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Safety Knowledge Sharing in the Culinary Industry: An Examination of Employees' Attitudes, Intentions, and Behaviours

Final Report

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Report Prepared by:

Pernille Goodbrand, MA
Westman Centre for Real Estate Studies, Haskayne School of Business, University of Calgary, Canada
Charlotte McClelland, PhD
Independent Consultant, Denbigh, Conwy, United Kingdom
Nick Turner, PhD
Canadian Centre for Advanced Leadership in Business, Haskayne School of Business, University of Calgary, Canada
Krista L. Uggerslev, PhD
J.R. Shaw School of Business, Northern Alberta Institute of Technology, Canada

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Executive Summary

Purpose

The purpose of this research project was to investigate how experienced (seasoned) workers share their safety-related knowledge with less experience (novice trainees) in the culinary environment, and receptivity towards and learning of safety- related information of trainees in culinary trades. The project involved two studies with participants from NAIT (based in Edmonton, Alberta) and from Red River College (based in Winnipeg, Manitoba).

Summary

Study 1 included 22 one-on-one interviews with students in culinary, baking, meat cutting, and the apprenticeship program, work placement chefs in Edmonton, and chef instructors at NAIT and Red River College. Six key themes were identified through the analysis of the interview data:

1) Novices are not "blank slates"
2) Industry experience: "You don't learn these things in school"
3) School differs from work
4) Safety knowledge as "common sense"
5) Learning safety from peers
6) Social relations with mentors and peers

We found that novice workers are rarely blank slates and their experiences within industry affect how they learn about safety in school. Novice workers with industry experience are able to draw on safety knowledge obtained from their experiences and share those experiences with their peers. Although this type of knowledge sharing is informal, it is one that is often highlighted in the interviews and represents a source of learning that should not be disregarded. We found that safety is socially constructed and often understood as "common sense" attributed to the individual, but is comprised of three overarching characteristics: it is shared and social, it is a practical accomplishment, and the presence or absence of an understanding of common sense separates less experienced practitioners from experienced ones.

Study 2 was conducted as a 6-wave longitudinal study at NAIT with 94 novice worker participants and 13 instructors, and a 2-wave longitudinal study with 73 participants from Red River College and NAIT. Five sets of analyses were conducted across the survey data:

1) Examining how mindfulness, attitudes towards risk, and the experience of injuries predicted safety knowledge sharing.
2) The relationships among hiding safety knowledge, informal learning, error avoidance, and perceptions of task-based demands.
3) How safety knowledge sharing is affected by time control, work control, schedule demands, along with neglect, exit, and voice.
4) The relationship between instructor observations of safety, safety knowledge seeking, and safety knowledge sharing attitudes.
5) The effects of safety knowledge sharing on the frequency of injuries.

We found the relationship between safety knowledge sharing and mindfulness is negative between first and second waves, but non-significant at later waves, which shows that once some of the students' skills become more embedded, there is a more capacity to focus on mindfulness and the broader context, including sharing knowledge, anticipating safety obstacles that have not yet occurred, and sharing conversation with peers (which may be about safety) at the same time as self-protection. In contrast, safety hiding is related to lower informal learning and great error avoidance learning. People who are more curious about their work environment and want to learn about it, and who feel a psychological safety in discussing safety and mistakes, are more likely to share safety knowledge. Therefore, when safety knowledge sharing is initiated, it prompts additional safety knowledge sharing and, likewise, when conversations about safety are not initiated, others are less likely to bring it up.

Recommendations

Based on the results of the two studies, we propose several recommendations related to how seasoned workers share safety knowledge with others, the receptivity of novice workers towards receiving safety knowledge from experienced workers, and how novice workers believe they can learn and share safety knowledge.

1. Provide opportunities for novice workers to learn from seasoned workers and one another as this is a key way in which safety knowledge is imparted in the classroom.
2. Safety knowledge and safety knowledge sharing are collective enterprises; safety knowledge sharing is a fundamental mechanism for one's own health, for legitimate participation in a community of practice, and for preservation of the safety of the collective.
3. Design work or classroom environments to enable safe practice of basic skills and to provide more opportunities for safety knowledge sharing as experience increases.
4. Provide environments in which novice workers have the opportunity to learn about their environment informally and to discuss errors and mistakes more openly to promote a safer work environment.
5. The vocal nature of safe participants in the community of practice serves as a form of intervention that will either inspire them to care more about safety or encourage them to depart.
6. Novice workers who seek safety information are seen by seasoned workers as peripheral participants in a community of practice. However, once novice workers pass an elusive threshold and exhibit safe behaviours, they are seen as legitimate contributors to collective safe practice.

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1.0 Project Objectives

There are two broad objectives for this project:

1. To explore how seasoned workers share safety-related knowledge with other organizational members, and

2. To investigate the receptivity of novice workers towards receiving safety knowledge from experienced workers, and how novice workers believe they can learn and share safety knowledge.

The project consists of a qualitative interview study (Study 1) and a quantitative survey (Study 2) conducted over 6 waves (Part A) and over 2 waves (Part B).

Table 1.1 (see Appendix A) provides the timetable and brief activity description for each component of the project.

2.0 Safety Knowledge Sharing between Novice and Experienced Workers in the Culinary Trades – Background

The reality of everyday safety practices on work sites often carries little resemblance to official health and safety strategies implemented by site directors (Pink, Tutt, Dainty, & Gibb, 2010). Despite the best intentions – using safety introductions, regular safety training, and readily available safety materials and signage – discrepancies between safety ideals and reality still exist. This happens because learning about safety is not a "linear practice" (Pink et al., 2010: 656). Safety is a continuous and active process that is achieved through work, effort, and perhaps most of all, through social engagement with other people who are also part of the site where learning happens (Gherardi & Nicolini, 2002a). Learning from personal experience and "gut feeling" can only get an individual so far because learning is essentially a social activity, and learning about safety is no exception (Nicolini, 2012).

2.1 Safety versus Accidents

Safety is more than the absence of accidents and controlling of risk (Rochlin, 1999), and accidents are more complicated than understanding them as a result of individuals who continue to act unsafe even after learning the "proper way" of doing things (Green, 1997; Kelley, 1996). Green (1997) looked at people's perceptions of accidents and found that generally they are understood as preventable through individual responsibility and "basic social competence," though it was also recognized that occasional unpreventable accidents happen. How safety is understood often varies depending on who you ask – the work site director versus a labourer are likely to say different things (Gherardi, Nicolini, & Odella, 1998; also Pollnac, Poggie, & Cabral, 1998; Simpson, 1996). Therefore, many scholars emphasize the importance of ethnographic work to understanding the context of work and safety (Pink et al.,

2010; Gherardi & Nicolini, 2002a and 2002b; Holmes & Gifford, 1997; Kelley, 1996; Dwyer, 1992).

Overall, work safety scholars have moved away from an individualistic way of understanding safety and safe work behaviour to one that focuses on the collective and collective responsibility (Turner & Gray, 2009; Somerville & Abrahamsson, 2003; Llory, 1997; Green, 1997). Holmes and Gifford (1997) argue that occupational health and safety strategies that focus solely on individual behaviour change or technical measures will fail because they do not consider the social context, the hierarchical structure of the industry, or the shared assumptions about risk control through individual skills and responsibilities" (p. 11). The social context is especially important for understanding safety because safety and danger are often "intersubjective products of social construction, collective agreement and socialization" (Simpson, 1996: 550). In this sense, safety becomes difficult to quantify, and other means of understanding how safety is created and maintained must be employed.

2.2 Safety as a Social Construction

Rather thinking of safety as "a set of observable rules or procedures, externally imposed training or management skills, or easily recognized behavioural scripts" (Rochlin, 1999, p. 1557), which are often blamed when things go wrong (Esbester, 2005), thinking of safety as a social construction moves us beyond the individual level to understand how safety is created and maintained. Social constructions are the things, meanings, and social phenomena that people create that then shape their everyday reality. In the case of safety, this approach argues that rather than safety being something objective that just exists "out there," safe working practices are continuously created as people interact and communicate with each other (Burke, Scheuer, & Meredith, 2007). Safety is largely what a person perceives it to be, and this depends on the social context (Gherardi et al., 1998).

Gherardi (2006) and Nicolini (2012) (see also Gherardi & Nicolini, 2000a, 2000b, 2002a, 2002b; Gherardi, et al, 1998) have published extensively in the field of sociology of work, including the social construction of safety for novice learners. Gherardi et al., (1998, p. 202) argue that people "do not learn 'safety'… rather they learn safe working practices" as a participating member of a community (Gherardi & Nicolini, 2000). Learning through participation is a complicated process although it appears automatic and simple (Gherardi & Nicolini, 2002a). Gherardi (2006, pp. 97-98), using ethnographic data from a building site, describes five processes involved in the learning of safety practices, these are comprehensive, but, as she recognizes, not necessarily exhaustive.

1. *Highlighting*: Understanding knowledge pointers; being able to watch, look, see and listen to others as they "carry out meaningful activities".
2. *Shaping aesthetic feelings*: repeated "exposure to clues and sensory experiences", as well as the language employed makes safety embodied (also in Strati, 2003)
3. *Talking in practice and talking about practice:* talking while doing, or talking about doing,

4. *Weaving the texture between the social and the material*: mediating the social world with artefacts (training manuals, posters etc.) that supports leaning
5. *Supporting the enactment of the new identity*: knowledge and behaviour considered appropriate is reinforced by other practitioners

In this way, learning about safety is very much about being socialized into a new identity through interaction with people who are already part of the environment in which learning takes place. This environment is often referred to in the literature as "a community of practice" (Lave & Wenger, 1991).

2.3 Legitimate Peripheral Participation in a Community of Practice

According to Lave and Wenger (1991, p. 29), legitimate peripheral participation "concerns the process by which newcomers become part of a community of practice" learning through an "evolving form of membership" (p. 53) that takes individuals from novices to more experienced participants. Being "peripheral" does not mean that their participation is less important or disconnected; it is simply about being at different stages in the process of learning (p. 37). Being an experienced legitimate member also does not mean that a person has reached an end point because the process is always ongoing – there is always more to learn (Nicolini, 2012), and learning can only happen through participation and being part of a "lived-in world of engagement" (Lave & Wenger, 1991, p. 47). Learning is about getting to a place where a novice is able to pass as a member of the community by learning a new identity and how to see, speak, and act as a practitioner (Nicolini, 2012; Gherardi, 2006).

Interestingly, and often contrary to popular belief, going through a process to become a legitimate practitioner can take place whether education provides the context of learning or not (Lave & Wenger, 1991). In order words, studies have found that intentional instruction through schooling is not a prerequisite for learning, but that participation is (Nicolini, 2012; Gherardi, 2006; Lave & Wenger, 1991). If there is no participation, there cannot be learning because learning is social, and about "belonging, engagement, inclusiveness, and developing identities" (Nicolini, 2012, p. 80). Participants create the community where learning takes place, not the other way around.

Understanding what a community of practice entails is complicated because it is not about "co-presence, a well-defined, identifiable group, or socially visible boundaries" (Lave & Wenger, 1991, p. 98). A community of practice is hard to identify because it is not a visible group (Nicolini, 2012). Rather, a community of practice is a "set of relations among persons, activity, and world over time and in relation with other tangential and overlapping communities of practice," and these communities are always in flux (Lave & Wenger, 1991, p. 98). Pink et al. (2010) argue that a person may not actually be able to understand community of practices unless they observe them happen, and take part because community is a shared understanding for those who recognize it, but not for others. The key to understanding how people learn is therefore to move beyond the level of individuals and attempt to look at the community of practice that learning happens in.

There is a general consensus in the literature on safety knowledge sharing that research must move beyond the level of the individual to understand how safety is learned, and how safety knowledge is shared. The unit of analysis must be the community of practice, not the individual. Whether learning happens through participation in a school environment or in the field, participation is essential because learning is social and happens through practice. It is this view that guides the methodology and analysis in this report.

