

COVID-19 and In-Company Training

1. Introduction and Research Questions

The COVID-19 pandemic has had a profound impact on various aspects of education. Schools on every academic level closed during the first wave in 2020 and again in 2021 (Eichenauer & Sturm, 2020; Kanton Bern, 2022; Kohler et al., 2020), which led to distance teaching and distance learning, to the cancellation of final exams and to many other consequences. Previous research has closely looked at the effects of school closures, distance teaching and home-schooling on the learning effects and learning outputs (Biebeler & Schreiber, 2021; Bolli et al., 2020; Bolli & Morlet, 2022; Ebbinghaus, 2021). The dual vocational education and training (VET) system was also affected by schools' closings and other school-oriented measures, whilst also experiencing the consequences of firm closures and other restrictive measures, due to the two learning places of dual VET: school and training firm. This double exposure of dual VET by the pandemic has been looked at from different scholars (Goller & Wolter, 2021; Laganà & Babel, 2021), yet mostly from an economic or a school perspective, as well as mainly from a quantitative point of view. The perspective of other affected VET actors, however, is missing, in particular the perspective of apprentices, vocational trainers and training firms. The aim of this project is to integrate these perspectives and to show the significance Covid-19 had on the affected actors during that time.

Various occupations all around Switzerland were exposed to the pandemic. The consequences of exposure and restrictions vary when comparing professions of the e.g., skilled craft sector, to trade, to the public sector and to hospitality. Even though there were many national measures and insurances in place, federal measures and measures by private organizations in place, not every occupational program or region had received the same amount of monetary insurance or concrete requirements on how to deal with the pandemic. Because of the different exposure to Covid-19 and the various conditions under which the pandemic was supposed to be overcome, the perspectives of the affected actors can differ.

The Swiss VET system aims to offer highly qualitative occupational programs. The exposure and measures of the pandemic could have influenced the quality level of vocational training. To assess the quality of VET, Böhn and Deutscher (2019) as well as Fischer (2013, 2014b) created useful frameworks. They categorize quality in three (or four) dimensions: input, process, output (and outcome). On the input dimension – the learning environment and the framework conditions are focused on; on the process dimension – the work-tasks, the social interactions, and the educational mediation; and on the output dimension, the skills and

identification with the profession. This quality framework sets the basis for the perspective's analysis of the affected VET actors of Covid-19.

My research project aims at integrating different perspectives in an explorative mixed-methods project. Three different data sets and methodologies will be used: documents analyses, qualitative (group) interviews and a standardized online survey with training firms. The triangulated data can show the width the effect of the pandemic had on in-company training. The focus of this current exposé lies on the importance of my research by looking at the literature on the pandemic and on the effects quality has on VET. This exposé follows the following overarching research question:

How did Covid-19 affect the quality of practical training in the training firm from the perspective of the affected VET actors?

The aim of this exposé is to give a brief literature overview of the theories and the research on the quality of VET. I will first provide an overview on the research on how VET was affected by the pandemic. Secondly, the literature of quality in VET will be discussed. Lastly, I will theoretically contextualize the pandemic in the quality framework by explaining how I will proceed methodologically.

2. Dual Vocational Education and Training (VET) and Covid-19

A degree from a dual VET is the most common educational degree in Switzerland (Bundesamt für Statistik [BFS], 2023; Ebbinghaus & Krewerth, 2014). There are 250 different occupational programs at two levels located in 22 different occupational fields. Regular VET programs take three or four years and are completed with a nationally recognized VET diploma. Short programs last two years and are completed with a VET certificate. 2/3 of all degrees on upper-secondary level are vocational educational degrees.

