

## Chapter 4

# Sharing experience: The painters' story

Jean-Luc Gurtner, Alberto Cattaneo, Alessia Coppi

As mentioned in Chapters 2 and 3, apprentices often have a hard time linking what is being done at school with what they experience at work in the host company. Everything differs between these two contexts – the setting, the colleagues and the possibility versus impossibility of reaching out to more experienced persons to receive help or ask questions whenever needed (Resnick, 1987). Each location has its own agenda and programme. Nothing guarantees the matching of the content with the topic addressed since, with few exceptions, as in the very seasonal professions, each company may be working on a different topic at a given point in time. So, school information might come too early for some and too late for other apprentices of the same class. Can technology be of any help here? And how? We saw in Chapter 3 that technology offers the possibility to 'cross boundaries' and that its appropriate use can help teachers to give meaning to what is being worked on at school by linking it to what is experienced at work. The current chapter deals with the same issue but comes from the opposite direction, investigating if and under what conditions schools can provide help to apprentices in doing their work at the company and, hence, ease the job of VET trainers out there in the host companies. A story taken from the lessons given by a prominent teacher in the branch of painting illustrates this 'boundary crossing' scenario.

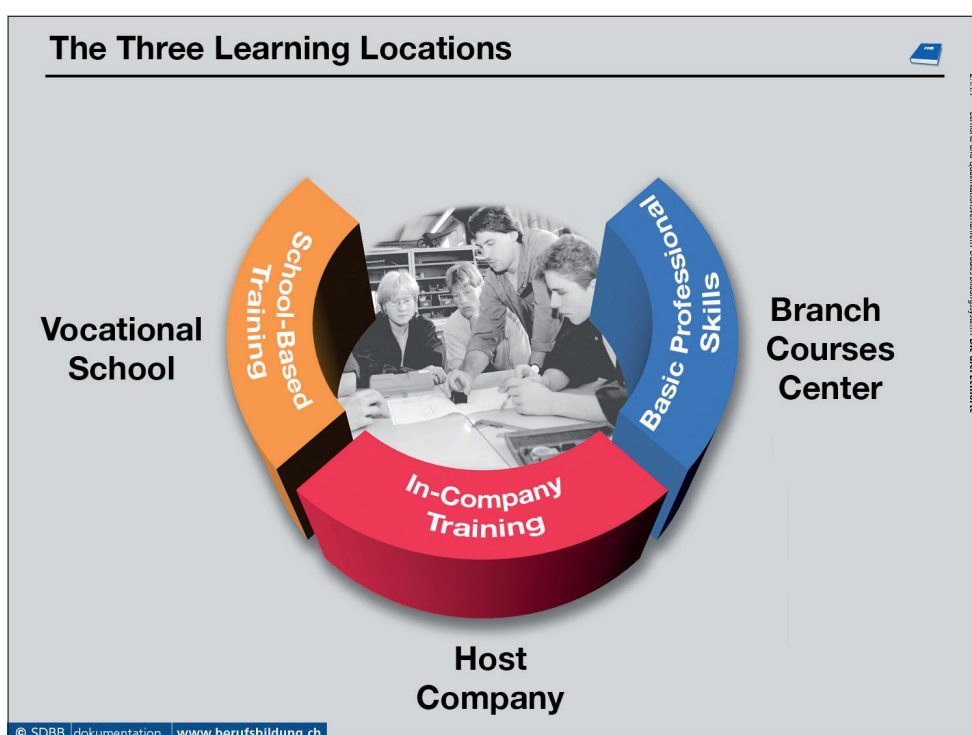
### Connected partners but independent actors: the current state of togetherness in VET

The VET system in Switzerland is jointly administered and governed by three partners, attached respectively to the federal level (state secretary for education, research and innovation), to the cantonal level (each state has its own office for VET) and to the various professional associations (Figure 4-1). Each partner has the triple mission of watching, controlling and organising given aspects of the system and none of them has the right or the power to change anything within it without the agreement of the other two partners. Because of the complexity and cost of the entire system, and because of the diversity of the needs of each professional association, but also to allow the diverse branches to regularly adapt their training plans to the evolution of the labour market, the three partners have to meet quite frequently and negotiate through diverse delegates and numerous committees. Together, they promote new or updated regulations, adapt ordinances, but also decide and attribute the financial resources to the various bodies in charge of conducting the real training in the various locations – mainly VET schools and branch course centres. At that level, partners work together quite well and regularly insist on the importance of creating and maintaining good coordination between the actors contributing to apprentices' training, whatever training locations they are based in.



**Figure 4-1** • The three partners supporting VET in Switzerland and their respective missions.  
Source: SBFJ.

At the lower level, however, that of the actors contributing to the training on a regular basis – the host company, the vocational school, as well as the branch courses and centres (see Figure 4-2) – collaboration is rather exceptional and corresponds to diverse and varied conceptions of connectivity (Sappa & Aprea, 2014).



