provided, the effects of nervousness due to a lack of previous experience could not completely be avoided.

Conclusion

In general, the research study offers an interesting insight into general motivational factors of university students and the relevance of these motivational factors in the context of a project-based university course. The gained new insights can help instructors at universities and universities of applied sciences to better understand their students and the link between learning success, motivation, emotions and cognition, the acquisition of knowledge. For more information on the role of emotions in the community-based research service-learning course, see Bittner and Kempchen (2024a). The research findings can also be useful to draw conclusions for designing new teaching-learning arrangements. Motivational factors should ideally always be considered, but in the opinion of the authors of this paper, they play a particularly important role in project-based teaching and learning formats with a high proportion of independent student work, in university courses in which students are confronted with highly challenging situations, and in courses that extend beyond the usual format of one semester. The basic idea in our research study was to compare general motivational factors that play a role for students, for example in studying, at work, in sports or even just in performing everyday activities. And then, as a second step, to look at which of these general motivational factors play a role or are important with regard to the work, the learning activities in a specific university course, a teaching project. In the case of our research study, it was a community-based research service-learning course. Doing research about motivational factors would also be conceivable in an independent learning activity setting. This distinction between general motivational factors and those that play a role in

working in a specific university course also seems interesting for further research studies with a larger number of participants and comparative studies in educational research.

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Authors' Contributions

JB: principal investigator, conceptualisation, design and methods, data analysis, drafting the paper. JK: conducting the interviews and contributing to interview guideline development, reviewing the manuscript

Conflicts of Interest Statement

The authors have no conflict of interest to declare.

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