

Safe Working Practices and Knowledge in the Practice of Sustainability: A Narrative in the Context of a Forest Operation in a Brazilian Pulp Industry

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Received: March 10, 2023

Accepted: June 15, 2023

Online Published: June 29, 2023

doi:10.5539/jel.v12n5p31

URL: <https://doi.org/10.5539/jel.v12n5p31>

Abstract

This study articulates the concepts of sustainability and work safety to understand how safe working practices enable knowledge in the practice of sustainability. Anchored in the lenses of the learning process of practiced-based studies, we conducted a case study of qualitative nature in a forest harvest operation of a Brazilian company with sustainability in the core of its business strategy. We adopted as collection tools in-depth observation, semi-structured interview, and documental research, which were assessed by the thematic analysis of narratives. As results, we identified that the learning process of sustainability occurs in this context in a combination of institutional mechanisms and practices located at the occupational communities. Among those, the safe working practices indicate being capable of enabling the knowledge in practice of the systemic and integrative perspective, carefulness, responsibility, and look to the future, reflecting the assumptions contained in the ideal of sustainability. We also verified that, with the practices, this group has been establishing alliances, building common concepts, and producing and reproducing practices that change the way of learning sustainability.

Keywords: learning for sustainability, safe working practices, work safety, sustainability, situated learning

1. Introduction

This study articulates two concepts relevant to the current corporate scenario: sustainability and safety. The relevance is justified by the fact that both emphasize the protection and the development of the people, the economy, and the ecology (Merad et al., 2014; Le Roux & Pretorius, 2016; Nawaz et al., 2019).

The literature on sustainability is characterized by the absence of conceptual agreements and the inaccuracy regarding its understanding. Those conflicts, as well as the real drivers for sustainability and its introduction among the organizations' routine practices are widely debated (Silva & Figueiredo, 2017, 2020). Despite the divergences and criticisms, convergences regarding the importance of the socio-environmental crisis the world faces and the changes necessary can be observed (Ciegis et al., 2009; Osorio, Lobato, & Del Castillo, 2009; Nawaz et al., 2019). The need for making sustainability operational and for facing the challenges of managing businesses in this environment are also discussed, reducing existing gaps between speech and managerial practices (Waas et al., 2014; Nawaz et al., 2019).

Le Roux and Pretorius (2016) point out the evolution of the organizations' speeches. However, despite the evolution of their speeches, the authors argue that the concept is not reflected in the beliefs, practices, and decision-making of the organizational practitioners, due to challenges imposed by the implementation gap.

In turn, the occupational safety literature suggests debates about the normative character and the trade-offs regarding safety and productivity. Nevertheless, in the face of the challenges imposed to the organizations, studies that discuss safety in the cultural field have increased, as well as the importance of directing efforts to cultural learning, deployment of safety culture, enlargement and strengthening of leadership role, and the nexus with sustainability (Gherardi et al., 1998; Gherardi & Nicolini, 2002b; Merad et al., 2014; Ozmec et al., 2015; Migueles et al., 2019; Nawaz et al., 2019; Chen & Reniers, 2020; Tear et al., 2020).

The debates on society of risk present in the 1990s and the understanding that human beings and organizational factors are in the source of the industrial catastrophes are still present in the literature (Alkaissy et al., 2020; Chen & Reniers, 2020). In the Brazilian context, socio-environmental tragedies caused by Samarco Mineração S.A. and Vale S.A. are examples of actions that show the incapacity of companies in dealing with a new environment. In 2015 and 2019, respectively, the Fundão and Brumadinho dams, both in the state of Minas Gerais (an important state in Southeastern Brazil), destroyed lives, estates, cultures, affective memories, among other riches, causing a large environmental, socio-economic, and human devastation (Feroni & Galvão, 2020). The factors that have caused these tragedies, as well as the difficulties for managing the problems that arise from them and the attitude of the companies involved in the discussions and repair and compensation actions, as well as to the future operations discussions, point out the need for a new economic model.

Due to the demands for interdependent and multidimensional business models, an increasing emphasis on the issues related to work safety and the protection of the workers' health is also noticed, indicating a close relationship between sustainability and safety, besides a convergence in the debates that point out that both concepts are multifaceted and polysemic (Merad et al., 2014; Nawaz et al., 2019; Chen & Reniers, 2020).