**Figure 4-2** • The three actors contributing to VET in Switzerland (in black) and their domains of contribution (in white within the coloured shapes).  
Source: SDBB

It surely has not gone unnoticed to the reader that in the figure presenting the actual contributors to VET (Figure 4-2), neither the domains nor the institutions are linked in contrast to the partners presented in Figure 4-1.

It has been shown that the contacts between school teachers and company trainers mainly take place when a problem occurs, such as the misbehaviour of an apprentice (35% of the contacts between school teachers and VET trainers) or important learning difficulties (39%), while common projects (4%) or teaching material exchange (1%), for instance, were almost never mentioned as a reason for contacting another training actor during the period of the learning locations separation (Peter, 2014). Moreover, such contacts mostly pass through the school administration, not directly from teachers to trainers or vice versa.

Even less frequent, not to say almost non-existent, were contacts with branch course instructors, be they from teachers at school or a trainer in a company (Peter, 2014). Introduced into the VET system at the turn of the century only, and mainly performed in a third location set up and held by the professional associations, the branch courses are defined in the official texts as a complement to both the practical training in the companies and the knowledge acquisition done at school, and as a way to consolidate the basics of the profession. Such a definition is somewhat ambiguous, as we have been told many times in the other two locations: while some take this definition as an indication that intercompany courses are only secondary, others wonder whether their introduction could be a sign that professional associations have come to consider that the other two locations have failed to bring the necessary instruction to apprentices in the domain. As a recent report of the Ministry of Education of the canton of Zürich puts it, this could lead to ‘frictions in the delimitation of the respective content to be transmitted’ (Zürich, B. K., 2018, p. 99). Moreover, the timing and financial issues do not help mutual confidence and trust; for instance, apprentices’ attendance at the branch courses at a given moment in the semester is compulsory, whatever the pressure at the company or the school is. Host companies contribute to the financing of the branch courses directly, but also indirectly through their membership fees to the professional association and because they have to ensure that the apprentices’ salaries are paid even when they are attending such branch courses and are, therefore, not being productive for the company. On top of that, branch course instructors may be less experienced professionals than the host company trainers or former colleagues who have ceased running a company themselves. Conversely, professional associations often complain that VET schools do not give them enough spare time to run the branch courses with minimal interference in the school exams or their preparation, or during the holiday periods (Zürich, 2018). All of these conflicting interests tend to introduce mistrust, defiance and jealousy between the different actors, as we sometimes heard during our regular visits to the companies, the VET schools and the professional centres.

Vertically, the network around each actor is not much tighter; once they have received the authorisation from their canton to serve as a host company, enterprises are allowed to select whom they want as apprentices and are free to organise the training programme as they wish. The training plan has been defined by the professional association in terms of the competencies to be acquired in the workplace, but not in terms of timing – when to work on the acquisition of what competence – or in terms of importance – how much time apprentices should be given for acquiring what competence. Membership in a professional association is not mandatory and many professionals consider it useless. In most companies, the apprentices are mainly mentored very closely by the collaborator they work with because they share the same office, the same machines or the same professional sector. Their actual bosses are generally sitting in another office or another sector of the enterprise, and sometimes there is minimal contact with that apprentice. Sometimes they have another background or even another profession, as is often the case, for instance, in the health or the food sectors. For instance, the actual boss of a salesperson in a typical bakery is generally the owner of the bakery, a baker actively working backstage, while the person accompanying the apprentice in the shop is the baker’s wife.

In a typical VET school, teachers of the same speciality number generally between one and three depending on the profession. Their links with the school direction are quite loose. As very different occupations are grouped in the same section of the school, contacts with the head of each section – called a dean – are maintained at a minimal rate and are rather organisational, not pedagogical. This diversity of backgrounds of the actors as well as the complexity of the configuration further leads to most VET schools controlling teachers on administrative issues, but not on content or methods to be used in teaching. It is, therefore, not false to pretend that VET teachers are rather independent and that they like it to be so. None of these observations of course should be taken as a criticism of the system. They are only the result of repeated observations of the situation in most professions and most VET schools, a situation that has arisen due to the complexity of both the organisation of the labour market and of the dual (trial) training scheme.