3.0 Study 1: Safety Knowledge Sharing Culinary Interviews

The purpose of the qualitative research presented herein is descriptive, and aims to address the specific issue of how safety knowledge is created and shared. The purpose of the qualitative part of this study is not to test theory, but rather to produce an accurate and detailed picture of the issue at hand, which will inform and complement the quantitative data (Study 2) collected for this project.

3.1 Methods

3.1.1 Sampling and Recruitment

The data consist of transcripts from 20 in-depth, semi-structured interviews with individuals who are involved in the culinary industry in a variety of roles (number in brackets), and who have various levels of experience: chefs (3), instructors in the field of apprentice (2), culinary (1), baking (2), and meat cutting (2), as well as students at different stages of their education enrolled in apprentice (4), culinary (4), and meat cutting programs (2). All participants were recruited at the Northern Alberta Institute of Technology (NAIT). A conscious effort was made to recruit participants with different levels of experience, and from different fields to represent as broad of a population as possible.

3.1.2 Data Collection and Interview Process

In-depth interviews as a method of data collection are ideal for “issue oriented” studies (Hesse-Biber & Leavy, 2011), and a semi-structured approach allows for an “exchange” between the researcher and the participant. The questions are meant to guide the conversation, however, the approach leaves room for re-ordering and rewording of questions, and for the interviewer to probe and make clarifications to fit the participant and the situation (Berg & Lune, 2012). A copy of the semi-structured interview guide for chefs, instructors, and students is included in Appendix B. The interview guide was developed with the assistance and feedback of the project Strategic Advisory Board in February 2014. Interviews ranged from approximately 30 to 90 minutes and were audio recorded. A professional transcriptionist then created a written transcription of the interview. The research team both listened to the interviews as well as read the transcripts and had focused discussions about the interviews before commencing formal data analysis using nVIVO software to organize the data.

3.1.3 Data Analysis and Coding

The interview data was organized using a reworking of the five processes outlined by Gherardi (2006), as well as an additional category inspired by findings by Gherardi & Nicolini (2002a), Strati (2003), Esbester (2008), and Holmes & Gifford (1997) (see Appendix A, Figure 1). This approach was used because much scholarly work has already been dedicated to the topic of the social construction of safety and the learning of safety practices, and so it was deemed important to ground the analysis in the widely-regarded works preceding this study, rather than trying to reinvent the wheel.[1]

Coding of the data progressed in the following manner:

1. First cycle: Structural coding of interview data assigning data to pre-established categories (as outlined in Appendix A, Figure 1). Concurrent analytic memo and note writing.
2. Second cycle: Axial Coding reviewing and examining initial codes from each pre-established category. Organizing ideas and themes through analytic memo and note writing.
3. Sorting analytic memos into "memo/concept groupings" based on themes, and systematically going through and talking about each memo, and how it relates to overall research questions of how people learn about safety and how they share safety knowledge.
4. Constructing a coding map – a visualization of memos, memo notes, and conversations.
5. Constructing visualization of coding considerations, codes generated through axial coding, and selection of key themes to be discussed in the analysis (Figure 1).

3.2 Analysis of Key Themes and Circulation of Safety Knowledge

The analysis is centered on six key themes identified through axial coding/data analysis:

1. Students are not blank slates
2. You don't learn these things in school
3. School differs from work
4. Common sense
5. Learning safety from peers
6. Social relations with mentors and peers

The following section deals with themes 1-3, while the section entitled Safety Knowledge as Common Sense deals with theme 4, and indirectly with themes 5 and 6.

Being a part of the overall community of practice is essential to learning (Lave & Wenger, 1991), but learning in the controlled environment of school is different than learning in an industry

[1] As the coding progressed it became clear that the categories were certainly neither exhaustive nor mutually exclusive, and that subtle differences often allowed for data to fit in multiple categories, for example trying to determine if an experience belonged in the "you don't learn these things in school" or the "shed school experience and scholastic knowledge category". This was not interpreted as a limitation of using pre-established categories, but rather a testament to the complexity of attempting to analyze and categorize human experience.

environment – and yet culinary students tend to move between the two environments and are simply expected to understand that they are different. The circulation of safety knowledge thus permeates all sites of practice, as represented visually in Figure 2.

3.2.1 Students Are Not Blank Slates

"You're about to start cooking in a kitchen, so learn about the safety. Whether you've worked in there for five years, whether you're just going in the kitchen, it's going to be all the same." (Interview P001, Culinary Student)

Analysis of the interview data shows that although the safety education that each student receives in school is the same, students' starting point when entering programs are not. With one notable exception, the data shows that students are not clean slates, and enter culinary, apprenticeship, baking, and meat cutting programs having various experiences in kitchen settings. The implication is that the safety knowledge learned in school does not exist in a vacuum. Sometimes "you don't learn these things in school". The safety knowledge that students have acquired in the industry, including examples of safe and unsafe behaviour, is shared within the school community, and more often than examples from the school environment, used as reference points and examples in the interviews when asked about safety or lack of safety. When experiences are shared in this way, students with less experience get the benefit of learning from their peers' "real world" experiences. This knowledge sharing is an important part of the learning experience for all students, and should not be underestimated. However, it is questionable to what extent hearing a story can substitute learning about safety first-hand as a participant in a community of practice, but it represents a form of learning nevertheless.

3.2.2 Industry Experience: "You Don't Learn These Things in School"

The significance of exposure to and socialization into the industry prior to entering the school environment did not become clear until data from an interview with a student without any industry experiences was analyzed. The student had no any prior exposure to industry, which is, judging from the reaction of the interviewer, Jeff, a person highly experienced in the field, highly unusual:

"MCS – I'm in meat cutting. We're almost done I guess. We're doing our final group project. I'm one of the team leads.
Jeff – And are you working in industry right now?
MCS – No, I'm not.
Jeff – Have you worked in the industry in the past?
MCS – No, never.
Jeff – Wow! So you just decided? Are you going to be a meat cutter or are you looking at coming into culinary arts?
MCS – I'm going into culinary, actually.
Jeff – So no experience what so ever in the hospitality business at all?

MCS – Nothing.
Jeff – This was your first introduction?
MCS – First introduction."
…
Jeff – Never?! So is that something that you're planning on doing when you finish here? You're going to go out and?
MCS – Yeah.
Jeff - So in between meat cutting and culinary, are you going to go work in a kitchen for a bit over the summer and see what it's like or are you just going to come in in September and?
MCS – Come in in September and get it done.

A student not having prior kitchen experience and not planning on obtaining any while in school is met with disbelief. Having at least some experience in and knowledge about the industry is considered important especially considering that participants reported considerable variation between the school environment and the industry environment.

3.2.3 School Differs From Work

The interview data revealed three key differences between an industry environment and school environment which affects how safety is handled.

First, school is a protected environment as compared to industry. The school has a nurse who can stitch students back together, whereas the industry relies on the practitioners in the community to take responsibility, "own their safety" and in some cases "suck it up" when they do get injured, as seen in the following interview excerpt from with an apprentice instructor (Interview P017):

"AI – I see a difference where especially in the first year apprentices that come in, right away if they cut themselves or let's say they get a little burn they think they're dying. So right away they need to get medical attention immediately. Being in school I would say, "Yes, go ahead. Go see the nurse and get it set up" and then they would come back with a bandage all the way around their arm because they burned themselves on the tip of their finger. But in industry, it doesn't work that way. In industry, if it's really severe then yes, we're taking you to the hospital because we don't have a nurse on staff there, we're taking you to medical attention immediately. But if it's just a little nick or a little burn or whatever, "Suck it up princess, go to work." That's the way we encourage it because of the fact that it's small. But there are some small things that can turn very bad."

Second, the emphasis put on safety often varies considerably. In the school environment safety is explicitly taught, whereas the emphasis on safety can be everything from non-existent to involving comprehensive safety training programs in the industry. But even when participants are attuned to safety concerns, the nature of industry sometimes trumps those concerns, at least in the short term while ensuring that things get done (Interview P017):

"AI –…If it's just a little nick or if it's something that's a little more uncontrollable, in that business, in that line where you've got all these deadlines and you've got all this production that you're doing that day, wrap it up and get to work. Depending on the severity. If it's severe than no, I would definitely, if it was myself cutting it I would basically because we had proper first aid training I would try and wrap it up as good as I can. Get out there and do what I need to do and then I would seek medical assistance after the fact. Because I knew I would always report it. But doesn't happen all the time. If it's a little nick or whatever, it's like put a bandage on it, put a finger cot and get to work. Because that business is that business. You're not going to constantly stop. That was another thing. I had some cooks that were with me at the Mayfield Inn where they would get a little nick and they wanted to go home. It's like, "No, you're not going home. Wrap it up, tighten it up, we'll make a note of it and get back to work."

Finally, the speed with which work has to be performed in industry is considerably higher than in a school environment, which has implications for safe work practices especially for the less experienced. The school environment emphasizes that things are done right rather than fast, as seen in the interview excerpt below (Interview P019):

"Jeff – So now here you are, you're thrown into that environment. It's super busy and there's a hazard of some sort…How are you able to recognize, see that hazard and then how do you deal with it when it's so busy?
CS –I think it's easier at school than it is in the workplace because at school you're not being paid to be fast. You have the opportunity to slow down if you need to."

3.2.4 Becoming a Practitioner: Safety Knowledge as "Common Sense"

"There's only really so much you can teach people. At the end of the day they need common sense" (Chef, Interview P005)

A reoccurring theme in the interviews was the notion of having "common sense" and applying it to working safely. Despite this frequent mention of common sense, interviewees did not have a shared understanding of how people come to possess it. Several participants spoke of common sense as something innate, while others believed that common sense is learned. The contradictory nature of responses is not unusual. Common sense is defined as having "good sense and sound judgement in practical matters" (Oxford, n.d.), but where this good sense comes from is often debated. The word "sense" appeals to something innate, but according to Geertz (1975) common sense is far from innate. Geertz argues that common sense should be thought of as a "relatively organized body of considered thought", but that it is often considered "largely a result of deliverances of experiences, rather than deliberate reflections upon it" instead (p. 7). Despite some participants believing that common sense is strictly innate (you know not to touch something hot), or learned through experience (you touch something hot and know not to do it again), the data showed that what becomes common sense is in fact very much about "deliberate reflections" (sharing with others how to be safe) in a community of practice – it is something that is negotiated on a collective level and shared in interactions, although this construction of common sense often happens without participants noticing.

A careful analysis of interview transcripts showed that common sense had three characteristics:

1. It is shared and social, and exists within a community of practice permeated by social relationships
2. It is a practical accomplishment; something we learn and re-enact
3. It is a device that enables identifying in-group and out-group

3.2.4.1 Common Sense as Shared and Social

What is considered common sense in terms of safe behaviour was situated in the context of the community of practice who share safety knowledge. Participants talk about how they learn safety from their peers and mentors, how watching and interacting with others within the community of practice teach them "common knowledge". Below is an excerpt from an interview with an apprentice student (Interview P008) speaking to the matter of how safety has been shared has been shared with him/her:

"…Listening to guys, they've been around a lot longer than I have. Chef's been in the industry 20-30 odd years… Just past experiences, just common sense kind of things. Just proper sanitation, proper this. Don't cross contaminate, things like that. Just a lot of past experiences really most of the stuff that I've been told. I've been fortunate to work with a lot of guys with a lot of experience and they have a lot of knowledge to share, not only cooking but with safety as well."

New students, or "peripheral legitimate practitioners" often learn about safety in interaction with other more experienced "legitimate practitioners" (Lave & Wenger, 1991) who simultaneously create and re-create what simply appears to the novice, and sometimes even to experienced practitioners themselves, as being common sense. Although this process as outlined in Figure 3 appears to be a linear, this is not the case. Getting to a point where knowledge is common sense, however, is a process that takes time, and although some interviewees considered common sense innate, the below interview excerpt (P012) shows how, under more careful consideration, common sense is something that happens in interaction with others within the community of practice.

