Development of a Reflective Learning Method to Support Health and Safety of Adolescents with Learning Difficulties Enrolled in a Pre-work Practicum

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Article accepté dans la revue *Ergonomics*, 2022.
https://doi.org/10.1080/00140139.2022.2099017

Abstract

The challenges of youth employment include providing appropriate job training and safe working conditions for women and men. Adolescents enrolled in the Work-oriented Training Path (WOTP) complete a practicum as part of their vocational preparation, notwithstanding learning difficulties or disabilities. This research-action study among this subpopulation used a method called the self-reflection interview (SRI). Developed in the field of ergonomics, it combines interviews and worksite observations to establish discussion prompts. This method is based on the principles of situated learning. The objective is to analyze the process of conducting SRIs with WOTP's students in order to suggest adaptations for this specific population considering their challenges. SRIs were used to address gender stereotypes and occupational health and safety (OHS) risks, two learning targets. The study found that these dimensions are accurately addressed with this method. The findings confirm that the prompts and the method must be adapted to the population.

Practitioner Summary

The challenges of youth employment require appropriate job training and safe working conditions for women and men. The study used a reflective method called the self-reflection interview as a learning resource, based on situated learning. The study found that OHS and gender differentiation are accurately addressed with this method.

Keywords

Reflexive learning methods, differentiated instruction, gender, occupational health and safety, activity-centered ergonomics**,** semiskilled trades

Funding details

This project was funded by the Fonds de recherche du Québec – Santé and l'Institut de recherche Robert-Sauvé en santé et sécurité du travail

1. Introduction

The professional integration of underqualified youth is a global challenge (Michaud et al. 1997; Jellab 2005; Smith 2012; Cahuc et al., 2013). Vultur (2009) demonstrated that youth without a diploma or recognized qualifications are more likely to have precarious work, be less well paid, and experience mediocre working conditions. Professional training in the workplace can alleviate some of these difficulties(Mlynaryk et al., 2017). An innovative academic programme has been put in place in Québec to improve students' professional integration: the Work-oriented Training Path (WOTP). This programme caters to challenged adolescent students from 15 to 18 years old with diverse kinds of learning difficulty or disability. This programme is founded on the principals of differentiated instruction, in which students, who are not necessarily at the same point in their education, can each choose periods of training in the workplace (practicums) in different semi-skilled trades. About 10-15% of Québec's school population, or roughly 10,000 to 15,000 teenagers, go through WOTP each year. This training path is based on the work-study approach used in vocational training whereby students spend time performing actual tasks in the workplace. Periods of training in the workplace (practicums) alternate with periods of general education in school. The semi-skilled trades generally selected are jobs in which manual work dominates with varying degrees of workplace health and security risks (e.g. stock handler, cook's helper, hotel cleaner)(Laberge et al. 2010). Students tend to choose semi-skilled trades stereotypically associated with their sex (Laberge et al. 2012). Most students carry out their practicum in small, nonunionized companies (Laberge et al. 2016; Laberge, MacEachen, and Calvet 2014; Laberge et al. 2012; Laberge et al. 2017b), where learning takes place on the job. Our research team has been working on the development of tools for occupational health and safety (OHS) for this population since

2008 (Laberge et al., 2010; Laberge, 2011; Laberge et al., 2012; Laberge et al., 2014; Laberge et al., 2016; Laberge et al., 2017a). This article presents an initiative developed in the context of this research program, based on a systemic and participative approach of ergonomics, and on work activity analysis.

In the WOTP programme, teachers are responsible for students' placements, follow-up, and evaluation, and by extension they are also responsible for workplace OHS (Laberge et al., 2017a). Over the past few years, our team conducted an in-depth work activity analysis of teachers' role within this training pathway. Among the teachers associated with the program, there are those in charge of a school domain (French language, mathematics, physical education, etc.) and those in charge of practicums. The latter have a great deal of time allocated to visit practicum sites and to organize reflective activities with their students (Ministry of Education, 2013). Reflective feedback in class can take different forms: collective or individual activities, with or without prompts. The work activity analysis revealed that teachers in charge of practicums did not always know what to do when visiting the workplaces or how to organize meaningful reflective feedback: what to observe, what questions to ask, what material / prompts to collect, how to mobilize an effective reflection with the students, etc.? Moreover, teachers have shared that the interactions they have with students are relatively superficial during reflection periods (Laberge et al., 2017a). The analysis of the teaching activities revealed that they do not have precise procedures to guide them in their tasks, that they have few didactic resources to help them, and more particularly, that they have a low sense of self-efficacy when addressing the topic of occupational health and safety with employers and students.

Rousseau and Bergeron (2017) also conducted interviews with the same population of teachers in charge of practicums. They interviewed 23 teachers in eight

schools across Québec to document teachers' practices aimed at differentiating their instruction among WOTP students. None of the teachers talked about how they use the mandatory "reflection period," even though it is part of their formal task. This illustrates how little reflective techniques are prioritized and valued within the WOTP. Another possible interpretation of this finding is that teachers lack training or methodological tools to carry out reflective work. Indeed, the use of reflective methods is not an easy, intuitive exercise. Yet, reflective periods have been shown to have considerable potential in differentiated instruction (Gagnon 2008, 2019).

This study was therefore initiated at the request of teachers, in order to help them improve their training methods in the domain of learning at work. In the article, we explore the potential of using the self-reflection interview (SRI) with this subpopulation, a well-known reflective technique in the French literature in the fields of psychology, education, and ergonomics (Mollo and Falzon, 2004). We explore whether the SRI technique could be used with this population, knowing that they have little experience in their jobs, and that this is a population with particular cognitive challenges.

1.1 The self-reflection interview (SRI): Definition and theory

In the field of ergonomics and work psychology, the purpose of this technique is to capture the essence of a person's situated activity by accessing cognitive processes that are called upon in the action (Mollo and Falzon, 2004). It consists of having a people verbalize their own work activity based on a video extract of themselves in an actual work situation.