Despite the high complexity of the network around each apprentice and the efforts invested by those organisations which administer the system (the partners) for a fruitful collaboration, the actors actually contributing to that network remain rather loosely interconnected and feel mainly independent from each other. Each one has their own agenda, priorities, programme and activities to propose to the apprentice, and even if the curricula clearly prescribe what should be taught and practised at school, in the branch courses or at work, collaboration is nowhere requested nor really expected. A study by Peter (2014) shows, for instance, that while the majority of in-company trainers welcome school activities requesting part of the job to be done in the enterprise, an equivalent majority of them consider that such activities should remain infrequent and require no time, attention or effort to be invested in by the in-company trainer. Apprentices are also ambivalent about such connections. If they generally consider what they are taught in the different locations as being highly disconnected, and welcome more connections in their programme, they are not sure they would appreciate their various ‘trainers’ having deeper exchanges about their performance and attitudes in the different learning locations. This has not changed much from a study conducted in 2011 where apprentices clearly identified themselves as ‘hands-on’ persons (Taylor & Freeman, 2011), and where a rationale oriented towards the productivity typical of the business-driven location prevails against the learning-oriented rationale characterising the school (Illeris, 2011). In a survey we conducted within the project, for instance, we asked the stakeholders about the possibility of showing the teachers at school the apprentices’ Learning and Performance Documentation, a requirement that must be completed and corrected in the company. We saw that apprentices were significantly less in favour of giving access to it to their teachers at school than were the teachers themselves or their in-company trainers. Teachers at school declared themselves happy to have a look at this documentation to see what the apprentices were doing in their respective enterprises, but were less willing than any other stakeholders to be involved in commenting or correcting apprentices’ entries in these documents (Caruso et al., 2020). To make a long story short, it is a bit like if each trainer wants to see what is done in the other locations but is not ready to invest the time and effort beyond their actual responsibilities, simply to facilitate the task of another trainer or to make it more fruitful, what we sometimes refer to as a ‘peep in but not chip in’ principle (Gurtner, 2021). In our view, this strong ‘independence’ of the various actors leaves the difficult task to the apprentices to bundle together what they learn in the different learning locations, a job that might well be a real challenge, as we already know from the vast literature contrasting informal and formal learning. We, therefore, decided to explore how learning technologies could boost the collaboration between the various actors intervening in the VET training and so help apprentices to ‘see’ more clearly the connections between what they learn at school and in their enterprise. This collaboration, we thought, would be even easier to set up since, as we have seen in Chapter 1, most VET school teachers and intercompany trainers have formerly been or still are professionals.

### **Take advantage of technologies to foster collaboration among the various actors across learning locations**

As already presented in Chapter 2, the *Erfahrraum* is a virtual space in which experiences made by an apprentice in one location, generally the workplace, can be decontextualised and transformed into a more abstract, elaborate and reflective form; it is also a space that teachers and in-company trainers can access without being physically there. But what is present in the platforms developed so far in the project (see Chapter 3), such as LearnDoc for bakers or e-Dap for cooks, has been inserted by an apprentice, with teachers and in-company trainers being offered the possibility to consult it and eventually to react to those traces, not to provide their own content or to trigger apprentices’ reactions to their own input.

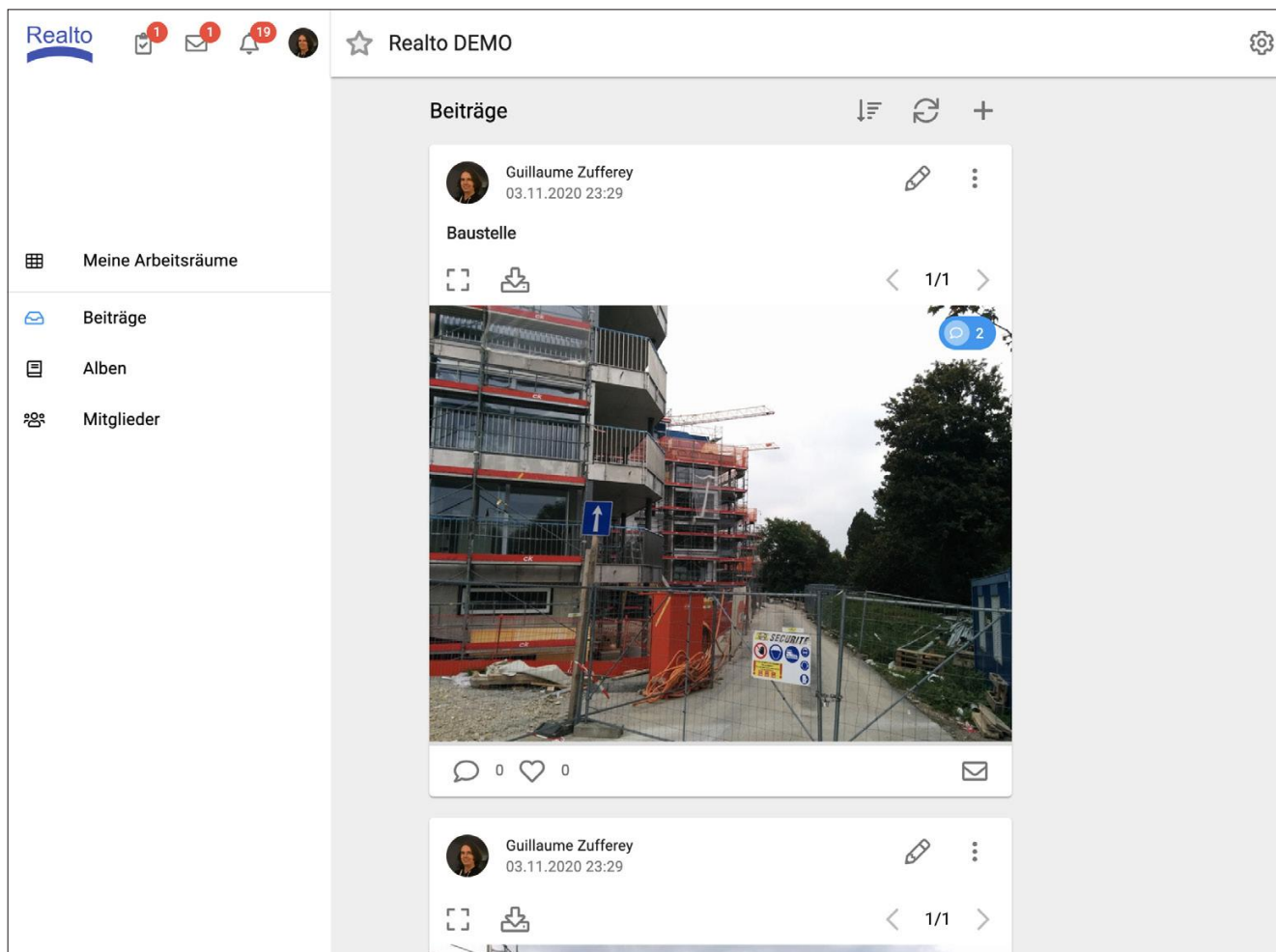
We, therefore, decided to design a new platform on which teachers and in-company trainers could upload content, not just the apprentices, that is, a platform that allows easy transmission from one location to the other of any content that a stakeholder wishes to make accessible to another of its users. The metaphor of a bridge imme-