Jeff – Do you find safety reminders in the kitchen to be helpful?
AS – Sometimes. I could see the benefit for new trainees but for me a lot of the stuff I realize is common sense so I just don't do it. Like don't touch hot things, don't clean the slicer while it's on or plugged in.
Jeff – So common sense, do you think it's always common sense?
AS – Once you learn it, it becomes common sense. I'm not saying that I innately knew that. I probably left the slicer plugged in the first time I cleaned it but somebody was like, "Oh, you need to unplug that otherwise you're going to die." And I was like, "Oh, okay." That makes sense.

Common sense is created in interactions and is therefore shared and social. The above excerpt shows that even though safety reminders can be helpful for novices, it is the interactions surrounding how to do things – things that may appear obvious – that creates the sense that doing something in a certain (safe) way is simply common sense.

3.2.4.2 Common Sense as a Practical Accomplishment

As seen above, safety does not just happen; safety involves a shared understanding of what is safe. However, many components of safe behaviour is accomplished under the guise of just being common sense, as seen exemplified in the following excerpt (Interview P004):

"Chef – …As students you learn, it's a different pace obviously in the students' kitchen but you learn basic fundamentals that you would apply to a professional kitchen, especially with safety. It's common sense to make sure your arms are covered for example when you're working. How to properly use equipment and you know, don't mix oil and water - that type of stuff. Simple stuff like that that you learn at NAIT, that I learned at NAIT and I still apply now. It's all common sense."

In the excerpt above the Chef explains how common sense is something that is learned in school – simple things – and when continuously practiced becomes common sense in the workplace.

Although some students are not sure how they come to know these things, as one culinary student explained, "It's still a lot of common sense. Like if you see something on the floor, pick it up. I don't think you ever really get taught that. I don't know" (Interview P002); in other interviews, it becomes clear that some things considered common sense – for example, that picking up after yourself is really something that is learned. Common sense is accomplished once it becomes an unquestioned habit, which arguably comes with practice. An apprentice student (P008) illustrates this process of learning common sense nicely in the following interview excerpt:

"AS – … And you work with guys, you'd think that they'd understand proper don't cross contaminate. It's preached a lot and people should know that but you'd be surprised how often I'd have to tell someone to "Get rid of that cutting board" or "Clean that cutting board" or "Clean up that counter" or "Are you going to leave that sitting on the counter all day? Are you going to leave that? What are you doing with that? Get that in an ice bath. You can't leave that in the sink." Things like that. Some things that people I guess don't practice themselves and it shows".

The above excerpt also highlights the notion that common sense is not a given, but that it is accomplished through interaction – through someone telling you what the proper action to take is. In turn, accomplishing common sense gives other practitioners an understanding of the level of legitimacy as a practitioner, which brings us to the final point that exhibiting a high degree of common sense showcases a practitioners' legitimacy.

3.2.4.3 Common Sense as Identifying

An in-depth understanding of things that appear to be common sense highlights a practitioner's level of legitimacy. If a participant is lacking what is regarded as common sense, the practitioner cannot be considered legitimate in the community of practice. The transition from peripheral to legitimate practitioner involves getting to a point where acting in a safe manner and taking safety precautions appears as common sense. A chef (P020) explains that when he was starting out his "common sense didn't kick in for a long time". Knowing what is common sense is a process, and happens as a practitioner moves from being a peripheral practitioner to a legitimate one.

Common sense surrounding safety is a tell-tale sign of legitimacy and their common sense identifies who is legitimate and not. The overarching idea of "supporting the enactment of the new identity" (Gherardi, 2006, p. 98) is really about getting to a point where everything becomes common sense. The curious thing is that once a practitioner gets to this point, they may not be able to articulate how they got there (Gherardi, 2006; Strati, 2003), as an apprentice student (P007) explains, "like, if you don't know something, come and ask somebody. Or I don't know. I've just been doing it so long it just like grows on you I guess", or as a baking instructor highlights (P014, Question 8D):

"Jeff – Can you tell me about how safety in the kitchen happens?
BI – I think it's through personal experience as well as through experience of others. How it happens?
Jeff – So you're saying you're kind of relying on your own experience, your own safety knowledge but you're also relying on everyone in the kitchen to be aware?
BI – Everyone else as well. Kind of like a collective knowledge."

When there is a shared understanding of the importance of safety – a "collective" or common knowledge – safety is constructed.

4.0 Study 2: Safety Knowledge Sharing Quantitative Surveys

We conducted two quantitative studies measuring how novices in the culinary industry learn safe behaviors and predictors of safety knowledge sharing in combination with instructor reports of student safety knowledge seeking and safety behaviors, and self-reported injury data.

4.1 Methods

In Part A, survey data were collected over two 6-week long semesters within the culinary (including baking, meat-cutting, culinary, and apprenticeship) programs at Northern Alberta Institute of Technology (NAIT). A research associate introduced the study during the first week of classes during a knife safety skills course taken by all students. Electronic invitations were sent to all students soliciting voluntary participation in the study in exchange for food services

gift cards following each wave in which the student participated. Students take two classes during each 6 week semester, one each morning and one each afternoon (such as line cooking fundamentals; baking; meat, poultry, and seafood; cold kitchen; garde manger; patisserie; professional meat cutting and merchandizing; international food and culture; dining room operations; soup, vegetables, and starch). Student surveys were administered at the second, fourth, and sixth weeks of each semester representing approximately the beginning, middle, and end points of each semester, respectively. Over the six waves, 305 student responses were obtained from 94 individual respondents. Table 4.1 displays student participation for each wave in the student. Notably, only 11 participants provided complete data across all 6 waves.

Also during Part A, instructors of the culinary courses were asked to provide ratings of the safety behaviors of the students in their classes. Thirteen instructors provided 505 students with ratings over the 6 waves. In total, there were 170 matched responses between students who participated in the study who were also rated on their safety performance by their instructors.

Examining response attrition over the 6 waves in Part A, and to maximize the amount of data we would have, we made two adaptations to our protocol in Part B. First, we reduced the number of waves of data collection to 2 down from 6. We focused on key predictors and produced a longer survey administered at two time points. Second, rather than have Part B duplicate Part A but with Red River College (RRC) students instead of NAIT students, we decided to open up the Part B to both RRC and NAIT students. Electronic invitations to participate in the study were provided through the culinary programs at RRC and NAIT, and students received an electronic Starbucks gift certificate following their participation in each wave. A total of 83 responses were received over the 2 waves from 73 participants with 10 providing complete data from both waves. Table 4.2 indicates the number of respondents for each wave of Study 2, Part B.

4.1.1 Student sample description

The following sample description is based on the demographic data provided at the wave when a respondent first enters the study. Descriptions are provided for samples associated with Part A (6 waves) and Part B (2 waves) samples.

For Part A, 37% of respondents were male, 62% female, and 1% transgender. In terms of age, 77% were between 18 and 25 years old, with only 6% over 40 years old. In terms of ethnicity, 67% were Caucasian, with 8% Aboriginal, 5% South East Asian, and 5% ‘Other’; the remaining 15% identified themselves across a range of other ethnic groups. In terms of highest educational attainment, 66% had college or trade diplomas and 9% had undergraduate degrees. Over half of the sample (i.e., 54%) had less than one year’s relevant work experience, whilst 22% had only between 1 and 2 year’s relevant experience, perhaps reflecting the relatively young age of respondents. Around 66% of respondents worked in a kitchen, bakery, or meat shop, whilst the remaining 34% had not worked in any of the three. Respondents worked across six types of culinary industries (bakeries, butcher shops, camps, hotels, restaurants, and resorts), but with the vast majority (66%), having experience in hotels. A total

of 40% of respondents described themselves as not working in a restaurant. Of the remaining 60% who did work in restaurants, 10% were described as 'Casual Dining', 10% were 'Fast Food', 25% were 'Fine Dining' and 15% were 'Other'. Respondents tended to work in small teams: 19% worked in pairs, 34% in teams of two to five people, and 29% in teams of five to 10 people. Less than 5% worked alone, whilst only 12% worked in teams of 10 or more.

For Part B, 30% of respondents were male and 70% female. In terms of age 76% were between 18 and 25 years old. Less than 4% of respondents were under 18 years old; similarly, less than 4% were over 40 years old. In terms of ethnicity, 61% were Caucasian, with 12% Filipino, 8% African, 8% 'Other' and 6% Aboriginal; the remaining 5% identifying themselves across a range of other ethnic groups. Similar to Part A, respondents in Part B were also well educated with 73% having college or trade diplomas and 12% having an undergraduate degree. Approximately 50% had less than one year's relevant work experience, with 14% having between 1 and 2 years, and 23% having between 2 and 5 years. Around 65% of respondents worked in a bakery, meat shop, or kitchen whilst the remaining 35% had not. Respondents worked across six industries, with the majority, 68%, in hotels and 18% in resorts. A total of 37% of respondents described themselves as not working in a restaurant. Of those who did work in restaurants, 5% were described as 'Casual Dining', 26% were 'Fast Food', 21% were 'Fine Dining' and 11% were 'Other'. Respondents in Part B were working in larger teams on average than those in Part A: 32% were in groups of 2 to 5 people, whilst 41% were in groups of 5 to ten.

4.1.2 Measures

The surveys administered to the students measured: (a) their mindfulness, risk-taking propensity, and injuries (b) attitudes towards hiding safety knowledge and attitude towards safety knowledge sharing, (c) informal learning, error avoidance, and perceptions of task-based demands, (d) perceptions of time control and work control, (e) responses to dissatisfaction (exit, voice, neglect), (f) schedule demands, and (g) cognitive failure. In addition to safety knowledge sharing and number of injuries as rated by students, instructors' observations of (a) safety knowledge seeking, (b) voicing of safety concerns, and (c) safe/unsafe behaviors were used as criteria.

Appendix C displays the full scale items. Each of these scales was administered with a 7- point scale ranging from 1 to 7 (with the following exceptions: injuries were rated in terms of total count; instructor-ratings of observed behaviors ranged from 1 to 3). Table 4.3 displays the wave at which each variable was measured in Study 2 for both Part A and Part B. Table 4.4 displays the means and correlations for each of the study variables across the 6 waves of Part A. Table 4.5 displays the means and correlations for each of the study variables across the 2 waves of Part B.

4.1.2.1 Self-reported Injuries

Self-reported injuries sustained during their culinary instruction were measured at waves 1 and 5 of Part A, and during both waves of Part B. The injuries reported included burns, scalds,

bruises, scratches, cuts, tripping, slipping, falling, colliding, repetitive use injuries, and other self-reported injuries. Tables 4.6 to 4.9 display the number of respondents and the number of times each respondent experienced each type of injury.

Most notable across the two waves of Part A and the two waves of Part B, both the number of respondents reporting each type of injury, and the frequency of particular injury types declined at the later time point compared to the earlier wave, with the possible exception of the number of collisions. In short, participant training and experience reduced the frequency of most injury types.

4.1.2.2 Instructor Ratings of Student Safety Information Seeking, Voicing Concerns, and Safe/Unsafe Behaviors

Thirteen instructors provided 505 ratings over the 6 waves of Part A which were matched to 159 students who participated in the study. Instructors were asked to rate each student in their class on their observations of student behaviour related to: (a) seeking safety information from the instructor and from fellow students, (b) voicing concerns about safety to the instructor and to fellow students, and (c) whether they had observed the student engaging in safe, unsafe, or neither safe nor unsafe behaviors. Table 4.10 displays the number of respondents rated by each instructor at each of the time waves.

