Guided reflection in Simulator-Based Crisis Management Training

Examining the possibility to implement After Action Reviews in the CCRAAAAFFFTING project

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Abstract

Reflection is an important team learning activity, allowing team members to process feedback and to learn from experiences. Debriefing methods such as the After Action Review (AAR), proved to increase learning, can be used to guide teams through the process of reflection. This thesis, commissioned by the Creating Collaborative Resilience Awareness, Analysis and Action for Finance, Food and Fuel Systems in INteractive Games (CCRAAAAFFFTING) project, aims to investigating how current post-exercise discussions within the CCRAAAFFFTING project support reflection and whether or not AAR could be implemented. This study used an explorative, semi-experimental research design, containing two conditions - the current post-exercise discussions (condition 1) and AAR’s (condition 2). Data was collected through observations and questionnaires. Due to issues regarding validity, data from questionnaires given to participants, as well as comparisons of participants' subjective experiences between the two conditions, could not be used to provide any support for choosing one post-exercise discussion over the other. However, observations showed that the current post-exercise discussion did not support reflection, thus, making it beneficial to implement AAR. Proper implementation of AAR could not only support team learning, but also organizational learning by facilitating the transference of knowledge back to participants home organizations. This transferred knowledge, if used right by the organizations, could help increased resilience. However, AAR cannot simply be implemented, and this thesis concludes with a list of identified recommendations.

Keywords: After Action Review, Debriefing, Organizational learning, Reflection, Resilience, Simulator-based training, Team learning.
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Explanations of abbreviations and terms

Throughout this thesis, terms which may have different definitions in different scientific areas, will be used. Below follows brief definitions and clarifications to how these terms will be used in this thesis. The thesis also contains abbreviations, which are briefly described below.

**AAR**
Abbr. for the debriefing method: After Action Review.

**CCRAAAFFFTING**
Abbr. for Creating Collaborative Resilience Awareness, Analysis and Action for Finance, Food and Fuel Systems in INteractive Games, which is the name of the research project governing this thesis.

**Debriefings**
The term is used as a collective term, referring to the action of guiding reflection by a series of questions to help individuals and teams uncover meaning and lessons learned from recent experiences and actions.

**MSB**

**MSB’s AAR**
For the purpose of this study will this abbreviation be used when referring to MSB’s version of the AAR. This AAR is also adapted to Swedish conditions.

**SyRes**
Abbr. for “Systemic Resilience Model” which is a systemic model aiming to consolidate different resilience concept into an explanatory model of resilient systems.

**System**
For the purpose of this thesis the definition of system will be the same as the one used in the SyRes model. System is thus to be considered an “/.../ open socio-technical system working towards one or more meaningful, safety critical, goal(s) in an environment that holds the potential of presenting threats towards either the system in itself or the goal(s) it pursues” (Lundberg & Johansson, 2015 p.23).
| **Resilience** | In this thesis will the term resilience refers to a systems capacity to proactively or reactively adapt to a situation or event meanwhile preserving the systems core goals (Lundberg & Johansson, 2015). |
| **Team** | Besides commonly being defined as “a distinguishable set of two or more people who interact dynamically, interdependently, and adaptively toward a common and valued goal/object/mission, who have each been assigned specific roles or functions to perform, and who have a limited life span of membership” (Salas, Dickinson, Converse, & Tannenbaum, 1992, cited in Johansson, van Laere & Berggren, 2018), will the term, except from when discussed in the theoretical section of this thesis, be used as a collective term referring to the teams participating in the study, although not necessary being “regular” teams. |
| **Team learning** | The term can refer to both interpersonal behaviors important for the occurrence of team learning and/or the outcomes of team learning. Besides when covered in the theoretical section of this thesis, will the term mainly be used to refer to the interpersonal behaviors of team learning if nothing else is specified. |
| **Organizational learning** | Changes in organizational knowledge, brought on by experiences, that can be manifested in either cognitive- or behavioral changes throughout the organization (Argote 2011; Argote & Miron-Spektor, 2011). |
| **Knowledge repositories** | Medium through which individual, team or organizational knowledge can be stored. Some examples given by Argote (2013) are documents, technology, tools, members, routines, procedures and organizational structure. |
| **Post-exercise discussion** | the term is used to clarify which discussion the author refers to. Post-exercise discussions are held after the conclusion of the exercises and should not be confused with discussions held during the exercises. |
1. Introduction

Today’s societies consist of multiple sectors, each with important societal functions, such as providing power supply, financial services, safety and rescue services, municipal support and transportation. Each sector consists of multiple actors whom are connected to- and dependent upon other actors, both within their own sector as well as within other societal sectors. These dependencies do not necessarily result in negative consequences, however, disruptions occurring in one societal function, e.g. disruptions in the card payment system in the financial sector, might cause problems in other societal sectors, e.g. decreased sales in food and fuel supplies sectors (MSB, 2009). Because of the increase in connectiveness and dependencies between actors, crises and disaster management have to depend on collaborative efforts to maintain- or resume functionality. However, participants in these collaborative efforts tend to be more dispersed, having divergent agendas and are less well acquainted with each other – factors which adds to the already difficult task of handling crises or disasters in effective ways (Ansell, Boin & Keller, 2010).

The card payment system in Sweden, is one example of a societal function which has become increasingly dependent upon different actors, such as actors providing technical support and Internet services, to maintain functionality (Johansson, Jaber, van Laere & Berggren, 2018a). Meanwhile has the public dependency upon the card payment system increased over the last years. According to a recent survey from Sveriges Riksbank (2018), did 87 percent of Swedes use their debit- or credit card for their last payments. This is an increase since the last survey conducted in 2016, where little more than 60 percent used debit- or credit cards for their last purchase. The same survey also shows that cash payments steadily decreased over the time period of 2010-2018, from approximately 40 percent to 13 percent (Sveriges Riksbank, 2018). Other shopping- and payment alternatives, besides the traditionally in-store shopping using online payments methods, exists, such as online shopping using invoices. However, most businesses of societal importance, such as groceries, medicine, and fuel still rely on in-store retailing and online, card-based payment methods (Johansson, et.al., 2018a). This reliance on online payment methods, in combination with the lack of a governmental authority to solve crises occurring with the payment system, leaves the Swedish society dependent upon the collaborative efforts from affected actors and different crisis and disaster support organizations to establish a well working crisis management effort (Krisinformation, 2018).

In an attempt to gain insights into how collective cross-sectorial resilience can be achieved, the Creating Collaborative Resilience Awareness, Analysis and Action for Finance, Food and Fuel Systems in IInteractive Games (CCRAAAAFFFTING) project was initiated. One of the research objectives is “To develop a micro-world that enables participants to develop a deeper understanding of the total system and the impact that their decisions and the decisions of other actors have on total systems performance and resilience” (MSB, 2016b, p.3). This micro-world will be used in a simulation-gaming environment, combining role-playing gaming with computer simulation, to provide decision makers in the various sectors with a team-training opportunity in how to handle crisis situations in a multi-organizational context (Johansson, van Laere & Berggren, 2017). To be able to develop a holistic educational package with the purpose of facilitating and maximizing learning, the authors stress the importance of including feedback
and reflection in the simulation environment (Johansson, et.al., 2017). This project will therefore, on behalf of the CCRAAAFFFTING project, examine the possibility to secure team reflection in the simulation-game environment.

One way of doing this is to implement a debriefing method in the simulation-gaming environment. Debriefings, as the structured methods through which the participants create their own understanding and knowledge from experience and actions through reflection, has been shown to be both an effective (boosting the participants learning and performance), as well as an efficient (low in recourses and quick to apply) way to enhance learning (Tannenbaum & Cerasoli, 2013). Debriefings can be used effectively with both real-life events as well as simulation-based learning events (Fanning & Gaba, 2007; Sawyer, Eppich, Brett-Fleegler, Grant & Cheng, 2016). One well known debriefing technique is the After Action Review (AAR). This method has been used by the US military since the 60’s (Barid, Holland & Deacon, 1999; Bolton, 2016; Seglie & Selby-Cole, 2010) as well as been adapted to Swedish conditions by MSB. The aim of AAR sessions is to let participants develop a new understanding from experiences by reflecting upon what happened through answering five main questions: 1. What was supposed to happen, 2. What did actually happen, 3. Why did it happen, 4. What can be done now and, 5. Who else needs to know (MSB, n.d.). However, there are more than one way to conduct debriefings and methods such as AAR can be modified to fit the specific experience of interest (Sawyer, et.al., 2016; Sawyer & Deering, 2013).

1.1. Research objectives and Research questions
The purpose of this project is, on behalf of the CCRAAAFFFTING project, to study the current post-exercise discussion structure and the possibility to implement a structured debriefing method. The purpose is to develop recommendations regarding eventual implementation of the After Action Review method and further studies.

Research questions needed to be answered to reach the objective are:

- How is the post-exercise discussion conducted within the CCRAAAFFFTING project to day?
- How are the CCRAAAFFFTING projects post-exercise discussions experienced by the participants?
- Are there differences in experiences of post-exercise discussions between participants participating in post-exercise discussions using a non-specified method and participants participating in post-exercise discussions using the AAR method?
- If AAR should be implemented, how should it be implemented to support learning?

This study will rely on observations of the post-exercise discussions held within the CCRAAAFFFTING project and observations of After Action Reviews, a post-exercise debriefing method, held at the Swedish Defense University. Questionnaires will be used to gain insight into participants subjective experience of own learning and different aspects of the post-exercise discussion. The observed post-exercise discussion structures, as well as the participants reported experiences, will be compared to answer the research questions.
1.2. Limitations of the study

Although the CCRAAAFFFTING project focuses on resilience in large systems, the scope and objective of this project will not allow for a thorough investigation of learning in all levels of the system (individual, team, intra-system/organization, inter-system/organization). Because the objective of this study is to provide suggestions on how to implement a post-exercise discussion structure to complement the team training developed in the CCRAAAFFFTING project, the scope will be limited to mainly focus on learning at the team level. This limitation is necessary for keeping this project within both time, resource and scope limits. However, it will impact the possibility to draw conclusions regarding the potential enhancing or facilitating impact that structured post-exercise discussions might have on learning throughout the system.

Another limitation made in this study concerns feedback. This study will only focus on identifying which level the feedback is provided on (individual or team) and how participants are provided with feedback. Therefore, no evaluation will be conducted in regard to feedback fidelity and how feedback support important gaming aspects believed to facilitating learning. Both the fidelity (Druzhinina, Hvannberg & Halldorsdottir, 2013) and feedback related to game aspects (Wilson, et.al., 2009) can have positive effect on learning, however, these aspects of feedback are related to game- and game-simulator design.

1.3. Outline

This thesis consists of seven chapters. This first chapter contributes with a brief description of the context in which this study is carried out, as well as the study's objectives and research questions. Chapter two contributes with a more in-depth description of the CCRAAAFFFTING project, while the third chapter consists of the study’s theoretical background. In the fourth chapter is the research design and proceedings described. Results and discussions are presented in chapter five and six. Results and discussions in chapter five aims to present and analyze the collected data, whereas results and discussions in chapter six aims to answer the research questions and tie these together with the theoretical background. The final chapter, chapter seven, summarize the study’s conclusions and provides final recommendations regarding the use of After Action Review as a post-exercise discussion structure, and further work.
2. Project Background

Below follow brief descriptions of the CCRAAAFFFTING project, the micro-world, the simulation-gaming environment, the scenario and the game proceedings. Descriptions in this chapter are based on information from conference papers, information about the project published on the various actors’ websites and observations conducted during a two-day pilot test in October 2018. However, since the CCRAAAFFFTING-project is an active and iterative research project, these descriptions may differ from later and final project publications.

2.1. The Project

Creating Collaborative Resilience Awareness, Analysis and Action for Finance, Food and Fuel Systems in INteractive Games (CCRAAAFFFTING), is a project financed by the Swedish Civil Contingencies Agency (swe. Myndigheten för Samhällsskydd och Beredskap, MSB) (MSB, 2016a). The project, which started back in 2016 and is expected to be completed in 2020, is a collaborative effort between Linköpings University, Mid Sweden University, University of Skövde and Combitech (MSB, 2016a; University of Skövde, n.d.). Due to increased dependence upon online payment alternatives, a shortage of cash in circulation and the complexity in relations amongst autonomous actors within the card payment system, effects from a long-lasting disruption quickly cascades and affects the food-, fuel-, finance- and transport sectors (van Laere, et.al., 2017). The CCRAAAFFFTING project therefore aims to develop a deeper understanding for how these different sectors are impacted by disruption in the card payment system and to develop concrete guidelines for each sector. These guidelines should enable collaborative efforts and increase overall system resilience, e.g., how to quickly recover from a crisis (van Laere, n.d.; University of Skövde, n.d.). Another main objective of the project is to combine computer simulation, consisting of a micro-world representing a demarcated part of the country and selected sectors of social infrastructure, and role-playing gaming to create a simulation-gaming environment. This simulation-gaming environment will both provide deeper insights to the dependencies and interactions in the finance-, food- and fuel system as well as to be used as an educational tool (Johansson, et.al., 2017; van Laere, n.d.). The purpose of using the simulation-gaming environment for educational purposes is to provide decision makers in the various sectors with a team-training opportunity in how to handle crisis situations in a multi-organizational context (Johansson, et.al., 2017).

As the project is ongoing and iterative, the 30 games planned to be carried out within the project will provide input for fine-tuning and adapting the micro-world and, to a certain extent, the proceedings for the team-training. Because there was no established plan for the team-training proceedings, only a schematic description can be provided. The proceeding, applicable in the fall of 2018, illustrated in figure 1, required half a day to a full day’s participation. The session starts with an introduction, where the project and the game are presented. After the introduction, participants get to play the game for two rounds. Upon completion of the game, the training session ended with discussion.
Although the closing discussion part of the proceeding is of main interest in this thesis, the following paragraphs will provide the reader with the context in which these discussions takes place and a better understanding for the simulation-gaming session.

### 2.2. The Microworld

Simulations of complex systems, such as small towns, are known as microworlds. These simulations are complex (comprises multiple goals and courses of actions), dynamic (changes due to autonomous processes and player actions), and opaque (not every process within the simulation is visible to the player) (Brehmer & Dörner, 1993). The CCRAAAAFFFTING project’s microworld was constructed and run in AnyLogic, which is a multimethod simulation tool (The AnyLogic Company, n.d., https://www.anynlogic.com/company/about-us/). This micro-world spans across a larger, but still demarcated part of Sweden, covering two larger urban cities and two smaller countryside cities. The modeled infrastructure consists of sectors providing societal functions of food- and power (fuel) supplies, finance- and security services and transportation. The food supply function is represented by various food chains in various sizes, ranging from convenience stores to hypermarkets. There is a higher amount of small- and medium sized stores than the number of larger stores (supermarkets and hypermarkets). Also, the larger stores are solely placed in the urban cities. The power supply function, limited to the fuel supply, is represented by both manned and unmanned gas stations. Financial services are represented by cash supply through ATM’s and the in-store possibility to activate alternative payment methods, such as swish and invoices. Security services are limited to only covering security guards. Thus, other security service providers such as police and military are not represented. The transport sector is indirectly represented in the infrastructure by e.g. the lack of goods in stores. The lack of goods occurs due to the break down in logistics when enough fuel cannot be purchased.

By using the micro-world in a computer simulation, a lot of information can be gathered. This information is presented in different views. Some examples of views are: A geographic map of cities, stores and stations. Two views of 15 indicators for food and gas retails respectively, showing overall sales, hording behavior, stealing, customer disappointments etc. Specific views for each store/station. Overall progress view for the whole area.
2.3. The simulation-gaming environment

The simulation-gaming environment is created by combining role-playing gaming with computer simulation. The micro-world constitutes the computer simulation aspect of the simulation-gaming environment and are visible on a screen in the room. The role-playing gaming aspect consists of a team of four to eight participants, whom, collaboratively try to deal with a long-term disruption in the card payment system (see section 2.4. for a more detailed description of the scenario). Each participant takes on the role of one representative from a number of different sectors of society, e.g., financial services, food supplies, power (fuel) supplies, municipal services etc. Together, the role-playing team discuss alternative solutions and possible courses of actions before making any final decisions. When the team have made their decisions, these are communicated to the game leaders. The game leaders then manually register these actions in a “list of actions” that are visible to the participants on a second screen throughout the entire gaming session. Another set of game leaders then uses the actions from the “list of actions” as the input to the computer simulation. After these actions are implemented in the computer simulation, the effects that the team’s action had in the micro-world are shown on the first screen.

Figure 2: Outline of the simulation-gaming environment and the process through which the actions of the role-playing team becomes implemented in the micro-world.

2.4. Scenario

The team is provided with the scenario before the game starts. The information given is that a disruption in the card payment system has occurred, affecting large parts of Sweden. Because the card payment system does not work properly, card payment is no longer a possible payment
option. This disruption is not caused by a malfunction of the power grid, rather, the cause is a breakdown in internet connection between points of sale and banks/card-issue organizations. Because the electricity is still working, financial processes and services other than the card payment system, still function as usual. However, no matter how much the bank- or card-issue organizations try to troubleshoot and solve the problem, no cause or remedy is identified. The duration of the disruption is ten days (van Laere, et.al., 2017).

2.5. The game
The game is led by one game leader, who help the team to gather and interpret information from the simulation and ensure that the process moves forward by encourage discussions and decision making.

The game, consisting of a total of five decision points (DP): DP 1 - Day 1, 12.00 PM, DP 2 - Day 2, 06.00 AM, DP 3 - Day 3, 06.00 AM, DP 4 - Day 6, 06.00 AM, DP 5 - Day 9, 06.00 AM, starts off in DP 1, which takes place three hours after initial information about the disruption. The team discuss amongst themselves to collectively form a plan of action. During this time the team can, with help of the game leader, seek information in the simulator that might help them make their decisions. When the team decides upon which actions they want to implement, they communicate this to the game leader. The game leader then encourages them to motivate their decisions by stating what they think their actions will result in. Both the actions and the motivations are registered in “list of actions”. When the team is satisfied with their decisions, they move on to the next DP. The game leader then shows the team a number of graphs depicting the current state of the micro-world. Based on the previous actions, and the team's expected outcome, the game leader helps the group to interpret the graphs to understand the development since last DP. It is also now that the game leader can alert the team of unforeseen developments. The team are then again encouraged to discuss how they want to proceed. In this way the game continues until the team has worked through all DPs.