diately came to mind, with its double function of being a connector and short-cut between two locations. Based on previous experience, we knew that this could not be an open-air bridge, such as the Golden Gate or the Pont d'Avignon, since the content to be transferred along this bridge may sometimes be sensitive. Not all in-company trainers accept people from other companies being able to see the kind of work done in their own company; nor is every teacher ready to share their material with teachers from other schools. We then remembered that in other countries, such as Italy, well-known bridges often have walls and a roof, yet facilitate the transmission of goods from one location to another while, at the same time, preventing people all around from seeing the content actually transferred. This is especially the case for the Rialto, the well-known Venetian bridge. We, therefore, decided to name this new platform Realto, a name that is sufficiently similar to that of the well-known bridge without being totally identical to it. Moreover, the term 'Realto' implicitly makes reference to the 'real' experiences we wanted learning to start from, and it also attracts the reader's attention by the presence of an 'e', which is typical of any electronic environment.

As part of the family of the previously developed platforms, Realto still offers apprentices an easy way to upload material captured in the workplace (e.g. photos, films, notes), elaborate on it somehow and present it in various forms and degrees of reflection to the trainer at work or the teacher at school. These forms may range from simple posts to fully elaborated documents, such as learning documentation. Due to the sensitivity of some of that material (i.e. to keep it as a 'safe' bridge), accessibility to the platform had to be restricted in many ways, as with the previously developed platforms. Through a login and an invitation procedure, which makes sure that only the 'right' people can see the material uploaded, Realto also provides the option of manually setting and modifying the access to different sections. But privacy was obviously not enough to encourage teachers and in-company trainers to share information on the platform. In her doctoral thesis, Nicole Furlan (2017) saw, for instance, that feedback to apprentices' learning documentation by their in-company trainers was not more frequent with Realto than with a more traditional paper and pencil format (although this differed a bit in other experiences, such as the chefs' ones – see Chapter 3). Two other aspects were, however, more encouraging: the delay between the publication of a learning document on the platform and the reception of feedback was shortened with Realto, and the completeness of this feedback (assessed in number of words) was higher than when feedback was given via a pencil only.

If the absence of effect on the frequency of reactions as well as the effect on the speed of the reply is fully in line with what we already know from social network practices and other platforms (see Chapter 3 for similar results with the chefs' platform), the impact of Realto on the completeness of the feedback was more unexpected and encouraged us to keep and refine the system.

A *Notification* function was then added, allowing users to let those 'right' persons know that feedback was expected from their side. The first idea of such a function was an email or a message on the addressee's phone. But reactions to this idea were actually ambivalent, not everybody appreciated being alerted that way while, for others, it was a welcome reminder and a useful indicator of the work accomplished by their apprentice. In line with other social media, we decided to go for less intrusive versions of that notification function – in the form of a red flag being flashed in the addressee's to do list on the opening screen of Realto, completed or not by the name of the person requesting a reaction (see Figure 4-3) – and the possibility of the addressee deciding on the frequency they would accept receiving such notifications according to the type of reaction expected.



**Figure 4-3** • Screenshot from Realto showing next to the Realto logo the to do list, with the red dots indicating the notifications received as well as who in the network actually sent it.