Merad et al. (2014) argue that sustainability is a key concept to work safety studies, and the opposite is also true, since the principles of safety are useful when considering sustainability, which is still a very novel concept. The authors claim that, in the long term, the sustainability of a system depends on its capacity of maintaining a balance among its main characteristics: resilience, efficiency, reliability, and safety. In other words, if we consider the interdependency, similar efforts are recognized for the operationalization of these concepts, and that a sustainable practice entails a safe practice and vice-versa, thus revealing a circularity relationship between these practices in the organizational context.

Furthermore, Nawaz et al. (2019) confirm that safety and sustainability are intimately connected, and the former may offer a command over the latter, since both subjects share the same pillars, which are economy, environment, and society. Moreover, the authors state that the advances in the field of safety may be expanded even further to surmount the gaps in the operationalization of sustainability. Among the existing gaps, dyad education and learning has been considered as a key issue to sustainability (Edwards, 2009; Henry, 2009; Benn & Martin, 2010; Wals, 2011; Sidiropoulos, 2013; Le Roux & Pretorius, 2016; Wals & Benavot, 2017; Moyer & Sinclair, 2020), as well as in the field of work safety (Chen & Reniers, 2020).

Researches on education and learning for sustainability have been conducted and, although an increase in the studies that consider learning for sustainability as a social process has been noticed (Edwards, 2009; Henry, 2009; Wals, 2011; Madsen, 2013; Lankester, 2013; D'angelo & Brunstein, 2014; Ipiranga & Aguiar, 2014; Figueiró, Bittencourt, & Scuttel, 2016), the perspectives that consider it a mechanism of organizational adaptation to the sustainability environment from individual learning still prevail (Wals & Benavot, 2017).

Given the challenges that sustainability brings to society, such as the conflicts inherent to the choices made and the integration concept, associated with matters related to values, ethical behavior, among others, considering the learning process only as a cognitive perspective means narrowing the discussion. Thus, we argue about the need for broadening the understanding of learning for sustainability under a perspective of a participation and interaction process, connected with practices developed by a group (Gherardi et al., 1998; Nicolini et al., 2003).

In this study, the learning process is understood as a situated practice (Gherardi et al., 1998; Nicolini et al., 2003; Bispo, 2015), and sustainability as a multidimensional concept associated to long-term perspective and responsibility with future generations (Ciegis et al., 2009; Nawaz et al., 2019), which reflects on the practices of the organizational actors (Silva & Figueiredo, 2017, 2020). We also recognize work safety as a context-specific practice in which the shared beliefs are practiced in the occupational spaces (Gherardi et al., 1998; Gherardi & Nicolini, 2002b; Ozmec et al., 2015; Migueles et al., 2019; Tear et al., 2020), as well as the interdependent character of sustainability and work safety (Merad et al., 2014; Nawaz et al., 2019) and the similarities for the operationalization of both concepts and social practices.

Thus, to understand how work safety practices enable knowledge of the sustainability practice, we conducted a qualitative research, using a case study, in a forest operation with sustainability in the core of its business strategy. Flora Company, a fictitious name used to preserve identities, is a forest-based Brazilian company with industrial and forest operations located in different regions in Brazil. The company was founded in 2009 due to the merge of two Brazilian companies, having over 17 thousand workers, in-house and outsourced. This research was carried out in one of the harvest operations in Southeastern Brazil, which involves the cutting and preparation of the wood for transportation and supply of the cellulose plants.

The supporting arguments for the accomplishment of this research are based on the possibility of (1) broadening

the understanding of sustainability as a concept reflected in a set of practices that are created, reproduced, and assumed by its actors (Silva & Figueiredo, 2017, 2020); (2) contributing for the studies on the sustainability learning process as a social process; (3) broadening the studies that discuss the interdependent character of sustainability and work safety (Merad et al., 2014; Nawaz et al., 2019); (4) contributing for the structuration of sustainability-oriented corporate education projects that are more integrative, in which the initiatives may be connected and integrated to existing practices in the occupational communities sphere. Finally, when discussing both sustainability and work safety beyond the normative, prescriptive, cognitive, and individual spheres, we understand that this study contributes to the theoretical progress of the field being addressed.