![Figure 3: Illustration of the game process.](image-url)
3. Theoretical Background

This chapter aims to cover relevant theoretical background on topics regarding resilience, organizational learning and team learning. The theoretical background also covers the topics of debriefings as methods to facilitate learning and the description of the After Action Review.

Today’s societies consist of multiple sectors which are becoming increasingly connected to-and dependent upon each other. This increased connectedness might lead to disruptions occurring in one societal function to have effect on other societal functions (MSB, 2009). Unplanned disruptions can classify as a crisis, since crises are defined as specific, nonroutine and unexpected events which threatening the realization of important goals while leading to high levels of uncertainty (Seeger, Sellnow & Ulmer, 1998). Apart from natural crises, most crises occurs due to human error. However, the view on human errors and how to create safety within systems have changed over the years (Dekker, 2002). In “the old view”, safety is seen as an innate property of the system, where the human poses the greatest threat to its functioning, whereas in “the new view”, creating safety is a continues process where human error is but a symptom on underlying issues within the system (Dekker, 2002). “The new view” entails that the traditional way of working with security, removing or highly proceduralize humans or elements of work prone to errors, is not enough, and that focus should be on creating resilient systems (Dekker, 2002; Hollnagel, 2009).

3.1. Resilience

According to Dalziell and McManus (2004), the term resilience was first mentioned in an ecological study conducted by Hollnagel in 1973. The term was used to distinguish between a system in a state of equilibrium and the behaviors a dynamic system exhibits when forced out of its previous equilibrium (Dalziell & McManus, 2004). Resilience have since been used as a concept in different research areas often with a plethora of definitions (Dalziell & McManus, 2004; Lundberg & Johansson, 2015; Bergström, van Winsen and Henriqson, 2015). Even in the field of Resilience Engineering, where the concept of resilience holds a prominent position, Lundberg and Johansson (2015) as well as Bergström, et.al. (2015) argues that the definition of resilience are multifold and also could be somewhat contradictory, referring, amongst others, to the system’s ability to: bounce back to a previous state, or bounce forward to a new state, or both; absorb variety and preserve function, or recover from damage, or both; and be proactive and anticipating, or be reactive (when recovering during and after an event), or both. Due to this plethora of existing definitions, Lundberg and Johansson (2015) argued that the meaning of resilience might be obscured and Bergström, et.al. (2015) argues that the multitude of definitions also makes resilience difficult to operationalize. In an attempt to synthesize these different perspectives into a holistic and comprehensive model of resilience, Lundberg and Johansson (2015) postulated the Systemic Resilience Model (SyRes).
3.1.1. System

Before describing the Systemic Resilience model, the term ‘system’ should briefly be clarified. Because the current study will be based on the Systemic resilience model, the same definition provided in the presentation of the model will be used in this thesis. In the SyRes model, the authors refer to a system as an “...open socio-technical system working towards one or more meaningful, safety critical, goal(s) in an environment that holds the potential of presenting threats towards either the system in itself or the goal(s) it pursues” (Lundberg & Johansson, 2015, p.23.).

This definition is consistent with other definitions of socio-technical systems. A socio-technical system, besides exhibiting goal-directed behaviors, consists of socio- (people and societal aspects) and technical- (machines and technology) units (Walker, Stanton, Salmon & Jenkins, 2008) which are highly interlinked to reach functionality (Geels, 2005). The openness of the socio-technical system refers to different properties within the system that enable it to cope with environmental complexity, dynamism, new technology and competition (Walker, et.al., 2008). A system could therefore be seen as the combination of individuals and technologies, with intrinsic capability to handle change, meanwhile working towards realizing functionality and goals. Lundberg and Johansson’s (2015) definition could therefore be seen as more explicit definition, emphasizing the potential threats from the environment as part of changes. Based on this definition, what can be considered a system, varies from individuals working with technical devices to organizations and even entire communities (Geels, 2005).

3.1.2. Systemic Resilience Model

The Systemic Resilience Model (SyRes) is a systemic model that builds on the premise that resilience is the systems intrinsic capacity to proactively or reactively adapt to a situation or event meanwhile preserving the systems core goals (Lundberg & Johansson, 2015). By drawing on knowledge from Resilience Engineering and Crisis Respond research, the model aims to highlight dependencies between constraints, functions, and strategies within a resilient system. Thus, the model consists of four different sections; Event-based constraints, Functional Dependencies, Adaptive Capacity and Strategy (Lundberg & Johansson, 2015).

The model, depicted as a downward spiral (see figure 4), starts of in the section of event-based constraints. The event-based constraints are the manifestation of the event unfolding within the system, resulting in different restraints (mainly in time and space) in different phases of the event. The next section in the model, Functional Dependencies, refers to the six basic core functions, anticipating, monitor, respond, recover, learn and self-monitoring, that the system needs to maintain in order to cope with an event. Different functions, each with its own potential to cope with a situation, could be applied in different phases of an event. Adaptive capacity, which is the next section of the model, becomes an intrinsic concept incapsulated in what is called Adjustment of Capabilities. Adjustment of capabilities accounts for the constraints and different approaches available to create new functions that can better help cope with the event. The last section, Strategy, refers to the multiple ways these functions could be executed. Strategies can be at a low level, referring to actions such as constructing barriers (immunize), creating response systems (control) or taking actions towards making sure the effected population knows about threats and how to cope with upcoming events (knowledge). Strategies
could also be more advanced building on combinations of different functions, constructed for specific threats and systems. Leading strategies to vary between systems (Lundberg & Johansson, 2015).

Of all the functions in the Functional Dependencies section of the model, the function of self-monitoring represents the system’s intrinsic ability to adapt and response, rendering the other functions to become important prerequisites for adaptation (Lundberg & Johansson, 2015). Amongst these prerequisite functions (Anticipating, Monitoring, Responding, Recovery and Learning), is it learning that is the main focus of this study. Learning is a vital part of resilience since lessons learned from previous events, both positive or negative, might result in changes in one or more of the other prerequisite functions. Such changes could manifest itself in e.g. new routines for response (Response) and new ways of implementing recovery measures (Recovery), leading the system to better cope during an ongoing event and, in the end, have a shorter recovery time. Failure to learn from events will, on the other hand, result in inadequate use of resources within the other functions next time the same event, or a similar event, occurs (Lundberg & Johansson, 2015).

Figure 4: The systemic Resilience Model (Lundberg & Johansson, 2015. Used with permission from the authors).
In the model, learning is preferably an ongoing process based on both feed-forward and feedback information. Learning also refers to the system’s ability to capitalize on lessons learned in other systems. The learning function is executed through the strategy of “creating knowledge”. How knowledge is created within a system can vary between different systems and the strategy could be realized in different ways. One way to implement the strategy is to make the process of learning explicit by providing structures for information gathering. Examples of such structures are different report systems as well as exercises (Lundberg & Johansson, 2015).

3.2. Organizational learning

Although SyRes aims to be a holistic model for understanding resilience in systems, the model does not contain an overall model for how learning takes place within these systems. Since the definition of a system used in the SyRes model largely corresponds to the general definition of socio-technical systems, can organizations be considered as systems (Geels, 2005). Thus, knowledge from the research area for organizational management and learning might be used to complement the SyRes model.

Organizational learning is most commonly viewed as changes within an organization, brought on by experiences (Argote & Miron-Spektor, 2011), and were these changes occur in knowledge (Argote 2011; Argote & Miron-Spektor, 2011). This knowledge in turn, can manifest itself in either cognitive- or behavioral changes throughout the organization (Argote, Miron-Spektor, 2011). Because learning is seen as changes, and changes are to be seen as a function of experience, experiences then become the core of organizational learning (Argote, 2011). However, an organization does not just learn in and of itself, rather, learning takes place in different levels of analysis, where the most common levels are the: individual-, team- and organizational level (Argote, 2013; Easterby-Smith, Crossan & Nicolini, 2000). These three levels of analysis are also referred to as intraorganizational learning (Easterby-Smith, Lyles & Tsang, 2008). In recent years, an additional level of analysis has also been added, namely the interorganizational level (Easterby-Smith, et.al., 2008).

3.2.1. Levels of Analysis

Learning at the individual level is seen as the foundation of organizational learning (Wang & Ahmed, 2018). However, it is not necessary for the organization to learn just because an individual member of the organization learn (Ikehara, 2009). Argote (2013) argues that organizational learning occurs when the individual member’s store knowledge in different knowledge repositories such as communication tools, processes, routines and transactive memory systems within the organization. By using these knowledge repositories, knowledge become embedded within the organization and can be kept even though individual members would come to leave the organization (Argote, 2011).

The next level of analysis, the Team level, spurred from the beliefs that organizational learning was more than the cumulative knowledge within the individual members of the organization (Easterby-Smith, et.al., 2000). At this level of analysis, learning occurs when team member engages in iterative cycles of interpersonal behavior, and where outcomes can be both changes in performance, task mastery and changes within the team regards to how they interact with
each other and continue working (Argote, 2013; Decuyper, Dochy, & Van den Bossche, 2010; Edmondson, 2012). Thus, knowledge at this level can result in new routines for how the team should work together as a team as well as new knowledge regarding the task the team perform. Independent of the kind of knowledge derived from team efforts, this knowledge has to be stored in knowledge repositories for organizational learning to occur (Argote & Miron-Spektor, 2011). More on team learning, see section 3.3.

At the organizational level, learning can be seen as changes occurring in the organization as a result of integrating knowledge from the individual- and team level with the organization itself. Argote and Miron-Spektor (2011) argues that knowledge becomes integrated, or embedded, through the use of knowledge repositories, while Crossan, Line and White (1999) mean that knowledge becomes part of the organization when it affects routines and practices.

The latest added level of analysis, Interorganizational learning, could be seen as either unidirectional, where an organization learn from what is already known within another organization (Easterby-Smith, et.al., 2008; Argote; 2013) or as a collaborative effort, where knowledge flows both ways and are created between organizations (Mariotti, 2012). Therefore, Mariotti (2012) argues, that interorganizational learning cannot only be seen as the process through which one organization absorbs knowledge from another, rather, interorganizational learning should be seen as completely different learning processes, where organizations; Learn how to collaborate, learn how to share knowledge and learn how to create interorganizational knowledge.

3.2.2. Processes of learning

Although, originally developed from the perspective of learning as strategic renewal, Crossan, et.al.’s (1999) 4I framework for the propagation of knowledge in intraorganizational learning, is a well-known framework used to explain organizational learning. Learning in the 4I framework consists of four sub-processes; intuiting, interpreting, integrating and institutionalizing. The process of intuiting is strictly at the individual level and refers to the individual’s ability to learn through experience. Interpreting, which is the stage where the individual tries to make sense of what is learned, is a process relying on communication, and can be either communicating with oneself at the individual level of learning or communicating with others at the team level of learning. At the team level, when knowledge becomes articulated, it starts to integrate with the team’s way of working through mutual adjustments and creating shared understandings. Integration can also take place at the organizational level of learning, where knowledge also becomes institutionalized - part of the organization through affecting routines and practices (Crossan, et.al., 1999).

The 4I framework do not only consist of the four processes enabling learning through the different levels of the organization, but also contains two processes spanning over time. These two processes are often depicted as a constant trade-off between the feed-forward process of exploring and assimilating new information and the feedback process of exploiting already known knowledge (Crossan, et.al., 1999). Too much focus on either one of these two processes will in the long run impair the organization’s adaptive capacity. An organization focusing solely on feed-forward processes risks ending up with insufficient distinctive competences,
meanwhile organizations solely focusing on feedback processes end up with rigid structures making it harder for the organization to adapt to changes (March, 1991). March (1991), thus argues that a balance between these two ways of gaining knowledge within an organization is crucial for an organization’s longevity.

As a compliment to the 4I framework, Argote and Miron-Spektor (2011) proposed three processes for how to turn experiences into knowledge. These three processes for deriving knowledge from experiences, are; knowledge creation, knowledge transfer and knowledge retention. Knowledge creation occurs when the unit (individual, team, department, organization etc.) derives knowledge from own experiences. Knowledge transfer occurs when one unit within the organization develop knowledge from the experiences of other units. Meanwhile, knowledge retention occurs when knowledge is stored within the organization. These learning processes occurs at all level of analysis.

In a recent attempt to integrate Crossan’s et.al. (1999) 4I framework and Argote and Miron-Spektor’s (2011) three processes for transforming experiences to knowledge, Brix (2017) proposes a new framework. This framework consists of three different types of knowledge, corresponding to the three levels of analysis and processes of learning proposed by Crossan et.al. (1999). At the individual level of analysis, personal knowledge is created through the processes of intuiting and interpreting. At the team level of analysis, collective knowledge is created through the processes of interpreting and integrating. Last, organizational knowledge, at the organizational level of analysis, is created through the processes of integrating and institutionalizing. However, this framework is a recent proposal, therefore have not yet have the time to be tested by other researchers. It does, nonetheless, indicate the possibility to use these above mentioned frameworks and processes simultaneously to explain organizational learning.

Common to all of these models is that knowledge "flows" in both directions, individual knowledge can be transferred upwards in to the organization, while organizational knowledge can be transferred down the organization to the individual members.

3.2.3. Knowledge
Knowledge is the outcome of learning (Argote, 2013). However, knowledge can vary in different dimensions, where perhaps the most well-known dimensions are; explicit- and implicit knowledge. Implicit knowledge is also called tacit knowledge. Explicit knowledge is formal and systematic (Nonaka & Takeuchi, 1995) and could be codified (Lam, 2000). Because this knowledge could be articulated and written down, it could be stored in non-individual medias such as reports, procedure and computer programs (Nonaka & Takeuchi, 1995). Explicit knowledge, being articulated knowledge, also makes it easy to share and communicate to others. The possibility to store this knowledge within medias other than individuals, also means that the access and transfer of explicit knowledge is less restricted by location and time (Lam, 2000). Tacit knowledge, on the other hand, is more intuitive and personal, making it harder to formalize and articulate. Tacit knowledge also includes an action-oriented aspect, focusing on skills and “know-how”-knowledge obtained from experiences (Lam, 2000). Nonaka and Takeuchi (1995) exemplifies this, by arguing that expert craftsmen, after years of practice and
a developed expertise, still have a hard time to identify and communicate the underlying principles behind what is known. Because this knowledge is difficult to articulate, the transfer of tacit knowledge is a time-consuming activity, which requires close interaction where the individuals creates a shared understanding and trust between themselves (Lam, 2000).

Although these dimensions seem independent, they are actually interdependent. There is always a tacit knowledge component to explicit knowledge. To be able to use the explicit knowledge the corresponding tacit knowledge is needed (Polanyi, 1966, cited by Brown & Duguid, 2001). While explicit knowledge is easy to store and share within organizations, the same could not be said about tacit knowledge. Because tacit knowledge is difficult to put down in words, both retaining tacit knowledge in repositories as well as to transfer the same knowledge to other units becomes difficult (Argote, 2013). However, there are some mechanisms through which tacit knowledge can be transferred. Argote (2013) argues that by moving individuals between units and workplaces, tacit knowledge can be transfer to these new places. Leonard and Swap (2004) argues that learning through guided experience, where newcomers becomes paired up with coaches, also promotes tacit knowledge transfer by allowing the newcomer to observe, experiment and solve problem with guidance from their coach. Tacit knowledge could also be transferred by developing new codifications, so that the tacit knowledge could be transformed into more explicit knowledge (Goffin, Koners, Baxter & van der Hoven, 2010). However, these codifications never capture the whole range of tacit knowledge (Goffin, et.al., 2010).

3.3. Team

Learning at the team level has become an increasingly important part of organizational learning (Easterby-Smith, et.al., 2000), increasing the interest for teams as learning entities. Although learning can occur at all three levels within an organization, the remaining thesis will focus on learning within teams since the CCRAAAFFFTING project aims to provide a team-training opportunity.

Team can be defined as “a distinguishable set of two or more people who interact dynamically, interdependently, and adaptively toward a common and valued goal/object/mission, who have each been assigned specific roles or functions to perform, and who have a limited life span of membership” (Salas, Dickinson, Converse, & Tannenbaum, 1992, cited in Johanson, van Laere & Berggren, 2018). However, when teams are put together without previous experience of training together, in the purpose of performing a specific task, these teams are called ad hoc teams (Sukthankar, Sycara, Giampapa & Burnett, 2009). Ad hoc teams can also be multidisciplinary, and in their article, van der Haar, Jeher and Segers (2008), summarize what characterize multidisciplinary ad hoc teams. According to the authors, multidisciplinary ad hoc teams are characterized by frequent changes in team compositions, consisting of interdependent, highly skilled members, with varying experiences and resources. However, the authors also identify characteristics regarding the task an ad hoc team is supposed to solve. Some of these characteristics are unpredictability, high stakes and urgency, where immediate response is needed (van der Haar, et.al., 2008). The motivation for putting together multidisciplinary teams are that decisions and actions made by these teams are more likely cover many perspectives and issues that might affect the success of the task (van der Vegt & Bunderson, 2005).
Since Sweden has no organized crisis management regarding disruptions in the card payment system, hastily assembled teams, consisting of representatives from several societal functions must work together to avert crisis. These teams, which are the focus of the CCRAAAAFFFTING project, could be considered multidisciplinary ad hoc teams. These team’s members are from different domains, have no or limited experience of working together, and are solving a task which needs immediate response although event development, solutions and consequences are unpredictable, and consequences might come at high costs.

3.3.1. Team learning
Collaborative learning is an umbrella term for joint intellectual efforts in groups (Laal & Laal, 2012), under which team learning have been seen as a specific form of collaborative learning (Gabelica, Van den Bossche, De Maeyer, Serges, & Gijselaers, 2014). Learning in teams is a constant process, were teams learn through intense member interactions (Fu, Lo & Drew, 2006; Gabelica, et.al., 2014), task(s) specific work, and feedback from the environment (Gabelica, et.al., 2014). The knowledge generated by these joint efforts can be stored as rules, procedures, routines and shared norms (Lam, 2000). The storage of knowledge in routines, procedures and other knowledge repositories is also a necessity in organizational learning (Argote & Miron-Spektor, 2011). However, the concept of team learning has, in itself, been studied in many disciplines, resulting in a myriad of definitions and foci (Decuyper, et.al., 2010). Research on team learning have mainly focused on either the processes through which team learning occurs or the outcomes of the learning (Decuyper, et.al., 2010; Edmondson, 1999).