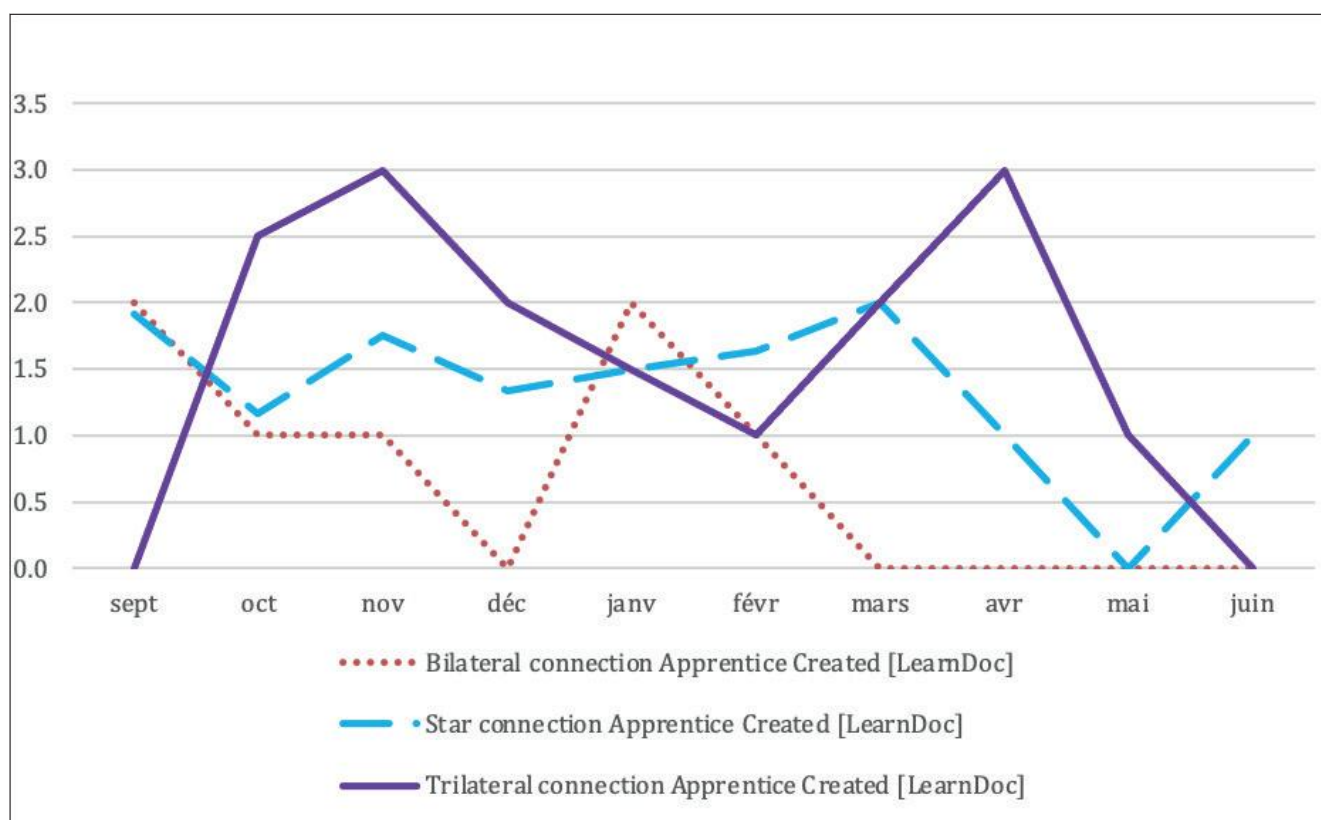
But the Erfahrungsraum does not foresee the possibility for the in-company trainers at the company to see what the apprentices have done or are currently doing at school. To make the exchanges go both ways – and not only through what the apprentices may say or carry over the bridge to the company – we decided to provide different solutions enabling the in-company trainers to be informed of – or even involved in – the work being done at school. To allow this to happen, we offered teachers the possibility of inserting directly on the platform, actually in the class workspaces, not only documents and photos, but also complete activities to be worked on by apprentices outside of the school physical environment. Our naïve expectations were that apprentices would then complete the school task in the workplace with their in-company trainers out there looking over each apprentice’s shoulder, and so be regularly informed of what apprentices and teachers were currently working on in school. From an inquiry, we, however, learned that most apprentices actually access Realto from home more often than from the workplace, a general observation that varies a little bit from profession to profession and from workplace to workplace (Caruso et al., 2020).

Another idea was to have in-company trainers directly connected to the teachers through an invitation email to integrate them into the classroom workspace. This proved to be not such a good idea since it led to an avalanche of notifications that quickly submerged the pilot in-company trainers. The in-company trainers were not only notified about the activity of their own apprentices, but also by the activity of all the participants in that same class workspace – the teachers, apprentices and the related in-company trainers – an effect that led to most in-company trainers simply denying invitations and ignoring notifications. A possible solution to that problem, we thought, could be to filter the posts and to limit them to those concerning a given apprentice, but it soon proved impossible to separate these messages from those which, while not being specifically addressed to one apprentice, could be useful and relevant to that particular trainer. Thus, filtering information on that basis would have been either too restrictive or too open to remain sensible. To alleviate this risk, and to make the tool adaptable to the diverse sensibilities of its users, the notification functions of our platforms offer many options, so that they can be set according to each user’s preferences,

