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Using Learning Portfolios to Investigate Students' Understanding of Positive Leadership and Their Experience With Teamwork

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Abstract

This paper examines students' understanding of good leadership and successful teamwork. I used learning portfolios as a reflection tool for bachelor students in geography who participated in a community-based research course, which was combined with elements of service-learning. The learning portfolios consisted of seven reflection-stimulating key questions, which were answered in writing by the 15 participants after completion of the course. These key questions were raised on the students' perceptions of good leadership, successful project work and individual teamwork components, such as the organisation of decision-making processes and dealing with risks. The focus of the paper will be on the first mentioned points. Here, the students had the opportunity to reflect on their own experiences about the role(s) taken on, tasks performed and collaboration with team members of the course, to place the results on a meta-level. This reflection enabled a sustainable learning process. I chose qualitative content analysis as a widely used qualitative data analysis technique to code the text material from the learning portfolios. The data analysis approach was inductive. About the idea of good leadership, the most frequent categories are "taking responsibility for others", "organisational skills, having an overview of the process", "high degree of expertise", "friendly appearance", "adequate handling of team dynamics" and "the need for consistent behaviour". About the question of which key factors contribute to the success of work in project teams, the most frequent categories are "good communication", "equitable division of tasks" and "respectful interaction with each other".

Keywords: Students' Conceptions, Leadership, Teamwork, Learning Portfolio, Written Reflection, Qualitative Content Analysis

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Introduction

The teaching of soft skills and interdisciplinary skills to students is becoming increasingly important at universities and universities of applied sciences with the introduction of the tiered structure of the bachelor's and master's degree programmes, which are more strongly aligned with the needs of the labour market. Important core qualifications for the labour market include skills in the areas of collaboration in working groups and teams, as well as skills necessary to later take on a managerial role or leadership tasks in a company or organisation. Various approaches and teaching formats for imparting or guided and reflected step-by-step acquisition of such knowledge and skills, which are in high demand by future employers, are conceivable and are also applied.

In the study presented here, I refer to the two project-related, experience-based forms of teaching, service-learning and research-based learning or community-based research, both of which I believe are ideally suited to teaching relevant teamwork and leadership skills to students.

According to the definition given by Furco (1996), I understand service-learning as an approach that can be "… distinguished from other approaches to experiential education by … [its] intention to equally benefit the provider and the recipient of the service as well as to ensure equal focus on both the service being provided and the learning that is occurring" (p. 5). The positive effects that service-learning experiences have on students, in general, are manifold, well documented in the literature and were the reason for choosing this approach for the redesign of the study project course, funded by a teaching grant from the Ruhr University Bochum.

These include social outcomes, the extension of citizenship skills, changing of attitudes and values, mitigation of prejudices, the development of teamwork and leadership skills, as well as acquisition and application of academic knowledge and are described in detail, proven many times over by empirical studies (see as overview e.g. Celio et al., 2011; Conway et al., 2009; Eyler et al., 2001; Gordon et al., 2022; Novak et al., 2007; Yorio et al., 2012).

Of the various forms described in the literature for establishing a research connection in higher education teaching and bringing students into contact with research, which differ in particular in the degree of students' activity and the focus of the project (on the content or the process, the problem) (in particular see Healey & Jenkins, 2009; but also Deicke, 2016; Huber & Reinmann, 2019) I have oriented myself to the narrow definition of Huber (2009). Going through the entire research cycle (Huber, 2009, 2014), the problem orientation (Huber & Reinmann, 2019), the active role that students should play (Deicke, 2016; Huber, 2014), the support of the course instructor and the intention to gain knowledge that is also of interest to third parties (Huber, 2009) outside the context of a university course seemed particularly important to me. Several authors have reported on the effects of research-based learning on students (as an overview, see Camacho et al., 2017).

In the context of a one-year study project course for bachelor students of geography at the Ruhr University Bochum, both approaches were combined. The students worked in three project teams, with a strong research focus on project topics developed in consultation with community partners and the lecturer. The overarching topic of the course was "social inequality, poverty and homelessness" in the Ruhr area, a region in the state of North Rhine-Westfalia in Germany with formerly mining and steal industry which is confronted with a

multitude of challenges in the process of structural change since the 1960s but is increasingly on the way to an attractive, green, liveable region with new economic pillars in the tertiary sector (Bogumil & Heinze, 2021; Kiese, 2019) and an overall more diversified economic structure. Nevertheless, Rommelspacher (1998) comment still applies today: the comprehensive efforts and diverse measures in the structural change process have had a positive impact, but the Ruhr area is not able to keep pace with the high-growth regions in Western and Northern Europe. The region still has to deal with some problems until today, and this fact also determined the thematic focus of the study project, for which the accompanying research was carried out regarding the teaching of teamwork and leadership skills to students. For example, the at-risk-of-poverty rate in the Ruhr metropolitan region is above the national average (21.6 % in 2022, Ruhr Regional Association, 2024), as the unemployment rate (9.9 % in April 2024, Ruhr Regional Association, 2024), the region has experienced a significant population decrease since the 1960s (Butzin et al., 2006) and an increasing socio-spatial polarisation.