When team learning has been researched as a process, it is primarily about identifying interpersonal behaviors and activities that result in learning (Decuyper, et.al., 2010). Which interpersonal behaviors team members engage in differs between different team learning models (Decuyper, et.al., 2010). Edmondson (2012), argues that learning occurs through iterative cycles of communication, decision making, action and reflection, whereas Argote (2013), assert that teams learn through the processes of sharing-, generating-, evaluating- and combining knowledge. In an attempt on an integrated model, Decuyper, et.al. (2010) divided previously studied interpersonal behaviors, found in their literature review, into the sub-process of sharing, co-construction and constructive conflict. Sharing is the process through which team members recall information, deem it relevant and feels motivated to communicating not previously known knowledge to the rest of the team (Argote, 2013; Decuyper, et.al., 2010). The other two sub-processes, co-construction and constructive conflict, are the two ways a team can manage the knowledge shared in the team. Co-construction, is an iterative process through which the team members engage in behaviors like e.g. paraphrasing, questioning, concretizing, and completing the knowledge being shared to create collective knowledge that expand what was previously known to the team (Decuyper, et.al., 2010). Constructive conflict is the process through which team members engages in dialog to uncover diversities within the team and their knowledge, moving the team out of “the comfort zone”, stimulating further communication and learning (Decuyper, et.al., 2010).
Knowledge is the outcome of learning, however, this knowledge can be manifested in changes in both cognitions and behaviors (Argote, 2013). Thus, research on team learning as outcomes have been many over the years, and Decuyper, et.al. (2010) identified five team learning outcomes categories. Team learning outcome can be (1) Adaptations and Improvements: were teams who only serve their own purposes and disregarding organizational needs adapt, whereas teams who improve their team work and learning processes shows improvements in e.g. performance and effectiveness. (2) Primary and Secondary: were primary outcomes are implicit or explicit changes or improvements within the team in regard to the team’s objectives. Primary outcomes can be e.g. new knowledge about activity, project plans, procedures and documents. Shared mental models, psychological safety and shared habits are examples of secondary outcomes, which usually are seen as biproducts of the team learning processes. (3) Adaptive, Generative and Transformative: were adaptive learning results in gathering information which fit the given task, generative learning results in developing already existing knowledge, and were transformative learning results in innovative knowledge. (4) Task, Social and Team: task outcomes are better understanding for the task and the team’s performance, social outcomes are better understanding of team members, and, team outcomes are better routines and procedures for team learning and performances. (5) Individuals, Team, Organization, Society: refers to which level the knowledge can be related to (Decuyper, et.al., 2010). Based on this categorization, team learning outcomes can be many.

3.3.2. Influencing factors in team learning

Previous research has to a large extent focused on either identifying interpersonal behaviors underlying team learning or outcomes of team learning (Decuyper, et.al., 2010). Besides studying processes and outcomes of team learning, influencing and facilitating interpersonal behaviors and factors have also been studied (Argote, 2013; Decuyper, et.al., 2010). Several interpersonal behaviors and factors influencing team learning are proposed in the literature, however, all cannot be covered within the scope of this thesis. Feedback, reflexivity and psychological safety will be briefly covered in the next paragraphs as three facilitating processes and factors of importance in post-exercise discussions and team learning.

3.3.2.1. Feedback

Feedback has been identified as an influencing factor to improve learning and performance on both the individual and team level (Gabilica, et.al., 2014). Feedback on both correct and incorrect performances yield effects, however, feedback is more effective when it provides information on correct rather than incorrect performances (Hattie & Timperley, 2007). Team performances are also more likely to be improved in teams provided with team-level feedback only, rather than teams provided with both individual- and team-level feedback (London & Sessa, 2006). Besides the positive impact feedback might have on team performance, feedback at the team level has also been shown to steer, motivate, support, and reinforce future interpersonal behaviors such as e.g. setting goals, develop strategies, communicate and coordinate their activities (Gabilica, Van den Bossche, Segers & Gijselaers, 2012; Gabilica, et.al., 2014). Although feedback have been reported to improve performance and change team behaviors, this is not always the case, and Gabilica, et.al. (2014) found that changes in performance only occurred when feedback was combined with team reflection (Gabilica, et.al., 2014). Reflection is necessary to process the feedback, to make sense of it, build common
ground, reach new insights and identify necessary changes (Gabilica, et.al., 2014; London & Sessa, 2006).

3.3.2.2. Reflection and reflexivity
Team reflection are the information seeking activities (e.g. seeking and gathering information and feedback) and information evaluating activities (e.g. assessing and analyzing feedback) teams engages in in order to reflect upon strategies, behaviors and implementation of changes (Konradt, Otte, Schipers & Steenfatt, 2016). Teams can reflect on their performance before (e.g. by jointly setting goals and choosing strategies and processes), during (e.g. by ensuring that the team adheres to agreed strategies and solves intended problems) and after (e.g. by evaluating achievements and execution) a task is executed (Schippers, Den Hartog & Koopman, 2007). Daudelin (1996) proposes a four-stage process for which reflection progresses. In the first stage, the problem or event has to be articulated and identified. In the second stage, the problem or event is analyzed. The third stage focuses on formulation and testing of tentative theories explaining the problem or event. In the fourth stage, decisions are made regarding whether or not to act, and which actions to enact (Daudelin, 1996). Daudelin (1996) also found that posing and answering questions related to the four stages of reflection increased learning. In stage one, “what”-questions such as; "What occurred?" helps the teams to delimit and describe the situation. "Why"-questions such as; "Why did it happened?" helps the teams in stage two to start analyze and think about what happened. "How"-questions in stage three, such as; "How would things be done differently?" helps the teams create theories of what happened or what needs to happen. In stage four, “what”-questions such as; "What are the implications of these actions?" helps the team analyze potential consequences of actions and helps them decide on which actions, if any, that should be taken. The practice of using questions to guide reflection is the core of debriefing methods (see 3.5. for more on debriefings).

It should be noted that the concept of reflection has been used synonymously with the concept of reflexivity (Decuyper, et.al., 2010), however, reflection is merely a constituent of team reflexivity which consists of the processes of reflection, planning and adaptation (West & Sacramento, 2010). Thus, reflexivity comprises, in addition to the team’s reflective activities, the planning on how to incorporate what was learned from reflection in order to adapt, as well as the team’s actual adaptation to new situations and challenges by including new or changed actions (West & Sacramento, 2010). The difference between Daudelin's (1996) description of reflection and West and Sacramento's (2010) view of reflexivity is thus West and Sacramento's requirement of adaptation and actual action to say that learning has occurred, and it is not sufficient to only reflect (Daudelin, stage one-three) and plan for potential measures (Daudelin, stage four).

3.3.2.3. Psychological safety
Psychological safety in teams, refers to team members shared beliefs of the team as a safe environment for interpersonal risk taking. The term refers to the team members confidence, originating from trust and mutual respect within the team, in that they will not be embarrassed, rejected, or punished for speaking up (Edmondson, 1999). However, psychological safety is not the same as trust, as trust can be seen as the individual’s willingness to be vulnerable to the independent actions of another part based on the expectation that these actions will be of importance to oneself (Mayer, James & Schoorman, 1995). Psychological safety extends
beyond trust, also including mutual respect, to create a team climate where team members are comfortable being themselves (Edmondson, 1999). When team members feel psychologically safe, they are more likely to offer ideas, admit mistakes, ask for help, provide feedback and engage in interpersonal team learning behaviors (Edmondson, 1999; Edmondson & Lei, 2014). When psychological safety is low, team members might experience that they are judged as ignorant, incompetent, negative, or disruptive, therefore stop engaging in team learning behaviors such as asking questions, seek information, feedback and help, admitting or calling attentions to mistakes, and critically reflect on current and past performances (Edmondson, 2002). Psychological safety has also consistently been shown to enable effective team performance as well as increase learning (Edmondson & Lei, 2014).

3.4. Debriefings to facilitate learning

Debriefings, as the methods through which individuals or teams construct their own meaning and uncover lessons learned from recent experiences and actions by reflections guided by a series of questions, have been used in, e.g., military, medicine, educational and safety communities (Tannenbaum & Cerasoli, 2013). Debriefings are also argued to constitute an important tool in organizational learning and can be used in a wide range of different organizations (Ellis & Davidi, 2005; Tannenbaum & Cerasoli, 2013).

Tannenbaum and Cerasoli (2013) identified four essential elements that differentiate debriefings from other interventions. These four elements are: 1. **Active self learning**, where the participants themselves must partake in an iterative cycle of reflection and planning. Simply be provided with feedback and being told what to do next time is perceived as passive self learning and these kinds of feedback-sessions are not to be classified as debriefings. 2. **Developmental intent**, referring to the focus of the debrief. Focus on development, rather than evaluations and/or judgements, are believed to enhance motivation, learning and performance whereas evaluative and judgmental purposes might result in the participants to hold back and refrain from sharing knowledge. 3. **Specific events**, means that the focus should be on the specific actions or events rather than more general performances and competencies. Specific events allow for deeper examinations and future plans and strategies. 4. **Multiple information sources**, should be used to raise the credibility of the feedback. There are always multiple information sources in teams because each member is considered a source. External facilitators or objective data sources, such as video recordings, are also viewed as additional information source. Self-reflection, without interaction with others or consulting external information sources is therefore not the same as a debrief. For an intervention to be classified as a debrief, all four of these elements must be present (Tannenbaum & Cerasoli, 2013).

The fact that debriefings aim to create understanding and knowledge based on experiences and actions does not mean that debriefings are limited to only cover experiences and actions taking place in real life environments. Experiences and actions taking place in simulation-based education also constitutes objects for debriefings (Hanoun & Nahavandi, 2018; Sawyer, Eppich, Brett-Fleegler, Grant & Cheng, 2016). Sawyer, et.al., (2016) conducted a review of healthcare simulations debriefing methods and found that seven different debriefing methods were used. However, they did report that there was limited empirical evidence in supporting the use of one specific method over another, and the authors therefore argue that the used
Debriefings are commonly believed to enhance learning and performance (Hanoun & Nahavandi, 2018; Ellis and Davidi, 2005; Sawyer, et.al., 2016; Tannenbaum & Cerasoli, 2013) and results from Tannenbaum and Cerasoli’s (2013) meta-analysis show that debriefings could help improve performance for both individuals and teams by 20-25%. They did not find any significant correlations between time spent on the debrief and increase in performance (average time spent on debriefs, in their sample, were 18 minutes). Villado and Arthur (2013) also found a significant increase in team performance when the structured debriefing method, After Action review (AAR), were used. Their study investigated performance differences between teams training without debriefings and teams training with one of two different AAR methods (subjective AAR - the team remember and choses the action to discuss themselves, and objective AAR - use of e.g., video, audio and written communication to facilitate the recall, identification, and evaluation of behaviors or key events). They did not find any differences between the subjective- and objective AAR teams, however, teams training with the AAR reported significantly higher levels of cohesions and openness of communication than non-AAR-teams. Not only did the AAR-teams perform significantly better than non-AAR-teams, they also had a significantly higher increase in team efficiency.

Ellis and Davidi (2005) also conducted an experiment using the AAR method. Their experiment originated from the general assumption that individuals, when learning from experiences, are more motivated to learn when focused on mistakes or erroneous actions. However, they hypothesized that successes also could work as a motivation and help facilitate learning. Thus, they used two groups of teams, one group trained with AAR that only focused on erroneous actions, and the other group trained with AAR focusing on both successful- and erroneous actions. They found that AAR’s, focusing on both successful as well as erroneous actions helped improve performance to a greater extent than AAR’s that solely focusing on erroneous actions. Teams training with the AAR focusing on both successes and failures also developed more elaborate and deeper understandings for the situation in which they were performing and the relations between their actions and the outcomes (Ellis & Davidi, 2005).

In another study, where a related method to the AAR, namely the post-project-review (PPR), were used, Goffin et.al. (2010) found that the method was highly appreciated by the participants. Participants reported that they felt that the PPR-sessions helped them identify problems and successes that had occurred in the project. Participants also stated that these PPR-sessions resulted in many “aha-moments” that helped them understand what to do, and what not to do, in their next project.

Both AAR and PPR are methods most commonly used after the project or event of interest occurred, post-event debriefing methods, even though they can be used during the unfolding of an event, as within-event debriefings (Bolton, 2016; Goffin, et.al, 2010). In simulation-based training, within-event debriefings usually require the simulation event to be paused during the debriefing and to be resumed afterward (Sawyer, et.al., 2016). Both post-event debriefings and
within-event debriefings have their respective strengths and weaknesses and the method used are determined by the simulation. However, a study conducted with 161 medical students, divided in to two groups (post-event debriefing, and within-event debriefing), show that the participants felt that post-event debriefings better helped them understand their successful- and erroneous actions and helped them learn more effectively than within-event debriefings (van Heukelom, Begaz, & Treat, 2010).

As Sawyer, et. al, (2016) reports, does multiple different debriefing methods exist with limited evidence for one method being better than any other method. However, results from studies using the After Action Review have shown positive effects on performance (Ellis & Davidi, 2005; Villado & Arthur, 2013). The AAR were chosen for this project due to these reported positive effects and the possibility to use the method in different communities, e.g. the military (U.S. Department of the Army, 2013) and healthcare (Sawyer, et.al., 2016) and with different types of events, e.g. simulated (Sawyer & Deering, 2013; U.S. Department of the Army, 2013) or real-life (Baird, Holland & Deacon, 1999; MSB, n.d.; U.S. Department of the Army, 2013). The fact that MSB, who is financing the CCRAAAFFFTING project, have been adapting the AAR to Swedish conditions and advocates- and teaches the method, also influenced the choice of method.

3.4.1. After Action Review

The After Action Review is a method for "guided analysis of an organization’s performance, conducted at appropriate times during and at the conclusion of a training event or operation with the objective of improving future performance” (U.S. Department of the Army, 2012, chap.3 p.12). The purpose is therefore not to map a process or event sequence, rather, the purpose is to identify both strengths in performances as well as areas of improvements (Baird, et.al., 1999; Lareau & Long, 2018; U.S. Department of the Army, 2012). By identifying what went well, strengths in the performance can be sustained so that they can be replicated in the future, and by identifying what did not go so well, improvements can be made (Lareau & Long, 2018; U.S. Department of the Army, 2012). The method can therefore be regarded as having a developmental approach in accordance with the essential elements of debriefs identified by Tannenbaum and Cerasoli (2013). The method also meets Tannenbaum and Cerasoli’s (2013) requirements for focus on specific event, due to the AAR focus on actual performance in a certain event and not general performances or standardized routines (how the group usually work or should work in a specific event).

The AAR is also a structured, dialog-based method, using facilitators. The facilitator is responsible for the discussion and is to help guide the team through the AAR by asking questions. This dialog is a mutual effort, where both the facilitator and the participants, together, tries to comprehend what went right and what went wrong in a certain event, why it went the way it went, and what-and how to do better next time (MSB, n.d.; U.S. Department of the Army, 2012; U.S. Department of the Army, 2013). Because both the facilitator and participants contribute with information on what happened and what the intentions were with different actions, as well as participating in developmental work on how to act in the future, the method also meets Tannenbaum and Cerasoli’s (2013) essential elements of Active self learning and Multiple information sources.
3.4.1.1. Prerequisites for a successful AAR

As previously mentioned, the AAR can be used during or after the event (Bolton, 2016; Baird, et al., 1999). Regardless of the approach used, the AAR should take place as closely to the event as possible to maximize the benefits (Baird, et al., 1999; U.S. Department of the Army, 2013). In addition to the temporal aspect of when an AAR should be conducted, Baird, et al. (1999) lists four more factors affecting the outcome of the AAR. In order to maximize the benefits, the AAR needs to be structured, limited in scope (focusing on few critical key issues or actions), include all team members in the process and implement lessons learned in new actions. Lareau and Long (2018), also provides a list of prerequisites for a successful AAR, although focusing on how to include the whole team in the debriefing process. According to these authors, the success of the AAR lies in the facilitators capability to ensure participation of all team members and that this participation is on equal ground, thus nullifying potential hierarchical structures within the team or organization. Lareau and Long (2018) also highlights the importance of setting- and maintaining rules of conduct (e.g. not tolerating tantrums and not blaming each other) which help install a sense of psychological safety and facilitate communication within the team.

Bolton (2016) and Baird, et al. (1999) also acknowledge the importance of psychological safety within the team. Baird, et al. (1999) argues that, because the purpose of the AAR is to improve performances and not to grade successes or failures, debriefings cannot take place in an environment where participants are afraid of what they are saying will be used to punish individual team members or the team as a whole. It therefore becomes important to create an environment where participants can be sure of not being subjected to any negative consequences based on what is said during the debriefing (Bolton, 2016).

3.4.1.2. AAR structures

The AAR is a structured method, however, because the method can be used in a variety of areas and different prerequisites for the success can be of focus, the structure of the method can vary. Generally, the structures differ in the number of phases or main questions to be worked through during the AAR. The structure used by the US army, which have been developed and ingrained in their handling- and learning from changes since the Vietnam war (Seglie & Selby-Cole, 2000), consists of four phases: 1. Review what was supposed to happen, 2. Review what did happen, 3. Review what went right and wrong, and 4. Determine what should be done next time (U.S. Department of the Army, 2013). These four phases are usually included in altered AAR structures where adaptations usually result in adding phases to either secure the success of the method or to broaden the scope of learning. The structures provided by MSB (n.d.) and Baird, et al. (1999) are examples of structures where the phase: who else needs to know, have been added in an attempt to broaden the scope of learning. The structure still focusing on the team’s learning and performance, however, it also focusses on organizational learning by identify which lessons could be of value for other units within the organizations and how- and to whom these lessons learned should be transferred (MSB, n.d.; Baird, et al., 1999). Baird, et al. (1999) also have the additional phase of taking actions. This phase is explicitly included in the structure because the purpose of this structure is to be used during the event. This phase allows participants to examine why interim objectives have not been met, and to take actions towards correcting the course of action or develop new strategies in real time. The AAR structured for healthcare simulations, proposed by Sawyer and Deering (2013) also includes the four phases...
of the US army, although three additional phases have been added. These phases, inserted before the US Army’s first phase, are: Define rules, explain learning objectives and benchmark performance. These phases are not added to broaden the scope of learning, rather they secure the presence of important prerequisites for the success of the AAR. Phase one makes sure that the team are aware of the rules of conduct which helps establish trust and participation. Phase two helps the team to focus on what they are supposed to be learning in order to minimizing confusion and secure participation. The third phase helps secure objective feedback on the performance, identifying gaps in performance, which is used as support in discussions in the later phases (Figure 5 shows the phases of the above-mentioned AAR structures).