SRIs have been widely used in ergonomics as a method of work activity analysis, with the aim of improving working conditions, and then, enhancing human performance, health, and well-being (Theureau, 1996; Sève et al., 2002; Mollo and

Falzon, 2004; Ria, 2008; Flandin 2017). SRIs have been shown to be worthwile since they ascertain less visible components of work activity, such as reasoning or other cognitive functioning that lead to achievement (or not) of goals (Mollo and Falzon, 2004; Ria, 2008). It encourages the worker to make explicit what is significant in their work situations by presenting them with demonstrations (i.e. video or audio recordings, photographs, diaries) of their actual work activity. These interviews foster oral expression of experiences, as well as the unveiling of knowledge used in the action that is not necessarily explicit at the moment of the action (Ria, 2008).

In occupational psychology, the SRI technique have been mobilized to allow work teams to "see" what hinders work activity and generates pain and distress at work (Clot, 2000; Clot et al., 2000; Bonnemain et al., 2015). In “crossed SRIs,” discourse surrounding an activity – carried out by oneself or by others within the team – can lead to an improvement of work conditions initiated by workers themselves. This is the only condition for significative changes in the workplace, according to Clot (2000).

In professional didactics and education, the technique has been used in sports coaching (Sève et al., 2002; Lyle, 2003) and in teachers’ training (Ria et al., 2006; Beckers et Leroy, 2010; Leblanc et Veyrunes, 2011; Blondeau et al., 2021). It is in this last field that studies from the 1980s have reported on what they call “stimulated recall,” an early indication of the utility of video footage (Calderhead, 1981). Calderhead (1981, p.212) defines this technique as “*the use of audiotapes or videotapes of skilled behaviour, which are used to aid a participant’s recall of his thought processes at the time of that behaviour.*” The main research interest for which this technique was adapted was to gain an understanding of the mental processes behind teaching.

More recently, in the French literature on professional teaching, SRIs have been used to develop competency frameworks to enrich initial training and to design training innovations (Lyle, 2003; Leblanc et al., 2008; Beckers and Leroy, 2010; Numa-Bocage, 2020; Blondeau et al., 2021). As a technique that mobilizes speech and reflection on practice, it has proven to be well suited to developing professional expertise among groups of educated, verbally fluent learners.

1.2 Methods and advice for conducting SRI

This technique consists of inviting the interviewee to voice their opinion of their own work activity during a reflective period. It aims at enhancing awareness of the physical, mental and social work conditions, as well as difficulties arising while actually carrying out required tasks (Faye and Falzon 2009; Lyddon et al., 2006; Mollo and Falzon 2004). The technique is based on the distinction between the "assigned task" and the "actual work activity" (Guérin et al. 2006). In order to stimulate reflection surrounding the difference between one's actions and the reasoning behind them, subjects are shown a video of themselves working or another worker, often more experienced, doing the same task (Clot 2000; Clot et al. 2000; Cahour and Licoppe 2010; Moussay and Flavier 2014; Kloetzer et al., 2015). Theureau (1996) suggests some application principles, such as collecting the recall material in a natural setting. He also advises beginning discourse interpretation with an analysis of the "here and now," and then evolving towards the understanding of the skills to be improved upon for the future.

SRI consists of placing the worker, preferably at his or her actual work location, in front of a sufficiently rich representation of behaviour, for instance in a video, and asking for comments on actions observed (Theureau, 2010). Simulated situations are not suggested, since they distance the subject from his or her object and from the intrinsic motivations associated with work activity directed towards a goal. In an ergonomics perspective (improvement of work or skills), methodological precautions are required to

preserve the singularity of the situation, such as a faithful reproduction of the situation. The use of this technique for other purposes, such as the assessment of vocational skills, is not recommended by ergonomists. Indeed, ergonomists recommend its use to increase competencies, not for evaluation purposes. The professional teaching literature is rather in agreement on this viewpoint (Blondeau et al., 2021), even if the technique is considered useful for the development of competency frameworks. In both fields, the application of the technique must provide a safe space to reflect on one's own activities.

1.3 Rational and expected challenges of using SRI with WOTP students

To our knowledge, this technique is not commonly used among workers with little work experience. Yet we believe it could contribute to the cognitive reflective processes that are helpful in developing professional skills in early career stages. SRIs could be especially pertinent for WOTP students, who often have communication and comprehension challenges. Indeed, the use of video can replace words with images. Students have the potential to point to an object or a work location, or even imitate a gesture, which opens up interesting perspectives for practicum feedback.

Our team had the opportunity to try this type of interview with a population for which it was not originally designed. The specific context of this research was a request from teachers in the WOTP. They wanted to enlarge opportunities and methods to help their students in talking and reflecting about their work experiences in class. The work context of these teachers would easily allow the integration of the SRI method as teachers visit their students' workplaces on a weekly basis (they can easily take videos) and have dedicated time for post-internship interviews in the school calendar (in class). On average, they supervise between ten to twelve students each. Specifically, the teachers expressed a desire to better integrate the principles of reflectivity into their teaching practice; this is not always easy with their student population. In addition, it was imperative that the approach 1) contribute to the OHS training, a learning issue for

these students, and 2) use a technic capable of differentiating learning in function of gendered job segregation. According to literature and theory, the SRI technique can have a much broader impact in learning and work improvement, in this article we have primarily mobilized it from these two perspectives. Consequently, this paper constitutes a contribution to the special issue "Gender and Work in Ergonomics: Recent trends".

The aim of the study was to analyse the impact of SRIs as a technique for WOTP students in order to identify necessary adaptations for this population, provide recommendations on its use in training on OHS and demonstrate its usefulness as an approach that is sensitive to sex and gender issues. Indeed, several adaptations are likely necessary for use by teachers, who are not ergonomists nor experts of work activity analysis, and students, who are quite young, have limited experience and face learning challenges. It is also possible that young men and women's ease with voicing opinions or impressions differs (Breslin et al. 2007; Laberge et al., 2017b). The objective of this article is to present an instance of using the technique with WOTP students, in partnership with their teachers. This trial is part of a wider action-research study being carried out in collaboration with teachers and pedagogical counsellors. More specifically, we proposed to implement the technique a first time with WOTP students and to document all the steps, in order to identify strengths and aspects to be improved. The focus of the self-reflection was deliberately oriented towards OHS and the gendered dimensions of work. The purpose of the trial was to offer recommendations so that teachers could try it themselves, respecting their work organization and constraints. The research was approved by the ethics committee at UHC Ste-Justine research center.