Our data also reveal that certain groups of users have invented original ways to get around such difficulties, proving their will to “close the loop” and open communication paths between teachers and in-company trainers even when “nothing goes wrong”(!); in some cases, we saw teachers giving the in-company trainers of their “common” apprentices access to their own folder of the tasks prepared for students; in other cases, we witnessed the creation by teachers of parallel workspaces in which they could pass information to the in-company trainers related to the work being done at school and welcome their reactions to them. Of course, these solutions might appear to be a restriction to the intended ‘open’ philosophy of the Realto platform, but at the same time they are simply the result of pragmatic decisions to keep in-company trainers regularly informed of what is being done at school. Such alternative communication paths also allow teachers to inform in-company trainers of any assistance they might wish for, in directing their ‘common’ apprentices towards relevant material, assisting them in completing activities or letting them experience at work a given skill, as is the case of the chefs’ platform presented in Chapter 3. The example developed below in the case of painters shows that some teachers directly use the class workspace to alert in-company trainers of new regulations or developments they might not be aware of, for instance in the field of security at work, health prescriptions or new products developed by cutting-edge labs. Conversely, in-company trainers can also take advantage of such communication paths to ask teachers at school or instructors of branch courses to provide more explanations about a phenomenon, a principle or a technique that apprentices should better understand in order to be more effective at work.

Another way we found of boosting interactivity on the platform was by acting on the training scheme adopted to prepare the different stakeholders to using Realto. In a study conducted by Felder (Cattaneo et al., 2021), training the three stakeholders together (i.e. having teachers, apprentices and their in-company trainers jointly participating in the same training sessions) had a long-term impact on the apprentices’ activity in the platform throughout the school year, while training them separately resulted in a regularly declining activity rate in terms of productivity. We suppose that being trained together gave the various actors the feeling of being involved in a team, which led them to act as reciprocal supports when the amount of motivation or the time available eventually decreased.

The importance of building a team as a way to increase learners’ activity is also clearly visible in Figure 4-4. There, we contrasted the mean number of learning documents produced each month of a full school year by three groups of apprentices, based on the types of connections activated on Realto; we distinguished between those apprentices who had connections only with their teachers (star connections, invitation received from their teacher with host company trainer not involved), those who were invited to Realto by their host company trainers, but without their teachers participating (bi-lateral connections; this situation generally happened for those apprentices whose company trainers had reacted positively to an invitation by their professional association), and those who had open connections with both of them, with the teacher and the trainer also being directly connected (trilateral connections). Although the latter scheme took a bit more time to be established and become effective (see positions in September), this trilateral connection (solid line) clearly led to higher and more sustained productivity (measured in terms of the mean number of learning documents each learner posted every month) compared to the other two connection modes.



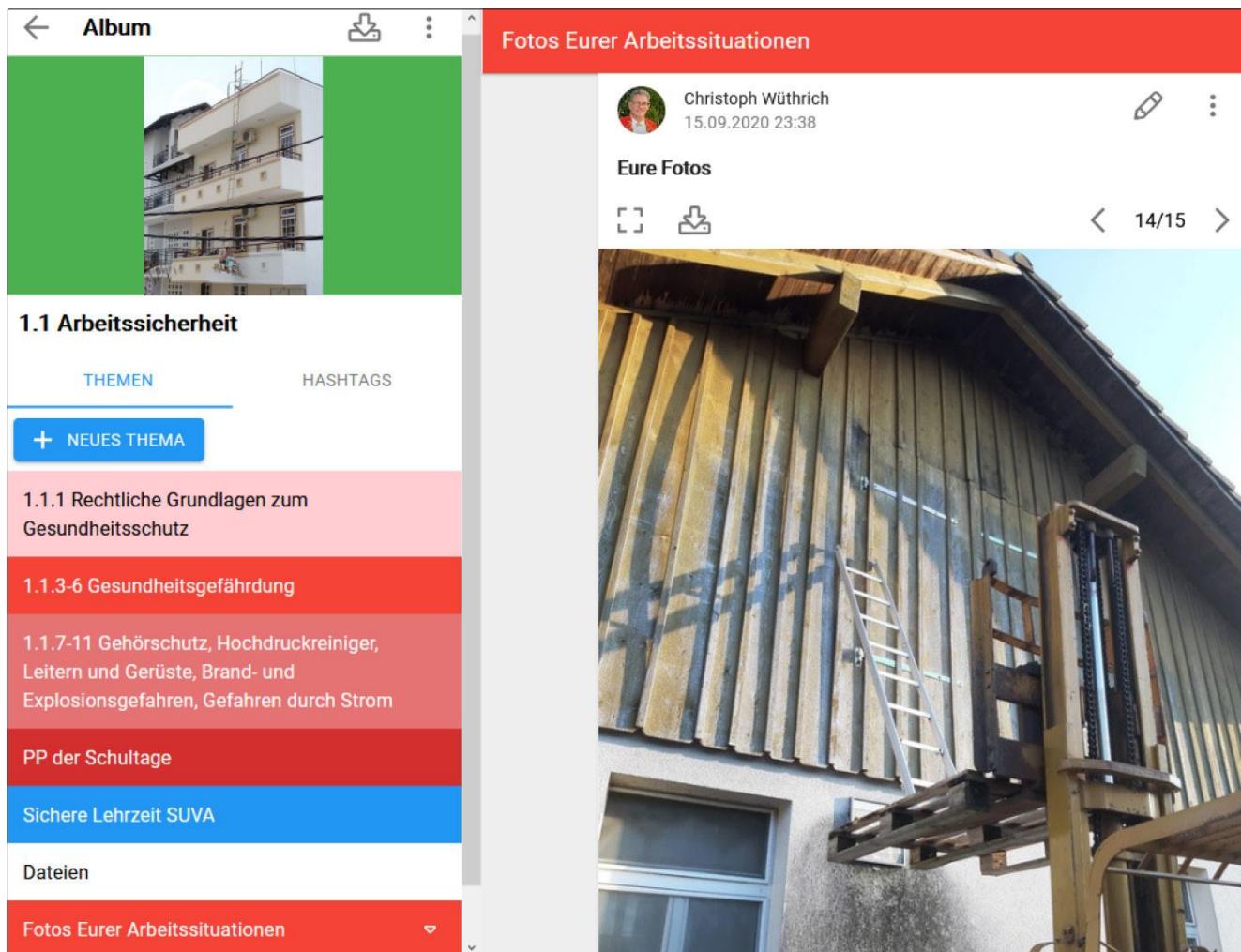
**Figure 4-4** • Mean number of learning documentation posted by the apprentices each month in relation to the type of connections established in Realto.