2. Literature Review

2.1 Sustainability in Organizational Environments

Due to the escalation of environmental and social crises since the 1980s, the discussion about sustainability has been a part of the agenda in organizations and the academia, indicating the importance of the social and environmental pillars within a more sustainable development model, besides the reinforcement of the signs that this model, in order to become viable, would require: deep changes in organizational governance. Relying on the anthropocentric paradigm, organizations have built wealth using technological and scientific advances, disregarding the biophysical limits of the environment (Ciegis et al., 2009) and its social transformations.

The organizational environments have many dilemmas for the transition to the sustainability paradigm due to its multifaceted and complex nature (Osorio et al., 2009). Thus, trade-offs and conflicts over corporate sustainability have become rules, as the model that considers the interdependence among ecology, economy, and society has brought tensions to the organizations (Gladwin et al., 1995; Müller & Pflieger, 2014; Le Roux & Pretorius, 2016). Moreover, the inexistence of conceptual agreements and its inaccuracy (Sartori et al., 2014) and the lack of coherence in the strategies to reach a sustainable model are pointed out as possible factors that interfere in the operational levels of sustainability (Ciegis et al., 2009; Müller & Pflieger, 2014; Sartori et al., 2014; Feroni & Galvão, 2020).

A model based on the sustaincentric paradigm has been discussed as an alternative to reconcile the different dimensions, in which inclusion, connectivity, equity, prudence, and safety are expressed (Gladwin et al., 1995). This integrative approach considers different time scales of the social, environmental, and economic areas, prioritizing the long term (Munck, 2015). The cognitive transformation and the values of the organizational actors (Sidiropoulos, 2013) and the adoption of appropriate, fair, and humane technologies by the organizations are also considered.

The introduction of this paradigm shifts the understanding of sustainability as a normative and homogeneous concept (Gladwin et al., 1995), represented by a set of sustainable technologies, as well as structures and rules existing in the organization, into something reflected in the practices of the organizational actors (Silva & Figueiredo, 2017, 2020). Thus, we comprehend sustainability in this study as a multidimensional and dynamic concept (Müller & Pflieger, 2014) that approaches the need for balance between economic growth, social development, and environment protection linked to the perspective of a long-term picture and the responsibility to future generations (Ciegis et al., 2009; Nawaz et al., 2019). Furthermore, sustainability results from beliefs and shared goals (Silva & Figueiredo, 2017) and that it is embedded in the routine of the organizations as a set of practices created, reproduced, and assumed by their actors (Silva & Figueiredo, 2017, 2020).

2.2 The Learning for Sustainability

The discussions about organizational learning revolve around technical and social perspectives and, through these lenses, one seeks to understand what and how individuals learn. The sociologic perspective is adopted in this study and its starting point is the experience lived in the daily life and the learning process as a part of being active in social life and practice (Gherardi, 2001, 2011; Gherardi & Nicolini, 2002a). This approach conceives learning as a process of participation and interaction connect to a practice developed by a group (Gherardi et al., 1998; Nicolini et al., 2003).

In this perspective, the practice merges knowledge and action, and is gradually produced and reproduced in this interaction, in which the practitioners master the practical knowledge and become competent within their practice communities by the interactions between humans and non-humans. That is, it is by the working practices that such knowledge becomes observable and is produced and reproduced (Bispo, 2015; Gherardi, 2001, 2011; Nicolini et al., 2003).

Several approaches have influenced the understanding of the organizational learning process in the practice-based perspective and, although they have different ontologies and epistemologies, they share the notion

that knowledge is something practical and context-based (Nicolini et al., 2003). Likewise, the practice-based approaches do not arise from the same theory and, although they have similarities, they also have different terminology, history, assumptions, and traditions (Nicolini, 2011). In this research, we understand the learning process as a situated practice (Gherardi et al., 1998; Nicolini et al., 2003; Bispo, 2015). That is, a practice is something that gives meaning and identity to a group (Nicolini, 2011) and is organized from it.

Sustainability studies emphasize the education and the learning process as essential for its operationalization (Edwards, 2009; Henry, 2009; Benn & Martin, 2010; Madsen, 2013; Sidiropoulos, 2013; Le Roux & Pretorius, 2016; Wals & Benavot, 2017) and the approaches of learning for sustainability as a social process have been more frequent. Those studies approach the networks, the collaborative work, and the created and negotiated practices as fomenters of learning, as they give meanings to the practitioners (Edwards, 2009; Henry, 2009; Wals, 2011; Lankester, 2013; Madsen, 2013; D'angelo & Brunstein, 2014; Ipiranga & Aguiar, 2014; Figueiró et al., 2016).