**Figure 5**: An overview of the phases used in different versions of the After Action Review method. The fields within the solid lines illustrate the phases that are common to all AAR methods. The fields within the dotted lines illustrate the phases added to the method.

The AAR structures, as shown above, can differ with regard to the number of phases included. However, these differences might be due to how explicit the authors choose to describe their take on the method. The most explicitly described structure is provided by Sawyer and Deering (2013), whom considers the establishing of rules of conduct as a phase of the AAR. However, both MSB (MSB utbildningsenhet, n.d.) and the US military (U.S. Department of the Army, 2013) includes establishing rules of conduct in their instructions of how to conduct the AAR session, hence, making a differentiation between the structure of the AAR method and the execution of the AAR session. The US army, like Sawyer and Deering (2013), also include "explain learning objectives" in their instruction for execution, although, being developed for military operations, they stress the importance to begin each session by "stating the commander’s mission, intent and concept of the operation" (U.S. Department of the Army, 2013, p.15) before moving on to the first phase of examine what was supposed to happen.
The differences between the structure of the AAR method and the instructions for executing the session is highly visible in MSB educational film, available on their website (MSB, http://cursnet.srv.se/fortb/aar/). The structure, used to ensure team reflection, as shown in figure 5, consists of five main questions: 1. What was supposed to happen, 2. What did happen, 3. Why did it happen, 4. What, and how, can we do better next time, and 5. Who else needs to know. The suggested execution, however, consists of six steps. These are 1. Appointing a facilitator who guides and supervise the discussion and another participant who takes notes during the session, 2. Establishing and communicating rules of conduct, 3. Conducting individual AAR, moving through the first four phases, focusing on individual experiences and actions (5-10 min), 4. Conducting a collective AAR, moving through all five phases, using the physical layout of the room and other materials (video, logs, graphs, etc.) as support for the discussion (50-60 min), 5. The facilitator gather materials and notes from the session and compiles a report which is distributed to relevant recipients in the organization, 6. Implementation of prioritized changes.

Because some of the initial differences observed in the reported structures can be eliminated when looking at the instructions on how to execute the AAR session, one might say that these approaches are fairly similar to each other. The largest difference seems to lie in the purpose of the AAR, individual or team learning (U.S. Department of the Army, 2013; Sawyer & Deering, 2013) or organizational learning (Baired, et.al., 1999: MSB, n.d.). However, because the structures usually describe the phases through which individual or team reflection can be ensured, and not postulating any set way of executing the AAR, the AAR method should be considered highly flexible and adaptable to the specific situation.

The choice to use MSB’s AAR as debriefing method in this study is based on its support of organizational learning. Where a part of the structure specifically aims to transfer knowledge within the organization to maximize learning. The fact that MSB, who is financing the CCRAAFFFFTING project, have been adapting the AAR to Swedish have influenced the choice of method.
4. Method

The following chapter provides a demographic description of participants and recruited facilitators as well as description of the study design, the pilot study, the data collection procedure and a description of how the data was analyzed.

4.1 Demographic information

4.1.1. Participants

In total did 45 participants partake in this study, including the pilot study, the two data collection conditions and the recruited facilitators. The two conditions are (1) groups ending training session with post-exercise discussion using a non-specified method, and (2) groups ending training session with post-exercise discussion using the AAR method.

Out of these 45 participants did 11 partake in the pilot study. Participants in the pilot study were recruited through convenience sampling. These participants were students, employees, former employees or former students at Linköpings university. The sample consisted of an even distribution of six (6) men and five (5) women with an average age of 30,1 years (max=69, min=23).

The 14 participants partaking in condition 1 were all participants in the original CCRAAAfffttTing project. They were recruited through a two-step voluntary sampling procedure. County councils throughout Sweden were contacted by the research administration with an invitation to participate in the study. Upon volunteering, the county councils extend the invitation to possible actors of interest within their jurisdiction. These actors could choose to either refuse or accept the invitation. This procedure ensures that participants represent a variety of societal function. The societal functions represented in this study are banks, food- and fuel businesses, county councils, municipalities, cash handling businesses, Swedish police and media. Despite the participants differences in professional background their average collective work experience is 14,2 years (max=31, min=1). There was also some variation in reported experience of working with crisis management, were 42,9% (6) of the participant reported a very low to somewhat moderate experience on a seven graded Likert scale (1-3) and 50% (7) of the participants reported a moderate to high experience on the same scale (4-6). Regarding previous experience of participating in crisis management games or exercises, 42,9% (6) of the participants reported that they never before had participated, 42,9% (6) had participated in this kind of games on a few occasions and 7,1% (1) participate yearly.

The 17 participants partaking in condition 2 were all students at the Swedish defense University and were recruited through convenience sampling. Contact with the course coordinator at the Swedish Defense University, responsible for the course in which a simulated UN mission exercise was planned, was established thanks to previous contacts. Participants were all students registered for the course. There was a gender distribution of eleven (11) men and six (6) women, with an average age of 29,2 years (max=49, min=21). The average years studied was 4,4 (max=29, min=0,5).
4.1.2. Facilitators
A total of three teachers from the UN mission exercise condition participated in the study as AAR facilitators. Two (2) men and one (1) woman, with an average age of 40.3 years. All facilitators have prior experience of teaching and training, with an average experience of 9 years. However, none of them have any prior experience of using the AAR method. Prior to the training, facilitators therefore watched MSB’s educational film on how to conduct an AAR and read through the AAR dialog guide. Both the film and the dialog guide are provided at the MSB website1.

4.1.3. Nonresponse rate
A total of 34 participants participated in the actual study, 31 exercise participants (condition 1 = 14, Condition 2 = 17) and three facilitators. Out of these 31 exercise participants, four participants, two from each condition, ended their participation early, resulting in a total nonresponse rate of 13% (nonresponse rate in condition 1 = 14%, nonresponse rate in condition 2 = 12%). In condition 1, one participant left the study after the first game round. The three remaining participants, independent of condition, left after completing the exercises and before the post-exercise discussions started. All participants ended their participation early due to other commitments requiring their presence. The three participants who completed the exercise expressed a willingness to participate in the remaining parts of the study, however, shortage of time on their part made this impossible.

4.2. Ethical aspects
Participation was fully voluntary, and participants received information that they, at any time, could terminate their participation. Participation was considered to be risk-free in regard to both physical- and psychological damage. Simulations were used on all data collection occasions, ensuring a secure learning environment, minimized the risk of physical- as well as psychological damages since any mistakes or developments lack any real consequences. No graphical content that may cause psychological discomfort were included in these simulations. The risk of psychological damages due to answering the questionnaire were considered low since the questionnaire focus on the participants perception of the post-exercise debriefing and not any invasive personal subject. All participants gave written informed consent to their participation. Participants will remain anonymous. Participation was not associated with any form of compensation. The study was conducted in accordance with the ethical guidelines provided by Vetenskapsrådet (2002).

1 Film: MSB, http://cursnet.srv.se/fortb/aar/ . Received 10/5/2018
4.3. Design

This study is an explorative, semi-experimental study, aimed at investigating the current post-exercise discussion structure used in the CCRAAAFFFTING project as well as to explore the need and possibilities of implementing the AAR method. As part of being an exploratory study, results might also refer to improvements in both research design and data-collection methods.

The semi-experimental design aspect of this study refers to the non-randomization of participants in the two different conditions, as well as the use of an independent variable. The two conditions are (1) groups ending training session with post-exercise discussion using a non-specified method for this discussion and (2) groups ending training session with post-exercise discussion using the AAR method. The independent variable is thus the presence or absence of a debriefing method. Because part of the purpose of study is to examine current post-exercise discussion structure within the CCRAAAFFFTING project, no manipulation of post-exercise discussion structure can occur, thus leaving the CCRAAAFFFTING project as condition 1. The simulated UN mission exercise held by the Swedish Defense University, where AAR have been agreed to be used, are therefore condition 2. Randomization into conditions and groups could not be accomplished since (1) Participants were either recruited to participate in the CCRAAAFFFTING project specifically (condition 1) or students registered to the Swedish Defense University’s course were AAR could be used as a post-exercise discussion method (condition 2), (2) participants (independent of condition) were not recruited and/or divided into groups by the researchers.

This study consists of six dependent variables of interest. These are:

1. **Structure**: measured through questionnaire (perceived extent of structure, preplanning, rules of conduct, enough time and thoughts on how to better the structure) and observation.

2. **Feedback**: measured through questionnaire (perceived extent of feedback on individual and group performance and feedback on actions that went well and actions that went less well) and observation (feedback on individual or group level and feedback on specific actions or overall performance).

3. **Reflection**: measured through questionnaire (perceived possibility to discuss group performance and what went well and what went less well).

4. **Facilitators involvement**: measured through questionnaire (perceived importance for learning and flow of discussion) and observation.

5. **Psychological safety**: measured through questionnaire (perceived comfort in the group).

6. **Learning**: measured through questionnaire (perceived individual and group learning).
Data will be collected through observations (see 4.3.2.) and questionnaires (see 4.3.3.). After some smaller alterations due to the results from the pilot study (see 4.5.), observations will be carried out during the game sessions, focusing on feedback during training, as well as during the post-exercise discussion. The post-exercise discussion observations focus on structure (questions asked by the game leader/facilitator), facilitators involvement, provided feedback, participants participating and developmental intent. Due to some differences between the two conditions will two questionnaires be used, one for the participants (used in both conditions) and one for the facilitators (used in condition 2). Both these questionnaires are to be filled out after the post-exercise discussion is finished. The participants questionnaire focuses mostly on participants experiences of different aspects of the discussion. The questionnaire for the facilitators consists of questions regarding their experience of using the AAR but also questions about the session. See figure 6 for an overview of the design.

Figure 6: Overview of research design, sample distribution and data-collection procedure. * These observations differ from observations in condition 1, see 4.3.2 for details.

4.3.1. Conditions and the use of AAR

This study design consists of two conditions, where condition 1 consists of the simulator-based crisis management game and subsequent discussion that has been developed within the CCRAAAFFFTING project (described in chapter 2.). No manipulation of the post-exercise discussion structure or instructions on how to conduct these discussions occurs in this condition. However, because these sessions constitute data collection opportunities for the original CCRAAAFFFTING-project, additional data (analyzed elsewhere) is collected throughout these sessions. These data consist of (1) Task complexity indications: measured at the end of every DP by participants ranking their perceived task complexity from 1 (not complex at all) to 7 (extremely complex). (2) Teams shared awareness: measured with the use of Shared Priorities at the end of DP2 and DP4. Shared priorities are used in two stages. First, participants individually write down, and rank, five objectives of subjective importance. Then, a new list, based on the individual lists, are created by the administrators. Participants rank the new list from 1 (most important) to 5 (least important). (3) Perceived quality of working relationships within the team: measured through the Team member exchange quality scale (TMX) questionnaire at the end of the session. (4) Participants’ opinions on participation: measured in the end of the session through a questionnaire focusing on evaluating the session. When this data is collected, the post-exercise discussion is carried out.
Condition 2 consists of the simulated UN mission exercise and the subsequent discussion, held by the Swedish defense university. This exercise is a full-day exercise, held in the university's premises. The purpose of the exercise is for three teams to coordinate a UN mission on the Ivory Coast. These three teams (consisting of 5-7 students with set roles), responsible for defense and security (SWEBAT), taking care of internally displaced persons (IDP) and support and resource allocation (WFP), participate simultaneously in the exercise. The teams are located in different rooms. Actions taken by one team may have impact on the work of the other two teams. Event development is also controlled by three teachers (opponents) who are placed separately from the teams. Each opponent only plays as opponent for one team. All communication, whether it is with the other teams or the opponent, it is done via e-mail. During the exercise, teams are expected to have at least one representative whom attends collaborative meetings with representatives from other teams, meetings with the responsible superior and attend a press conference. Each team is also expected to log all activities and decisions as well as to create reports to superiors. During different stages of the exercise, two to four observing teachers are present. These teachers also act as figurants in sub-exercises such as meetings and press conferences.

The post-exercise discussion structure is manipulated in condition 2 by introducing the use of AAR. The AAR structure used in this condition is the one developed by MSB (see 3.5.1.2.). The three facilitators used, also played the role of opponents during the exercise. Each facilitator continued working with the same team as during the exercise. After consultation with these facilitators, no alterations were made to the structure. Thus, all five main questions are included in the discussion. MSB’s structure also includes sub-questions to each main question (Appendix I). These sub-questions are also included without alterations. An excerpt from the MSB’s dialogue guide (MSB, n.d.), containing the main and sub-questions, is provided to the facilitators as support.

Alterations had to be made to the MSB’s proposed execution due to the purpose of the course as well as the allocated time for discussion. Because of uncertainties regarding benefits of these discussions in relations to the course final report, it was decided that no student was to take notes during the discussion to fully focus on participation. The time allocated for these discussions was 50 minutes in total. This time was divided into 5-10 minutes of individual AAR followed by 35-40 minutes of collective AAR. The facilitator is to provide the participants with rules of conduct before starting the collective AAR. These rules are: (1) focus on what happened or what was done, not on who did what, (2) only provide constructive criticism, and, (3) participate and let everyone speak. Decisions regarding how to best engage the participants and use tools to facilitate the discussion, are left to the facilitators them self to make.

### 4.3.2. Observation

Observations are used to collect data regarding the post-exercise discussions, since observation is one method that can be used to collect data when the purpose is to study, explain or describe situations, environments, societies or cultures (Ryan, 2017). However, there are different types of observations. Robson (2011) argues that what distinguish these types of observation are the degree of formality in collecting data and the degree of observer participation. Formality in data collection ranges from informal, were data is collected based on what is considered interesting,
to formal, which is a structured and predetermined procedure were data not corresponding to predetermined aspects of interest is disregarded (Robson, 2011). The degree of observer participation also varies. Waddington (2004) identifies four levels, which are; (1) Full participation: the observer participates but identity and purpose are not known by research subjects. (2) Participants who observe: the observer participates, and the identity and purpose are known by research subjects. (3) Observer participation: superficial participation through e.g. follow-up questions, and, finally, (4) The complete observer: observations are made separately from the activity (Waddington, 2004).

Bryman (2011) defines four types of observations: participant observation, non-participant observation, unstructured observation and simple- and controlled observation. Participant observation has a high degree of observer participation and normally occurs in the natural environment with a low degree of formality (Bryman, 2011; Robson, 2011). Non-participating observation occur in the natural environment but have a low degree of observer participation (Bryman, 2011). Unstructured observation is usually low in observer participation and formality and are conducted when the purpose is to generate as detailed descriptions as possible (Bryman, 2011). Finally, both simple- and controlled observations are low in degree of observer participation and do not necessarily have to take place in the natural environment. Both types of observations are also high in formality. The difference between the two, is that the simple observation leaves the observer without possibility to influence on the situation, while the controlled observation allows the observer to manipulate the situation (Bryman, 2011).

In this thesis, non-participating observation is the primary observation type. Thus, a low degree of observer participation, corresponding to Waddington’s (2004) level of the full observer, will be adopted. Both exercises will take place in potential (condition 1) or actual (condition 2) educational settings, thus, observations will be carried out in natural training environments. The observations will be semi-formal, which means that observation checklists for both the exercise procedure (Appendix II and III) and the post-exercise discussion (Appendix IV and V), will be used. These checklists will help focus the data collection, however, space for collecting potentially interesting data, not identified beforehand, have been included. Due to procedural differences between condition 1 (one team perform at the time) and condition 2 (all three teams perform simultaneously), observations in the later will be of a lower degree of formality. Since the observer cannot be in several places at once, gaps in collected data is unavoidable, and the observation checklists will therefore be used as a guide. Attempt to minimize the gaps in missing data during the post-exercise discussion is made in the Questionnaire for the facilitators (see 4.3.3.). A lower degree of formality during the exercise in condition 2 is also justified with the need to collect data to be able to describe the exercise itself. Although the main observation type is the non-participating observation, there might be argued that some elements of controlled observation has been included, since the observer, in agreement with the course coordinator and teachers, introduced the use of AAR in condition 2. However, this thesis data collection approach is not as formalized and delimited (e.g. implemented in a laboratory) as is common for controlled observations.
4.3.3. Questionnaire

Questionnaires can be used to gather information about participants' opinions and attitudes (Robson, 2011; Trost, 2007). Questionnaires can be administered as: Self-completion questionnaires (participants fill out the questionnaire), Face-to-Face interviews (interviewers read and complete the questionnaire for the participant), and, telephone interviews (interviewers read and complete the questionnaire for the participants over the phone) (Robson, 2011). Questionnaires can use close-ended and open-ended questions, where open-ended questions allow the participants to formulate their own answers while close-ended questions come with predetermined answer alternatives (Robson, 2011; Trost, 2007). Questionnaires are used in this study as it is of interest to examine the participants' experiences of the post-exercise discussion. All questionnaires are self-completion questionnaires, consisting of both close- and open-ended questions, although predominantly consisting of closed-ended questions.

The participants' questionnaire, consisting of three parts, includes questions reflecting important aspects of debriefing methods, such as structure, feedback, developmental intent, psychological safety, etc. (Appendix VI and VII). The two first parts consist of listed statements, to which the participants indicate their answer on a five graded scale, ranging from 1 = very low extent to 5 = very high extent. The last part consists of three open-ended questions on what they learned, if and what aspects of the discussion supported learning, and if they had any suggestions on improvements.