2. Materiel and Methods

2.1 Study design

French-speaking ergonomists are dedicated to the development of interventions that bring together research (theory) and action (practice). They tend to gather scientists and community around complex social issues occurring in workplaces (Daniellou and Rabardel, 2005). These ergonomists are interested in the analysis of work activity to improve work conditions in existing situations or designing new work environments, including training initiatives following a socio-constructivist approach. Ergonomics in the French tradition using activity theories has spread in many European countries, and lately to North America (Quebec) and South America (Brazil, Chili). The present study is rooted in this approach, aiming at joining practical considerations and theory.

The present action-research is part of an intervention development initiative aimed at OHS prevention. It follows the process proposed by Goldenhar (2001) involving the stakeholders concerned by the innovation. This approach, recommended by NIOSH, proposes three stages, from the development of the initiative to the evaluation of effects. Our project is situated in the first stage, development, i.e., the development of the concept or the initial development of the intervention, which is here, the adaptation of the SRI approach to a specific subpopulation.

The study was carried out in one WOTP class in Québec, and followed three steps: 1) preliminary interviews with students from the WOTP class, 2) video-taped work activity observations of a representative sample of the students who participated in the preliminary interviews, and 3) SRIs with the students who participated in step 2. Step 3 was then analysed to examine strengths and weaknesses of the technique.

2.2 Participants

After having presented the study to the class, an **initial interview** was carried out with all the students. Six students were chosen from among these students and invited to participate in **work activity observation**, followed by a **SRI**. The sample was selected in order to have three men and three women who were representative of the students in the class, with at least two with the same job title (male and female). They gave their consent and their parents were informed of the study and could refuse to have their children participate.

2.3 Data Collection and Analysis

Step 1: Preliminary Interview

Short preliminary interviews lasting approximately 10 minutes were carried out with 20 students from the class (4 women | 16 men) to document sociodemographic and practicum information. They were also asked to fill in a body chart with body parts on which one hatches out the areas experiencing pain or discomfort, also indicating the intensity of discomfort. They had to mention which symptoms associated with their work, heightening their awareness of these associations.

Following the first interview, a representative sample of six students was chosen such as to have three women and three men having chosen a variety of semi-skilled trades. Data from these six students were compiled into an Excel table and a summary for each interview was produced. The following data was extracted for each: job, place of practicum, reported tasks, degree to which genders mix at the workplace, integration, as well as OHS history (history of accidents or injuries during the practicum, pain). For these six students, all the information collected in the first interview was used to choose the work situations to observe. Table 1 lists the six participants and their characteristics.

Table 1. Students' characteristics

Student	Sex	Age	Semiskilled Trades	Company type and size
1	F	15	Fast-food counter attendant	Large fast-food chain; ~ 2 or 3 employees at this site
2	F	16	Day-care worker	Small day care ~ 5 employees
3	F	16	Hair-salon assistant	Small hairdressing salon (2 employees)
4	M	15	Fast-food counter attendant	Large fast-food chain; ~ 2 or 3 employees at this site
5	M	15	Florist's helper	Small flower shop ~ 3 employees
6	M	16	Tire installer	Small garage ~ 10 employees

Step 2: Work Activity Observation

Filmed observations in the workplace were carried out in order to observe work activities. We selected days by confirming with the apprentice that it was a typical workday, in the sense that there were no exceptional tasks planned that day. That being said, it is quite clear that what we observed represents a unique and singular situation, with its share of contingencies and peculiarities. Observations considered the systemic and unique character of each day, in terms of work activities, determinants and consequences for the individual and the organization. This is coherent with the objective of the SRI technique, which aims to contribute to the development of enabling environments at work. During observations, attention was paid to the actual activities carried out by the student, gender-based social relations and OHS. Notes were taken but most of the recorded data comes from subsequent viewing of videos. Student 1 could not be filmed because the company she worked at did not accept the procedure. More detailed notes were taken for this student. A work activity analysis based on the person-centred work situation model was carried out using the work observations (St-Vincent et al. 2014). Then, the images that best represented the tasks carried out, the work strategies used, the work situations of interest in terms of OHS and social relations were

selected to make a video montage for each student (duration of the final montage: between 9'03 min and 12'59 min). For the student who could not be filmed, the interview was prepared by going through the observation notes and task durations. Other discussion prompts were used, such as photos, drawings, and body charts filled earlier in the first interview. This part of the project took place in the first two months of students' traineeship. For each student, 20 minutes of interview, two hours of observation and five hours of analysis and editing were done in preparation for the self-reflection interview. We have been careful to develop an approach that respects teacher's time to do the same procedure in the future. These tasks easily fit in the already-required preparation and supervision periods allocated for the traineeship, between two to three days per week throughout the school year for approximately 6 to 10 students.

Step 3: Self-reflection Interviews (SRIs)

SRIs were carried out with each of the students. They were recorded and filmed, with consent from the students. The interviews lasted between 35 and 45 minutes each. Interview content was then analysed to establish reproducible inferences that would be contextually valid. Insights gleaned through content analysis of texts deepen understanding of the situation and are a way to explore, verify and quantify explicit and implicit interview material (Krippendorff 2018). Both the interviewers' questions and the students' questions were analysed.

Content analysis of the SRIs led to the emergence of the main themes discussed with the WOTP students (explicit content) and the contextual elements linked to the interview itself and the students' reactions to the self-reflection experience (implicit content). The implicit content (including non-verbal indicators, such as body language,

facial expressions, nervous tics, etc.) has relevance for recommendations on the use of SRIs with youth, and was treated as a specific theme.

The analytical approach used was mainly inductive insofar as the preparation of interviews was oriented towards predetermined subjects of interest (OHS and gender). The results, therefore, partly reflect an orientation to the study context. It should be noted that other themes are also covered, mainly related to social components of work.

Two researchers viewed the SRIs to develop an evaluation grid, and to note down certain challenges observed. The procedure was the following:

(1) Repeated playback of material
(2) Transcription: verbatim transcripts with context notes
(3) Identification of emerging themes with a steering committee composed of two other researchers
(4) Coding and determination of themes in two Excel tables:
    a. One for explicit content analysis (topics covered)
    b. One for the analysis of the implicit content of the interview (contextual elements)

Note that this procedure is related to the study and not to the future application of the technique by teachers. It was used to identify the strengths and weaknesses of the method and to generate suggestions for its future application. See the discussion for applied advices for future use by teachers.