Under different denominations, the social approaches share the fact of (1) considering learning as something that goes beyond one solely based on knowledge; (2) focusing on existentially relevant or “real” questions that involve the individuals; (3) understanding the learning process as inevitably transdisciplinary and transperspective; and (4) considering the indetermination as a key characteristic in the learning process (Wals, 2011). However, although learning for sustainability fills an essential role for the development of sustainable behavior (Moyer & Sinclair, 2020), and an increasing rise of the social approach has been noticed, an instrumental and cognitive perspective of learning associated with an individual changing process still predominates (Moyer & Sinclair, 2020; Wals & Benavot, 2017).

The main point is that there is no unique model of education and learning for sustainability, although the necessity that it is action-oriented is recognized in a collaborative, participative, and transformative way (Wals & Benavot, 2017).

2.3 Work Safety Practices

The discussion about work safety has been increasing due to the risks inherent to the businesses (Merad et al., 2014; Nawaz et al., 2019) and the effects of decision-making over the workers' health (Vasconcelos et al., 2017). Among the studies about the subject, a primary traditional approach is noticed, which deals with safety as a technical route based on rules and technologies that prescribe individual and collective behaviors guiding the safety for preventing and controlling risk-related processes and/or products (Gherardi & Nicolini, 2002b; Gherardi, 2018).

This approach, still predominating in the organizations, conceives safety as a key value declared by the top management and performed by managers and teams based on policies and procedures (Von Thiele Schwarz et al., 2016). However, this approach is criticized, especially due to its unspecific and complex character and the existence of gaps between norms and equipment and safe practices (Ozmec et al., 2015; Nawaz et al., 2019).

A second aspect discusses the cultural character of safety and refers to the beliefs shared and reflected on the working practices (Gherardi et al., 1998; Gherardi & Nicolini, 2002b; Ozmec et al., 2015; Migueles et al., 2019; Tear et al., 2020). In this perspective, knowledge about safety is understood as a social and cultural phenomenon based on practices that are created and re-created by participation and negotiation within a practicing community (Gherardi & Nicolini, 2002b; Ozmec et al., 2015; Gherardi, 2018).

In the field of the learning process, an increasing interest in studies that set themselves apart from the safety approach with rules and excessive controls and that are more interested in the comprehension of active learning from the development of practical agreements has been identified (Gherardi et al., 1998; Gherardi & Nicolini, 2002b; Ozmec et al., 2015; Migueles et al., 2019). Gherardi et al. (1998) argue that people do not learn safety, but learn work safety practices that are absorbed in a continuous way, from the development of situated identities based on participation. Thus, social relationships are important for safety, and the situational nature of knowledge of safety is essential to understand what a safety culture is and what it means to be safe.

Therefore, unlike a traditional perspective based on the learning of safety as an accumulation of knowledge and focused on risk, knowledge about safety practice considers safety as a situated practice. That is, it is understood that the learning process occurs supported by values of trust and responsibility, as an emerging characteristic of a sociotechnical system (Fuenfschilling, 2019; Roberts & Geels, 2019) in which the collective knowledge is created and reproduced, becoming a competence that is incorporated within the working practices (Gherardi, 2018).

3. Methodology

Aiming to understand how work safety practices enable the sustainability practice knowledge, a qualitative research was conducted by a case study (Flick, 2004; Stake, 2016). The research was carried out in one of the harvest operations (identified as SUL01) of Flora Company. The company was created in 2009 due to the merge of two Brazilian companies: Company A, founded in 1967; and Company B, founded in 1988.

The research is focused on the practical matters of the forest harvest operation of an organization with safety and sustainability in the core of its business strategy. Furthermore, in its sustainability policy, the company states the “zeal for a safe and healthy working environment, seeking the prevention of accidents and health risks.” Thus, when approaching this operation, the possibility of understanding the learning journey of those organizational actors about sustainability and work safety is broadened, from the observation of their practices and from their narratives. To do so, in-depth observation, semi-structured interview, and documental research were used as collection tools.