4.2 Data Analysis

To examine the focal outcomes of safety knowledge sharing and injuries, we conducted five sets of analyses: (a) examining how mindfulness, attitudes towards risk, and the experience of injuries predicted safety knowledge sharing, (b) the relationships between hiding safety knowledge, informal learning, error avoidance, and perceptions of task-based demands, (c) how safety knowledge sharing is affected by time control, work control, schedule demands, along with neglect, exit, and voice, (d) the relationship between instructor observations of safety and safety knowledge seeking and sharing with safety knowledge sharing attitudes, and (e) the relationship between safety knowledge sharing on injury frequency.

4.2.1 Relationships Among Mindfulness, Risk, and Injuries on Safety Knowledge Sharing

The effects of mindfulness, risk and injuries measured at wave 1 (W1) on safety knowledge sharing measured at both waves 2 and 4 (W2, W4) were examined in a cross-lagged path model (CLPM) using Mplus version 6. All three W1 variables were entered into the model at the same time and were allowed to correlate with each other; W1 variables were regressed onto safety knowledge (W2 and W4); an autoregressive path between W2 and W4 safety knowledge sharing was modelled. The results are shown in Figure 4. Mindfulness (W1) was found to be negatively related to safety knowledge sharing at W2, β = -.35, $p < .05$. However, there was no significant relationship between mindfulness (W1) and safety knowledge sharing (W4), after controlling for safety knowledge sharing (W2), β = -.13, p = ns. There were no significant

relationships found between risk (W1) and safety knowledge sharing (W2 and W4) (β = -.24, *p* = ns; β = .13, *p* = ns, respectively). There were also no significant relationships found between total number of injuries (W1) and safety knowledge sharing (W2 and W4) (β = -.04, *p* = ns; β = -.10, *p* = ns, respectively). In sum, safety knowledge sharing at the earlier time wave was strongly related to safety knowledge sharing at the later time wave, and it was negatively related to mindfulness.

4.2.2 Relationships Among Safety Hiding, Informal Learning, Error Avoidance and Task-based Demands

The correlations among safety knowledge hiding, informal learning, error avoidance and task-based demands (W2 and W4) can be found in Table 4.11. The direction and nature of associations were as expected. Safety hiding (W2) was found to be moderately and negatively related to informal learning (W2 and W4) (*r* = -.40, *p* < .01; *r* = -.40, p < .01, respectively). Safety hiding (W2) was found to be positively related to error avoidance at Wave 2 (*r* = .33, *p* < .01), but not at Wave 4 (*r* = .14, *p* ≥.05). Informal learning (W2) was positively associated with task-based demands (W2), *r* = .30, *p* < .05. Error avoidance (W2) was negatively related with task-based demands (W2 and W4) (*r* = -.26, *p* < .05; *r* = -.44, *p* < .01, respectively) and informal learning (W4) (*r* = -.47, *p* < .01), but positively correlated with safety hiding (W4) (*r* = .36, *p* < .05). Task-based demands (W2) had moderate negative relationships with safety hiding (W4) and error avoidance (W4) (*r* = -.42, *p* < .01; *r* = -.54, *p* < .01, respectively) and a positive relationship with informal learning (W4), *r* = .47, *p* < .01. Safety hiding (W4) was found to be positively related to error avoidance (W4) (*r* = .34, *p* < .05) and negatively related to task-based demands (W4) (*r* = -.32, *p* < .05). Informal learning (W4) was positively linked to task-based demands (W4) (*r* = .36, *p* < .05) and negatively linked to error avoidance (W4) (*r* = -.32, *p* < .05). Finally, error avoidance (W4) was strongly negatively associated with task-based demands (W4), *r* = -.57, *p* < .01.

4.2.3 Relationships Among Time Control, Work Control, Voice, Neglect, Exit and Schedule Demands on Safety Knowledge Sharing

The effects of a range of study variables (W3) on safety knowledge sharing (W4) were examined in a CLPM. Time control, work control, voice, neglect, exit and schedule demands (all W3) were all regressed in separate models onto safety knowledge sharing (W4), as small sample sizes precluded the testing of effects simultaneously (note that for the same reasons, we were unable to analyse data at W5 and W6). In the secondary models, safety knowledge sharing (W2) was controlled for by the inclusion of an autoregressive path in the model. The results can be found in Table 4.12.

The results from the primary models show that neglect (W3) had a negative relationship with safety knowledge sharing (W4), β = -.41, *p* < .01. Exit was found to be significantly and positively associated with safety knowledge sharing (W4), β = .40, *p* < .05. None of the other variables tested had significant relationships with the same (see Table 4.12).

The same analyses were run again after controlling for levels of safety knowledge sharing at W2. Neglect was no longer significantly related to safety knowledge sharing (W4), β = -.06, *p* = ns. Exit was also found to be no longer significantly related to safety knowledge sharing (W4), β = .17, *p* = ns (see Table 4.12 for these results).

4.2.4 Relationships between Instructor Observations and Safety Knowledge Sharing

The correlations between the instructor-rated observation variables (W2 to W5) and safety knowledge sharing (W2 and W4) can be found in Table 4.13. Observed safe behaviours (W2) were found to be positively associated with safety knowledge sharing (W2 and W4) (*r* = .34, *p* < .05; *r* = .56, *p* < .01, respectively): respondents who engaged in more *unsafe* behaviours at Wave 2 exhibited higher safety knowledge sharing at the same wave and later wave of the study. Observed information seeking at Wave 3 was negatively related to prior and subsequent safety knowledge sharing (W2 and W4) (*r* = -.39, *p* < .05; *r* = -.44, *p* < .05, respectively).

4.2.5 Relationship between Safety Knowledge Sharing and Number of Injuries

The effects of safety knowledge sharing (W4) on number of injuries (W5) were examined in a CLPM after controlling for previous measures of the same variables (i.e., safety knowledge sharing W2 and number of injuries W1). For completeness, safety knowledge sharing measured at the wave of interest (W4) as well as the previous measure (W2) were regressed onto number of injuries (W5); autoregressive paths between measures of safety knowledge sharing (W2 and W4) and between measures of number of injuries (W1 and W5) were modelled. The results can be found in Figure 5. Safety knowledge sharing (W4) was not found to be significantly related to number injuries (W5), β = .32, *p* = ns. It is notable, however, that the relationship between safety knowledge sharing at W2 and number of injuries (W5) was found to be negative and approaching significance, β = -.40, *p* = .07. These results should be interpreted with caution due to sample attrition in the later waves, as well as the nature of the injuries variable (i.e., count).

5.0 Recommendations

Based on the results of these two studies, we propose several recommendations related to how seasoned workers share safety-related knowledge with other organizational members, the receptivity of novice workers towards receiving safety knowledge from experienced workers, and how novice workers believe they can learn and share safety knowledge.

5.1 Capitalizing on Students' Industry Experience in the Classroom

Students are rarely clean slates, and the safety lessons learned from being immersed within a community of practice in industry, for better or for worse, have consequences for how students learn about safety in school. Students who have already been socialized into industry to varying degrees describe the three key differences between the school environment and industry, and they are able to draw on safety knowledge obtained from their experiences of these

differences, whereas “clean slate” students cannot. This “real-life” experience and socialization into the community of practice is invaluable prior to starting school, and important to reaffirm concurrently with being in school. It appears to be regarded as important by instructors as well, who highlight the benefits that students can gain by sharing their experiences with safety or lack of with others. Although sharing knowledge related to real life experience appears to happen informally, learning from the experiences of peers represents a source of learning that should not be disregarded in the classroom. ***Providing opportunities for novice workers to learn from seasoned workers -- and from each other -- is a key way in which safety knowledge is imparted in the classroom.***

5.2 Safety Knowledge Sharing as Common Sense

Whereas capitalizing on industry experience in the classroom highlights how safety is socially constructed, it is often understood as common sense attributed to the individual. Understanding common sense as a purely individual attribute misses the point. The analysis of the interview data shows that common sense has three overarching characteristics: it is shared and social, it is a practical accomplishment, and finally, the presence or absence of an understanding of common sense separates peripheral (inexperienced) practitioners from legitimate (experienced) ones. When a practitioner progresses from the periphery to legitimacy they learn common sense – they become familiar with the collective knowledge that is shared in interactions. Although gut feeling and personal experiences matter, interactions are crucial for achieving legitimacy (Lave and Wenger, 1991). The sharing of safety knowledge in interaction with other practitioners creates a shared sense of safety knowledge that is constantly shaped and re-shaped in the community of practice. A practitioner does not have to experience injury to learn safe behaviour because knowledge about safety is shared in the community. Common sense necessitates a community to be something held in common – the sound judgement that practitioners should possess is something that is held in common. What is “proper”, “right”, and “safe” is something that is determined on a collective level and something that is a result of deliberate reflections, not just people’s individual experiences. That is not to say that individual experiences do not matter. People may learn through personal experience or embodied knowledge, but one’s personal experience does not guarantee that things are done safely. Safety necessitates interaction with other practitioners on a larger scale to gain an understanding of the common sense knowledge within the community of practice; otherwise, every person would need to be injured to learn safe behaviour. ***Safety knowledge and safety knowledge sharing are collective enterprises; safety knowledge sharing is a fundamental mechanism for one’s own health, for legitimate participation in a community of practice, and for preservation of the safety of the collective.***

5.3 Safety Knowledge Sharing with Increased Experience

When novice workers must concentrate more intently on the task at hand, they are less able to share safety knowledge with others. At first this negative relationship seems to be counterintuitive: the focus on the “here and now” enables students to stay safe, which should be related to their willingness or orientation to share their safety knowledge with others. When first building skills, however, the focus needs to be on the “here and now” (e.g., knife skills or using equipment for the first time); there may not be leftover capacity to look at the broader

environment and think about safety obstacles, concerns, or looking out for others. However, once some of the skills become more embedded, there is more capacity to hold the "here and now" (mindfulness) alongside the the broader context, which includes sharing knowledge of others, anticipating obstacles to safety that have not yet occurred, and sharing conversation with peers (which may be about safety). ***It becomes easier to share safety knowledge once the task at hand becomes more practiced. Work or classroom should be designed environments to enable safe practice of basic skills and to provide more opportunities for safety knowledge sharing as experience increases.***

5.4 Safety Knowledge Hiding, Informal Learning, and Error Avoidance

Safety knowledge hiding (i.e., playing dumb or stalling with sharing safety information) relates to lower informal learning and a tendency to avoid discussing mistakes. Novice workers with more curiosity about their work environment and fellow novice workers were less likely to hide and more likely to share safety knowledge. Additionally, work group climates in which errors and mistakes were not actively discussed prompted novice workers to hide safety knowledge. In turn, safety knowledge sharing is related to a reduction in injuries. ***Novice workers are not likely to initiate safety knowledge sharing, and yet safety knowledge sharing begets more safety knowledge sharing. As such, providing environments in which novice workers have the opportunity to learn about their environment informally and to discuss errors and mistakes more openly promotes a safer work environment.***

5.5 Individual Interest in Safety and the Promotion of Safety Knowledge Sharing

The stronger a novice worker feels about avoiding unsafe workspaces and working with peers, other chefs, kitchen managers and so forth who act unsafely, the more likely they are to share safety knowledge; when dissatisfied with the safety conditions, these workers are more likely to speak out. On the other hand, when novice workers have an orientation towards being neglectful (e.g., they take shortcuts that may threaten their personal safety, get in the habit of not working safely or following safety policies), they are less likely to share safety knowledge. ***A lack of concern about safety begets a lack of concern about safety. The vocal nature of safe participants in the community of practice serves as a form of intervention that will either encourage them to care more about safety or encourage them to depart.***

5.6 Being Seen to be Safe vs. Being Seen to Need Safety Information

Novice workers seen to be seeking safety information by seasoned workers share less safety knowledge with others. In contrast, novice workers observed by seasoned workers to be engaging in safe behaviors more frequently report sharing more safety knowledge. ***Novice workers who seek safety information are seen by seasoned workers as peripheral participants in a community of practice. Once novice workers pass the threshold and they exhibit safe behaviors, they are seen as legitimate contributors to collective safe practice.***

6.0 Dissemination of Results

On March 22, 2017, these research findings were presented at the WCB of Manitoba to stakeholders involved in young and adult worker injury prevention, public health, workers'

compensation, and regulation and policy. In addition, a draft of this report was provided to Joanne Machado at that time for possible feedback and internal purposes.