3 Results

3.1 Preparing SRIs through analysing preliminary interviews and observations

Table 2 provides a synthesis of data from the preliminary interviews and work observations. The tasks described are varied and primarily include tasks peripheral to the full tasks carried out by specialists. Cleaning the work area was a substantial part of

each student's work. All three girls and one of the boys were in contact with customers either through providing services or care (E1, E2, E3, and E4). The tire installer (E6) was required to lift heavy objects (tires) in atypical or cramped places (e.g. from the trunk of a car). He also used numerous tools. Most of the students worked primarily in a standing position and many worked alone, having little interaction with their co-workers, with the exception of two of the boys - the florist's helper (E5) and the tire installer (E6) - who both worked closely with co-workers in a confined space.

Table 3 summarizes planning for the SRIs, including the prompts supports prepared and themes chosen. Except for the girl working in a fast-food restaurant (E1), a video montage highlighting difficult or potentially dangerous tasks was put together. For example, images of exposure to hair products (without gloves) were shown to the student working in a hair salon (E2) to elicit a discussion on the potential chemical risks perceived, or not, by the student. Similarly, a video sequence showing her changing a diaper was shown to the student working in a day care (E2) as a prompt to explore perceived risks. The tire installer (E6) was asked about video sequences showing him handling heavy objects and toxic cleaning products.

Table 2. Synthesis of information collected in preliminary interviews and work observations

Student	Information from interviews			Information from observations		
	Reported tasks	Reported MS Symptoms and OHS risks	Reported social and gender relations	Observed tasks	Observed risks	Observed social and gender relations
1 (F)[1]	"You get there, you clean up, if there's dishes to do, you do them. After that, you have to prep food and all that. After, you have to clean out front, the tables, the windows, all that [and so on]."	"They explained that you can't put your hand too close for cutting tomatoes. They told me where to place my hand and where not to put it because it could cut me."	"There are girls and guys at work, but since I work in the morning, most of the girls work after me. I'm with guys and one girl. It's going well. My supervisor is a man; he's nice."	Fill condiment and meat containers Clean containers, clean the room, wash bread pans, sweep, make sandwiches for customers, charge customers.	Uses gloves every time, except for cleaning Small stature, so she needs to use a stepping stool to reach certain things Standing work. Repetitive movements Cold in the fridges.	Only one other person present (a man) He is kind, he helps her a lot, he shows her tricks and explains things.
2 (F)	"We disinfect, I feed the kids, I play with them, when it's time for the nap I set them up, I do the dishes, I disinfect the bathroom, the tables, when the kids wake up we play a bit with them, we make their snack."	Points out only the risks for the children (blocking the doors, paying close attention when they climb on a stepping stool to wash their hands). Doesn't see risks for herself, just tired of taking care of the kids.	"I work only with women. There's a man, but it's his day care, he doesn't work with us. I know the women who work with the babies a bit more. I'm most comfortable with the ones who take care of the 3-year olds."	Play with the kids, change diapers, clear plates, feed the children, wash their hands, put the children to bed. Cleaning: clean the bathroom, sweep the common area, tidy up.	Doesn't always use gloves, even when she uses toxic cleaning products (bleach) Twisted posture during the nap, standing work, repetitive movements.	Women only, very little interaction with the student. Talks mostly with one other co-worker.
3 (F)	"I'm a hair-salon assistant, I do the braids, I cut hair, I style hair. When I get there and no one is around, I sweep, mop, tidy up the hair products. Sometimes I charge the customers."	"No one told me about any risks." "I could hurt myself with the scissors, but I'm careful, and the curling irons too."	"There's always two of us, myself and my supervisor, sometimes her friends come in to help her. There's also a male hair stylist there. There is good communication among us."	Wash hair, dye hair, braid, cut hair, straighten hair, charge the customers, clean the shop (sweep, dust).	Doesn't always use gloves, even when she uses toxic products. Her supervisor reminds her to put them on. Standing work,repetitive movements, arms extended.	Her supervisor (female) and a male employee. Tense relationship with her supervisor (missed a shift) leading to termination of practicum. The boss often speaks in Haitian Creole with the customers (student speaks Haitian Creole). She jokes around with the male employee.

[1] This student could not be filmed.

Student	Information from interviews			Information from observations		
	Reported tasks	Reported MS Symptoms and OHS risks	Reported social and gender relations	Observed tasks	Observed risks	Observed social and gender relations
4 (M)	"I make sandwiches, I do the dishes, I wash the tables, I do everything an employee does. Soon I'll start working the cash register. I prepare the vegetables and other things."	"When you put the sandwiches to grill, you have to do it properly. The door of the bread oven is always hot, you have to be careful." "I've hurt myself before, I put my arm too close to the oven door."	"There's a girl with me in the morning, and the manager. I get along better with the manager, he's nice with me, he doesn't stress me out. The girl thinks she's better than me because she started one week before me."	Cut vegetables, lay out the cheese, bake the bread, place bottles in the fridge.	Cutting risk from small electronic appliances (electric knife), burning risk from the oven. Standing work.	One girl and another student from the WOTP. Not much interaction with the girl, she tells him what to do in a less than friendly way. The other WOTP student helps him, shows him tricks.
5 (M)	"I cut the plants and then, I put them in buckets. I sweep. I make sure that the plants have enough water. When a new order comes in, we have to put the flowers in the same bucket, pack it up, nicely arranged. We have to take off the broken or split petals."	"Cut a finger, poke a thorn in the back."	"People are really nice, there's a good feel to the place, it makes me happy. There's 5 or 6 of us, I'm the only intern. There's one girl and several guys. They are smiley, welcoming."	Cut flowers, prune leaves, make bouquets, change water for the flowers, go to the basement to get equipment.	Doesn't always use protective gloves. Carries heavy things: has difficulty carrying some of the heavier buckets. Work while standing, repetitive work.	2 men and 1 woman (his supervisor). Good relationship with everyone.
6 (M)	"Sometimes I change tires, sometimes the breaks, I can't really do anything else because I don't know much about cars. I'm learning."	"You shouldn't lift a tire with your back. You should lift it with your legs. You have to wear safety boots."	"There are two bosses, but it's really the other workers who explain things to me. My initiation went well, they are really friendly, they fool around. There are just guys."	Carrying the tires, screwing, cleaning hoses, adjust the tire pressure, unscrew tires, check car batteries.	Handling of gloves that were in contact with toxic chemicals. Work while standing, repetitive work, heavy load (tires).	Only men. Good relationship with everyone, works with everyone, doesn't have a specific supervisor. Jokes around with his co-workers.