The following is a brief description of how teaching of teamwork and leadership skills was incorporated into the study project course. It should be noted that the course was split into two parts by the outbreak of the COVID-19 pandemic. When the university completely ceased its on-site operations with the onset of the pandemic, the course format had to be converted to an online-only format in a very short time, so that virtual collaboration between the students in the project teams became increasingly important as the course and the year progressed. At the beginning, before the pandemic, the students worked together in the three project groups especially in the classroom during course time in designated group work phases and reflection sessions, during visits to the partner organisations, social organisations in the city of Bochum and Essen, accompanied by me as the lecturer, and on the student's own initiative. Often in self-organised face-to-face meetings or through different arrangements (e.g. by email). In the first phase, one session was also used to approach the question of teamwork and leadership theoretically, to briefly address and discuss various approaches and talk about challenges of implementation. The second phase, with an exclusively virtual collaboration, using email, an online-learning platform, virtual team meetings and the WhatsApp Messenger, presented all course participants with major challenges. Each project group was led by a team leader and a deputy, whom the students themselves selected. With regard to the tasks of a team leader and existing challenges, the selected students were accompanied throughout the course, guided and advised by the experienced lecturer.

The goal of the research study is twofold. One of the aims was to explore different conceptions and views of good leadership among the participants of a community-based research service-learning course. The second aim was to identify important factors contributing to the success of teamwork. This can be specified in the following research questions:
- What are conceptions of a good leader among participants in a community-based research service-learning course? (RQ 1)
- What are critical (key) factors that contribute to the success of teamwork? (RQ 2)

Method

Research Design and Setting

I designed a qualitative study using learning portfolios as written reflections. The study population consisted of 15 students in the geography bachelor degree programme at the Ruhr University Bochum. All students took part in the study project course "social inequality, poverty and homelessness" in the academic years 2019 and 2020. The course took place during the COVID-19 pandemic. So after about half of its duration, the course format had to be changed to a purely online format in accordance with the requirements of the university. Collaboration in the project teams then took place via various forms of virtual collaboration.

Participants

A total of 16 bachelor students were initially enrolled on the course for which the accompanying research was conducted. However, one student decided not to continue the course at the start of the COVID-19 pandemic. The remaining students took part in the course until the end and all of them were successful. At the end of the course, they were asked to take part in the accompanying qualitative research study. All 15 students completed the prepared learning portfolios, which were set up as written reflections, completely, answering all guiding questions. Of the participants, seven were male students (47 %) and eight were female students (53 %); the vast majority were born and grew up in the state of North Rhine-Westphalia and were between 21 and 22 years old. The oldest participant was 27 years old.

Data Collection

I developed a learning portfolio as a written reflection tool that consisted of seven reflection-stimulation questions. The portfolio had no assessment function and was not linked to any university examination. It therefore differed from the portfolios usually used, particularly in the school context, even if very different forms of portfolios have to be distinguished, which are often designed as a kind of folder in which various documents, materials and objects that document the individual learning process are collected (c.f. Häcker, 2004 for an overview of the use of portfolios in project-related courses). However, the developed and used written reflection tool did address the central function of a portfolio, which is to reflect on the learning process, one' s own learning, and what has been learned (Häcker, 2004).

The importance of reflection for the learning process has been described in the literature many times, particularly in the context of experiential learning approaches. Kolb's experiential learning theory emphasises in the cycle of learning the interplay between two forms of capturing experiences: concrete experience and abstract conceptualization. And two forms of transforming experiences: reflective observation and active experimentation (Kolb, 2015). Experiences and reflection are linked in learning. Guthrie & Jones (2012) emphasised the potential that arises for learning from the combination of leadership experiences with reflective learning. Hatcher & Bringle (1997) provided some helpful guidelines for creating reflection activities for educators. For me, especially the principle of seeing reflection as a link between experiences made and the learning objectives, as well as the helpfulness of the instructor's guidance in this process, was of particular importance (Hatcher & Bringle, 1997).