On March 19, 2018, study participants were provided by e-mail with the one-paged Executive Summary contained in this report as a debriefing memo, summarizing the results from this project in line with University of Manitoba research ethics requirements for de-briefing participants.

The research team has begun preparing a research paper for submission to peer-reviewed conferences and journals.

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APPENDIX A – Tables and Figures

Table 1.1 Project Activities

Timeline	Activity
October 2013 - October 2014 Ethics approvals	Obtain ethics approval from Northern Alberta Institute of Technology and University of Manitoba for both parts of both studies. **COMPLETED**
May 2014 Meeting with Strategic Advisory Council	A Strategic Advisory Council of experts in safety and culinary was established and met to review the interview questions for the young (trainee) chefs, culinary instructors, and restaurant chefs (work placement supervisors) and review the design of the research relative to the research questions posed in the grant. **COMPLETED**
May 2014 - September 2014 Study 1, NAIT data collection.	Twenty qualitative interviews were conducted at NAIT including: 1 Culinary Arts instructor 2 Apprentice instructors 2 Baking Instructors 2 Meat Cutting instructors 4 Culinary Arts Students 2 Meat Cutting Students 4 Apprentice Students 3 Chefs/Workplace Supervisors Each group responded to questions pertaining to safety in their workplace and in the classroom. **COMPLETED**
August 2014 Solidify quantitative study based on preliminary qualitative results	Project team meeting to go through interviews and finalize design of Study 2 based on results from Study 1. **COMPLETED**
July 2014 - October 2014 Study 1 data preparation	Transcribing of interview notes **COMPLETED**
September 2014 -June 2015 Study 2 data collection	Study 2, Part A: Quantitative, 6 wave longitudinal survey with NAIT trainee chefs, culinary instructors, and work placement supervisors. **COMPLETED**
October 2014 Study 1, Red River College data collection	Coordination and scheduling of two qualitative interviews with Red River College **COMPLETED**

October 2014 – May 2015 Study 1 data analysis	Project team conducted data analysis on interviews. **COMPLETED**
September 2015 Study 2 Part B data collection	Study 2, Part B: Quantitative, 2 wave longitudinal survey trainee chefs, culinary instructors, and work placement supervisors from RRC and NAIT. **COMPLETED**
October 2016 Study 2 data analysis	Project team conducting data analysis and writing research report on both quantitative data parts **COMPLETED**
December 2016 Study 1 Part B data analysis	Project team writing research report following data analysis of interviews. **COMPLETED**
March 2017 Preliminary feedback	Project team submitted draft report and made presentation at WCB **COMPLETED**
March 2018 Final report	Submission of final report Study participants debriefed **COMPLETED**
Throughout 2018 and 2019 Knowledge dissemination	Project team anticipates disseminating findings at WCB and academic conferences **IN PROGRESS**

Table 4.1. Study 2, Part A – Number of Respondents by Wave in Part A

		Total Respondents to Each Wave	New Respondents at Wave	Prior Respondents	Respondents Providing Complete Data
Part A	W1	65	65	-	65
	W2	69	18	51	54
	W3	52	3	48	43
	W4	49	4	45	31
	W5	37	2	35	22
	W6	33	2	31	11

W = wave of data collection; Total Respondents to Each Wave= total number of respondents contributing data at each wave. New Respondents = number of new respondents entering study at current wave; Prior Respondents = number of respondents already in study at ≥ 1 prior wave to the current wave; Respondents Providing Complete Data = number of respondents who responded to all waves up to that point.

Table 4.2. Study 2, Part B – Number of Respondents by Wave

		Total Respondents to Each Wave	New Respondents at Wave	Respondents Providing Complete Data
Part B	W1	51		
	W2	32	22	10

W = wave of data collection; Total Respondents to Each Wave= total number of respondents contributing data at each wave. New Respondents = number of new respondents entering study at current wave; Respondents Providing Complete Data = number of respondents who responded to all waves up to that point.

Table 4.3. Variables Listed by Wave for Parts A and B of Study 2

	Part A						Part B	
Variables	W1	W2	W3	W4	W5	W6	W1	W2
Mindfulness	*							
Risk	*							
Injuries	*				*		*	*
Observed behaviours [a]	*	*	*	*	*	*		
Safety hiding		*		*				
Safety knowledge sharing		*		*			*	*
Informal learning		*		*			*	*
Error avoidance		*		*			*	*
Task-based		*		*			*	*
Time control			*		*			
Work control			*		*			
Voice			*		*		*	*
Neglect			*		*			
Exit			*		*			
Schedule demands			*		*			
Cognitive failure							*	

Variables = names of variables; W = wave of data collection. [a] This variable was instructor rated.

Table 4.4 Means, Standard Deviations, Correlations and Internal Consistencies for Variables at Part A

	Variable	*M*	*SD*	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
1	Mindfulness W1	2.62	.88	(.68)																									
2	Risk W1	2.73	1.19	-.08	(.69)																								
3	Safety hide W2	1.82	1.15	.11	.18	(.61)																							
4	Inf learn W2	5.25	.83	-.43**	-.11	-.40**	(.76)																						
5	Error W2	2.96	1.37	.32*	-.07	.33**	-.08	(.63)																					
6	Task-based W2	5.69	.78	-.32*	-.17	-.15	.30*	-.26*	(.89)																				
7	Time cont W3	4.60	.87	-.35*	.20	-.11	.13	-.01	.28	(.75)																			
8	Work cont W3	2.82	.79	.07	.11	.29*	-.16	.35*	-.26	.04	(.75)																		
9	Voice W3	4.88	1.35	-.20	.14	-.20	.43**	-.15	.28	.17	-.00	(.90)																	
10	Neglect W3	2.10	1.08	.35*	.02	.24	-.28	.09	-.28	-.13	.16	-.31*	(.84)																
11	Exit W3	4.93	1.31	-.15	.02	-.22	.23	-.15	.40**	.38**	-.09	.44**	-.25	(.81)															
12	Sch dem W3	4.88	1.16	-.33*	.14	-.15	.26	-.28	.49**	.42**	-.14	.15	-.15	.26	(.80)														
13	Safety hide W4	1.57	.67	.27	.08	.55**	-.26	.36*	-.41**	.06	.51**	.16	.18	-.31*	.09	(.63)													
14	Inf learn W4	5.14	.69	-.26	-.21	-.40**	.59**	-.47**	.47**	.22	-.37*	.31*	-.29	.33*	.22	-.27	(.70)												
15	Error W4	2.88	1.16	.29	-.02	.14	-.16	.68**	-.54**	-.04	.46**	-.20	.22	-.50**	-.51**	.34*	-.32*	(.52)											
16	Task-based W4	5.63	.87	-.23	-.21	-.16	-.04	-.44**	.77**	.10	-.31	.18	-.20	.43**	.34*	-.32*	.36*	-.57**	(.91)										
17	Time cont W5	4.03	1.02	-.06	-.03	-.05	.02	-.00	.24	.59**	.21	-.12	.12	.19	.35	-.05	.06	-.10	.05	(.88)									
18	Work cont W5	2.78	.78	.18	-.16	.14	-.05	.26	-.30	.06	.51**	.14	-.03	.11	.05	-.01	-.17	.04	-.10	.19	(.76)								
19	Voice W5	4.78	1.42	-.15	.23	.08	.28	-.12	.24	.11	.10	.38*	-.02	.53**	-.05	-.30	.11	-.39*	.26	.01	.21	(.92)							
20	Neglect W5	1.91	1.10	.33	.23	.39*	-.52**	.25	-.33	-.24	.09	-.10	.37*	-.23	.08	.33	-.50**	.19	-.29	-.19	.07	.11	(.89)						
21	Exit W5	4.81	1.36	-.29	.18	-.25	.31	-.13	.48**	.30	-.18	.38*	-.21	.73**	.26	-.34	.20	-.38*	.36*	.14	.01	.46**	-.16	(.83)					
22	Sch dem W5	4.79	.91	.16	.18	.03	-.12	-.00	.02	.31	.19	-.21	.09	-.00	.37*	.24	-.23	-.11	-.30	.58**	.11	-.02	-.13	-.01	(.75)				
23	Injuries W1	17.95	4.91	.16	.23	-.10	-.01	-.07	-.10	-.14	-.12	-.12	-.08	-.24	-.00	-.20	.10	.07	-.22	-.18	-.18	.14	-.21	-.16	.19	-			
24	Injuries W5	19.46	5.69	-.18	-.01	.04	.09	-.12	-.15	-.09	.22	.20	-.31	.05	-.11	-.00	-.12	-.15	-.04	-.10	.31	.06	-.15	-.18	-.05	.45*	-		
25	SKS W2	5.90	.67	-.38**	-.19	-.31*	.16	-.41**	.52**	.05	-.31*	.32*	-.42**	.32*	.25	-.55**	.51**	-.58**	.54**	.11	-.05	.24	-.24	.34	.04	-.17	-.12	(.81)	
26	SKS W4	5.91	.70	-.39*	-.02	-.11	.30	-.43**	.42**	-.02	-.16	.25	-.41**	.40*	.18	-.44**	.36*	-.53**	.55**	.02	.13	.64**	-.36*	.52**	-.07	-.20	.09	.69**	(.91)

Variable = names of variables; W1-W5 = wave of data collection 1 to 5; *M* = mean; *SD* = standard deviation; Safety hide = safety hiding; Inf learn = informal learning; Time cont = time control; Work cont = work control; Sch dem = schedule demands; SKS = safety knowledge sharing.

Note. Sample size ranged from 26 < *N* < 69. Where appropriate, internal consistencies of variables are represented as Cronbach's alphas (α) in parentheses. * Correlation significant at = $p < .05$ level; ** Correlation significant at = $p < .01$ level.

Table 4.5 Means, Standard Deviations, Correlations and Internal Consistencies for Variables at Part B

	Variables	*M*	*SD*	1	2	3	4	5	6	7	8	9	10	11
1	Informal learning W1	4.15	.89	(.81)										
2	Error W1	2.83	1.36	.02	(.59)									
3	Task W1	5.63	1.10	.45*	-.38*	(.93)								
4	Voice W1	4.07	1.33	.65**	-.05	.51**	(.89)							
5	Cognitive failure W1	2.08	.44	-.04	.28	-.31*	-.21	(.79)						
6	Informal learning W2	4.22	.72	.44	-.41	.67**	.72**	-.35	(.60)					
7	Error W2	2.73	1.09	-.18	.46*	-.46*	-.08	.15	-.09	(.30)				
8	Task-based W2	5.56	1.05	.35	-.48*	.93**	.66**	-.48*	.62**	-.42*	(.92)			
9	Voice W2	3.68	1.44	.44	-.49*	.72**	.68**	-.41	.63**	-.16	.64**	(.92)		
10	SKS W1	5.94	.93	.41**	-.32*	.84**	.60**	-.26	.59**	-.48*	.89**	.66**	(.91)	
11	SKS W2	5.85	1.18	.46*	-.33	.88**	.60**	-.41	.45*	-.27	.74**	.59**	.94**	(.94)

Variable = names of variables; W1-W2 = wave of data collection 1 to 2; *M* = mean; *SD* = standard deviation; SKS = safety knowledge sharing.

Note. Sample size ranged from 19 < *N* < 45. Where appropriate, internal consistencies of variables are represented as Cronbach's alphas (α) in parentheses. * Correlation significant at = $p < .05$ level; ** Correlation significant at = $p < .01$ level.