Table 3. Summary of data used to prepare SRIs

Student	Conversation prompts	Tasks selected for video montage	Work themes	OHS themes	Social and gender relation themes
1 (F)	Workplace layout, drawing work station, pain chart, pictures of the materials used (from Internet).	N/A (no video).	Sandwich making strategies, help from co-workers. Tasks more fulfilling than others.	Risks related to potentially toxic substances, not eliminated by personal protective equipment (PPE)	Challenges with some customers, relationships with co-workers.
2 (F)	Video montage, pain chart.	Changing diapers, watching over the nap, cleaning the bathroom and the hallway.	Tips for changing diapers, getting the children to fall asleep, and cleaning. Tasks more fulfilling than others.	Hygiene risk from changing diapers and chemical risk from cleaning toilette bowl.	Relationships with co-workers.
3 (F)	Video montage, pain chart.	Shampooing, straightening hair, cleaning (sweeping + dusting).	Tips for shampooing and straightening hair. Tasks more fulfilling than others.	Chemical risk from products and pain from repetitive movements.	Distribution of men's and women's haircuts according to the hairdresser's gender.
4 (M)	Video montage, pain chart.	Cutting vegetables, making bread, putting away bottles.	Tips for cutting vegetables. New tasks to carry out. Tasks more fulfilling than others	Cutting risk from vegetable kitchen appliances and burning risk from oven.	Relationships with co-workers.
5 (M)	Video montage, pain chart.	Cutting flowers, putting away flowers, going into the basement.	Challenges in remembering instructions. Tasks more fulfilling than others.	Cutting risk from handling plants with thorns without gloves and carrying of heavy loads.	Relationships with co-workers, opinion of job.
6 (M)	Video montage, pain chart.	Putting away tires, cleaning hoses, changing tires.	How to divide up tasks. Tasks more fulfilling than others	Chemical risk related to products used and frequent carrying of heavy loads.	Relationships with co-workers, opinion regarding women holding the job.

3.2 Analysis of SRIs

The main themes brought up revolved around the actual work activities carried out, links between work activities and OHS, gender relations (gender dominance in the workplace and gendered social relationships), relationships with co-workers and supervisors, customer interactions (the case being), as well as trainees' spontaneous reactions to seeing images of themselves. These themes are defined in Table 4.

Table 4. Themes from SRIs

Theme	Description
The work task	Interview excerpts that dealt with the way a task was carried out, often linked to a part of the video. ● Example of a Question: "Can you describe a typical day for me? When you arrive in the morning, what do you do first?" ● Example of an answer: "When I get there, I clean up, I mop, I sweep, I dust the bottles because sometimes there is dust on them."
Occupational health and security	Interview excerpts that dealt with OHS, often linked to a part of the video. ● Example of a Question: "Did your employer explain the possible risks of your work?" ● Example of an answer: "Yes, they showed me how to lift a tire. You shouldn't do it with your back, but with your legs."
Gendered dimensions of work	Interview excerpts relating to sex or gender stereotypes. ● Example of a Question: "You spoke of pushy customers just now, could you tell me more?" ● Example of an answer: "He asked me how old I was, if I was at school, do I have a boyfriend, what time I finish work, things like that."
Co-worker and supervisor relationships	Interview excerpts that had to do with relationships or communication with supervisors and co-workers. ● Example of a Question: "Do you feel like a member of the team? In what way?" ● Example of an answer: "Yes, because, like, if everyone gets a talking to, I also get a talking to and if everyone gets complimented, I get a compliment too."
Customer interactions	Interview excerpts that dealt with relationships or interactions with customers. ● Example of a Question: "Are there specific types of customers? Are there easier or harder orders to handle?" ● Example of an answer: "Yes, like one time this guy complained about how I cut the bread. There was just a little crack! I took a breath and cut another bun. Sometimes they are really too picky!"
Comments on images of themselves	Interview excepts initiated by students about themselves. ● Example of a remark: "Oh my god! That took me so long to do!" (upon seeing him-herself on the screen)

3.2.1 Actual Work Activity

SRIs helped students describe elements of their work activity in more detail by referring to the images on the screen, as the following excerpts illustrate:

> "I do up the vegetables, I cut them to put them in the container, after that I prepare two containers for the veggies and then I write down what they are." (Fast-food counter attendant, E4)

> "I put the tires away to have more room in the garage. We take the summer tires and put them in a truck to store them somewhere else." (Tire installer, E6)
>
> "I get there, I take off my boots [other preparatory activities described], I go up, I say "hello" to the kids and my co-workers and after, it depends whether some of the kids are going outside. Sometimes the parents don't want their kids going outside, so I play with them until the child-care provider gets back in from outside. Then we change diapers and while some are getting changed, others play. After that, I go get the food, I take the bowls, and during that time the other child-care providers put away the toys. [she goes on to describe many of her other tasks right up to the end of the day]." (Day-care worker, E2)

In comparison, the student who was not filmed did not describe her work activity in as much detail (E1). She did, however, make a drawing of her work environment at the request of the interviewer, which she used to show the different sections of her work station:

The florist's helper also had some difficulty in explaining what he does (E5). Even while watching segments of the video (for example of pruning flowers and changing the water in the buckets), he remains vague and does not explain exactly why he acts in one way rather than another (e.g. what was asked by the supervisor, quality requirements, etc.). He does not explain exactly how and why he does what he does. This illustrates that he does not know exactly what is expected of him. He lacks certain words for being able to describe his work strategy. This situation highlights students' difficulty expressing themselves. Communication challenges and shyness might explain this difficulty.

3.2.2 Links between Work Situations and OHS

With the aid of carefully selected video images, the SRIs led to discussion of the movements done and postures held during work, exposure to toxic chemicals, or the handling of potentially dangerous appliances or tools.

Students who handle potentially dangerous products were asked about the chemical or biological risks associated with the products. For example, the day-care worker was seen washing the toilette bowls with bleach. Upon seeing the video segment, she recognized that she used the product without gloves despite knowing that it is toxic, “It’s bad, but I’m not really worried about it. I’m more worried about the kids than my hands.” She implied that she put her own health after that of the children. She said that she prefers doing the cleaning without gloves because she can get it done faster and then spend more time with the children.