Due to the variety of occupational programs in VET in Switzerland, apprentices were differently affected by the pandemic. The week of an apprentice in a dual VET occupational program is split into days in school and in the workplace. The number of days in school and work vary according to the occupational program, and in which year the learner is. During the pandemic this daily life changed, the apprentices were not able to go to school due to school closures and experienced other restrictions, had higher or smaller workloads and were confronted with new tools in their workplace (Task Force Perspektive Berufslehre, 2020). Many apprentices that, for example, worked in retail could not work in their training company, whilst stores had to close in Switzerland in 2020 and again in the beginning of 2021 (Eichenauer & Sturm, 2020; Kohler et al., 2020; Schweizerische Eidgenossenschaft, Federal Office of Public Health FOPH, 2022). Other occupational programs switched to home-office, such as people working in

Information and Communication Technology (ICT) or in administrative jobs. Further groups experienced a bigger workload due to the pandemic, such as workers and apprentices in health care. Depending on the occupational program and the measures that were introduced by the canton, apprentices experienced various effects of the pandemic on their training. Results of Bieber and Schreiber (2021) imply that on a macro- und mesolevel companies were forced to change teaching ordinances and adjust the teaching environment (e.g. to online). Yet, this analysis does not capture the impact the restrictive measures had on the apprentices and the personnel. Also, many further adaptations were introduced that have not been fully assessed.

Possible Effects on Quality in VET

In addition to the effects of measures the apprentices experienced, training firms could decide on further adaptations that affected the training of apprentices. These adaptations could affect the learning environment and with that the learning context of the apprentices in their workplace (Brooker & Butler, 1997). Learning context refers to the informal learning setting. "In informal learning settings the context is the curriculum, it delimits the possible learning, it both restricts and enables learning, it specifies what can be learnt and how it will be learnt" (Brooker & Butler, 1997, p. 488). The context of learning can thus be influential on what is learned. The content of what is learned is formed by its environment. When applying this to the pandemic, the learning context strongly changed in every training firm. Because Covid-19 was new and the effects of the pandemic were unpredictable in the beginning, the environment was tense and could have been more stressful (Horvat, 2022). Due to the constant adaptations of measures and the rapid spread of Covid-19, institutional changes occurred frequently, which led to a further stressor for employees and employers (Hower et al., 2020). Other research on the effect of stress for the apprentices in their in-company training is scarce.

The learning context during the pandemic also influenced further aspects of training. One aspect that was directly affected was the social interaction in the workplace. Measures such as a limitation of people or a distance measure of two meters had a physical impact on the social interaction between employees (Fuchs & Matzinger, 2021). Social interaction helps individuals organize their thoughts and supports the learning process (David et al., 2023), which makes it influential in the workplace. Previous research focused on the psychological effects of social distancing, yet the research between social interaction and daily work is limited. Particularly lacking is the connection to apprentices and their in-company training. The work of Tuzovic and Kabadayi (2021) is the only paper I found that addresses the role of social distance in the workplace and how this affected the employees' wellbeing. The authors show how employees were differently affected depending on their work. Employees on the frontline that provide "essential" service (e.g., pharmacies, health care, childcare, grocery stores) were stronger exposed to the virus, which also affected their stress and mental illness (Sim, 2020).

Whereas occupations with a sudden shift to home office suffered stronger from loneliness, anxiety and depression (Davidsen & Petersen, 2021). How social distance or the lack of social interactions affected the daily working life is not discussed. With the decline of social interactions, apprentices consequently experienced a decline in the exchange with supervisors, vocational trainers and other employees. However, there is no sufficient research on this specific topic.

Most research focused on the outputs the pandemic had on the VET training. Au Yong Lyn and Renold (2022), for example, assessed multiple impacts the pandemic had on apprenticeship training with apprentice supervisors. They used monthly collected panel data in collaboration with Bolli et al. (2021) by analyzing data from “Yousty.ch” that tracks changes in apprenticeships and administrative data on the cantonal level. Their results show that most apprentices were not strongly affected by measures taken to contain the virus. Yet, they show that apprentices that were more exposed to Covid-19 measures were less likely to make up for the material they missed in their vocational school. This lack was not seen when looking at the practical training, the apprentices were more likely able to catch up on missed practical training, even if they were exposed to strong measures. However, especially apprentices from the industries health and social service were able to make up for the lack of practical training (Au Yong Lyn & Renold, 2022, pp. 21–22). The authors explain this finding with the need of personnel in these two fields during the pandemic, which led to apprentices performing more practical tasks in the workplace. This assessment stems from vocational supervisors during the pandemic, how the assessment would look like today is unknown. Further outputs from the apprenticeship like identification with the job or future perspectives, were not assessed (Böhn & Deutscher, 2019).