The guiding questions covered various aspects that were intended to encourage the students to reflect on their experiences during the one-year course and were also interesting for me as

the course instructor. In the sense of receiving feedback on the students' thoughts, ideas and experiences, and therefore also on the learning outcomes achieved. The portfolio therefore also fulfilled an evaluative function (Häcker, 2004). The students answered the questions in written form at the end of the course. At home or at a place where they wanted to, undisturbed, without having me as the course instructor around. All questions were answered by the participants, there were no exceptions. Two of the seven reflection questions in the portfolio are relevant to this study.

These are the following two questions:

1. If you think about people with leadership responsibility with whom you have already worked in the context of a study-related activity, for example at school, at university, in sports, you can certainly think of a person who has a role model character for you. On what, i.e. on which characteristics would you define this role model character? Please describe this in more detail.

2. In your opinion, what are the relevant key factors that contribute to the success of working in project teams? Could you please name and explain the *three* most important points from your point of view!

Each of the two relevant guiding questions was answered by the students with a length of between ¼ and ¾ of a page. With one exception, the students filled out the portfolio templates with the computer.

Data Analysis

The qualitative data analysis of the written reflections was software-supported. MAXQDA Analystics Pro software, version Release 22.8.0 was used (Kuckartz, 2010; Rädiker & Kuckartz, 2019). A computer-written copy of the handwritten portfolio was made so that all documents could be imported into the software. I conducted a qualitative content analysis following the approach of Mayring (2010a, 2010b, 2022; Mayring & Frenzl, 2019) with the answers to the two guiding questions. The coding of the text material as part of the qualitative content analysis was carried out manually; the use of the AI assistant offered by the software was deliberately avoided. Initially, the method of inductive category formation, as described and illustrated in a corresponding process model by Mayring (2010a, 2010b, 2022), was used with the aim of approaching the available text material with as much openness as possible and developing the categories or main themes step by step from the text material. As a coding unit, the minimum size of a text element assigned to a category, the clear meaning component was defined. At the end of the inductive line-by-line processing of the available text material, in which new categories are repeatedly formed or text segments are assigned to existing categories and a partly subsumption of the categories developed from the text material under superordinate categories, there is a developed category system for each of the two research questions or the respective selection criterion defined for this. With regard to research question 1, the deductive category application procedure was also used and combined with the inductive category assignment procedure. I defined the categories at the highest hierarchy level as structuring units taken from a model described in the literature by Beineke & Spencer (2007). Five areas of leadership competencies are described in this report, which are based on the evaluation of scientific and grey literature on leadership theory, as well as on the evaluation of training programmes and courses on mental health, health and leadership

(Beineke & Spencer, 2007). These formed the structure for the top level of the category system in relation to research question 1.

With regard to this research question, the question of what characterises a good leader, a quantitative content analysis was also carried out in advance using the available text material. This was primarily done to gain an initial impression of the available answers and to compile the character traits and working methods of a good leader that were mentioned particularly frequently by the study participants. The quantitative content analysis took the form of a pure frequency distribution of words in the sense of a quantitative computer-aided, dictionary-based text analysis for text exploration (cf. Züll & Landmann, 2002 for an overview of different approaches).

Results

This section summarises the main results of the research study in the corresponding order of the research questions examined.

Characteristics of a Good Leader

The most important result of analysing the word frequencies of the answers given in the portfolios to the guiding question 1 is, that the following characteristics of a leader are frequently mentioned: role model character, responsibility, experience, motivation / motivate, trust / confidence, friendliness.

Based on the responses given in the written reflections, the qualitative content analysis showed the following results in terms of the main categories at the highest hierarchical level, which were taken from the model by Beinecke & Spencer (2007). The responses most frequently given by the students could be categorised under the main heading of 'interpersonal skills' (93 %, 13 out of 15 study participants). The next category with the second-highest number of mentions is 'personal skills/knowledge/(general life experience)' (86 %, 12 out of 15 study participants). Followed by the category 'transactional (execution, management skills)' (79 %, 11 out of 15 study participants) and finally, with the lowest frequency the category 'transformational skills' (57 %, 8 out of 15 study participants). The area of 'policy/programme knowledge' included in the 'leadership and management skill set' model described by Beinecke & Spencer (2007) does not appear in the portfolios (see Table 1 for details, unit of analysis: cases).