Similarly, the hair-salon assistant (E3) was observed handling dyes and other toxic hair products while only partially using her gloves. The video segment allowed her to explain that the gloves often bother her, especially when she has to wash her hands between tasks or customers. In an excerpt her supervisor asked her to put her gloves on “so that she wouldn’t have dyed hands.” She says she prefers to work without gloves but states, “I have to wear them sometimes. When I run the water, it gets inside. I put them on mostly because of the colour and because it’s supposed to burn, but for me, it doesn’t. The straightener, that’s a different story. I put on my gloves because it’s dangerous, it burns, the product is very strong.” The student recognizes the danger primarily when there is a burning feeling or the colour stays on her skin.

In another example, the tire installer (E6) explained that “all the products I use are pretty toxic” and he wears gloves. However, he was seen removing his gloves and handling them inappropriately afterwards (he blew into his gloves, practically putting

his lips right on the dirty glove). He explained, “Yes, it’s dangerous to put it close to my mouth, but I turned the dirty part away.” This answer illustrates the apprentice’s understanding of the mechanisms related to toxicological risks (which is in contradiction to the current scientific knowledge on this type of risk). He further explained that it is quicker to blow into the gloves than to go get another pair. He had the impression that he reduced the risk by taking a “precaution,” that of turning the glove around, which is questionable.

Excerpts from both students working in the fast food industry (E1 and E4) indicate that they handle machinery. Watching these sequences brought up the topic of training. It was at this point that they explained the training that they received from their supervisor. The SRI gave the interviewer more insight into the topics covered (or retained) during the training received in the workplace.

In terms of risks related to musculoskeletal disorders (MSDs), video footage showing uncomfortable postures, as well as the body charts explored in the initial interview, were used as prompts. The girl working in a day care (E2) confirmed that she had level 3 pain in her shoulder and arms, associated with a posture (arm above shoulder) and a task (carrying food). The boy working in a fast food restaurant (E4) indicated that he felt level 5 pain in his lower back, associated with a standing posture and no possibility of sitting down. The student working in a hair salon (E3) expressed having pain in the elbows, forearms and fingers (level 2-3) due to braiding hair. The boy working in a garage also indicated that he feels level 3 pain in his hands or wrists and linked it to turning tire screws

The fast food attendant who could not be filmed (E1) also mentioned OHS risks. In particular, she identified the risk of cutting herself with electric slicers, slipping when cleaning floors and risks related to food hygiene (the need to wear a hairnet, gloves,

baseball cap). She described in detail the machinery she operates: “There are appliances with blades, the one for tomatoes and other veggies, it’s very dangerous, there is a way to hold it, another way to put it in the sink. You have to be very careful. When I make salads, I always have to look in front of me to make sure the two blades are there because if I put my hand there I could cut it.”

On several occasions, students seemed to have had difficulty understanding the questions put to them about OHS. For example, the day-care worker (E2) was asked about her OHS training, “did someone talk to you about occupational health and safety?” To which she replied, “You mean the safety of the kids?” Similarly, the young hairdresser’s aide (E3) replied to the same question evasively and evoked the customer’s safety, “Yes, they talked to me about safety, for example, only customers can use the bathrooms, no one from outside.”

3.2.3 Gendered Work Dimensions

It was not easy to talk about gender with the students. The questions fell flat, i.e., the students did not seem to have a clear answer. However, by posing very precise questions about work relationships (e.g. Could you tell me about your relationships with your male and female co-workers?), several students explained that social relations were easier with customers or co-workers of the same sex. This was the case for the young intern at the hair salon (E3) who revealed that she was more at ease communicating with female customers than male customers. Further, some common stereotypes were spontaneously expressed by supervisors and co-workers during the workplace observations (unsolicited comments during observation days noted by the research team). For examples, one supervisor said of a female intern, “she works really well, after all, girls are more accustomed to cooking and cleaning.”

The questions that best elicited comments on stereotypes were those that were workplace specific. For example, we asked the student at the hair salon (E3) if male and female customers had preferences for the sex of the hair dresser they had. According to her, “men prefer to have their hair cut by a man, but women don’t have a preference.” In another example, the young woman working at a fast food restaurant was asked about “difficult” customers. She explained that some male customers had harassed her. She explained that she didn’t think it was because she was young, but, rather, because she is a woman. She disparaged the behaviour, saying, “they really don’t have anything better to do.” She went on to explain that she tries to ignore the behaviour (“I learned not to care”), all the while recognizing that if she were a boy, customers wouldn’t make those sorts of comments.

3.2.4 Supervisor and Co-worker Relationships

During interviews, the interviewer questioned the students about their relationships at work with the help of video sequences of them interacting with their co-workers or supervisors when possible. For example, she asked them who they ask for help when they need it or whether they feel integrated into the team. Responses varied and were sometimes vague (e.g. “I talk to everyone), but at other times quite specific (e.g. an anecdote of an interaction with a particular person at work). It was in this context that the day-care worker (E2) revealed that she never asks for help from the people with whom she is less comfortable. The tire installer (E5) stated “I ask the two people I know best [for help] but not the guy I get along with best because he is also new.” The SRIs showed that the youth were reserved and didn’t ask for help readily and that trust-based relationships and familiarity with the other person were prerequisites.

When asked about being part of the team, the day-care worker (E2) said, “hmm, it depends, no, I don’t know, I never really paid attention. When people come to talk to

me on my break I reply, but if not, I watch my series." On the other hand, the girl working at a fast food restaurant (E1) mentioned, "Yes, because, like, if everyone gets a talking to, I also get a talking to and if everyone gets complimented, I get a compliment too." The SRIs made it possible to verify the extent to which the student feels integrated into the work team, which is then useful for developing specific interventions on this aspect, either with peers or the student.

3.2.5 Customers Relations

The SRIs, especially those with a video component, encouraged students to talk about interactions with customers. Even though all the semi-skilled trades chosen by the students were in service, the interns themselves had very little contact with customers. In the video montages only the three female students (E1, E2, and E3) are seen serving customers. The hair-salon assistant (E3) was filmed while she washed and dyed a customer's hair. Despite the physical care that was given, very little social interaction took place (no conversation). "I'm not usually the one who talks with the customers. Usually it's my supervisor. But I need to follow along with the conversation to keep it light." This demonstrated that the student was not very comfortable initiating conversations with customers. This topic is important to address in order to help students identify strategies to overcoming shyness and, eventually, engaging customers in making the task easier for them, for example reducing constraining postures (e.g. lowering or turning his head).