Table 4.6. Type of Injuries and Number of Incidents Experienced by Respondents at Wave 1 Part A

	Number of Incidents Experienced at Wave 1/Part A				
Injuries	0 [a]	1	2-5	6-9	>10
Burns	22	21	18	4	0
Scalds	46	9	10	0	0
Bruises	47	9	8	0	1
Scratches	24	17	16	4	4
Cuts	12	18	25	6	4
Slips	45	14	5	1	0
Trips	41	14	9	1	0
Falls	62	3	0	0	0
Collisions	22	15	24	2	2
Repetitive Injuries	51	8	5	1	0
Other1	-	13	3	0	1
Other2	-	3	0	0	0

Injuries = type of injuries. [a] 0 = number of respondents who did not experience this type of injury during the current wave.
Note. N = 65.

Table 4.7. Type of Injuries and Number of Incidents Experienced by Respondents at Wave 5 Part A

	Number of Incidents Experienced at Wave 5/Part A				
Injuries	0 [a]	1	2-5	6-9	>10
Burns	5	16	15	1	0
Scalds	20	9	5	2	1
Bruises	24	4	6	1	2
Scratches	14	9	10	3	1
Cuts	6	15	12	1	3
Slips	18	9	6	1	3
Trips	0	1	6	0	0
Falls	33	2	2	0	0
Collisions	6	11	15	4	1
Repetitive Injuries	27	6	3	0	1
Other1	-	0	1	0	0
Other2	-	0	0	0	0

Injuries = type of injuries. [a] 0 = number of respondents who did not experience this type of injury during the current wave.
Note. N = 37.

Table 4.8. Type of Injuries and Number of Incidents Experienced by Respondents at Wave 1 Part B

	Number of Incidents Experienced at Wave 1/Part B				
Injuries	0 [a]	1	2-5	6-9	>10
Burns	19	14	14	4	0
Scalds	30	8	11	2	0
Bruises	32	6	11	2	0
Scratches	18	7	20	4	2
Cuts	10	9	23	6	3
Slips	34	10	4	2	1
Trips	27	15	6	2	1
Falls	45	4	2	0	0
Collisions	17	14	9	4	7
Repetitive Injuries	44	1	5	1	0
Other1	-	2	1	0	0
Other2	-	0	0	0	0

Injuries = type of injuries. [a] 0 = number of respondents who did not experience this type of injury during the current wave.
Note. N = 51.

Table 4.9. Type of Injuries and Number of Incidents Experienced by Respondents at Wave 2 Part B

	Number of Incidents Experienced at Wave 2/Part B				
Injuries	0 [a]	1	2-5	6-9	>10
Burns	8	10	11	3	0
Scalds	27	4	1	0	0
Bruises	26	2	4	0	0
Scratches	11	6	12	1	2
Cuts	10	9	12	1	0
Slips	20	8	4	0	0
Trips	18	10	2	1	1
Falls	32	0	0	0	0
Collisions	8	5	15	2	2
Repetitive Injuries	26	4	2	0	0
Other1	-	0	0	0	0
Other2	-	0	0	0	0

Injuries = type of injuries. [a] 0 = number of respondents who did not experience this type of injury during the current wave.
Note. N = 32.

Table 4.10. Number of Respondents Rated by Instructor by Wave

	Number of respondents rated Part A					
Instructor	W1	W2	W3	W4	W5	W6
1	10	16	15	0	0	0
2	2	0	0	0	0	0
3	2	1	2	3	0	0
4	1	5	0	0	3	2
5	11	0	0	0	0	0
6	6	2	0	0	0	0
7	7	6	4	0	0	0
8	2	7	1	0	0	2
9	1	7	2	0	0	0
10	5	1	1	5	0	0
11	0	3	3	2	0	2
12	0	9	4	0	0	0
13	0	0	0	2	4	0

Instructor = instructor referenced by number; W1-W6 = wave of data collection 1 to 6.

Table 4.11 Means, Standard Deviations, Correlations and Internal Consistencies for Safety Hide, Informal Learning, Error and Task-Based (Part A)

	Variables	*M*	*SD*	1	2	3	4	5	6	7	8
1	Safety hide W2	1.82	1.15	(.61)							
2	Informal learning W2	5.25	.83	-.40**	(.76)						
3	Error W2	2.96	1.37	.33**	-.08	(.63)					
4	Task-based W2	5.69	.78	-.15	.30*	-.26*	(.89)				
5	Safety hide W4	1.57	.67	.55**	-.26	.36*	-.42**	(.63)			
6	Informal learning W4	5.14	.69	-.40**	.59**	-.47**	.47**	-.27	(.70)		
7	Error W4	2.88	1.16	.14	-.16	.68**	-.54**	.34*	-.32*	(.52)	
8	Task-based W4	5.63	.87	-.16	-.04	-.44**	.77**	-.32*	.36*	-.57**	(.91)

Variables = names of variables; W2-W4 = wave of data collection 2 to 4; *M* = mean; *SD* = standard deviation.

Note. Sample size ranged from 41 < *N* < 69. Internal consistencies of variables are represented as Cronbach's alphas (α) in parentheses. * Correlation significant at = $p < .05$ level; ** Correlation significant at = $p < .01$ level.

Table 4.12 Results of Cross-Lagged Path Models: Wave Three Variables Predicting Safety Knowledge Sharing (Part A)

	Primary models SKS W4 β	Secondary models SKS W4 β
Time control W3 >	-.02	-.04
Work control W3 >	-.16	.27
Voice W3 >	.25†	.09
Neglect W3 >	-.41**	-.01
Exit W3 >	.40**	.17
Schedule demands W3 >	.18	.01

W2-W4 = wave of data collection 2 to 4; β = standardized beta coefficients; Primary models tested direct relationships; Secondary models tested direct relationships after controlling for SKS at W2; SKS = safety knowledge sharing.

Table 4.13 Means, Standard Deviations, Correlations and Internal Consistencies for Instructor Observations and Safety Knowledge Sharing (Part A)

	Variables	*M*	*SD*	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	Obs seek W2	1.84	.50	(.62)																
2	Obs voice W2	1.61	.69	.15	(.78)															
3	Obs safe W2	1.34	.61	.08	-.17	-														
4	Obs seek W3	1.68	.54	-.48*	.60**	-.26	(.68)													
5	Obs voice W3	1.45	.71	-.25	.79**	-.42	.50**	(.96)												
6	Obs safe W3	1.31	.47	.12	-.24	-.04	.12	-.48	-											
7	Obs seek W4	1.58	.42	.14	-.04	-	.17	.17	-.10	(.52)										
8	Obs voice W4	1.36	.71	.31	.77*	-	-.50	-.50	.41	.52	(.90)									
9	Obs safe W4	1.18	.60	-	-	-	-	-	-	-	-	-								
10	Obs seek W5	2.06	.42	-.92*	-.66	-	-	-	-.10	-	-	-	(.82)							
11	Obs voice W5	2.00	.38	-.80	-.80	-	.87	.76	-.13	1.00*	-	-	.68	(.13)						
12	Obs safe W5	1.13	.35	.00	-	1.00**	-.55	-.20	-1.00**	-	-	-	-	-	-					
13	Obs seek W6	1.75	.69	-.58	.47	-	-	-	.50	.95	1.00**	-	-	-	-	(.70)				
14	Obs voice W6	1.75	.76	-.43	.52	-	-	-	.87	1.00*	1.00**	-	-	-	-	.81*	(.93)			
15	Obs safe W6	1.29	.49	-.17	-.41	-.50	-.16	-	-	-	-	-	-	-	-	-	-	-		
16	SKS W2	5.90	.67	.11	.16	.34*	-.39*	-.12	.02	-.14	.31	-	.11	.67	-.33	.00	-.09	.03	(.81)	
17	SKS W4	5.91	.70	.12	-.20	.56**	-.44*	-.24	-.16	-.27	-.23	.03	.59	.69	.52	-.41	-.70	-.50	.69**	(.91)

Variables = names of variables; W2-W6 = wave of data collections 2 to 6; *M* = mean; *SD* = standard deviation; Obs = observation; SKS = safety knowledge sharing.

Note. Sample size ranged from 0 < *N* < 55. Internal consistencies of variables are represented as Cronbach's alphas (α) in parentheses. * Correlation significant at = $p <$ .05 level; ** Correlation significant at = $p <$ .01 level.