Table 1: Frequencies of Main Categories (Documents With Codes)
– Characteristics of a Good Leader

	Documents	Percentage	Percentage (valid)
Personal Skills/Knowledge/ Level of Experience)	12	80,00	85,71
Interpersonal (People) Skills	13	86,67	92,86
Transactional (Execution, Management Skills)	11	73,33	78,57
Transformational Skills	8	53,33	57,14
Policy/Programme Knowledge	0	0,00	0,00
DOCUMENTS with code(s)	14	93,33	100,00
DOCUMENTS without code(s)	1	6,67	-
ANALYSED DOCUMENTS	15	100,00	-

Table 2: Frequencies of Main Categories (Segments With Codes)
– Characteristics of a Good Leader

	Segments	Percentage
Personal Skills/Knowledge/(Level of Experience)	32	31,37
Interpersonal (People) Skills	28	27,45
Transactional (Execution, Management Skills)	27	26,47
Transformational Skills	15	14,71
Policy/Programme Knowledge	0	0,00
TOTAL	102	100,00

Table 2 provides the supplementary results if we use the coded segments as the unit of analysis. From this perspective, it can be seen that most of the character traits of a good leader mentioned by the students in the written reflections fall into the main category of personal skills / knowledge/(level of experience).

For the main category 'policy/programme knowledge', derived from the model by Beineke & Spencer (2007), there are no text segments in the given answers to research question 1 in the portfolios that can be assigned to this main category.

In the following, the results will be presented in more detail, with a focus on the most frequently occurring sub-categories for the evaluation focus or selection criteria, i.e. the research question. The numbers given in brackets indicate the number of documents (portfolios/written reflections) in which the sub-categories are represented. The categories most frequently found in the portfolios in terms of the idea of good leadership or characteristics of a good leader which can be assigned to the main category 'personal skills / knowledge / (level of experience)' are a) taking responsibility for others (5), b) high degree of expertise (4) and c) the need for consistent behaviour (4). With regard to the main category 'interpersonal skills' the following often occurring sub-categories are to be named here: a) adequate handling of dynamics in the team (4), b) guiding and supporting staff (3), c) responsiveness in case of ambiguities and questions (3) and d) trusting and respectful interactions with others (3). For the main category 'transactional (execution, management skills)', the following sub-categories are to be emphasised: a) organisational skills, overview of the process (5), b) scheduling and monitoring compliance with deadlines (3), c) fair distribution of tasks and control of execution (3) and d) setting the direction and leading the group (3). Finally, the most frequently occurring sub-categories for the main category 'transformational skills' are listed: a) motivate and convince employees (3), b) must have and maintain the overall view c) being a role model in terms of values (3).

Critical Factors That Contribute to the Success of Teamwork

The following are the results of the qualitative content analysis conducted in relation to research question 2. The main category 'organisation of work processes' appears most frequently in the documents, followed by the main category 'communication'. These are followed by the main categories 'dealing with each other' and 'work of the individual'. Other 'main categories' that do not occur so frequently are 'personality of the individual', 'team composition', 'team hierarchy' and 'team cohesion'.

Table 3: Frequencies of Main Categories (Documents With Codes)
– Critical Factors That Contribute to the Success of Teamwork

	Documents	Percentage	Percentage (valid)
Organisation of Work Processes	12	80,00	80,00
Communication	10	66,67	66,67
Dealing with Each Other	6	40,00	40,00
Work of the Individual	6	40,00	40,00
Personality of the Individual	2	13,33	13,33
Team Composition	2	13,33	13,33
Team Hierarchy	2	13,33	13,33
Team Cohesion	2	13,33	13,33
DOCUMENTS with code(s)	15	100,00	100,00
DOCUMENTS without code(s)	0	0,00	-
ANALYSED DOCUMENTS	15	100,00	-

The findings for research question 2 will also be presented in more detail. The sub-categories that occurred most frequently in the documents (portfolios/written reflections) after conducting the qualitative content analysis are given.

The categories most frequently found in the portfolios in terms of critical factors that contribute to the success of teamwork which can be assigned to the main category 'organisation of work processes' are a) distribution of labour (9) and b) operational organisation (4).

With regard to the main category 'communication' the following often occurring sub-categories are to be named here: a) in general key factor for team collaboration (6), b) helps to solve problems (3) and c) is used for the exchange of information (3).

For the main category 'dealing with each other', the following sub-categories are to be emphasised: a) respectful interaction with each other (4), b) having an understanding of the needs of others (2) and c) sympathy / harmony between team members.

Finally, the most frequently occurring sub-categories for the main category 'work of the individual' are listed: a) reliable working method/reliability in collaboration (4) and b) personal ambition of the individual (2). The other main categories listed in Table 3 are not explained here with their respective sub-categories, as these occur overall with less frequency than the other main categories.