The background questionnaire developed for condition 2, only consisted of one part, including questions about gender, age and years studied (Appendix VIII and IX).

The Facilitator questionnaire for condition 2, consists of three parts (Appendix X and XI). The first part consisted of questions about the facilitators' background, e.g., age, previous educational experience etc. The second part consisted of questions developed to help minimize data loss from observation, questions such as if all participants participated and if aids and tools were used during the AAR. The third and final part of the questionnaire consisted of three open-ended questions regarding strengths and weaknesses with AAR as a debriefing method and whether or not they would choose to use the method again (prompting on a motivation).

4.4. Materials and apparatus

The study is conducted by using the simulation-gaming environment developed in the CCRAAAFFFTING project (condition 1, see 2.3.-2.5.) and the simulated UN mission developed by the Swedish Defense University (condition 2, see second paragraph in 4.3.1.). Exercises and post-exercise discussions is, in condition 1 conducted in conference rooms and in condition 2 conducted in classrooms, where two teams shared one classroom divided by a partition screen. Materials used during data collections are the participants questionnaire (Appendix VI) and observation checklists (Appendix II and IV). Additionally, the facilitators questionnaire (see Appendix X) and the background questionnaire for the participants (Appendix IV), are used in condition 2. All data collection material is printed on paper. Language for data collection are Swedish, thus, the Swedish versions of the materials are used. Translations into English are made by the author to be reported in this thesis.
An excerpt from MSB’s dialogue guide (MSB, n.d.), containing the main- and sub-questions, are used by the facilitators as support during the post-exercise discussions in condition 2.

4.5. Pilot study
A pilot study was conducted to test the data collection materials (observation checklist for the post-exercise discussion and the questionnaire) before data collection begun. The pilot study was conducted within condition 1. The study took place over a time period of two days, consisting of three half-day training sessions, with three groups of participants. These participants were students, employees, former employees or former students at Linköpings university. The groups consisted of four, five and two participants each. Overall training-session procedure was also informally observed to gather data to describe the exercise (this data forms the basis for chapter 2).

Data for the CCRAAAFFFTING project was also collected during this pilot study. Data was therefore collected during the trainings-session as described in the first paragraph in 4.3.1. Immediately after the exercise was finished, the game leader informed the participants that the training-session was over and that a closing discussion would be held. During these discussions, the post-exercise discussion observation checklist, was used. After the discussion ended, participants filled out the TMX questionnaire and the evaluation questionnaire, for the CCRAAAFFFTING project, and the post-exercise discussion questionnaire, for this thesis. The questionnaires were filled out in this order.

After analyzing the data from the pilot study, one main issue could be detected. This main issue was that participants did not seem to differentiate between the discussions during the exercise and the post-exercise discussion. This could, e.g., be seen in the discrepancy between the high degree of perceived feedback reported by the participants and the non-existing feedback observed during the post-exercise discussion.

In attempt to solve this problem some modifications were done to the research design, its execution and the data collection materials. The overall research design was kept, although, modified to include a more formalized observation of the exercise, with focus on provided feedback during exercise (this design corresponds to the one reported in 4.3). Modifications in executions were (1) the use of an observation checklist during the exercise and (2) changes in proceedings. The proceedings were changed so that after finished exercise, the game leader would announce the end of the exercise followed by the participants filling out the TMX- and evaluation questionnaire before the beginning of the post-exercise discussion. The hope was to create a large enough space between the exercise and the post-exercise discussion so that the participants would be able to distinguish the two from each other. Also, the instructions provided to the participants were modified to be clearer, stating that this questionnaire only referred to the discussion held after the finished exercise. Some minor linguistic adjustments were also made in the questionnaire (e.g. changing the word “feedback-session” to “Discussion”). Apart from these modifications, research design, execution and data collection materials, remained unchanged.
4.6. Procedure

Data collection for the main study took place on three separate occasions. Each occasion corresponded to a full day's training. Data collection in condition 1 occurred at two of these occasions, and data collection in condition 2 at one occasion. On all occasions, participants had the opportunity to fill in a consent form in advance. Participants in condition 1 got the consent form via e-mail and participants in condition 2 got the consent form on paper at an information meeting the day before the exercise. Participants in condition 1 also had the opportunity to fill in a background questionnaire before they came to the exercise session. Opportunity to fill in these forms on arrival, before the beginning of the exercise, was provided.

Condition 1: The 14 participants recruited for condition 1, constituted two teams of seven participants each. Only one team performing the exercise at a given occasion. Each training session began with a 30-40 minute introduction of the study and exercise, held by the game leader. After the introduction, the exercise started. The teams played through the game as explained in 2.5. however, due to time constraints, they only played four DP, instead of five DP, rounds. After the first round was finished, a longer break was taken for lunch, after which another round was played. In this round, the team had access to the list of action created during the first round. Both rounds were observed as separate situations, therefore using two sets of the observation checklist for feedback during exercise (Appendix II). Data was also collected during these two rounds for the CCRAAAFFFTING project as described in the first paragraph of 4.3.1., minus the measuring point of DP five. After the two rounds were finished, participants filled out the TMX- and evaluation questionnaire (CCRAAAFFFTING project), before the post-exercise discussion. This discussion was observed using the observation checklist for post-exercise discussion (Appendix IV). After the discussion, participants filled in the participants questionnaire (Appendix VI).

Condition 2: The 17 participants recruited for condition 2, constituted three teams of five to six participants each. All three teams performed the exercise at the same occasion, at the same time. The exercise begun with all participants gathering together to receive information on the day's proceedings. After the information, the teams, and the opponents, went to their separate rooms. Once in their places, the exercise started. The three teams took part in the seven-hour long exercise. The exercise was only paused for lunch. This proceeding was observed using the

Figure 7: Overview of the data collection procedure for this study in condition 1. The dashed line squares represent the exercise proceedings and the solid line squares represent the data collection procedure.
observation checklist for feedback during exercise (Appendix II). After the exercise ended, all participants gathered together for information about the post-exercise discussion. The teams then returned to their previous rooms, with the opponent they had during the exercise as their AAR facilitator. These discussions were observed using the observation checklist for post-exercise discussion (Appendix IV). However, due to all three teams performing at once, and there only being one observer, all observations were fragmentary. After the discussion, participants filled out the participants questionnaire (Appendix VI) and a background questionnaire (Appendix VIII), and the facilitators filled out the facilitator questionnaire (Appendix X).

Figure 8: Overview of the data collection procedure for this study in condition 2. The dashed line squares represent the exercise proceedings and the solid line squares represent the data collection procedure.

4.7. Compilation and analysis of data
Data from the study was compiled in spreadsheets in the free statistical analyze program Jamovi (Jamovi project, 2018., version 0.9 [Computer Software], retrieved from https://www.jamovi.org). Although this study being mainly exploratory and the sample size being too small to make any valid statistical conclusions, independent-sample t-tests (Student’s t) were conducted to compare numeric data from questionnaires in the two conditions. The applied alpha-value was α = 0.05. The independent-sample t-tests were also used to descriptively analyze questionnaire data.

Thematic analysis, which focuses on pinpointing, examining and highlighting patterns within qualitative data (Clarke & Braun, 2006), was conducted to analyze data from open-ended questions in the questionnaires and data collected with observation checklists. The thematic analysis followed the six phases presented by Clarke and Braun (2006): (1) Creating an overview and taking initial notes, (2) Create codes for reappearing features in the material, (3) Initial grouping of codes into themes, (4) Revisions of themes, (5) Defining and naming themes, and (6) Decide and report themes which helps answering research questions. The analysis thus begun with a read through of the material with initial notes/codes written down in a new column in the spreadsheet. Material and codes were revisited, upon which, initial themes were written down in an additional column. Themes and codes were revisited a last time before the themes got their final definition and name. Identified themes are presented in chapter 5. Analysis and discussion.

Analyzes of the observation checklists will not be reported as themes, rather will be reported in a more free-floating text to depict and describe the observed phenomena.
5. Results and analysis

In the following chapter, results from observations and questionnaires are reported and, when needed, analyzed. Excerpts from observations and cited open-ended questions are summarized and presented in both English and Swedish in Appendix XII. The chapter starts with observation-based descriptions of how feedback was provided during exercises and how post-exercise discussions were conducted. Then, descriptive and statistical analyses of the participant questionnaire are presented followed by thematic analysis of the questionnaire’s open-ended questions. The chapter concludes with a presentation of the thematical analyses of the open-ended questions in the facilitator’s questionnaire.

5.1. Feedback during exercise

Results reported in this paragraph are based on observations conducted during the exercises, guided by the observation checklist (Appendix II (swe), Appendix III (eng)).

5.1.1. Condition 1: Simulated disruption in card payment systems

Feedback was provided by the game leader at every DP. The game leader explained developments and performances based on the teams decided actions. Feedback was provided at team level, only focusing on the team’s actions, disregarding individual contributions and actions within the team. Pointers or hands were used to guide participants focus to relevant indicators and sources of information. The main source of information used to provide feedback was the views in the simulator, and primarily the views containing indicators for food and gas retailing (see 2.2.). Other simulator views, as well as fictive news tabloids printed on paper, were used to provide performance feedback or to draw attention to a development that the team may not yet have noticed.

The game leader informs the team that their sales have plummeted [points to food-indicator], arguing that this might be due to the team’s decision to close some of the smaller stores and limiting food sales to basic goods in the remaining ones. The game leader then points to two additional food-indicators [hoarding and stealing] and says that as a result of fewer stores being open and the team deciding to add more guards, the team has counteracted the trends of increased hoarding and increased stealing.

The game leader holds up a news tabloid. The heading and picture of the tabloid seems to indicate a growing problem with empty shelves in stores. The game leader informs the participants about the empty shelves becoming a problem, not yet to the extent of excessive hoarding taking place, although enough to have arisen concerns among citizens.

The two above excerpts exemplify how the game leader links the performance data to the team’s actions to provide feedback and possible explanations as well as using other information sources than the simulator to provide the team with new information. The teams receive feedback after every decision point (DP). All game sessions that constitute the basis for this study consisted of four out of the games five DP's, except one session where only three DP's were played.
Two independent-sample t-tests were conducted to compare (1) duration of feedback per DP’s in the first and second game session, and (2) duration of aggregated feedback in the first and the second game session. There was no significant difference between the duration of feedback per DP’s in the first game session ($M = 3.70 \text{ min}, SD = 1.80$) and second game session ($M = 3.59 \text{ min}, SD = 1.92$), $t(13) = 0.119, p = 0.907$. Neither was there a significant difference in aggregated feedback duration in the first game session ($M = 14.80 \text{ min}, SD = 1.00$) and the second game session ($M = 12.60 \text{ min}, SD = 3.92$), $t(2) = 0.787, p = 0.514$. The results indicate that increased knowledge of the game (due to playing the first session) does not affect the duration of feedback in later games. Descriptive statistics are provided in table 1.

Table 1

<table>
<thead>
<tr>
<th>Duration (min)/ DP</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration (min)/ DP</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Session 1</td>
<td>8</td>
<td>3.70</td>
<td>1.80</td>
</tr>
<tr>
<td>Session 2</td>
<td>7</td>
<td>3.59</td>
<td>1.92</td>
</tr>
<tr>
<td>Duration (min)/ session</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Session 1</td>
<td>2</td>
<td>14.80</td>
<td>1.00</td>
</tr>
<tr>
<td>Session 2</td>
<td>2</td>
<td>12.60</td>
<td>3.92</td>
</tr>
</tbody>
</table>

*a* Note that these results are based on one less data point since the second game’s, second session only consisted of three played DP’s.

5.1.2. Condition 2: Simulated UN mission

The teams did not receive any feedback regarding their overall performance or concordance with their plans during the exercise. The team’s representatives, participating in sub-exercises, however, received feedback on their individual performances. This feedback was provided verbally without any use of tools or other artefacts. An observation of one of the press conferences can be used as an example:

The representative [participant] was met by a journalist [teacher]. Questions were asked and answered. After ending the interview, the journalist returns to the original role of a teacher. The participant answers additional questions about the experienced situation and what message s/he had wanted to convey. After listening to the participant’s answers, the teacher compliments the participant on a job well done, stating that s/he had provided concise answers without getting into long complicated answers or explanations.

This kind of feedback, on sub-exercises, was provided to a few participants. This feedback did not contain information regarding the team’s overall performances or progress and is therefore believed to have a low impact on the team’s continued work.

5.1.3. Summary

Feedback were provided during the exercise in both conditions. However, administration of feedback differs between the two conditions in three major aspects; (1) duration, (2) level of feedback, and (3) span of distribution. Feedback is only distributed to a few participants in condition 2 whereas all participants in condition 1 receive feedback. Participants in condition 1 is also provided with team level feedback, focusing on the team’s actions and performances,
whereas the few participants receiving feedback in condition 2 is provided with individual level feedback, covering individual performances. Participants in condition 1 did also receive a higher duration of feedback, as measured in minutes, than participants in condition 2.

5.2. Post-exercise discussion
Results reported in this paragraph are based on observations conducted during the post-exercise discussions, guided by the observation checklist (Appendix IV (swe), Appendix V (eng)). Reported results from observations in condition 2 have been supplemented with answers from questions 5-7 from the facilitators’ questionnaires (Appendix X (swe), Appendix XI (eng)) since all three discussions were held simultaneously and observations therefore might, in some respects, be deficient.

5.2.1. Condition 1: Simulated disruption in card payment systems
No presentations of rules of conduct were observed. Three questions, presented on a screen, constitute the structure of the discussion. These questions were (1) What have you learned from the exercise and what do you bring back to your organization, (2) What needs to be solved at national level before this kind of situation occurs in reality, and, (3) What do you think we should change in the game.

The discussion lasted for an average of 14.35 minutes and was executed in two phases. In the first phase, participants individually answered the three questions. Allocated time for phase one was 3-5 minutes. In phase two, the participants shared their answer with the rest of the team. By asking the participants to, one at a time, share their answers, the game leader made sure that all participant participated. Participants provided their answer, to which another one might add or build upon.

The game leader instructs the participants to share their responses one at a time, but hands over the decision on who to start to the participants themselves. One participant responds, facing the game leader, saying that s/he has gained a greater understanding for how everything is connected. Another participant adds to the answer by stating that s/he have realized the importance of collaboration. A third participant agrees, highlighting the existence of dependencies between the actors which s/he had not known before.

By adding and building upon previous answers in this way, participants can list important new insights, however, they do not analyze together why this knowledge and insights are important and how this knowledge can help in future situations. Since the discussion focused on the subjective answers to the questions and not on improving the performance of the exercise, feedback from the game leader was not needed. Thus, no feedback was provided, and no tools or artefacts was used to provide feedback during the discussion.

5.2.2. Condition 2: Simulated UN mission
Verbal presentation of rules of conduct were observed in one of the three teams. The omission of rules of conduct in the other two teams were later attributed to forgetfulness. The MSB’s AAR structure, consisting of five main questions for analyzing what was supposed to happen,
what did happen, why did it happen, what, and how, can we do better next time, and who else needs to know, were used in these discussions. The facilitators used an excerpt from the MSB's dialogue guide (MSB, n.d.) containing the main and sub-questions as support (see Appendix I).

The discussions lasted for 40-50 minutes and was executed in two phases. In the first phase, participants individually answered the first four main questions. Allocated time for phase one was 5-10 minutes. In phase two, the participants collectively answered all five main questions. Allocated time for phase two was 30-40 minutes. All three facilitators reported that they followed the structure and that they used whiteboards to present the first four main questions to the participants in phase one. Apart from the use of whiteboards in phase one, no other tools or artifacts were used by the facilitators to support the discussion. However, participants themselves could use the team’s activity log or other materials they acquired or compiled during the exercise as support for discussion.

One participant produced a digital map over the area using the projector. The map had drawn symbols on it, representing various events that had occurred during the exercise, e.g. fires and roadblocks. The participant stated that this map had served as visual support, providing the team with current information of what happened in the area so that new, or altered, plans could take this into consideration. The participants then moved on to talk about the alternative approaches they had considered during the exercise, and how they, with help of the map [and additional information], either had discarded them or decided to continue working on them.

The above excerpts provide an example of how the participants themselves uses tools and artefacts to provide support to the discussion. By bringing fourth the map, the participant provided context when discussing what happened and what could have been done differently.

All three facilitators reported that all participants participated during the discussions. How the facilitators went about to engage the participants in the discussion is unclear, however, one of the facilitators was observed to direct the questions specifically to participants who had been quiet for some time, asking about their opinion. In all three cases, the participants received feedback on their performance in the end of the discussion. In one of the cases was feedback provided by the facilitator while, in the other two cases, feedback was provided by one of the observing teachers who had been observing the whole exercise. This feedback was given verbally, and on a team level (only focusing on the team’s actions, disregarding individual contributions and actions within the team). However, during the discussions, the participants might provide each other with individual-level feedback.

The team talked about an episode when it was difficult to keep track of everything that happened. One participant commends the team's efforts and directed a special thanks to one team member. The participant stated that if it was not for [team member] who, in addition to the own tasks, also helped organize and structure incoming information, they [the team] might have committed major errors and endangered the whole mission.
Participants talked about the importance of communication. An uneven distribution of workload had resulted in one participant receiving a much heavier workload than the others. One participant argues that s/he [the participant with heavier workload] did a fantastic job but should have called attention to the skewed workload earlier. Another participant agrees on the good job part, but states that the team should have been more vigilant and asked how everyone was doing.

The two above excerpts exemplify how the participants themselves can provide feedback, both on an individual level, complement and constructively criticize individuals’ performances, as well as on a team level, identifying areas and ways in which the team could have behaved differently.

5.2.3. Summary

The post-exercise discussions conducted in the two conditions are similar in that both types of discussion: (1) used a facilitator/game leader, (2) used guiding questions, and (3) consisting of an initial individual phase followed by collective phase. Besides these similarities, three major differences were identified. These differences are: (1) duration, where more time is spent on discussions in condition 2, (2) focus, where the discussion in condition 2 is focusing more on reflection upon events and performances than in condition 1, where focus lies on identifying what was learned and what needs to change in society and in the game, (3) feedback, where participants in condition 2 receive both team level feedback (from teacher not being the facilitator) and, to an extent, individual level (from other team members), whereas participants in condition 1 did not receive any type of feedback at all.