As shown, many topics that look at quality factors and Covid-19 have been the focus of previous research, yet the direct connection to the vocational training and education is scarce. This is the aim of the following project, namely to assess how the pandemic affected the quality of the VET training.

3. The Quality of VET

The learning place “workplace” in the dual¹ vocational and educational training (VET) is located in the training firm and in other decentral learning places that are separate from the vocational school (Böhn & Deutscher, 2019). The workplace in the training firm is organized through the *Berufsbildungsgesetz* in Switzerland. The involved actors are political actors on the national and cantonal level, the trade unions and employers associations (OdA = *Organisationen der*

¹ There are also school based VET-trainings that have no practical part in training firms.

Arbeitswelt), the training firms and the vocational schools (BFS, 2023). The involved actors all aim at providing a highly qualitative vocational and educational training system. The official quality standards and guidelines are formulated by the officials on the political level and from the OdAs. The vocational schools and especially the training firms are required to implement these standards, whilst also following their own quality pillars. These quality pillars are included on a daily work basis. Quality, thus, has a descriptive as well as a normative character (Nikolaus, 2009): The normative quality measure is assessed by looking at standards or learning objectives that set a framework for quality. Every institution and learning place can set its own quality standards. In dual VET programs, the schools and the training companies, for example, have separate final examinations to check the required learning trajectories. Moreover, the role of the vocational school, the importance of curricular frameworks in the dual context, and the special (and legally regulated) responsibility of the training staff for the trainees are quality standards that make the two learning places very special (Böhn & Deutscher, 2019). Thus, every training company and every vocational school are obliged to follow the contextual quality standards parallel to implementing own specific standards that can apply. This exposé looks specifically at the training firms and their quality frameworks, because the vocational schools are less dependent on the influence of the OdAs. The OdAs have a strong effect on the formation of an apprenticeship in Switzerland and are partly made up of employer associations that are the representatives of the training firms.

Because quality can be difficult to grasp in a day-to-day context, different frameworks were established to assess quality by looking at different dimensions (Böhn & Deutscher, 2019; Ebbinghaus, 2009; Fischer, 2013, 2014c, 2018; Stalder & Reinhard, 2014). The variety of VET when looking at learning, workplaces, branches, occupations and regions requires an extensive quality framework that also takes in account the learning processes and does not solely focus on the results of vocational training (Fischer, 2014c, pp. 71–72). Scholars differentiate between four dimensions: input, process, output and outcome. The outcome dimension is not included in my work, because the outcome looks at long-term results of an apprenticeship, which cannot be seen in my data. Scholars also differentiate every quality dimension with its own level (Fischer, 2013, 2018; Fischer et al., 2014). These levels can then be categorized into the macrolevel, mesolevel and microlevel (Fischer, 2013, 2014a; 2018). I will give an overview of each quality dimension and how they are connected to the dual vocational and educational training system.

Input Quality Dimension

A theoretical approach to quality in VET was formulated by Tynjälä (2013) that differentiates quality measures on three dimensions. The first one is the input dimension. The input quality dimension includes factors that stem from the training firm (Böhn & Deutscher, 2019).

Generally, this dimension can be separated in the learning environment and in the institutional frameworks of the firm. Böhn and Deutscher (2019) show in their metaanalysis on surveys to assess quality in VET that the working climate, the learning and employment opportunities and the learning site collaboration can be summarized to characterize the learning environment. The other category they formulate are the institutional frameworks, the authors differentiate between institutional frameworks that focus on the training and frameworks that look at the firm. The input dimension can set the basis of how the following dimensions are structured. Moreover, the input dimension cannot be compensated with a strong output or outcome dimension, according to Frommberger (2013). Frommberger (2013) argues that the results, the output or the outcome of a vocational training, cannot be objectively assessed without connecting it to the mediation and acquisition of learning. Other research has shown that the satisfaction of training from the perspective of apprentices is mostly connected to the input or process dimension of the training, which additionally shows the importance of the input dimension (Ebbinghaus & Krewerth, 2014).