### How painters use Realto as a connecting tool between learning locations

In the paint branch, most companies work on customers' requests and work in private houses but also inside and outside larger buildings often still under construction. Security issues there have high importance and the domain called 'Security at work, health and environmental protection' is nowadays one of the four domains of competencies around which the learning plan is organised. Despite employees' security coming under the remit of the company they are under contract with, many enterprises in the branch struggle with this issue for different reasons. The number and the language complexity of the acts, ordinances and regulations dealing with the topic increase regularly and keeping track of these prescriptions is often out of reach for most VET trainers. Moreover, more than 95% of the companies in the branch have fewer than 20 employees, all of whom prefer to go out and paint rather than to attend courses on these new regulations. On top of that, it is well acknowledged that young people have a different appreciation of dangers and risks than more experienced ones (Breslin et al. 2007). VET trainers are, therefore, quite happy that VET schools and branch courses do their share of training apprentices on these issues.

Christoph Wüthrich, a teacher at the VET school in Wattwil, who uses Realto in his courses on a daily basis, has taken the opportunity to use Realto to teach security and prevention to the in-training painters. To enrich his teaching of the acts, regulations and prescriptions with examples taken from the field, he asks apprentices to provide photos from various work situations and discusses these with them, focusing on the dangers and risks they contain and contrasting them with the various prescriptions, acts and regulations on security issues at work set at the federal or the cantonal level (in pink on Figure 4-5). He also complements these discussions with a variety of brochures and booklets provided by the professional association or other institutions, summarising the measures appropriate to handling typical risky situations safely or presenting the best practice in such situations (in blue in Figure 4-5). Finally, he puts the PowerPoint presentations he used in class on the platform (in dark red in Figure 4-5). According to Wüthrich, the teacher's presentations, as well as the booklets and leaflets he inserts on the platform, are meant for the apprentices but also, interestingly, for their host company trainers, so that they become aware of what the apprentices were presented with at school and, at the same time, can learn about any new act, regulation or prescription introduced by the political authorities on security at work or risk prevention issues. These are changes which professionals often have a hard time getting to know about and adopting in their day-to-day practice.