5.3. Participant Questionnaires

A total of 27 participants answered the participant questionnaire. The questionnaire consists of 18 questions where the participants indicate their experience from 1 = very low extent to 5 = very high extent. Reported experiences smaller than three (\( M < 3 \)) will be considered as the existence of the factor to a low extent, whereas reported experiences larger than three (\( M > 3 \)) will be considered as the presence of the factor to a higher extent. Reported experiences equal to three (\( M = 3 \)) will be considered as the presence of the factor, but where the participants have not decided to which extent. Instances where participants answered that a factor did not occur will be specifically mentioned.

5.3.1. Structure

The structure of the post-exercise discussion was the independent variable in this study, with no pre-determined debriefing structure in condition 1 and the MSB’s AAR structure in condition 2. It was therefore considered to be of interest to investigate how the participants experienced structure (Q.9), preparation (Q.8) and time spent on the discussions (Q.18). An overview of the mean results from questions related to the discussions structure is shown in table 2.
Table 2
Descriptive data on participants reported experienced structure:

<table>
<thead>
<tr>
<th>Question</th>
<th>Condition 1</th>
<th></th>
<th></th>
<th>Condition 2</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Q.8 The element was well prepared</td>
<td>N</td>
<td>Mean</td>
<td>SD</td>
<td>N</td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>3.67</td>
<td>0.49</td>
<td>15</td>
<td>3.60</td>
<td>0.74</td>
</tr>
<tr>
<td>Q.9 The element was structured and cohesive</td>
<td>N</td>
<td>4.00</td>
<td>0.43</td>
<td>15</td>
<td>3.87</td>
<td>0.83</td>
</tr>
<tr>
<td>Q.18 There was enough time set aside</td>
<td>N</td>
<td>3.50</td>
<td>0.80</td>
<td>15</td>
<td>3.53</td>
<td>1.13</td>
</tr>
</tbody>
</table>

The extent to which the discussion was perceived as well prepared (Q.8) (condition 1: $M = 3.67$, $SD = 0.60$; condition 2: $M = 3.60$, $SD = 0.74$) and the extent to which participants experienced that enough time was allocated for the discussions (Q.18) (condition 1: $M = 3.50$, $SD = 0.80$; condition 2: $M = 3.53$, $SD = 1.13$) were slightly on the higher end of the scale in both conditions. In both conditions did participants to a large extent experience that the discussion was structured and cohesive (Q.9), although participants in conditions 1 experienced a numerically larger extent of structure ($M = 4.00$, $SD = 0.43$) than participants in condition 2 ($M = 3.87$, $SD = 0.83$). However, none of the discovered differences between the two conditions were significant: Question 8 = $t(25) = 0.269$, $p = 0.790$, Question 9 = $t(25) = 0.503$, $p = 0.620$, Question 18 = $t(25) = -0.087$, $p = 0.932$.

5.3.2. Feedback

Feedback is important for team learning and both the focus (correct or incorrect performance) and level which the feedback is directed at (individual or team) affects learning (Gabelica, et.al., 2014; Hattie & Timperley, 2007; London & Sessa, 2006). Participants were therefor asked to what extent they experienced that they received feedback on group performance (Q.1), individual performance (Q.2), on elements that went well (Q.3) and on elements that went less well (Q.4). An overview of the mean results from questions related to feedback is shown in table 3.

Table 3
Descriptive data on participants reported experience of received feedback on:

<table>
<thead>
<tr>
<th>Question</th>
<th>Condition 1</th>
<th></th>
<th></th>
<th>Condition 2</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Q.1 Group performance</td>
<td>N</td>
<td>Mean</td>
<td>SD</td>
<td>N</td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td>Q.2 Individual performance</td>
<td>12**</td>
<td>2.71</td>
<td>0.76</td>
<td>15*</td>
<td>2.57</td>
<td>1.16</td>
</tr>
<tr>
<td>Q.3 Elements that went well</td>
<td>12</td>
<td>3.58</td>
<td>0.67</td>
<td>15</td>
<td>3.93</td>
<td>0.80</td>
</tr>
<tr>
<td>Q.4 Elements that did not go so well</td>
<td>12*</td>
<td>2.91</td>
<td>0.54</td>
<td>15</td>
<td>3.13</td>
<td>0.92</td>
</tr>
</tbody>
</table>

* One participant reported that the element did not occur, ** five participants reported that the element did not occur.

A high degree of team level feedback (Q.1) was reported in both conditions, were participants in condition 2 reported a higher degree ($M = 4.20$, $SD = 1.01$) than participants in condition 1 ($M = 4.00$, $SD = 0.60$). In both conditions did participant experience a low degree of received individual feedback (Q.2), where participants in condition 2 reported a lower degree ($M = 2.57$, $SD = 1.16$) than participants in condition 1 ($M = 2.71$, $SD = 0.76$). However, in condition 1 did five participants report a non-occurrence of individual feedback, whereas only one participant
in condition 2 did the same thing. Correct performance feedback (Q.3) was experienced to a high extent in both conditions, were a higher extent was reported in condition 2 ($M = 3.93, SD = 0.80$) than in condition 1 ($M = 3.58, SD = 0.67$). Feedback on incorrect performance (Q.4) was experienced to an extent just above $M = 3$ in condition 2 ($M = 3.13, SD = 0.92$), places it on the higher end of the scale, and just below $M = 3$ in condition 1 ($M = 2.91, SD = 0.54$), places it on the lower end of the scale. No significant differences in participant experience were detected between conditions in: Question 1 = $t(25) = -0.602, p = 0.553$, Question 2 = $t(19) = 0.295, p = 0.772$, Question 3 = $t(25) = -1.214, p = 0.236$, Question 4 = $t(24) = -0.723, p = 0.477$.

5.3.3. Reflection

Reflection is an important part of team learning (Daudelin, 1996; Decuyper, et.al., 2010; Konradt, et.al., 2016; West & Sacramento, 2010) and also constitutes the fundamental basis of debriefings (Tannenbaum & Cerasoli, 2013). Participants were asked to rate the extent of perceived possibility to discuss: team’s performance, how to evade potential problems in the future, and how to, in the future, repeat successes. An overview of the mean results from questions related to reflection is shown in table 4.

<table>
<thead>
<tr>
<th>Question</th>
<th>Condition 1</th>
<th>Condition 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Mean</td>
</tr>
<tr>
<td>Q.5 Team’s performance</td>
<td>12*</td>
<td>3.09</td>
</tr>
<tr>
<td>Q.6 How to evade potential problems</td>
<td>12*</td>
<td>3.45</td>
</tr>
<tr>
<td>Q.7 How to repeat successes</td>
<td>12*</td>
<td>3.36</td>
</tr>
</tbody>
</table>

*One participant reported that the element did not occur

In all three instances was the reported extent of perceived possibility to discuss higher in condition 2 than in condition 1. A high degree of possibility to discuss the team’s performance (Q.5) was reported in condition 2 ($M = 4.13, SD = 0.64$) whereas only a slightly higher degree of possibility to discuss team performance was reported in condition 1 ($M = 3.09, SD = 0.94$). In both conditions did participants experience a high degree of possibility to discuss how to evade potential problems (Q.6), although a higher degree was reported in condition 2 ($M = 4.00, SD = 1.07$) than in condition 1 ($M = 3.45, SD = 1.04$). The extent to which participants perceived that they could discuss how to repeat successes (Q.7) were also reported high in both conditions, higher in condition 2 ($M = 3.60, SD = 1.06$) than in condition 1 ($M = 3.36, SD = 0.81$). No significant differences in experience in the two conditions were identified for question 6 ($t(24) = -1.302, p = 0.205$) and question 7 ($t(24) = -0.620, p = 0.541$). However, there was a significant difference in experienced possibility to discuss team performance ($t(24) = -3.362, p = 0.003$), were the extent to which the team could discuss team performance was higher in condition 2. In all three instances did one participant in condition 1 report non-occurrence.
5.3.4. Facilitator’s involvement

Since facilitators are usually used in AAR and seen as an important aspect of the methods success, participants were asked to what extent they perceived that the facilitator had encouraged the discussion, welcomed everyone’s opinions, used tools to provide feedback/facilitate discussion, and contributed to individual learning. An overview of the mean results from questions related to the facilitator’s involvement is shown in table 5.

Table 5
Descriptive data on participants reported experience of the facilitator’s involvement:

<table>
<thead>
<tr>
<th>Question</th>
<th>Condition 1</th>
<th>Condition 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Mean</td>
</tr>
<tr>
<td>Q.13 Encouraged discussion</td>
<td>12</td>
<td>4.33</td>
</tr>
<tr>
<td>Q.14 Welcomed everyone's opinions</td>
<td>12</td>
<td>4.58</td>
</tr>
<tr>
<td>Q.15 Used tools to provide feedback/facilitate discussions</td>
<td>12</td>
<td>3.67</td>
</tr>
<tr>
<td>Q.16 Contributed to individual learning</td>
<td>12</td>
<td>4.00</td>
</tr>
</tbody>
</table>

* One participant reported that the element did not occur

A high extent of perceived encouragement from the facilitator (Q.13) was reported in both conditions, although numerically higher in condition 2 ($M = 4.47, SD = 0.64$) than in condition 1 ($M = 4.33, SD = 0.65$). A high extent of perceived facilitator objectivity (Q.14) was also reported in both conditions, again, numerically higher in condition 2 ($M = 4.67, SD = 0.49$) than in condition 1 ($M = 4.58, SD = 0.52$). The extent to which the facilitator was perceived to use tools (Q.15) was reported as high in condition 1 ($M = 3.67, SD = 0.78$) and as percent but undecided in condition 2 ($M = 3.00, SD = 0.88$), where one participant also reported a non-occurrence. Facilitators were perceived as contributing to individual learning to a high extent in both conditions (condition 1: $M = 4.00, SD = 0.60$; condition 2: $M = 4.00, SD = 0.66$). No significant differences in participant experience were detected between conditions in: Question 13 = $t(25) = -0.534, p = 0.598$, Question 14 = $t(25) = -0.430, p = 0.671$, Question 15 = $t(24) = 2.034, p = 0.053$, Question 16 = $t(25) = 0.000, p = 1.000$.

5.3.5. Learning

That participants participating in exercises learn something can be considered an obvious goal for any exercise developer. In this study, no objective way of measuring learning was identified, so participants were asked to rate the extent to which they experienced that they, and the team, learned. An overview of the mean results from questions related to learning is shown in table 6.

Table 6
Descriptive data on participants reported experience of learning:

<table>
<thead>
<tr>
<th>Question</th>
<th>Condition 1</th>
<th>Condition 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Mean</td>
</tr>
<tr>
<td>Q.11 Group learning</td>
<td>12</td>
<td>4.33</td>
</tr>
<tr>
<td>Q.12 Individual learning</td>
<td>12*</td>
<td>4.00</td>
</tr>
</tbody>
</table>

* One data point is missing
In both instances did participants in condition 1 experience a higher degree of individual (Q.12) 
\(M = 4.00, SD = 0.89\) and team learning (Q.11) \(M = 4.33, SD = 0.65\) than participants in 
condition 2 (individual: \(M = 3.87, SD = 0.74\); team: \(M = 4.27, SD = 0.59\)). In both conditions 
did participants experience a high degree of individual and team learning. No significant 
differences in participant experience were detected between conditions in: Question 11 = \(t(25) = 0.278, p = 0.783\), Question 12 = \(t(24) = 0.415, p = 0.682\).

5.3.6. Psychological safety

Psychological safety is important for enhance team learning (Edmondson, 1999; Edmondson 
& Lei, 2014) and to produce better outcomes from AAR’s (Baird, et.al., 1999; Bolton, 2016; 
Lareau & Long, 2018). One way to ensure psychological safety is to introduce rules of conduct 
(Lareau & Long, 2018). An overview of the mean results from questions related to psychological safety is shown in table 7.

Table 7
Descriptive data on participants reported experience of psychological safety:

<table>
<thead>
<tr>
<th>Question</th>
<th>Condition 1</th>
<th></th>
<th>Condition 2</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Mean</td>
<td>SD</td>
<td>N</td>
</tr>
<tr>
<td>Q.10 There was clear rules of conduct</td>
<td>12</td>
<td>3.42</td>
<td>0.52</td>
<td>15</td>
</tr>
<tr>
<td>Q.17 Extent of comfortability with speaking in the team</td>
<td>12</td>
<td>4.42</td>
<td>0.52</td>
<td>15</td>
</tr>
</tbody>
</table>

Participants in both conditions reported that they to a high extent felt comfortable talking in 
front of the other teammates (Q.17) (condition 1: \(M = 4.42, SD = 0.52\); condition 2: \(M = 4.47, 
SD = 0.67\)). High levels of experienced presence of rules of conduct was also reported in both 
conditions (Q.10) (condition 1: \(M = 3.42, SD = 0.52\); condition 2: \(M = 3.33, SD = 1.11\)). None 
of these differences were significant: Question 10 = \(t(25) = 0.813, p = 0.239\), Question 17 = \(t(25) = 0.828, p = -0.219\).

5.3.7. Thematic analysis of open-ended questions

The post-exercise discussion questionnaire for participants contained three open-ended questions: what they learned during the post-exercise discussion (Q.19), if, and how the discussion contributed to learning (Q.20) and if they had any suggestions on how to improve the discussions (Q.21). Data from Q.19 will be analyzed elsewhere, since comparisons of participants lessons learned in two different conditions does not contribute to any deeper understanding of whether or not to implement AAR’s in the CCRAAAAFFFTING project. Themes identified as a result of a thematic analysis is presented in table 8 along with the number and percentage of participant providing answers related to the themes.
Table 8
Number and percentage of participants providing answers related to each theme.

<table>
<thead>
<tr>
<th>Question</th>
<th>Condition 1</th>
<th></th>
<th>Condition 2</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>Theme</td>
<td>N</td>
</tr>
<tr>
<td>Q.20</td>
<td>7</td>
<td>58</td>
<td>Possibility to share perspectives</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>33</td>
<td>Task-specific learning</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
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Note. Total number of participants: Condition 1 = 12, Condition 2 = 15.
Note. Participants can provide answer in which more than one theme is identified. Thus, the percentage does not necessarily add up to 100.

5.3.7.1. Question 20: If, and how the post-exercise discussion contributed to learning
One participant (8%) refrained from answering Q.20 in condition 1. Two themes were identified in condition 1: Possibility to share perspectives and task-specific learning. The discussion provided the possibility to share perspectives, where participants were able “to exchange experiences” and “to hear thoughts and reflections from people in other industries/organizations' based on their backgrounds and everyday life experiences”. The second theme of task-specific learning might be considered a theme of wrongful answers, since this theme is constructed out of answers such as “The importance of working up communication channels, both public/private, before the crisis comes” and “We are dependent upon each other and need a better understanding of each other's challenges”, which are considered lessons learned during the exercise, and not aspects of the discussion nor interpersonal behaviors participants engage in during the discussion which contributed to their learning.

That the discussion provided a possibility to share perspectives was also reported in condition 2, along with three additional themes: possibility to reflect, receiving feedback and being able to relate theories to the event. The possibility to reflect refers to participants experiencing that “reflecting upon what was learned”, “talking about strengths and weaknesses” and “what we [the team] performed well and what can be improved” contributed to their learning. Receiving feedback refers to participants experiencing that they “/.../ received feedback linked to the team's decision” contributed to learning. Relate theories to the event refers to participants experiencing that they had the possibility to link leadership theories covered in the course when analyzing the performance. Two participants (13%) refrained from answering the question.

More themes were identified in condition 2 (4) than in condition 1 (2). This could be due to the use of AAR in condition 2, since the method prompt participants to share experiences and to reflect. Since the exercise in condition 2 also is part of a course, could it be considered natural that relevant theories are worked in to the analysis. However, during the thematic analysis of answers in condition 1 did the author note some indications of an expanded focus, were participants may have included all discussions during the exercise and not just the final
discussion after the exercise was completed. For example: “to hear thoughts and reflections from people in other industries/organizations' based on their backgrounds and everyday life experiences” was one of the quote for exemplifying the importance of sharing perspectives and experiences, however, the part “based on their backgrounds and everyday life experiences” is not really covered in the post-exercise discussion, rather this part of sharing is covered in the exercise discussions where the team tries to establish a common ground and understanding in order to make decisions (further discussion related to this expanded focus or misinterpretation of the questionnaire will be covered in the result discussion in chapter 6).

5.3.7.2. Question 21: Suggested improvements
There was a high frequency of missing data (non-answers), N = 5, 42%, in condition 1. Two participants (17%) stated that they had no suggestions on how to improve the post-exercise discussion. Answers from remaining participants could be divided in to two themes: More time and more structure. More time refers to participants experiencing the need of more time to cover all questions in the post exercise discussion or to discuss “/.../ how decisions affected the results”. More structure refers to participants stating that they believe that all questions asked in the post-exercise discussion should be covered, or that the structure should focus on feedback and discussion regarding performances, problems and future successes, and the need for “more structure to clarify what have been decided during each discussion” (this last quote also indicates a broader focus than intended, as discussed above).

The frequency of missing data was lower in condition 2 (N = 2, 13%), however, more participants stated that they had no suggestions of improvements (N = 4, 27%). Three themes were identified: more time, more room for self-criticism and ensure everyone's participation. More time refers to participants experiencing the need for more time to allow for deeper discussions. More room for self-criticism refers to a request for ”self-criticism (although it was good to first focus on formulating positive criticism). Ensure everyone's participation refers to the statement highlighting the importance of giving “/.../ everyone a chance to speak”.

5.3.8. Summary
No significant differences were detected between the two conditions’ when using independent-sample t-tests, except in question 5: Degree of possibility to discuss team performances, where participants in condition 2 reported a higher degree than participants in condition 1. The majority of answers where on the higher end of the scale (M > 3) without any clear pattern of one condition reporting constantly higher experiences than the other. Answers on the lower end of the scale (M < 3) were provided in two questions: Q.2 Degree of feedback on individual performance and Q.4 Degree of feedback on elements that did not go so well, where both conditions provided low mean’s on Q.2 and where condition 1 provided a low mean in Q.4. Q.2 was also the question with the highest proportion of non-occurrence answers, in both conditions. On both open-ended questions where a larger proportion of themes identified in conditions 2 than in condition 1. In both conditions where the theme: possibility to share perspectives, believed to be an important feature of the discussion which contributed to their learning, as well as participants in both conditions suggested allocating more time to these discussions as a way to improve them. In condition 1 it was also suggested that more structure could be added to the discussion as an improvement, whereas participants in condition 2
suggested more space for self-criticism and ensuring everyone’s participation to improve the discussion. Participants in condition 2 also reported that receiving feedback, be provided with the possibility to reflect and relate theories to events, were features of the discussion which contributed to their learning.