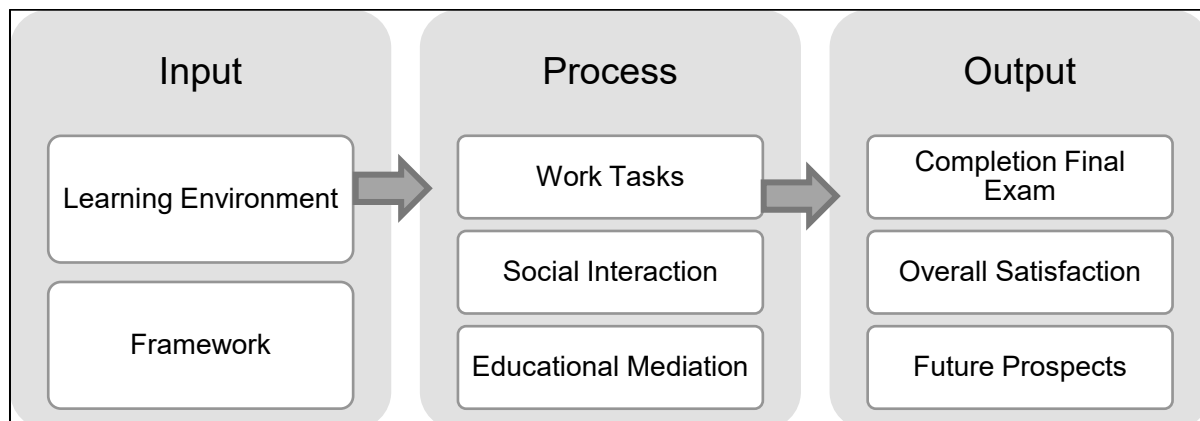
Process Quality Dimension

The second quality dimension that many scholars identified, is the process dimension. The process dimension is comprised in mostly three operationalization: social interaction at the workplace; work tasks; and pedagogical mediation (Böhn & Deutscher, 2019; Deutscher & Böhn, 2023; Tynjälä, 2013). In this dimension teaching- and learning processes as well as the interaction between the apprentice and the trainers are looked at (Fischer, 2018). The availability of training personnel, the tasks an apprentice takes on and the instruction of these tasks are a few examples of how the process dimension is measured. When assessing the quality of a VET training, the process dimension can be evaluated the easiest by the involved actors, because it affects their daily life most directly.

Output Quality Dimension

The third dimension is the output quality dimension, which can be equated with the analysis of results (Fischer, 2018). In this category the success in the occupational program, or the satisfaction with ones trajectory is looked at (Böhn & Deutscher, 2019; Fischer, 2013, 2014c, 2018). Thus, this dimension focuses on what has been achieved in the apprenticeship. Figure 1 shows all quality dimensions as well as the categories, which scholars use to operationalize the dimensions.

Figure 1 Quality Dimensions



Note: own figure, based on Deutscher and Böhn (2019)

As mentioned above, the quality dimension can again be organized in levels (micro-, meso-, macro-), as to be seen by Fischer (Fischer, 2013, 2014c, 2018). He argues that the help of such a matrix is to locate training quality more efficiently (e.g., micro = individual level), so that the need for changes in quality can be more easily located. Table 1 shows Fischer’s Matrix with possible items.