Figure 1: Coding Considerations

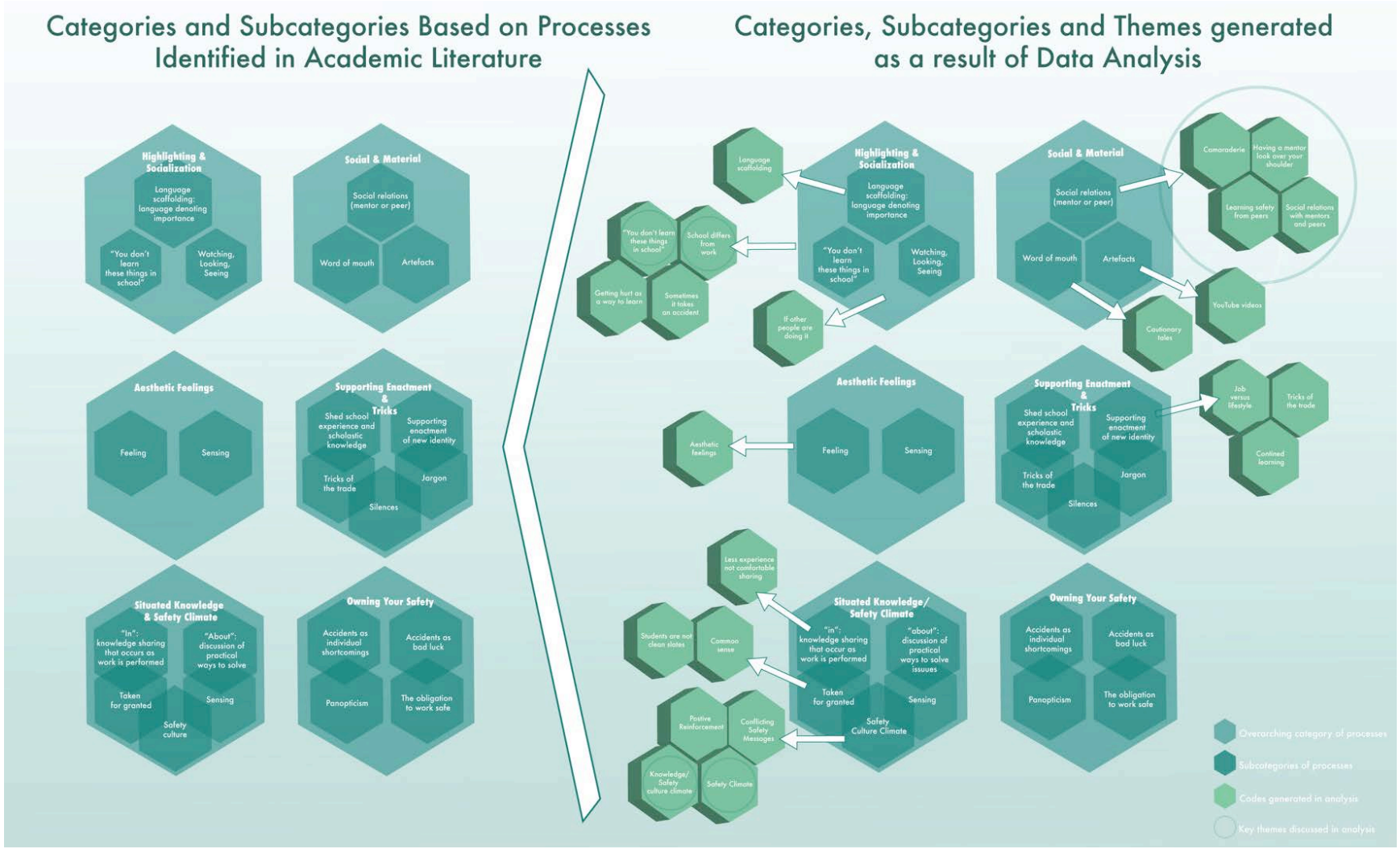


Figure 2: Circulation of Safety Knowledge

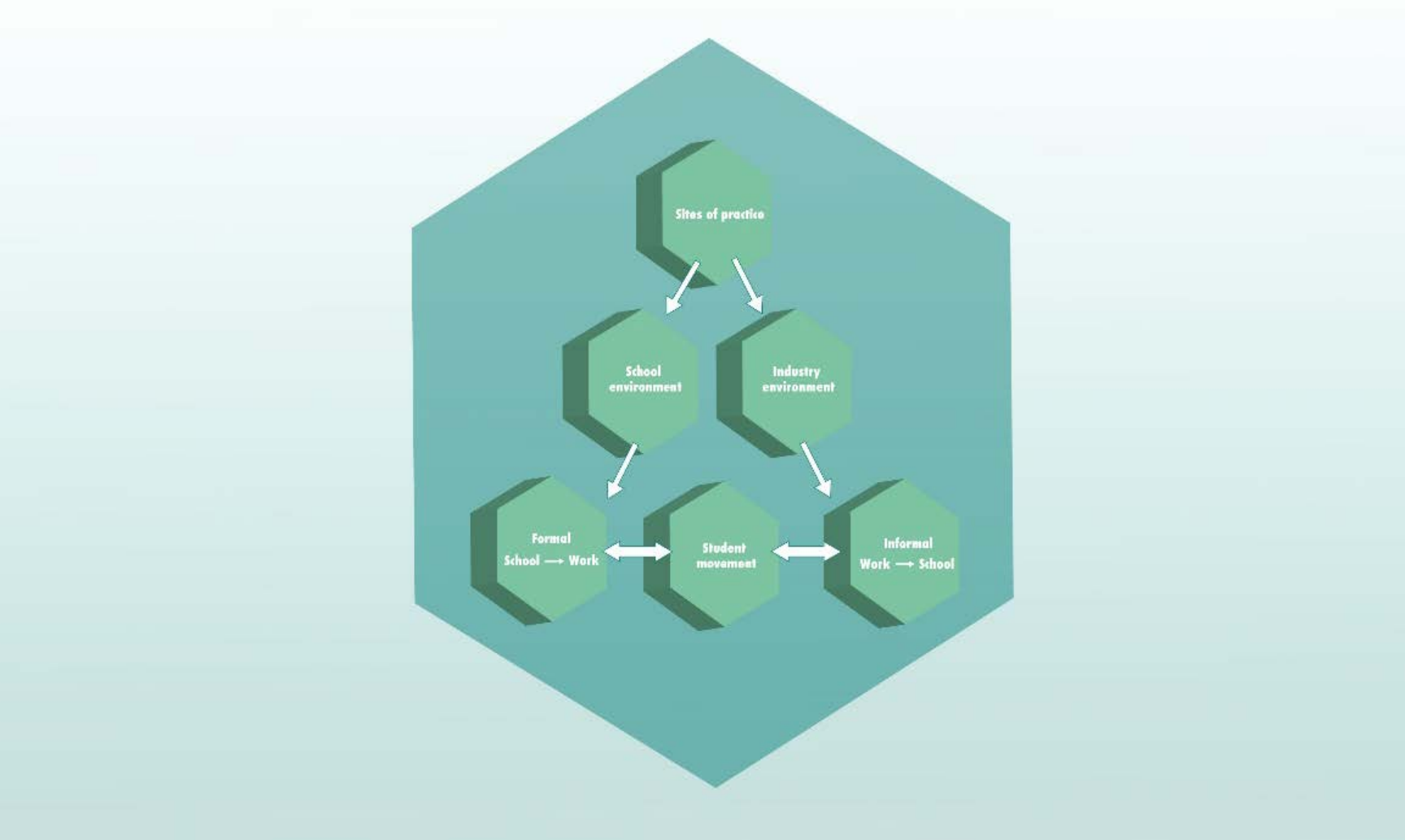


Figure 3: Becoming a Practitioner

Figure 4: Modelling the Effects of Mindfulness, Risk and Injuries on Safety Knowledge Sharing (Part A)

Note. N = 34 * Correlation significant at = p < .05 level; ** Correlation significant at = p < .01 level; *** Correlation significant at = p < .001 level.

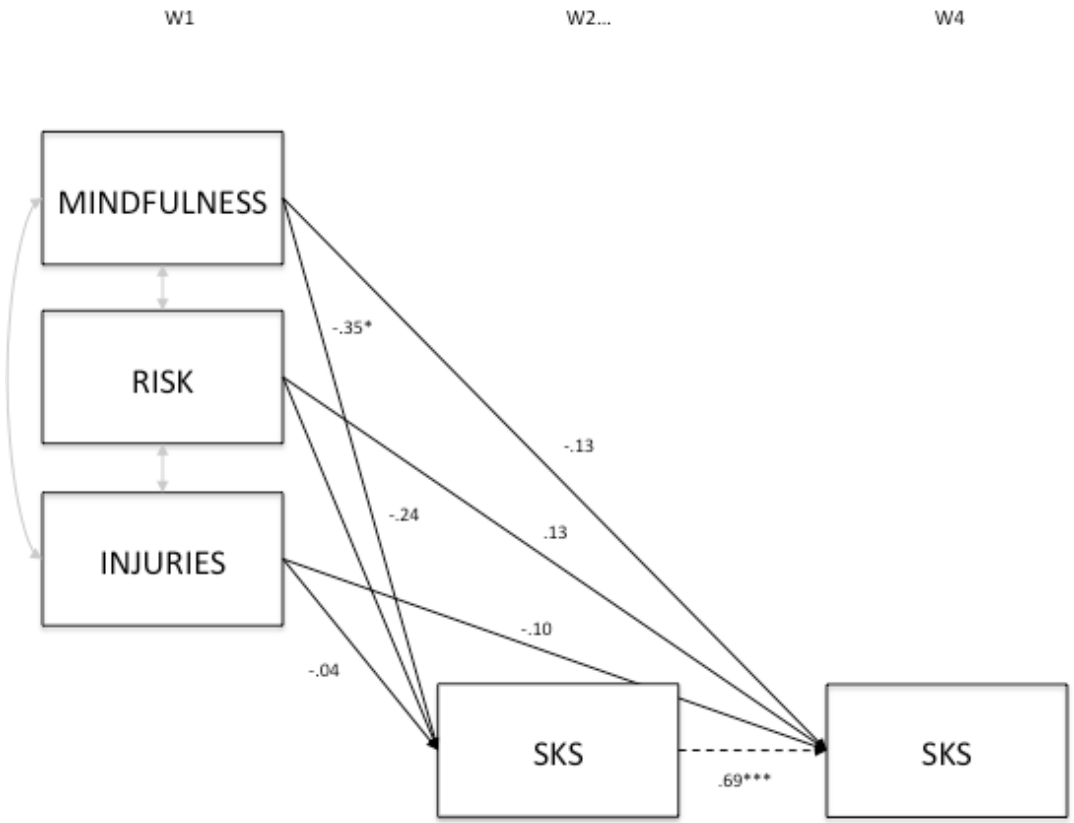
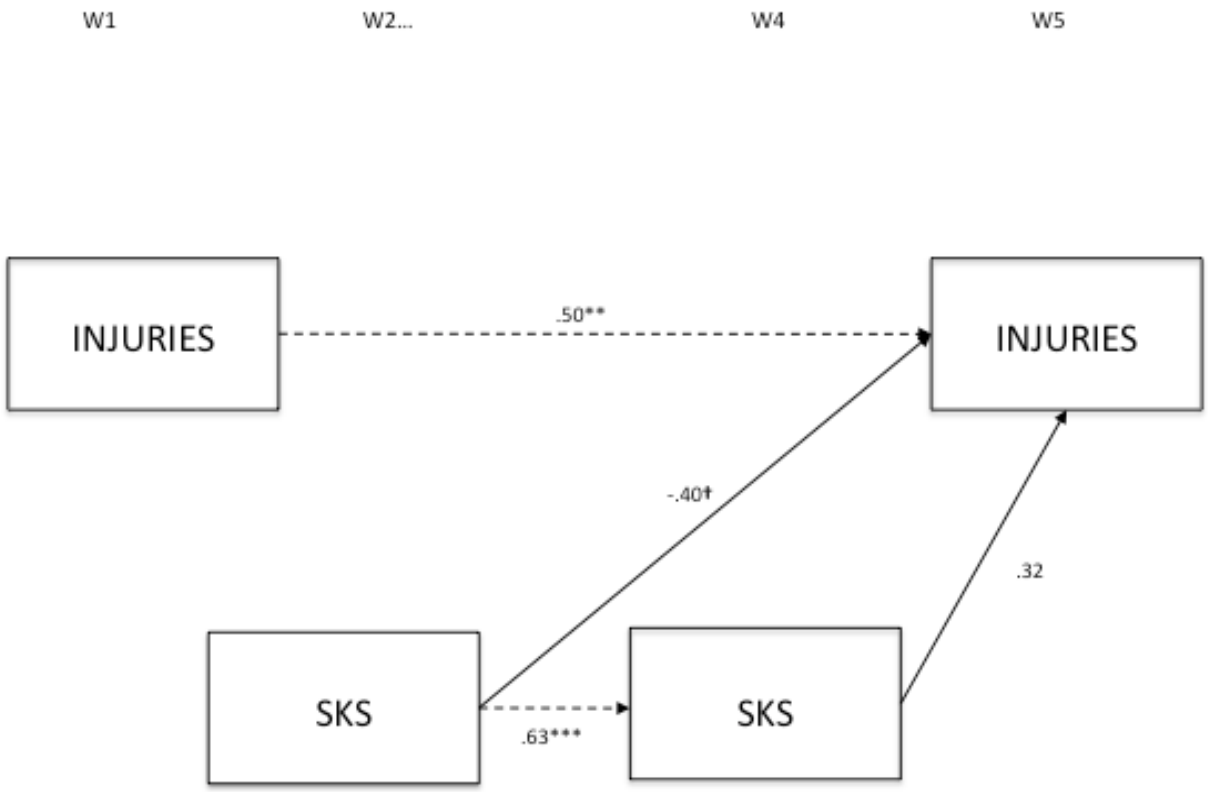


Figure 5 Modelling the Effects of Safety Knowledge Sharing on Number of Injuries (Part A)

Note. N = 24. † Correlation significant at = p < .10 level; * Correlation significant at = p < .05 level; ** Correlation significant at = p < .01 level; *** Correlation significant at = p < .001 level.



APPENDIX B – Interview Questions

Note to Researcher: Ensure that you have a copy of the participant's consent form. Before audio recording the interview, ensure that the participant has consented to having the interview audio recorded.

Definitions

Attitude towards safety: general feelings and opinions towards safety.
Safe work behaviours: behaviours that reduce the risks of accidents or injuries for you or members around you
Unsafe work behaviours: behaviours or obstacles that put you or members around you at risk for accidents or injury
Safety knowledge sharing: imparting your thoughts about safety with others
Safety knowledge receiving: learning about safety from other people
Tacit knowledge: The "know how" knowledge.
Explicit knowledge: The "know what" knowledge.
Implicit knowledge: Knowledge that is not explicit, yet can be codifiable.

For culinary instructors and work placement supervisors:

1. Background: Tell me about your role as a culinary instructor / industry chef.
    a. How many years have you worked in the culinary industry?
2. How do/did you learn about safety in culinary?
    a. Formal education, mentors on the job, through experience.
    b. Describe any workarounds employed that increase safety.
    c. How do others share their safety knowledge with you (and in what forms—tacit, explicit, implicit)?
3. How do you teach new trainees to be safe?
    a. Formal safety programs, story-telling, identifying safe and unsafe behaviors as they happen
    b. How do students, co-workers, and kitchen proprietors react to the safety knowledge you share?
4. Tell me about people you have worked with who have been very safe – what made them safe? Tell me about people you have worked with who are not safe – what made them unsafe?
    a. Do gaps exist between safety knowledge learned in-class versus how safety exercised in practice?
    b. In what instances do you think safe work practices are compromised (e.g., during busy periods)?
5. Tell me a little about the "badge of honour" worn by some chefs who have experienced accidents but kept working.
    a. How do these incidents and stories affect safety?