The in-depth observation was carried out in forest harvest areas of three cities in Southeastern Brazil, watching the operations of cutting plan, felling, debarking, and preparation of the wood for transportation. During the observation period, several videos and pictures were taken, as well as notes. They were registered in the field notebook (FN). Technical and safety trainings, as well as technical and managerial meetings, were conducted from August 2017 to January 2018, totalizing 80 hours of observation.

In total, 15 semi-structured interviews were conducted with operators (EOP1, EOP2, EOP3), technicians (ET1, ET2), coordinators (EC1, EC2, EC3, EC4, EC5, EC6), and managers (EG1, EG2, EG3, EG4) to broaden the understanding of what was being observed. The interviews were recorded and transcribed with the authorization of the interviewees. Finally, the forest harvest manual (D1), the training procedure (D2), the operators training matrix (D3), the operational technical diagnosis (D4), and the sustainability policy (D5) were the documents selected for analysis.

Data were analyzed using thematic analysis of narratives (Riessman, 2008), as it is a method applied to several stories developed within conversations, interviews, and written documents, seeking for the content that the narrative communicates and the similar thematic meanings among them. Based on Riessman’s (2008) premises, all the interviews were transcribed and read in isolating and categorizing episodes in a chronological order. Moreover, we analyzed the records of the field notebook and the documents trying to identify the themes defined *a priori*: (1) flow of sustainability knowledge and (2) work safety practices in the investigated context.

4. Results

4.1 Research Context

The operation of forest harvest involves the cutting and the preparation of the wood for transportation and supply of the cellulose factories. It is performed using tools that cut, debark, and remove all the wooden logs from the crop and take them to the side of the roads, making piles to then be transported (FN). The cutting of the forest is carried out based on a plan made by specialized teams and obeys internal regulations for the operation, described in their own manual and monitored by an indicator system (D1).

The SUL01 Harvest operation, locus of the research, is in Southeastern Brazil and works in a 24 hour-system in three relay shifts. It constitutes a team of two operational technicians and 49 forest operators and one outsourced crew of approximately 38 professionals from three different outsourcing companies of the areas of maintenance and supply. The internal team consists of 100% male professionals, whose average company time is 16 years, all from Company A. The follow-up and guidance routines are done by the operational technician.

The operational module, which works as an administrative basis and interaction space, is mobile and set up next to the cutting areas of the company or outsourced. Those areas are temporary and change according to the cutting plan.

4.2 The Narrative of Work Safety Practices in the Forest Harvest Context

A typical day in a harvest operation starts with the commuting of the professionals in a rented bus headed to an operational area. At disembark, they are taken to the module for their first meal, the daily safety meeting, the workplace exercise, then they are distributed to their working areas until they get together again for the second meal or at the end of the shift (FN). During the shift, by operating harvesting or transportation machines, these professionals aim to “produce piled up clean wood, with safety, quality, and low cost” (EC1). To accomplish this goal, the operators rely on the operation manual, described by EC4 as the “operation compass”, which establishes the standards for the harvest, following technical, environmental, quality, and work safety, health and hygiene

criteria (D1), and the cutting plan available for each machine.

To ensure that the forest management practices reflect the productivity parameters, low cost, and environmental and social responsibility, the organization provides in a structured manner a body of knowledge, such as training (D2, D3, D4), regulatory procedures (D1), indicators dashboard, and monitoring routines. In the field work (FN), we identified the organizational efforts to disseminate a shared sense of sustainable forest management practices. However, although it can be inferred from the narratives that those mechanisms work as a condition for sharing this common sense, in EC2's point of view, "sustainability that reaches the operational levels is equalized, but not resolved."

Despite the perception of EC2 that sustainability is not resolved, what we observed was that, by using the working practices, this group has been knowing/practicing/learning about sustainable forest management when producing and reproducing practices of anticipation and responsibility to the future, systemic perspective, self-care and care for the other, and the responsibility in the decision-making in an integrative way (FN). That is, in activities based on practices, in a process of social construction, new ways of working sustained by an entanglement of practices have been learned. Among the several practices observed in this operation, it is important to highlight the safety practices.