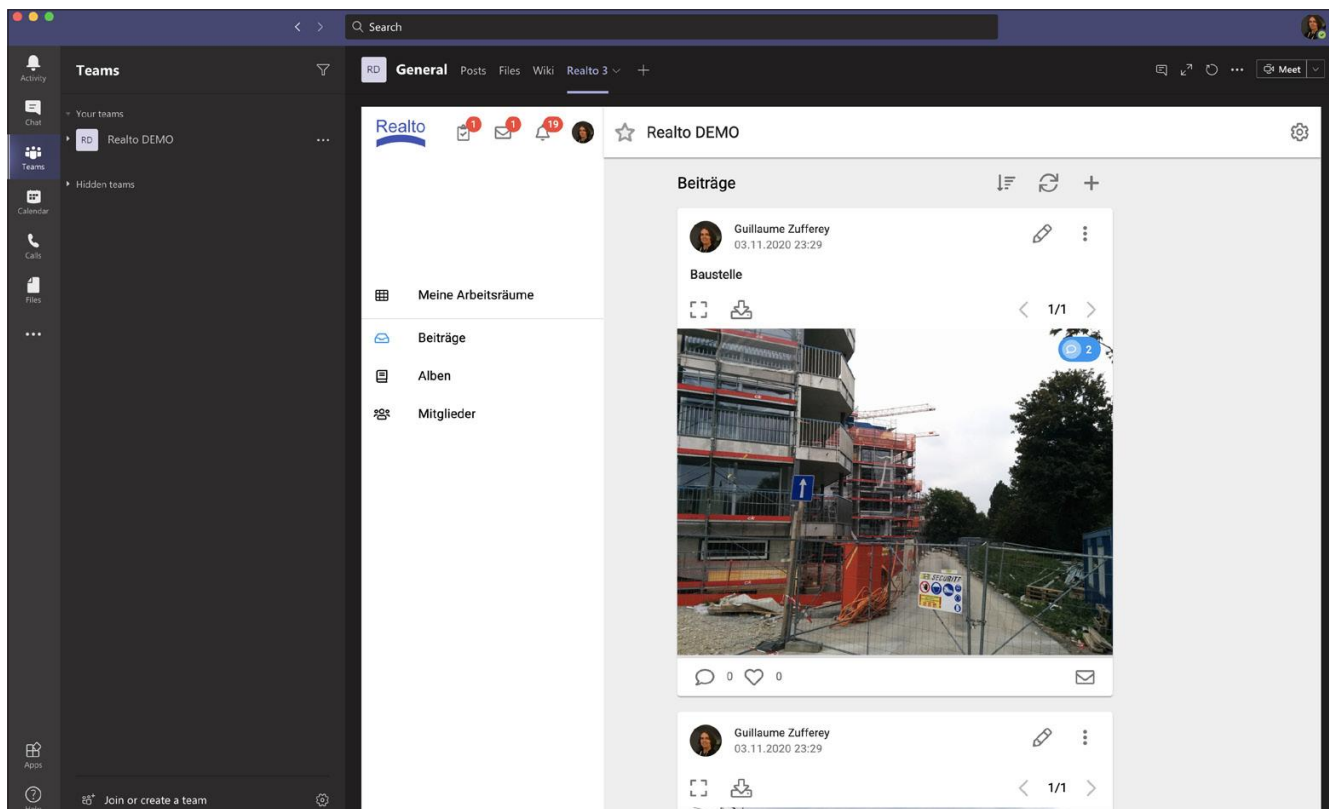


**Figure 4-5** • A screenshot of an activity conducted in class by Christoph Wüthrich around the topic of work security.

Activities like this one give apprentices a better feel for the risks and dangers one may face in their professional activities, a competence that is greatly appreciated by their VET trainers and host company owners. Some of them even consult their apprentices on what to do in delicate situations or nominate them as ‘company security experts’ in case of potential controls conducted by work inspectors.

### So what?

Realto’s ultimate goal is to offer the VET actors an easy way to stay regularly connected and to learn, possibly in real-time, about the efforts being conducted in the other locations to train their ‘common’ apprentices. This is challenging since it requires the involvement and commitment of many people, with different priorities and needs. Christoph Wüthrich’s example shows that collaboration is possible and even valued when the partners understand and appreciate the help another actor can bring, not only to the learner’s training but also to themselves in performing their own activities.



**Figure 4-6** • Screenshot of an activity integrating Realto (in white) with an MS Teams session (in black). A simple button added to MS Teams (Realto 3, centre top of the screen) allows one to pass easily from MS Teams to Realto.

Unlike e-Dap (Chapter 3), which was tailored to the needs of a specific profession, Realto is easily transferable to the needs of a wide range of professions. It is currently regularly used in 10 different professions by roughly 1,500 apprentices, 250 teachers and 250 professionals across the country. Moreover, the issues of security and risk prevention are crucial topics in many professions, and the pioneering work done by Wüthrich could serve as a basis for many training programmes and professionals in various fields. Chapter 5 presents another development of Realto, aiming at supporting yet another common widely used didactical practice, namely the annotation of pictures and videos whether taken from the workplace or from sources such as magazines or the Internet to direct apprentices' attention and make them adopt a professional vision or learn the codes, marks and symbols that constitute any profession's visual language.

With respect to sharing information and making multilateral contributions accessible beyond the borders, Realto is, of course, not unique and could easily be replaced by other communication platforms, such as MS Teams or Moodle and the like. Recently, VET schools began adopting MS Teams on a wide basis. Because of this, it was decided to make direct access to Realto possible through MS Teams directly (Figure 4-6). To support teachers who might be more comfortable working with other technologies, we have created a website for VET teachers called [eduscenarios.ch](http://eduscenarios.ch). The website contains 14 step-by-step descriptions of Erfahrungsraum-compliant learning activities that teachers can adapt for their students, along with advice on how to use a variety of different technologies (including MS Teams and Realto) to support those activities. Our goal is to provide resources that make it easy for teachers to bridge the gaps between the workplace and the school by implementing Erfahrungsraum-compliant activities in their classrooms.