For culinary instructors, only (these questions are repeated in the second and third interviews):

6. Tell me about the safety education and incidents that have happened in your classroom this week.
    a. Thinking about this past week only, what role has safety played in the education that you are providing to your students?

For trainee chefs, only:

1. Background: In which culinary program are you enrolled?
    a. What is your work and educational experience in the culinary industry?
2. What do you know about safety in culinary and how do/did you learn about safety in culinary?
    a. Formal education, mentors on the job, through experience.
    b. Describe any workarounds employed that increase safety.
    c. How do others share their safety knowledge with you (and in what forms—tacit, explicit, implicit)?
3. How are you learning safe behaviours through your program?
    a. Formal safety programs and the "Caught in the Act" program, story-telling, identifying safe and unsafe behaviors as they happen
    b. How do your classmates and instructors react to safety incidents and safety knowledge sharing?
4. Tell me about people you have worked with/studied with who have been very safe – what made them safe? Tell me about people you have worked with/studied with who are not safe – what made them unsafe?
    a. Do gaps exist between safety knowledge learned in-class versus how safety exercised in practice?
    b. In what instances do you think safe work practices are compromised (e.g., during busy periods)?
5. Tell me a little about the "badge of honour" worn by some chefs who have experienced accidents but kept working.
    a. Do you hear these types of stories?
    b. How do these incidents and stories affect safety?

APPENDIX C – Scale Items

Apprentices/Students:

Mindfulness (common sense) was measured with a 6 item scale from 1 = Never to 7 = Always and an open ended question (Dane and Brummel, 2014; SKS Research Team):
When working as an apprentice in the kitchen…/When training as a [culinary student / baker / meat cutter] in the kitchen…

1. I break or spill things because of carelessness, not paying attention, or thinking of something else.
2. I find it difficult to stay focused on what's happening in the present.
3. I tend to walk quickly to get where I'm going without paying attention to what I experience along the way.
4. I rush through activities without being really attentive to them.
5. I find myself preoccupied with the future or the past.
6. I find myself doing things without paying attention.

Open Ended Question:

1. In general, while working in the kitchen, how much control over your work environment do you have?

Work Demands was measured with a 12 item scale from 1 = Strongly Disagree to 7 = Strongly Agree (Rizzo, House & Lirtzman, 1970):
When working as an apprentice in the kitchen…/When training as a [culinary student / baker / meat cutter] in the kitchen…

1. I have to do things that I believe should be done in a different way.
2. I have to do things that are against my better judgment.
3. I have to break a rule in order to carry out an assignment.
4. I receive incompatible requests from different people.
5. I do things that are likely to be accepted by one person and not by others.
6. My colleagues expect things from me that conflict with what my team leader/instructor expects.
7. Different people I work with expect conflicting things from me.
8. My team leader/instructor sends me conflicting messages about what is important.
9. I have to trade-off the demands for quality in my work against other demands.
10. Standards for safety get in the way of meeting targets of my work.
11. I am expected to do things that are not part of my job.
12. I have to break rules in order to carry out parts of my job.

Personal Demands was measured with a single item from 1 = Not At All Tired to 7 = Extremely Tired (SKS Research Team):

1. On average, how tired do you feel while working in the kitchen?

Knowledge was measured with a 6 item scale from 1= Strongly Disagree to 7 = Strongly Agree (SKS Research Team):
Please respond to the following statements:

1. I am aware of the safety knowledge I require in order to be safe at work.
2. I want to work towards maintaining a safe work environment.
3. I know how to be safe at work.
4. My work environment (e.g., cooking equipment, workspace) allows me to be safe.
5. My work environment (e.g., people I work with) allows me to be safe.
6. When changes to improve safety are made, I am able to sustain the changes.

Informal Learning was measured with an 8 item scale from 1 = Never to 7 = All of the Time and an open ended question (Noe et al., 2013; SKS Research Team):
Consider the past _____. How often during a typical work/class week have you engaged in the activities below in order to learn and help you do better?

1. Reflected about how to improve my performance.
2. Experimented with new ways of performing my work.
3. Used trial and error strategies to learn and better perform.
4. Interacted with a mentor.
5. Interacted with my instructors.
6. Interacted with my peers.
7. Read professional books, professional magazines, or other class-related publications.
8. Searched the Internet for class-/job-relevant information.

Open Ended Question:

1. In general, please describe how you learn while working in the kitchen.

Error Avoidance Learning was measured with a 3 item scale from 1 = Strongly Disagree to 7 = Strongly Agree and an open ended question (Nikolava et al., 2014b; SKS Research Team):
Please respond to the following statements:

1. In my workplace/classes, we are afraid to admit mistakes.
2. In my workplace/classes, we do not dare to discuss mistakes.
3. In my workplace/classes, we are anxious to openly discuss work-related problems.

Open Ended Question:

1. In general, please describe how you learn from mistakes made in the kitchen.

Task-based Workplace Learning was measured with a 12 item scale from 1 = Strongly Disagree to 7 = Strongly Agree and an open ended question (Nikolava et al., 2014a; SKS Research Team):
Please respond to the following statements:

1. In my work/class, I am given the opportunity to contemplate about different workplace methods.
2. In my workplace/class, I am given the chance to think about how I can conduct my tasks more efficiently.

3. When confronted with difficulties in my tasks, I am given the opportunity to consider what the best possible approach is.
4. In my job/class, I can try different work methods even if that does not deliver any useful results.
5. In my job/class, I am offered sufficient time to find out how to conduct tasks more efficiently.
6. In my job/class, I am offered sufficient time and opportunities to search for new solutions regarding task-related problems.
7. My colleagues tell me if I make mistakes in my work/class.
8. My colleagues advise me if I don't know how to conduct a certain task.
9. My colleagues are eager to collaborate with me in finding a solution to a workplace/class problem.
10. My supervisor/instructor helps me see my mistakes as a learning experience.
11. My supervisor/instructor is eager to think together with me how to solve a work-related problem.
12. My supervisor/instructor provides me with tips me on how to do my work.

Open Ended Question:

1. In general, please describe how you learn from others while working in the kitchen. Should we also also who they learn from the most (i.e., head chef, peers, mentor?

Safety Voice was measured with a 4 item scale from 1 = Almost Never to 7 = Almost Always and 2 open ended questions (Tucker and Turner, 2011; SKS Research Team):

To what extent do you do the following…

1. Speak to co-workers at risk and encourage them to fix safety problems.
2. Tell the supervisor about hazardous work.
3. Tell the supervisor about the consequences of dangerous working conditions.
4. Remind co-workers to take precautions.

Open Ended Questions:

1. What factors inspire you to voice safety concerns in the kitchen?
2. What factors prevent you from voicing safety concerns in the kitchen?

Safety Neglect was measured with a 4 item scale from 1 = Almost Never to 7 = Almost Always and an open ended question (Tucker and Turner, 2011; SKS Research Team):

1. Take short cuts that threaten my personal safety.
2. Get in the habit of not working safely.
3. Stop following health and safety policies.
4. Ignore safety problems altogether.

Open Ended Question:

1. What are your main reasons for not completing work in a safe manner?

Safety Exit was measured with a 3 item scale from 1 = Almost Never to 7 = Almost Always (SKS Research Team) and an open ended question:
To what extent do you…

1. Avoid working with people who are unsafe.
2. Avoid working in kitchens with unsafe equipment.
3. Avoid working for chefs or managers who promote unsafe work practices.

Open Ended Question:

1. In which instances would you/do you remove yourself from unsafe situations?

Status-Driven Risk-Taking was measured with a 4 item scale from 1 = Strongly Disagree to 7 = Strongly Agree (Ashton, Lee, Pozzebon, Visser, & Worth, 2010):
Please respond to the following statements:

1. I would rather live as an average person in a safe place than live as a rich and powerful person in a dangerous place.
2. I would enjoy being a famous and powerful person, even if it meant a high risk of assassination.
3. If the pay were really high, I would be willing to work with extremely explosive materials.
4. I would risk my life for a good chance of finding a huge amount of buried treasure.

Safety Knowledge Sharing was measured with an 8 item scale from 1 = To a very small extent to 7 = To a very large extent (Faraj and Sproull, 2000, adapted):
Please respond to the following statements:

1. My colleagues share their safety knowledge and expertise with one another.
2. If a colleague has some special knowledge about how to perform a task safely, he or she is likely to tell other members about it.
3. There is willing exchange of safety information, knowledge, or sharing of skills among my colleagues.
4. More knowledgeable colleagues freely provide other members with hard-to-find safety knowledge or skills.
5. I share my safety knowledge and expertise with my colleagues.
6. If I have some special knowledge about how to perform a task safely, I am likely to tell other colleagues about it.
7. I willingly exchange safety information, knowledge, and sharing my skills with my colleagues.
8. I freely provide other members with hard-to-master safety knowledge or skills.

Knowledge Hiding was measured with a 3 item scale from 1 = Strongly Disagree to 7 = Strongly Agree and an open ended question (Connelly et al., 2012, adapted; SKS Research Team):
Please respond to the following statements:

1. I intend to play dumb when others ask me to share my safety knowledge.
2. I intend to stall in providing safety information to other organizational members.
3. I intend to provide incomplete safety information to other organizational members.

Open Ended Question:

1. What prevents you from sharing safety knowledge while working in the kitchen?

Injury was measured with an open ended question (SKS Research Team):

1. Please describe what you think causes people to get injured in the kitchen?

Instructors:

Safety Observations from instructors were measured with 4 items:
Looking at the students that you have taught in the last block, please indicate:

1. Those students who have sought safety information from you or fellow students.
2. Those students who have voiced safety concerns to you or fellow students.
3. Those students whom you have observed to engage in safe behaviors.
4. Those students you have observed to engage in unsafe behaviors.

Injury was measured with an open ended question (SKS Research Team):

1. Please describe what you think causes people to get injured in the kitchen?

APPENDIX D – Financial Report

Safety Knowledge Sharing Before Retirement: An Examination of Retiring Employees' Attitudes, Intentions and Behaviours

ACCOUNTING FOR THE PERIOD October 2014 – March 2018

	Actual for the Period	Actual To Date	Total Project Budget	Variance
FUNDING:				
WCB	$71,730.00	$71,730.00	$75,454.00	$3,724.00
Total	**$71,730.00**	**$71,730.00**	**$75,454.00**	**$3,724.00**
WCB EXPENDITURES:				
Salary and Benefits - Research Associates	$44,821.78	$44,821.78	$47,454.00	$2,632.22
Equipment - computer, voice recorder, software and manuals	$2,665.43	$2,665.43	$3,300.00	$634.57
Travel, accommodation and meals	$9,197.04	$9,197.04	$17,750.00	$8,552.96
Other Costs				
Materials and Supplies	$263.07	$263.07		
Workshops/Travel	$723.37	$723.37		
Honoraria	$3,100.00	$3,100.00		
Total of Other Costs	**$4,086.44**	**$4,086.44**	**$6,950.00**	**$2,863.56**
Expenditures funded by WCB	**$60,770.69**	**$60,770.69**	**$75,454.00**	**$14,683.31**

Fiscal Year	**Revenue**	**Expenses**
April 1, 2014 - March 31, 2015	$37,247.50	$ 20,367.56
April 1, 2015 - March 31, 2016	$34,482.50	$ 23,577.32
April 1, 2016 - March 31, 2017	0	$ 9,937.87
April 1, 2017 - November 27, 2017	0	$ 6,887.94
Total	**$71,730.00**	**$ 60,770.69**