On the daily work, this group has been producing a situational perspective of respect, personal and others' safety, and respect to life. It has been due to those work safety practices that these professionals are producing and reproducing this knowledge, based on a value of care and responsibility among them. In EG2's point of view, safety "has changed the relationships in the operation, giving a strong sense of responsibility for what had been developed."

For this occupational community, sustainability is a concept with different dimensions not assimilated by all of them in the same manner, although it is understood and assumed from their specific working contexts. According to EOP2, "the company has preached this sustainability thing for a long time and we have always listened to it [...], we wonder what it is, but we will only understand what sustainability is with the routine". To treat the environment and economic dimensions, the professionals tend to seek references within the training and other existing institutional mechanisms. However, to approach the social dimension, they talk about their own practices and always resort to the values they identify and practice in this operation. To these professionals, as stated by EC4, "sustainability is life," and the respect is expressed in the handling of the environment, of the machine they operate, of their personal safety, of their neighborhood community.

According to EOP3, the value of taking care of oneself and their teammates is a demonstration of sustainability. This value is reassured in the narrative of EOP2, when they say "everybody has to leave here feeling safe with themselves, without accidents, without deaths [...]. We have to leave healthy and without harming the environment." In the perspective of EOP1, respect affects safety, since "it reminds us of the limits and the importance of patience to reach a result". In the observations and reports, we identified the responsibility as an important value related to sustainability. This value is reflected in the decision-making with the machine, so that they are operating within the environmental, safety, and operational standards.

Despite the isolated work in their machines, the operators use the radio communication system to practice safety actions, such as alerting the others about risks in the operation, animal presence, and asking for help in risky operations. During our observations, we observed a group sharing experiences and producing meanings about danger, safety, and caution, as well as the respective behaviors that should have been adopted in that moment. According to EOP3, in their daily routine, "each one takes care of the other here [...] the most experienced ones here give us tips and we keep learning."

Watching over one another during work was manifested in practices such as an operator, when seeing a loose horse, immediately interrupted his car itinerary and communicated in the radio to alert the other operators. Likewise, we described a practice of support to an operator who was working at a steep area in a very rainy day and required a lot of caution. Using the radio, a broad conversation occurred to seek for alternatives to jamming and other risks involved (FN). We also witnessed the use of reports, dialogues about safety in the in-person meetings before and after the shift, records on shift notebooks with the safety occurrences, preliminary analysis of any task, among other practices.

Safety was pointed out as one of the ways of understanding sustainability since both concepts are related to survival. Moreover, the perspective that safety is something that is learned by practicing is shared by several members of this occupational community. EOP3, new to the operation, highlighted how the experienced ones have helped them understand the value of safety, of health, and of taking care of the environment since their introduction in the group practices.

Safety practices have given this community an identity, from the development of the collective meaning of what it means to be safe and the understanding of what it means to operate in a sustainable way. During the research, this group had been working for 43 months without any work accidents, becoming a reference to the whole company.

Work safety practices are mediated by language and different discursive practices were identified, such as safety meetings, safety practices, i.e., “Stay alert” and “Safe Frequency,” conversations about the environment and safety, and meetings in the beginning of the shifts. Both in the reports and in the observations and documents, it is possible to identify other practices in which language organizes the practice and grants participation. In the meetings, we noticed an intense participation, and this behavior, according to the operators, is part of the change in the communication flux and the increased level of formal education. This behavioral change is mentioned by many of them as a transition from the role of operator “wood carrier to owner of the process” (ET1). This expression was used often to show the larger level of participation of the professionals in the process.

5. Discussion

The learning process has been pointed out as one of the key themes for the operationalization of sustainability, as it allows the development of sustainable behavior (Moyer & Sinclair, 2020). In this context, the predominance of studies with the instrumental and cognitive perspective of the learning process is still noticed, associated with an individual changing process (Moyer & Sinclair, 2020; Wals & Benavot, 2017).

When choosing the situated learning approach, we try to contribute with the understandings that sustainability is a concept with different dimensions that is not assimilated by everyone in the same way, but understood and assumed as it is introduced in the routine of the organizations as a set of practices created, reproduced, and assumed by their actors (Silva & Figueiredo, 2017, 2020). That is because, despite the transformation of organizational elements, it is necessary that the individuals present values, knowledge, and practices different from the traditional management model, as discussed by Gladwin et al. (1995), Sidiropoulos (2013), and Le Roux and Pretorius (2016).