Table 1 Quality Matrix by Fischer (2018, p. 160) with own extensions

VET quality	Input	Process	Output	Outcome
Micro-level: Teaching and Training	<ul style="list-style-type: none"> • Characteristics of apprentices • Availability of trainers and experienced co-workers 	<ul style="list-style-type: none"> • Work tasks and instruction quality • Feedback of trainers • Delays (repetition of training year) 	<ul style="list-style-type: none"> • Acquisition of required skills and knowledge • Premature contract termination • Successful completion of training 	<ul style="list-style-type: none"> • Employment in training occupation • Transition to higher education • Unemployment
Meso-level: companies, vocational schools	<ul style="list-style-type: none"> • Pool of applicants’ & recruiting strategies • Availability of experienced co-workers • Teaching environment (on-site/online) • Availability of vocational schoolteachers 	<ul style="list-style-type: none"> • Work tasks and instruction (un)available • Instruction and teaching quality of co-workers, vocational schoolteachers 	<ul style="list-style-type: none"> • Retention of apprentices by training company • Trainer satisfaction 	
Macro-level: legislation, ordinances	<ul style="list-style-type: none"> • Training ordinances • Teaching frameworks 			<ul style="list-style-type: none"> • Occupation-specific unemployment quotas of education-leavers • Occupation-specific quotas of trans. to HE

Note: Grey aspects will not be covered in my project

4. Methods and Goals

Previous research on the pandemic and on how it affected the vocational education and training system exists, yet the focus does not lie on the impact it had on the quality of the training. To fill this gap the perspectives of affected actors must be integrated. They can assess a potential shift of quality in the VET training. Because these perspectives can be very different, I integrate different data types and methods, which supports the explorative nature of my research.

First, I conduct a thorough document analysis of documents that were created by trade unions, employers or cantons that show the variety of measures and exposure of the pandemic of specific occupations or occupational fields (Bowen, 2009; Kohlbacher, 2006; Morgan, 2022). The measures taken varied between industries and between regions. The document analysis thus serves to provide an overview of the occupation-specific challenges and measures.

With the background knowledge of the document analysis, occupations are selected that were differently affected by the pandemic. The selection of the occupations is based on the consequences of restrictive measures Biebeler and Schreiber (2021) refer to. The different perspectives of affected actors are of interest, therefore, apprentices from the selected occupations as well as vocational trainers are interviewed. Through qualitative (group) interviews, apprentices and vocational trainers can share their perspective on the effect the pandemic had on the VET training. The apprentices that participate, completed their training in occupational programs that either experienced a decline (or an increase) in orders that led to a reduction in revenue or in business closures (selection: retail assistants and cooks); had a supply and purchase shortage (selection: electricians and logistics); worked mainly in home-office (selection: ICT-specialists and administrators); had strong hygiene-restrictions (selection: healthcare, childcare and medical practice assistance). We have conducted 17 group² interviews with apprentices (Flick, 2007; Grønmo, 2020; Kühn & Koschel, 2011). The apprentices stem from the German-speaking canton of Zurich and from the canton of French-speaking Vaud. The participants all completed their training in summer 2023 and were thus affected by the Covid-19 pandemic during their training.

The interviews with vocational trainers occur in the same occupations as the group interviews, but also include occupations from other occupational fields that were differently affected (e.g., Facility Management). The combination of the two perspectives helps to provide a brought sense of how VET quality was affected during the pandemic, especially because the vocational trainers can also provide the perspective of before the pandemic, during the pandemic and the

² Nine focus-group interviews took place in the region of Zurich, seven occurred in the region of Vaud.

comparison to now. The interviews will be analyzed through thematic analysis (Braun et al., 2019).

With the information of the documentations and the interviews, I will create a survey for training firms to assess their perspective on the quality of VET. The sample stems from the data base of the federal office for statistics (FSO), where a stratified sample was drawn. N=4'236 training firms will be contacted that train apprentices from all occupational fields and that are in the German and the French part of Switzerland. The French training firms are overrepresented due to the higher amount of vocational training in the German part of Switzerland. We expect a response rate from 20-30% (Gehret et al., 2019).

The triangulated data underlines the importance of this explorative mixed-methods project, by showing the perspective of all affected VET actors of the pandemic and their take on the quality of VET.

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