The young day-care worker (E2) was filmed while changing diapers and helping the children get to sleep for the nap. In both situations she asked the children to cooperate, which reduces her workload (e.g. the children stood, holding their diaper, while she changed them, which meant she didn't need to lift them).

The fast food attendant (E1) interacted with customers while making the sandwiches. She explained that the customers were often demanding and didn't take into account that she was new there and hadn't quite learned everything yet.

During the interviews, most interns, with or without video prompts, were able to say that they were shy with customers and that they were afraid of disappointing or angering them (e.g. the stress of making a sandwich without mistakes and all the right quantities, fear of messing up an order). Further, the SRIs showed that learning professional customer service conventions is an important part of work integration.

3.2.6 Self esteem

Several students had negative things to say about their appearance upon seeing themselves in the video. For the most part, comments illustrated an uncomfortableness with seeing themselves on the screen, for example, they might spontaneously put themselves down by saying things like, "oh, am I really that gothic?" (E3), or "Is that me?!" (E5).

Some of the students showed their discomfort through their mannerisms while watching themselves on the screen. The day-care worker (E2) fiddled with her ring, her hair and her necklace while she watched. The girl working at a fast food restaurant (E1) fiddled with her headphones and the hole in her jeans while she talked. The boy working in a fast food restaurant (E4) played with a pen throughout most of the video. The tire installer (E6) moved his leg throughout most of the SRI and the young florist (E5) played with his water bottle. Occasionally, seeing themselves on the screen brought up feelings of incompetence, low self-esteem or deprecation of the quality of their work as evidenced by these quotes "I really bungled that up" (E5), "I was that slow? Usually I work faster," (E3) "Usually I don't mess around so much, I must have been distracted," (E5) and finally, "Oh my god, that took me so long to do!" (E5).

4 Discussion

The semi-skilled trades profiled in the WOTP are varied, are often divided up along gender lines and include multiple occupational risks that students need to be protected from. Further, the student's learning difficulties are heterogeneous and they are not all at the same academic level. Thus, it is important to develop varied and meaningful training approaches to support the development of practical know-how that will enhance their work prospects (Ouellet and Vézina 2008). That being said, the different learning difficulties that the WOTP students face influence their communication and comprehension aptitudes, representing a significant obstacle, in some cases, to techniques that require describing work activity in detail. Examining the benefits and the challenges of such approaches among this population is essential for making informed decisions. One benefit of this technique is that it could take into account differences in the jobs and conditions typically attributed to men and women, an approach that is considered relevant for OHS (Laberge et al. 2020). In line with gender stereotypes, men often take up semi-skilled trades involving harsh working conditions and heavy loads. The difficult working conditions that women encounter are often less visible and less acknowledged than those of men, even by the women themselves, who tend to gloss over the impact of their working conditions (Messing 1996, 1998; Messing et al., 2006). Women tend to be more exposed to repetitive work, awkward postures, toxic chemicals, limited autonomy, contact with the public, psychosocial risks and schedules that conflict with family obligations (Cavet et al., 2013; Leroyer 2016; Mauroux 2016; Messing 1998; Vézina et al., 2016). The "invisibility" of OHS risks experienced by young women could cause WOTP teachers to fall into an unconscious, systemic form of discrimination whereby they neglect to consider the risks specific to both sexes. Being based on the authentic experience of

each person as it is, SRIs shine a light on these specific risks. This technique could prove particularly useful in revealing the invisible working conditions and difficulties encountered in both typically feminine and masculine jobs (Leroyer 2016; Mauroux 2016; Messing 1998; Vezinat 2013), thus contributing to greater equity in the workplace. This is an innovative application of this technique, not covered in the literature.

The SRI technique provides other advantages and several drawbacks that need to be considered. It promotes the use of timely, dynamic and concrete examples referring to recorded (observed or filmed) work activity (Mollo and Falzon 2004; Ria, 2008; Theureau 2010; Flandin, 2017; Blondeau et al., 2021). Further, the interviewees see themselves in action and can comment on their work as they observe it, allowing the interviewer to better understand the difficulties experienced at work (Clot 2000), a very promising application for student with learning challenges. Viewing a video means that both the interviewee and the interviewer see the same situation and they can then talk about very specific aspects of what they have seen, including giving meaning to work, identifying sources of satisfaction, and developing adaptive strategies.

Proper preparation (in this case the initial interview, observation and work activity analysis) aides in raising awareness surrounding the measures and strategies required to successfully carry out work tasks (Boubée 2010). A drawback of this approach is the amount of time required to put it into practice.

In this study, the research team implemented the chosen technique for the purpose of the trial. Some of the steps described in the article were research oriented, even if the project intended to produce practical recommendations to help teachers implement the technique. For example, the thematic content analysis would not need to be as detailed to implement the pedagogical approach with students. It is also important

to remember that teachers are not specialists in work activity analysis. They must be guided in the choice of situations to be filmed and the discussion topics to be proposed to the students. Our past studies among the same population, based on an in-depth analysis of teaching activities, has enabled us to create reference documents on how to approach OHS as WOTP teachers. These reference tools include a simplified work-activity analysis model that can be used to help in selecting images and planning a SRI (Laberge et al., 2017a; Laberge et al., 2018; Laberge, 2020).

Analysis of the SRIs revealed that the technique helped students be more precise in their description of their work activity. Whereas teachers expressed difficulty in getting the students to talk about their practicum experience in any great detail, using this technique, students were able to describe what they do in depth. They were explicit about the motivations and strategies behind their work methodology.

This research set out to demonstrate whether SRIs are a technique that could help make safety knowledge more explicit (Ouellet and Vézina, 2008). We found that the SRIs were a helpful way to talk about the student's level of risk awareness, protective strategies and previous OHS training. Young workers rarely bring up this topic on their own (Breslin et al. 2007). Yet, having a good understanding of how youth perceive risk could help teachers better establish training that actively involves the workplace. This is even more salient considering that employers do not always offer safety training when they judge the risk to be a matter of common sense (Laberge, et al., 2014). These discussions allowed the interviewer to revisit some of the preconceived notions about products' impacts and risks, especially those that are invisible or that do not cause immediate symptoms. Likewise, gendered social relations change the impression that young people have of their right to refuse to perform dangerous tasks, as

conferred by the law, as well as the freedom they feel they have to discuss the topic with their co-workers and their supervisor (Breslin et al. 2007).