We noticed that, although the institutional mechanisms of Flora Company are structured to make available a body of knowledge about sustainability, in the context of the SUL01 harvest, the knowledge of sustainability is an activity located in the participation (Gherardi, 2001, 2011; Gherardi & Nicolini, 2002a). That is, by the practices that produce order and meaning to the routine, this group has been experiencing in their daily tasks key elements of sustainability, such as inclusion, connectivity, prudence, and safety (Gladwin et al., 1995), as well as the long-term perspective and carefulness with themselves and others. Nonetheless, differently from an instrumental and cognitive perspective associated with an individual changing process (Wals & Benavot, 2017; Moyer & Sinclair, 2020), in this context, knowledge about sustainability has been activated in the practices, in which knowing and doing are entangled (Gherardi, 2001, 2009; Nicolini, 2011).

When approaching the working practices of this occupational community, we identified that working together in the creation and maintenance of the negotiated practices in the routine, these professionals have been concentrating on what matters to them. In a process of social construction and in the entanglement of practices, in a specific way in the work safety practices, this group has been experiencing in their daily tasks key elements of sustainability incorporated to their working routines and decision-making processes.

With those practices, the knowledge becomes observable and is produced and reproduced (Gherardi, 2014), activating the practice knowledge of the systemic view, of the carefulness, of the responsibility, of the integrative perspective, and the look to the future. With work safety practices, this community develops a collective meaning of what it is to be safe and what it is to be sustainable. This collective understanding enables decision making processes based on a negotiation, which causes changes in the practices aiming at the preservation of life, of the environment, of the production. The group shared experiences and produced concepts about danger, safety, and caution, as well as the respective behaviors that should be adopted in that moment. This way of acting gets closer to the debates regarding active learning process and beliefs shared and reflected in the work practices (Gherardi et al., 1998; Gherardi & Nicolini, 2002b; Ozmec et al., 2015; Migueles et al., 2019; Tear et al., 2020).

The normative system existing in the organization aiming at the safety learning process, called by Gherardi and Nicolini (2002) “the technical route to safety” does not ensure by itself the learning process to this group. It has been by the work safety practices that the professionals of the SUL01 harvest are producing and reproducing this knowledge, sustained by a value of care and responsibility among them. These findings reinforce the discussions about work safety knowledge being understood as a social and cultural phenomenon situated in practices created and recreated using the participation and negotiation in a community of practice (Gherardi & Nicolini, 2000b; Ozmec et al., 2015; Gherardi, 2018). That is, we identified in this context a distancing from the concept of safety

as a key value declared by the top management and executed by the managers and teams based on policies and procedures (Von Thiele Schwarz et al., 2016).

The observed practices reflect the creation and reproduction of safety and individual well-being practices, as well as for the safety of the environment. The practices give this occupational community an identity, based on the development of the collective meaning of sustainability and safety. This collective understanding enables decision-making processes based on a negotiation, which is performed by radio communications or during the times when they meet in person. Thus, in this context, indicators show that safety is an emerging competence carried out in the practice, which is socially constructed and communicated to the new members of this community and embedded in values, rules, and social institutions (Gherardi, 2018), besides evidencing what is discussed by Gherardi and Nicolini (2002b) about not learning safety rather than safe working practices.

Besides the understanding of safety as an emerging competence, in this context, we identified that the work safety practices established by the group indicate that they enable the learning process of sustainability, by promoting the practice knowledge of the systemic perspective, of the carefulness, of responsibility, of the integrative perspective, and the look to the future. Thus, we can argue that our observations corroborate what is discussed by Gherardi (2011) about the situated nature of the learning process and the characteristics of the relational knowledge and the learning process based on ways of involvement and participative assumption, creating associations among mental and material elements, and producing a body of knowledge shared by the involved communities.

Indicators show a shift in the communication flux with the broadening of the participation of the people, allowing the group to organize around the “knowing how we are doing” (Gherardi, 2018). The broadening of the participation of these operators suggests a rupture of a mechanistic logic that has predominated in this organization, in which the operator was not a thinking being, but a working force whose physical strength and repetition capacity was privileged. This sense of belonging and responsibility over their acts may suggest an understanding of the normative system of the organization in an autonomous way, moving these professionals from a heteronomous behavior, so present in the mechanistic, standardizer, and controlling models.