5.4. Facilitator’s Questionnaires
In the following sections are the themes, identified after a thematic analysis of the three open-ended questions in the facilitator questionnaire, presented. The themes will be presented under each respective question, and the questions will be reported in the same order as they appear in the questionnaire. The three open-ended questions were: (Q.8) What did you considered to be the strengths of the MSB AAR method, (Q.9) What did you considered to be the drawbacks of the MSB AAR method, and (Q.10) Would you use the MSB AAR method again. Motivate (see Appendix X (swe), Appendix XI (eng)).

5.4.1. Strengths
On the question of what the facilitators consider to be the strengths of the MSB's AAR method, the answers could be divided into two themes of: (1) structure, and (2) providing reflection and conversational space. Regarding the structure, one facilitator reports that the method's strength lies in the “Intuitive layout” with questions that “Covers the essentials”. By extension, it can be argued that the strength really lies in that the structure minimize the cognitive load placed on the facilitator. Since the layout of the procedure and questions are intuitive, the facilitator does not have to spend cognitive recourses analyzing how to guide the discussion forward, and since existing questions are believed to cover the essentials, no extra cognitive load is placed on the facilitator since there is no need to create new, appropriate questions on the spot.

Answers from the remaining two facilitators constitute the basis of the second theme: providing reflection and conversational space. One facilitator state that the method's strengths is that “It [AAR method] provides an opportunity for the participants to reflect” whereas the other report that the method's strength lies in the outcome of “Good conversation” where “Many good aspects surfaced” and where thoughts raised by the participants “/.../ were deep and insightful”. Thus, the use of the method creates a reflection and communicational space for where the participants can both reflet upon what has happened and at the same time highlight important aspects of the exercise and share thoughts and experiences with each other.

5.4.2. Drawbacks
The facilitators report three disadvantages of the MSB's AAR method. These were: (1) is time consuming, (2) requires a skilled facilitator, and (3) requires the participants feel psychologically safe. All facilitators reported that there was too little time allocated to the discussion, and that more time was needed. One facilitator report that 35 minutes for phase 2 was too little, and another facilitator report that time allocated for the entire AAR would need to be somewhere around 2-3 hours. It is no surprise that the facilitators experience a lack of time, since MSB advocates an allocated time of 55-65 minutes for the entire AAR (MSB utbildningsenhet, n.d.). However, exactly how much time is needed is hard to determine, and further research should explore what determines the length of the AAR and if there, for
example, are any correlations between the length of the exercise and the time needed for conducting a proper AAR.

That the method required a skilled facilitator was reported by two facilitators. One of the facilitators states that the method “Requires a good facilitator, or a group that takes on the responsibility themselves” indicating that the facilitators role is important for focusing and guiding the reflection. This can also be exemplified by the other facilitators answer, were s/he experienced it to be “Some difficulty working through the questions one by one. The participants jump between the various questions”. This is not to say that this facilitator didn’t do a good job, but that practice makes perfect, and none of the facilitators had previous experience of leading an AAR. The need of a skilled facilitator was also indirectly stated by the third facilitator who reported that a drawback of the AAR method was that it required the participants to feel psychologically safe to talk. One part of the facilitator’s role is to motivate and encourage discussion and create a safe space for speaking, however, this is difficult. It is also important to acknowledge that other factors such as personality and disinterest, besides the risk of psychological discomfort or negative repercussions, can contribute to participants refraining from participating.

The third drawback, the need for participants to feel psychologically safe, was reported by one facilitator, who stated that “It [AAR method] requires trust, which was lacking between the participants, some spoke very little, did not want to speak”. The facilitator is right, trust, or psychological safety is important, both in team learning (Edmondson, 1999; Edmondson, 2002; Edmondson & Lei, 2014) and in AAR (Baird, et.al., 1999; Bolton, 2016). However, in condition 2, participants reported high degree of psychological safety ($M = 4.47, SD = 0.64$). However, participants were asked whether they felt safe talking in the team, never were they asked if they felt safe talking in front of the facilitator. So, in this case, where the exercise and discussion are held as part of a course and where the facilitator potentially can influence grades, the facilitator’s presence might influence the degree to which some participants feel comfortable enough talking. Thus, feeling psychologically safety within the team might not be enough, and participants also need to feel psychologically safe with the facilitator.

5.4.3. Would facilitators use the AAR again
The structure was thought of as being helpful in conducting the discussions, although more time would be required to properly work through all questions. Because of this, two of the facilitators stated that they would use the MSB’s AAR structure again, while the third facilitator had some reservations, reporting that s/he might use the structure in the future, “/.../ but it has to be included in the planning of the exercise with allocated time of 2-3 hours”.

5.4.4. Summary
The three facilitators provided answers from which both strengths and drawbacks could be derived. Reported strengths were the AAR structure itself as well as the method's ability to provide a reflection and conversational space. Identified drawbacks on the other hand were that the method requires a high amount of allocated time, skilled facilitators and high amount of psychological safety amongst participants. All facilitators, one with reservations, reported that they would consider using the AAR method again.
General discussion

In this chapter the empirical findings and the method used in the study are discussed.

6.1. Results discussion

The purpose of this thesis was to study the CCRAAAFFFTING project’s current post-exercise discussion structure in order to develop recommendations for the potential implementation of the AAR structure. Four research questions were postulated: 1) How is the post-exercise discussion conducted within the CCRAAAFFFTING project to day? 2) how are the CCRAAAFFFTING projects post-exercise discussions experienced by the participants? 3) Are there differences in experiences of post-exercise discussions between participants participating in post-exercise discussions using a non-specified method and participants participating in post-exercise discussions using the AAR method? and 4) If AAR should be implemented, how should it be implemented to support learning?

6.1.1. Research question 1

The first research question, how is the post-exercise discussion conducted within the CCRAAAFFFTING project to day, aims to describe how the post-exercise discussion is conducted within the CCRAAAFFFTING project. The description provided in 5.2.1., should be considered the answer to this question. However, this description only provides insight to the proceedings and says nothing about if it supports reflection or could be considered a debriefing.

The term, non-specified method, were used to clarify that no defined debriefing method was used without implying a lack of structure. Because, observations reveal that there is a structure to the current discussion. The current post-exercise discussions build on three questions and is executed in two phases. The first phase is an individual phase where participants answer the questions alone. The second phase is a collective phase where participants share their answers with each other. Described in this way, the current discussion shows superficial similarities with the AAR method.

However, there are important differences. One being the duration, where the current discussion is held for about 15 minutes while AAR is proposed to last for approximately 60 minutes (MSB, n.d). Another difference being feedback, where none is provided in the current discussions whereas it is an important part of AAR. However, maybe the most important difference being that, although the current discussion is guided by questions, these do not necessarily support reflection. The questions (see 5.2.1.) seems to be designed to provide the CCRAAAFFFTING projects researchers with important information to further guide the project (what was learned and does that correlates to what was intended, suggested measures at a national level (since part of the projects objectives is to develop recommendations) and collect improvement suggestions for the game). Since the focus of these questions are diverted from the event and team performance, they do not guide participants through the reflection process of identifying and analyzing event or strategies, test or develop explanatory or alternative theories of what happened and what to do in order to finally decide on actions (Daudelin, 1996). And since
reflection, alone (Konradt, et.al, 2016) or as part (West & Sacramento, 2010), is considered important in team learning, it could be argued that the lack of reflection in the current post-exercise discussion structure converts the interpersonal behavior of sharing into a concluding conversation rather than an active learning activity.

In order for the current post-exercise to be considered a debriefing, all four elements of Active self learning, Developmental intent, Specific events and Multiple information sources differentiating debriefings from other interventions must be present (Tannenbaum & Cerasoli, 2013). However, since the current post-exercise discussion structure fails to support reflection, the element of active self-learning is not present, and the current discussion cannot be classified as a debriefing. However, the current post-exercise discussion fails to include the remaining elements of debriefings as well. Since no feedback is provided, information from multiple sources is not used to ensure feedback credibility, thus, lacking the element of Multiple information sources. The focus of the overall exercise (question 1), instead of key actions or developments, cannot be considered as specific enough for granting the presence of the element of Specific events. Developmental intent, cannot be considered present since the focus is not to make future changes within the team, rather the focus is to investigate which measures might be helpful to avoid card-payment disruptions at a national level (question 2).

To summarize, the current post-exercise discussion in the CCRAAAFFFTING project do have a structure, which at a superficial level resembles the AAR. However, since the structure do not include the elements of Active self learning, Developmental intent, Specific events and Multiple information sources, these discussions cannot be classified as debriefings. The structure also fails to support reflection, which turns the current post-exercise discussion into more of a concluding conversation rather than an active learning activity.

6.1.2. Research question 2

Analysis of the participant questionnaire in condition 1 was intended to answer research question 2, how are the CCRAAAFFFTING projects post-exercise discussions experienced by the participants? However, indications show that participants might have included all the discussions during the exercise, including the post-exercise discussion, when answering the questionnaire. There are therefore uncertainties regarding how the results reported in 5.3. should be interpreted.

6.1.2.1. Indications on a larger focus

The largest indicators of participants having adopted a greater focus than intended, can be found in the answers regarding feedback and the facilitators involvement. Observations reveal that participants do not receive any feedback during the post-exercise discussion, rather, feedback is provided after each DP discussions during the game. Answers in the questionnaire should therefore have been “did not occur” instead of rated from one to five. However, this is not the case. Participants reported high degree of feedback (team-level, individual-level, on elements that went well and on elements that did not) and can be seen as an indicator that participants included all discussions when answering the questionnaire. However, it should be mentioned that the questions regarding feedback does not specify the source of the feedback. Participants might therefore perceive that they got feedback from the other team members. Feedback from
other team members might have occurred during the post-exercise discussion and been missed by the observer whom focused on the game-leader as the single source of feedback. However, this is seen as unlikely since the focus and nature of conversation during the post-exercise discussion did not cover the exercise.

Regarding the facilitator’s involvement, participants did report that they perceived the facilitator encouraged discussion, welcomed everybody’s opinions, used tools to provide feedback/facilitate discussion and contributed to individual learning to a high degree. However, during observations, no, or a minimal involvement, was observed. The facilitator provided initial instructions for the discussion and managed the transition from phase 1 to phase 2. No tools, except the power-point presentation with the questions, were used. The facilitator was more involved in the discussions during the exercise, asking follow-up questions, providing feedback and alternative explanations, guiding focus towards important information using computer screens and news tabloid etc. Since the facilitator was observed to be more involved during the game than during the post-exercise discussion, these responses causes suspicion that participants considers all discussions, both during and after the exercise, when answering the questionnaire.

Other indicators might also be found in answers such as those provided in the open-ended questions. Regarding improvement suggestions, participants might have included all discussions in their answers when stating that they seek more structure to make it “/.../ clear what the team arrived at and decided on during each discussion” and expressing the need for longer discussion regarding “/.../ how the teams decisions affected the results”. The first citation clearly writes each discussion, indication the existence of more than one discussion. The second citation refers to the subject of performance discussion and development which is only covered during the game and not in the post-exercise discussion. As mentioned previously (see 5.3.7.1. last paragraph) were indications of an expanded focus identified during the analysis of question 20. (If, and what with the post-exercise discussion contributed to learning). The analysis revealed that many participants attributed their learning to the fact that all team member shared their knowledge and experiences, however, this occurs during the game and not during the post-exercise discussion.

Due to the many indications of an expanded focus, were participants have included all discussions during and after the exercise, problems arise when interpreting the results. Since it is not possible to ascertain which discussions the participants had in mind when answering the questionnaire, or if they included everyone, no conclusions can be drawn on how they perceived the post-exercise discussion.

6.1.2.2. Alternative interpretation of the results
Since there are strong indications of participants including all discussion, the results are more likely to reflect the participants experience of all discussions within the exercise. Seen this way, the exercise with all the discussions, including the post-exercise discussion, helps create an environment in which participants experience and report high levels of the important team learning elements of psychological safety, reflection and feedback.
Participants reported a high degree of feeling safe talking in the team, which is important for increasing the possibility of engaging in interpersonal behaviors of importance for team learning such as sharing and reflecting (Edmondson, 1999; Edmondson & Lei, 2014). However, somebody can feel psychologically safe without actually participating in interpersonal behaviors. We know that individuals have shared knowledge, as this has been reported by the participants as the most important aspect contributing to learning. Participants also reported that they got to discuss the teams performance, how to avoid problems and how to repeat successes, which are important aspects of reflection (Daudelin, 1996). Reflection is also an important part of processing feedback (Gabilica, et.al., 2014; London & Sessa, 2006) and since participants reported a high degree of team level feedback and feedback on elements that went well during the exercise, processing, and thus reflection, would have been necessary.

Although participant reported high levels of team level feedback, they also reported lower levels of individual level feedback, where the response frequency of “did not occur”-answers were the highest. However, since the game constitutes a team-training opportunity, feedback should ideally be solely at the team level, since a mix of team- and individual level feedback hampers learning (London & Sessa, 2006). Thus, having participants reporting lower degrees of individual level feedback, or a high frequency of “did not occur”-answers, when at the same time reporting high levels of team level feedback, can be considered beneficial from a learning perspective, since that increases the chances of feedback facilitating team learning.

In addition to participants reporting the occurrences of important team learning aspects, participants also report high degree of structure and facilitator involvement. Structure and the use of facilitators have been shown to positively correlate with the success of debriefings (Tannenbaum & Cerasoli, 2013). And although debriefings, AAR, can be conducted during an exercise or event (Baired, et.al. 1999), the current discussions cannot be classified as debriefings. Discussions during the exercise do not rely on guiding questions, rather have a more free-form structure, where the participants themselves decides on what to discuss and how to discuss it, mainly with a focus on what to do next. The reason to not classify the post-exercise discussion as debriefings is covered in 6.1.1. Although the discussions cannot be classified as debriefings, the participants experience of the discussions being planned beforehand and following a structure might not be so surprising, since they occur regularly, duration is regulated by the facilitator and they always have the same purpose (deciding on what to do next) and are initiated with feedback from the facilitator. Since the facilitator have been observed to be more involved during the exercise, using tools to provide feedback and help participants wrap up their discussions and come to conclusions, are the reported experiences of high facilitators involvement not surprising. And although it seems intuitively that a structured exercise and the help from a facilitator would support team learning, no empirical evidence presented in this thesis support such conclusions.

The participants have also stated that learning has occurred on both team and individual level. Although the subjective experience of learning cannot be used as an actual measure of learning, it can serve as an indication of the relevance and usefulness of the exercise, since a useless and irrelevant exercise probably would not result in an experience of learning.
To summarize, there are contradictions between what was observed during the post-exercise discussion and what participants answered in the questionnaire, indicating that participants took all discussion, both during and after the exercise, into account when answering the questionnaire. As a result, no conclusions can be made regarding their experiences of the post-exercise discussion, and research question 2 cannot be answered in this study. However, viewed as a reflection of their experience of all discussions, results indicate that participants experienced an environment fostering psychological safety, allowing the occurrence of interpersonal behaviors of importance for team learning such as sharing knowledge and reflection, meanwhile also providing the participants with team level feedback. These discussions are also perceived as contributing to learning at both individual and team levels, being structured and being supported by the facilitator.

6.1.3. Research question 3

Research question 3, are there differences in experiences of post-exercise discussions between participants participating in post-exercise discussions using a non-specified method and participants participating in post-exercise discussions using the AAR method, is mainly answered by the conducted independent-sample t-tests. No significant differences between the two conditions were identified, except from question 5, where participants in condition 2 (using the AAR method) reported significantly higher degree of possibility to reflect and discuss upon team performance. Participants in condition 2 did also report higher, although not significantly higher, degree of experienced possibility to discuss how to prevent problems in the future and how to repeat successes than participants in condition 1. These results are to be expected since part of the MSB’s AAR structure specifically focuses on future actions (3. What and how can we do better next time) (MSB. n.d).

However, the reason for not detecting any other significant differences between the two conditions might be due to the previously discussed expanded focus of participants in condition 1. Team learning occur when team members engage in cycles of sharing knowledge, combining and creating new knowledge from what was shared, act upon this new knowledge and also to reflect upon own action (Argote, 2013; Edmondson, 2012). The AAR, although being a method for reflection, also enables team learning behaviors by encouraging participants to share and combine experiences and knowledge in order to define what was supposed to happen, analyze what and why it happened and identify what and where changes needs to be made (MSB, n.d; US Army, 2013). Thus, many team learning behaviors arise during the AAR and are therefore reported high in condition 2. However, in condition 1, these interpersonal behaviors occur during the game, where the discussion related to every DP allows participants to sharing branch specific knowledge, which can be combined with the knowledge from the other team members or used to create new knowledge in order to make decisions (act). The discussions also allow for evaluative reflection of own decisions (actions) and developments. These behaviors do not occur during the post-exercise discussion in condition one as argued in 6.1.1. The high reports of experienced team learning aspect in condition 1, although their missing in the post-exercise discussion, is therefore not entirely unfounded if all the discussions from the game where to be included. And since there are similarities in the behaviors that participants engage in during the game in condition 1 and the behaviors encourage in the AAR in condition 2, no significant difference between the two conditions are to really be expected. However, this makes it
impossible to compare the two groups, since they most likely do not report the same thing, that is, how they experienced the post-exercise discussion. Participants in condition 1 includes all discussions, even those held during the exercise, while participants in condition 2, only reports on the final discussion, the AAR.