Discussion

This research study offers interesting insights into two areas of research that are particularly relevant for accompanying research activities about the learning outcome of service-learning and community-based research courses or the learning outcomes of other project-related course formats in higher education: views on good leadership and successful teamwork. Through practical experiences with teamwork and the possibility to try out a leadership role, the two-semester study project course gave the students the opportunity to develop the necessary skills and knowledge to work in teams or later act as a leader in professional life. Brookes (2017) showed in his study for Australia, that the importance of teaching teamwork skills to undergraduates is highly valued by university staff surveyed. Working in teams or working groups, in the traditional sense or virtually and across multiple locations, possibly

distributed worldwide, is increasingly important in the modern business and working world, in organisations (Applebaum & Blatt, 1994 as cited in Guzzo et al., 1996) in research (Fiore, 2008) and since the 1920s and 1930s, teamwork has also been increasingly researched by scientists in terms of its efficiency (Mathieu et al., 2018). The fact that the aim of imparting relevant knowledge through practical work in the community-based research service-learning project course and reflecting on the experiences made was achieved is shown by the differentiated and detailed answers to the two reflection questions posed.

About the concept of a good leader, the research study showed that the model described by Beineke & Spencer (2007) is well suited to categorise the characteristics of a good leader as named by the students in the written reflections. Particular emphasis was given by the students to factors inherent in the person of the leader, the personal appearance and his or her expertise. As well as proven interpersonal skills such as a general willingness and ability to lead and support employees, to treat them and other people with respect and to give them trust and a wide range of knowledge and skills in teamwork. This knowledge that the students gained will be of great use to them when they themselves take up a leadership position after completing their university studies. The area of 'policy/programme knowledge' presented in the model by Beineke & Spencer (2007) was not touched upon by the students in their given answers. This can certainly be attributed to the fact that the students derived their views, on the one hand, from experiences they had while participating in the community-based research service-learning course and, on the other hand, from previous knowledge and other experiences they had in the university or school environment, at home, during their first professional experiences, or in their free time. In the study project course itself, in the three project teams, the selected team leaders were guided by the course instructor. Policy and programme knowledge thus played a less important role.

Regarding critical factors that contribute to successful teamwork, the results show that students emphasise the importance of aspects related to the organisation of workflows and work processes. And also the significance of good communication for teamwork collaboration, problem solving, and keeping the same level of information. The other recurring topics that were less mentioned relate to interpersonal aspects, the working methods of each team member, the team composition, the cohesion between the team members, and existing team hierarchies.

The two most important factors according to the frequencies with which the students mentioned them, organisation of workflows and good communication, are also emphasised in the review study by Salas et al. (2000) as emerging principles of teamwork and thus also to be considered as significant key factors for the team performance. There are also similarities to the teamwork dimensions listed in the study by Morgan et al. (1986, as cited in Baker et al., 1992), which are closely related to the performance of the team and its success or failure. Morgan's seven teamwork dimensions also include communication and coordination, furthermore cooperation, team spirit, adaptability, and giving and receiving feedback (Morgan et al, 1986, as cited in Baker et al., 1992).

Limitations

This research has some limitations that also should be mentioned. The sample size of this work is small which results from the number of course participants. The course was newly developed and offered for the first time in terms of the content focus and the teaching concept. There was no parallel course with a comparable focus. The number of study

participants is therefore limited to 15. In future studies, a larger number of cases should be the aim, if possible.

The answers given to the key questions in the portfolios or written reflections are generally shorter than in qualitative interviews, and the researcher does not have the opportunity to obtain more detailed information through follow-up questions. Ambiguities cannot be eliminated. However, the effort is limited not only for the researcher but also for the study participants resulting in a high level of acceptance and willingness to participate, so that the use for accompanying research appears suitable.

Conclusion

Teamwork skills, as well as skills that are important for taking on a leadership role, can be taught to students as soft skills in project-based course formats. Salas et al. (2000) conclude from a review of the existing literature, as a principle of teamwork, that "teamwork requires leadership that enables the direction, planning, and co-ordination of activities" (p. 11, cites the work of Ginnett, 1993; Hackman & Walton, 1986; McIntyre & Salas, 1995; Cannon-Bowers & Salas, 1998). It therefore seems to make sense to think of teamwork and leadership skills together when teaching soft skills in the context of project-based university courses.

Experiential learning teaching formats, which include the approaches of service-learning and research-based learning or community-based research, are suitable for this purpose. This was shown by the result of my accompanying research on a community-based research service-learning course. In principle, it could also be shown that written reflections in the form described and used are a helpful tool for the students to internalise and critically question the experiences they had in interacting and working with others during the project. In my opinion, a more in-depth learning process is initiated by the guided writing and renewed conscious intellectual engagement with relevant key questions of leadership and teamwork. Students should do this at their own pace, undisturbed, and in my opinion, if possible, ungraded.

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