Among the challenges encountered in using SRIs, Guérin and Méard (2014) have identified several factors that can inhibit young people from speaking up, such as an asymmetry in the relationship between interviewees and interviewers and a language gap. It is possible that this technique is confrontational for teenagers who are self-conscious of their appearance and could have unintended negative consequences, such as uncomfortableness or shyness. In the current study, students were often shy, showed signs of unease and did not always understand the questions asked of them. The interviewer had to readjust and reformulate questions on several occasions. In 1996, Falzon, while defending the technique, also emphasized "the first question the analyst must ask himself [sic] regarding the use of video devices is: is it not possible to avoid it?" (cited in Flandin, 2017, p.193). This technique should be used with precaution with this population and a trust-based relationship should be established prior to its use.

Moreover, one condition for successfully carrying out SRIs is the absence of a relationship of authority or hierarchical subordination (Beckers and Leroy 2010). This prerequisite is indispensable if one is to avoid triggering defensive behaviours or eliciting responses that cater to social expectations, both of which limit the usefulness of reflective learning methods (Armenoult 2002). Since the teacher's role is to evaluate the student at the end of the year (pass or fail the practicum) it might be tempting for them to use the SRIs in their evaluation, but it is important that the interviews remain completely and clearly disassociated from the evaluation process.

Several studies on the use of video as an aid to self reflection in training have shown that it can have drawbacks. Boubée (2010) notes that film recordings do not always garner positive responses to seeing images of oneself. Linard and Prax (1984) have

urged for caution in relation to ethical questions raised by the technique, particularly with regard to handling images. The use of the technique in a situation of authority or in a situation of unequal distribution of power could be experienced negatively, both emotionally and cognitively, by participants (e.g.: request for justification, evaluation of the subject) (Linard and Prax, 1984). Our results indicate that this difficulty might be amplified among the WOTP students who already have low self-esteem. Guérin and Méard (2014) highlight difficulties in attaining active listening when interview videos are manipulated (stopping on an image, rewinding, listening again). To better instil an ambiance of trust, teachers should emphasise the student's abilities rather than pointing out their faults, thus "taking care" of their self-esteem (building pride in their work). It is important to remember that teenagers do not necessarily have positive body image and they are also not readily aware of their lack of experience. To this end, the interviewer often chose to ask a close-ended question, judged to be less confrontational, first, to break the ice. Then she continued with open-ended questions, adapting to the language level of each student. We could also imagine using single-frame pictures or alternative prompts (floorplans, locations, chronicles, equipment pictures, etc.). These are all possible adaptations to the technique to consider for this population.

4.1 Scope and Limitations

The students selected after the initial interview sometimes changed task assignments, so the observed tasks may not have been as representative as expected. Further, the involvement of the students and their employers was varied: one student could not be filmed, which had consequences on the quality of the exchange because video support was not available. Likewise, the timing and the length of observation was not always optimal for capturing rich, complex and diversified material to stimulate discussion. It is

possible that the material did not focus in on the hardest tasks to learn or those with the greatest OHS risk.

However, the triangulation of information generated by the different prompts did enrich the students' explanation process. If one medium did not elicit a rich discussion (e.g. video), the interviewer could use another prompt that was perhaps less confrontational for the student (not having to see oneself was likely beneficial at certain points.) Thus, the use of drawing, while less stimulating than other prompts, allowed the student to refocus on their work environment. It would be useful to expand the number and the type of prompts used with students. Next steps should look at providing concrete teacher's aides based on adaptations of this reflective learning technique to enhance OHS learning.

This study had specific objectives regarding OHS training, particularly with respect to better differentiating such training by sex and gender. This is an application that may seem peripheral when considering the broad scope of the technique's contribution. However, the OHS examples cited by the interviewer relate to occupational risks, but beyond that, health also includes psychological aspects, integration into the team, social relations, etc. It was not always possible to address sex and gender in interviews (it is hard to even have a conversation about very simple and visible OHS risks; the topic must remain very concrete for this population). This constitutes another limitation of using this technique with this population.

In the context of this study, however, OHS and sex/gender issues were a pretext for introducing the technique to the teachers. The hope is that this initial experience might incite some teachers to learn more about the technique, perhaps even seek out further training in it, so that they can broaden their perspective and utilize the reflective class periods to their full benefit.

5 Conclusion

The results of this study showcased the value of an approach aimed at making WOTP trainee's work activity explicit. The SRI technique provides the teacher with a different and varied view of the practicum, which can be useful in anticipating the difficulties and successes of each student, especially in the area of OHS. The triangulation of methods used in this research-action study, as well as the involvement of different stakeholders (students, teachers, businesses and the research team) led to the development of recommendations to adapt the approach to the WOTP population. This approach should never become a competency evaluation tool. However, this type of method could be a tool to promote constructive, as opposed to normative, evaluations. The technique makes it possible to see actual work activity, and thus to develop competencies that are not necessarily identified as expected competencies in current training programs. It should be used to help the student and the teacher understand the factors limiting and enabling learning in different work situations, without placing judgement on the abilities and shortcomings of the student. The student and teacher's common understanding of the work becomes the basis for a potential dialogue with the employer in order to improve the learning conditions. This approach was deemed particularly fitting for taking into consideration sex, gender and OHS because it is based on differentiated instruction. To bring this a step further, we recommend that teachers supervising practicums become familiar with the tools offered by an ergonomic approach to professional pedagogy (see tools developed by the team: Laberge et al., 2020 and Laberge et Tondoux, 2020). These tools structure work analysis ahead of reflective interviews and offer interesting perspectives to enhance training based on alternating work/study periods and professional integration. The next step will be an implementation process by the teachers, including work activity analysis, followed by a

collective reflective session with the teachers to finalize the guidelines for future implementation.

6. Acknowledgements

The author want to thanks Jena Webb for revision and insightful suggestions. This work was supported by a Career Award (Junior 1) Fonds de Recherche du Québec (FRQ) – Institut de recherche Robert-Sauvé en santé et sécurité du travail (IRSST).

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