As it is also discussed by Wals (2011), it is by dialogue that objectives of co-ownership and shared meanings can favor the construction of a future desired by all the parts involved and, different from the past, when sustainability was the responsibility of those with the most authority and influence. From the practice of knowledge and knowledge in practice, the possibility of assumption of the concept and changes in the actions increases. Thus, facing the necessity of establishing business models that are multidimensional, integrative, and that contain a long-term perspective and the responsibility to the future generations, we deem necessary to shift the understanding of the learning process for sustainability as a mere cognitive process to a process of participation and interaction. We also consider that the understanding of safety as a cultural system created and reproduced in the practices removes its unspecific and complex character and enables the minimization of the gaps between norms, equipment, and safe practices (Ozmec et al., 2015).

Thus, we argue that the learning process is associated with a practice developed by a group that negotiates, shares meanings, and establishes new actions and knowledge, evidencing the indissolubility between practice and learning process (Vogt et al., 2020). Those practices are anchored in normative knowledge and a cultural system, not having a dualism between what is learned with the routines of the company and what is produced in the communities, on the contrary, those practices are associated, in a movement in which all the elements contribute to the activation of the knowledge about sustainability, as well as when practicing sustainability, the elements of safety practices are entangled.

6. Conclusion

Aiming to understand how safe working practices enable knowledge in sustainability practice, we conducted a qualitative research, using a case study, in a forest operation of an organization with sustainability and work safety in the core of its business strategy. Guided by the objective and the theoretical frame, we built data from in-depth observation, semi-structured interviews, and documental research analyzed using thematic analysis of narratives (Riessman, 2008).

In this study the learning process is understood as a situated practice (Gherardi et al., 1998; Nicolini et al., 2003; Bispo, 2015), sustainability as a multidimensional concept associated with long term perspective and responsibility to the future generations (Ciegis et al., 2009; Nawaz et al., 2019), which reflects in the practices of the organizational actors (Silva & Figueiredo, 2017, 2020), and work safety as a specific context practice in which the shared beliefs are practiced within the occupational spaces (Gherardi et al., 1998; Gherardi & Nicolini, 2002b; Ozmec et al., 2015; Migueles et al., 2019; Tear et al., 2020). We also consider the interdependent

character of sustainability and safety (Merad et al., 2014; Nawaz et al., 2019), recognizing the existence of similarities for operationalization.

In the context of the research, indicators show that safe working practices activate the knowledge in practice of the systemic perspective, the carefulness, the responsibility, the integrative perspective, and the look to the future, reflecting the assumption contained in the ideal of sustainability. Based on values of trust and responsibility, this occupational community establishes safe working practices and, based on the dialogue and shared meanings, they build the future (present) that is desired by all the parts involved. From the practice of knowledge and the knowledge in practice, they assume the concept of sustainability and safety, reflecting in their way of acting. Thus, we verified that by using those practices, this group of professionals has been establishing alliances, building common concepts, and producing and reproducing practices that change the way of doing and knowing and, thus, the way of learning sustainability.

We recognize the limitations of the study, such as, for example, having concentrated the research at the context of the SUL01 harvest and the not-doing in a continuous way, thus restricting the understanding of the process of doing and learning sustainability. However, despite the limitations pointed out here, we encourage further research that expands on research that addresses the interdependence of sustainability and safety. Such studies can be directed to other productive sectors and/or other functional groups. Furthermore, we encourage research that deepens the cultural factors that enable situated learning, as well as the development of sustainable and safe behavior.

In the theoretical perspective, this study contributes to the maturation of the learning process for sustainability and to the discussions about the understanding of sustainability as a set of practices and a situated concept. In turn, regarding practical implications, we hope that the flow of the knowing and learning identified here may serve as a reference so that managers and corporate educators structure corporate educational projects that are more integrative, and that the organizational initiatives are integrated to the occupational communities' practices.

Finally, we believe that this study may contribute to the broadening of the debates about the interdependence of the concepts of work safety and sustainability and the efforts to make them even more operational. Moreover, the results may also contribute to the broadening of the understanding of safety as a social and cultural phenomenon situated in practices.

Funding information

This work was supported by the Espírito Santo Research and Innovation Support Foundation (Fapes) – Number T.O. 366/2023.

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