So, in summary, no significant differences were identified regarding the experiences of the post-exercise discussion between the no-structure condition (condition 1) and the AAR condition (condition 2), except from the higher possibility to discuss and reflect upon the team’s performance in condition 2. However, the veracity of the results must be considered low since they reflect an incorrect comparison of two incomparable phenomena. Indications suggest that participants in condition 1 include all exercise discussions, which would mean that reported experiences of all discussions are compared with the reported experiences of the single, post-exercise discussion, AAR. So, the answer to research question 3, is that there was only one identifiable significant difference between conditions. However, indications suggest that the two conditions cannot be compared. Since the two conditions cannot be compared, research question 3 cannot be answered and conclusions regarding the potential benefits of implementing the AAR in the CCRAAFFFTING projects educational environment cannot be derived from these results.

6.1.4. Research question 4

Since there are doubts regarding the reliability of results from participant questionnaires and the comparisons between conditions, these results will constitute a limited basis for answering research question 4, if AAR should be implemented, how should it be implemented to support learning. Thus, this discussion will mainly be based on the conducted observations. However, when results from participant questionnaires are used, these will be used separately, where results from condition 1 will be seen as an assessment of the entire exercise and where results from condition 2 will be seen as the assessment of the AAR. Results from the facilitator questionnaire will also be used to answer this research question.

The current simulation-gaming environment developed in the CCRAAFFFTING project (see chapter 2), do support and enable participants to engage in important interpersonal behaviors, which can be seen as team learning (argued in 6.1.3.). However, when it comes to the current structure of the post-exercise discussion, it can be argued that the learning activity ceases, and that the discussion takes the form of a concluding conversation (argued in 6.1.1.). This does not necessarily have to have a negative impact on learning, but, if the post-exercise discussion is desired to be a learning activity, there is reason to consider implementing AAR which support reflection, an important part of team learning (Daudelin, 1996; West & Sacramento, 2010), and have been proved to increase team learning (Ellis & Davidi, 2005; Villado & Arthur, 2013).

Conducting an AAR involves a certain need for understanding the method, and facilitators needs to familiarize themselves with the method to use it. Thus, facilitators have to be educated to use the method. MSB provides a non-profit, one hour long, internet based, education and provides a brief handbook on how to conduct the AAR. The facilitators in this study did only take part of this information before conducting their AAR’s. The facilitators did manage to conduct their AAR’s without any major problems (although two of them forgot to present the
rules of conduct) and did perceive the method to support the discussions by being intuitive and covering the essentials of the exercise. However, they did also state that the method needs an efficient facilitator, something that might come, besides from a-priori education, with experience. So, implementation of the AAR would issue the need to properly educate the game leader/facilitator in how to conduct the AAR. However, MSB’s existing educational material provides facilitators with sufficient information and understanding of the method for it to be used, without consuming too much time. In both condition 1 and condition 2 did participants experience that the facilitator/game leader did contribute to their learning. Intended AAR’s should therefore continue to use facilitators, and where the game leader can take on the role of the facilitator. Thus, the need to educate facilitators should not outweigh the benefits of implementing AAR.

6.1.4.1. Structure
Implementing the AAR would transform the existing post-exercise discussion into a learning activity. The structure of the MSB’s AAR should be kept intact, since the first four phases moves the participants through a similar cycle of stages (what was intended to happen, what happened, why did it happen, what can be done differently) as to what Daudelin (1996) defines as the process of reflection (define event, analyze event, try different theories to explain or change the flow of the event, and, decide on action). Departures from this structure may result in participants no longer being guided through reflection, and the method loses its purpose. The fifth and final phase of the MSB’s AAR structure should remain, since this phase (who else needs to know), enables for organizational learning. By stimulating discussion focusing on identify lessons learned that may be of interest to the participants home organizations, and whom within their own organization that need to know about these lessons, participants might be more motivated to return to the home organization and share their new knowledge. Bringing this knowledge back, sharing it within the own organization, increases the possibility for institutionalizing and organizational learning (Crossan, et.al. 1999). Part of the MSB’s AAR is also that a protocol is created and distributed (MSB, n.d.). The possibilities for such protocols to be established and distribution by the CCRAAAAFFFFTING staff should be further examined. Saving explicit knowledge from the exercise within a document that is to be distributed to the participants home organizations might help transfer explicit knowledge from multidisciplinary ad hoc teams to their respective home organizations’ knowledge repositories, thus, increasing the possibility for organization learning (Argote, 2013). Although this transfer of knowledge not necessarily results in changes in the home organizations’ day-to-day routines, the knowledge can have cognitive impact and influence future readiness for action (Argote & Miron-Spector, 2011). Such changes could be argued to affect the resiliencies of a system. The knowledge can be used to alter the prerequisite functions presented in the SyRes model by broadening the spectrum of events and effects that the organization can anticipate, help regulate the systems monitoring routines, and identify potential response and recovery strategies for when an event occurs (Lundberg & Johansson, 2015). Providing protocols of lessons learned to each home organizations can, thus, be seen as the CCRAAAFFFTTING project’s final contribution to help increase organizational learning and provide an opportunity for the organizations to increase their resilience. The effect on resilience can only be indirect since, ultimately, the responsibility to implement and capitalize on the knowledge lies with each individual organization.
Although keeping the MSB AAR structure is beneficial from an organizational learning standpoint, since it supports learning on both team and organizational level, there might be necessary to modify the questions. Questions facilitate reflection (Daudelin, 1996) and debriefing methods capitalizes on this knowledge, using questions to guide the reflecting activity of participants (Tannenbaum & Cerasoli, 2013). However, the wording of the questions might have impact on the quality of reflection. As the current questions are adapted to guide reflection when AAR are conducted with Swedish firefighters, some questions might be formulated in a way which hold little relevance for the CCRAAAFFFTING project’s scenario. An example is the sub-question, "what was to be salvaged/saved" (Appendix I). During a disruption in the card payment system, the terminology of salvage or saving might be irrelevant and actors might use other terms such as "prioritized societal functions", which would result in a sub-question more in line with "which societal functions were prioritized and why". Due to potential differences in terminology and the way the event develops and is handled, the AAR sub-questions might need to be modified to better fit the CCRAAAFFFTING project's scenario. Since questions might need to be modified to better fit the CCRAAAFFFTING project, it is recommended that the extent to which questions needs to be modified is investigated, and potential modifications implemented, before the AAR is used within the project.

6.1.4.2. Execution

MSB suggests that AAR is executed in six steps (see 3.5.1.2.). There is no obvious hinderance to implementing this process, and these six steps should be applied within the CCRAAAFFFTING project. However, the first step of the execution process needs to be slightly modified. Part of the first step is to appoint one participant who will take notes during the AAR. However, since all participants are representative from different branches, with the responsibility to bring knowledge back to their respective home organization, participants should be allowed to fully focus on reflection, without having to also having to concentrate on taking notes. Notes should therefore be taken by the facilitator or another staff member of the CCRAAAFFFTING project. These notes are later turned in to the protocol created and distributed in step five.

Although findings in this study indicate that step two, communicating rules of conduct, is unnecessary, theoretically support exist for keeping it. Rules of conduct can help nullifying potential hierarchical structures, establish a sense of psychological safety and facilitate discussions (Lareau & Long, 2018). However, high levels of psychological safety and the presence of rules of conduct were reported in both conditions, although no such rules were ever stated (except in one AAR in condition 2). The high levels of psychological safety reported in condition 2 might be due to fact that these teams are “regular” teams as defined by Salas, et.al. (1992)(Cited in Johansson, et.al., 2018b)(see 3.3.), where team members have worked together over a long period of time, getting the opportunity to find their roles within the group and learned norms and dynamics within the team. In this way, psychological safety has been allowed to build over time. In the CCRAAAFFFTING project, where the teams can be seen as multidisciplinary ad hoc teams (argued in 3.3.), psychological safety might stem from participants perceiving themselves as the expert within the branch they represent, knowledge and opinion is therefore less likely to be challenged by other team members with less knowledge. It is also possible that psychological safety stems from the knowledge that the team members, most likely, will not see each other again after the exercise, thus, lessen the need to
make good impressions and save face. However, there may occur exercises in the future where the participants know each other, will need to work together after the exercise or where the participants are not the only expert in the field, then these rules of conduct may possibly facilitate discussions by minimizing the impact of, real or perceived, hierarchies (Lareau & Long, 2018).

Why participant report the existence of rules of conduct is unclear. One explanation could be that participants misinterpreted unconscious social norms and "common sense" for presented rules of conduct. Rules of conduct can be used instead of relying on participants having the same set of social norms and the same degree of “common sense”. Since MSB already established rules of conduct (MSB utbildningsenhet, n.d.), implementation is quick and the negative aspects, seen as time lost when presenting these rules in the beginning of the AAR, does not outweigh the potential benefits of creating a psychologically safe environment that facilitate reflection. The second step in the chain of execution proposed by MSB can therefore advantageously be retained.

No modifications need to be done to the third, individual AAR, and fourth, collective AAR, step of the proposed execution. However, the duration of an AAR depends on the exercise. Tannenbaum and Cerasoli (2013) mean that an AAR on average takes 18 minutes, while MSB (n.d.) means that an AAR can be performed between 15-120 minutes but suggests that the third and fourth step is allowed 55-65 minutes (MSB utbildningsenhet, n.d.). In this study were 40-50 minutes allocated to the third and fourth step of the AAR. Participants in condition 2 provided mixed responses regarding the time being enough. 27% of participants did not have any suggestions on how to improve the AAR which can be interpreted as them being satisfied with the amount of time spent on the AAR, however, 33% of participants felt that 40-50 minutes was not enough time. The facilitators did also report that 40-50 minutes was not enough to properly conduct the AAR, and one facilitator stated that the AAR should be allowed to take 2-3 hours. In this study is both the CCRAAAFFFTING project exercise and the Swedish defense university exercise full-day exercises, and despite differences in content and purposes, it can be assumed that both exercises, due to their dynamics, will generate an equal number of events and phenomena which are of interest to later reflect upon. Thus, it is not recommended that the CCRAAAFFFTING project allocate less time than the recommended 55-65 minutes (MSB utbildningsenhet, n.d.). However, to establish the exact time needed to properly reflect upon the exercise, further testing is needed.

The fifth step of creating and distributing the protocol do not need any modifications and the responsibility of executing the sixth step, implementing changes, lies with the participants home organizations.

To summarize. If the purpose of the post-exercise discussion is to be a learning activity, then the AAR can be used to help participant reflect on events and performances during the exercise. The disadvantage of the method is that it is time consuming and that facilitators need to be trained before they can conduct an AAR. However, if 55-65 minutes of the exercise can be set aside for AAR’s and facilitators are given the opportunity to take part of the MSB’s educational material, the method can advantageously be used in the CCRAAAFFFTING project. By retaining the entire MSB structure and the proposed execution, the method can contribute to
both team learning, by guiding participants in reflection, as well as organizational learning, by
providing the participants’ home organizations with written protocols of lessons learned during
the exercise. By helping transferring knowledge from the exercise to the home organizations
can the CCRAAFFFTING project provide the home organizations with the opportunity to
learn by storing and implementing this knowledge. Implementations of this knowledge, in turn,
can, theoretically, contribute to increased resilience by broadening the spectrum of anticipated
events and effects, regulate systems monitoring routines and identify potential response and
recovery strategies.

However, since current questions in the MSB AAR structure might not correlate with the events
and terminology of the CCRAAFFFTING exercise, some questions might need to be
modified. Which questions and how to modify these, needs to be further investigated. Also,
modifications should be made in step one of the execution, were staff members of the
CCRAAFFFTING project should be responsible for taking notes during the reflection, instead
of one of the participants. Finally, rules of conduct should still be included, since they can help
establish and maintain an environment for psychological safety, although results from this study
might indicate that this step in the execution is unnecessary.

6.2. Method discussion

6.2.1. Data collection
In this study, data have been collected through the use of questionnaires (both for participants
and for facilitators) and observations (both during the exercises and during the post-exercise
discussions). The rationale behind combining these two data collection techniques was to allow
the different techniques to highlight the research questions from different angles, providing
richer data. However, problem did arise in relation to collecting data and the following
paragraphs will therefore focus on providing alternative explanations for why these problems
might have arisen and what could have been done instead.

6.2.1.1. Participants questionnaire
In order to investigate how the participants in the different conditions perceived the respective
post-exercise discussions, the participants questionnaires were used. In general, questionnaires
can be seen as a time efficient data collection method were a high amount of data can be
collected. In this questionnaire, data on many different aspects was collected due to the use of
many specific and targeted close-ended questions. The drawbacks of using this amount of close-
ended questions are potential loss of nuances of participants experiences and that the
questionnaire only provide data on aspects that the researcher searching for. Reliability and
validity of the questionnaire can also be affected due to participants interpret concepts used in
stating the questions differently from the researcher. In this specific study, reliability, could be
considered high since it reproduces similar responses throughout. However, it does not
necessarily measure the intended phenomena, thus being low in validity. The indications of the
inclusion on all discussions in condition 1, means that the questionnaire do not measure the
extent to which the participant, in this condition, experienced the post-exercise discussion.
The questionnaire might fail to measure intended discussion due to innate problems with the questionnaire itself. These kinds of innate problems could be vaguely formulated questions, the use of ambiguous concepts (e.g. feedback, discussion etc.) and unclear instructions and lay out (instruction not conveying right information and poorly located or visible response options). However administrative factors, in condition 1, might also have affected the validity. In condition 1 did participants receive instructions from the game leader, whom may not have sufficiently clarified that the questionnaire related to the post-exercise discussion ONLY (due to miscommunication between researcher and game leader). Since participants, when answering this study’s questionnaire, already been subjected to multiple data collection activities, their motivation might be diminishing, influenced the extent to which participants read the written instructions and the quality/correctness of their answers (respondent fatigue). The questions might also have been confusing the participants. The majority of the questions refers to elements that did not occur in the post-exercise discussion (such as feedback, performance discussions etc.) which should have resulted in “negative”, “did not occur”-responses. The extent to which the responses would have been negative, might have made participants questioning the instructions – “Why would researchers ask about things that never occurred? I must have misunderstood, and they must refer to the discussions after every decision”. Such reasoning might have led the participants to provided answers they believe to be desired by the researcher. Thus, providing more favorable answers (ratings) instead of “did not occur”-answers, which would have been expected and which would have reflected the actual discussion.

Although these above-mentioned reasons compromising validity, in theory, could be corrected through a thorough revision of the questionnaire and changes in the administrating process and instructions, the lack of change in responses between the pilot study and the actual study, suggests that such changes might not be enough. The most promising measure to correct these issues, thus, is to change the data collection method. Switching from questionnaires to interviews would result in longer time between the discussions and the data collection, increasing the risks of lost or distorted memories. It would also result in a prolonged data collection process. However, interviews enable the interviewer to guide participant to focus on the right discussion as well as provide the possibility to explain potential ambiguous concepts, thus increasing the control over which data is collected and knowledge about its origin. Conducting interviews at a later occasion might also help counteract potential loss in data quality due to respondent fatigue, since participants would have had time to rest between the conclusion of the post-exercise discussion and the interview. Interviews might therefor have been a better method for data collection than questionnaires.

6.2.1.2. Biases in questionnaires and observations

The design of the participants questionnaire and the observation checklist for post-exercise discussion, relies heavily on what have been argued to be important aspects for debriefings and AAR (reported in 3.5.). This might distort the data collection, only asking/seeking for data that will confirm the benefits of debriefings, in general, and AAR’s, specifically. More serendipitous observations of the CCRAAAFFTING projects current post-exercise discussion, analyzed using pedagogical perspectives and theories, might have revealed beneficial learning aspects supporting the retention of the current structure. Even if the purpose would have been to examine whether or not the current post-exercise discussion could be
classified as a debrief, observations could have been more serendipitous to secure an unbiased description. As of today, the observations, and thus the description of the post-exercise discussion, is exclusively governed by whether or not important debriefing aspects were observed. Thus, other, potentially important aspects of learning, not necessarily highlighted by the debriefing methodology, would be missed. In the same way could the use of more open-ended questions regarding how the participants experienced the discussions have revealed differences between the two conditions that is now missed.

This skewness might also explain why there have been no experienced validity issues with the participants questionnaire, nor the observations, in condition 2. Since both the questionnaire and the observation checklist for post-exercise discussions were created based on reported important aspects of the debriefing methodology, the actual execution of an AAR would result in observations and questionnaire responses affirming the occurrences of sought for aspects. Thus, providing the superficial impression of being valid.

6.2.2. Video recordings
None of the observations made in this study were recorded. The need for recordings might vary between the two types of observations, and the two conditions.

The observations focusing on feedback during the exercise, were conducted more as a safety precaution, and did not correlate to any of this study’s research questions. Although these data proved to be important in interpreting and explaining the unexpected results from the participants questionnaire in condition 1 (see 6.1.2.), video recordings are not believed to have any advantages over the use of pen and paper in this case, as it is the occurrence of feedback, and not the exact approach of providing feedback that has been of importance.

Post-exercise discussion observations were conducted, in condition 1, to gather data to describe the current post-exercise discussion, whereas, in condition 2, they were conducted to make sure that the AAR were conducted in accordance with instructions. The potential bias brought on by the observation checklist, in condition 1 (as discussed in 6.1.2.), might have constituted enough reason to warrant video recordings. However, there are natural reasons to why video recordings were not used, the main reason being that the need for it was realized after data was already collected. Although the observation checklist provides guidance and resulted in enough data to describe the post-exercise discussion in the CCRAAAFFFTING project, video recordings would have made it possible to re-visit the data, making sure nothing of importance was omitted.

Since all three post-exercise discussions in condition 2 were held at the same time, video recordings could have been used to capture the process of all three discussions, allowing for later observations. Using video recordings would also mean that questions regarding the execution of the AAR in the facilitator’s questionnaire could be removed, since the researcher could observe all discussions in their entirety, thus, no longer be needing complimenting data provided by the facilitators. However, the knowledge of being recorded can affect participants behaviors, and thus, affect the situation in such a way that is no longer representative of the phenomena (this holds true for both conditions). As long as the facilitator and game leader does
not become affected, this does not necessarily have to affect the results from the observations, since it was the structure of the discussion, not the participants behavior, that was observed. However, potential discomfort of being recorded could affect participant’s experience of the discussion, thus spilled over and reflected negatively in the questionnaire. The presence of an observer could also affect behavior and cause discomfort, but it is believed that the fact that recordings are permanent might cause greater discomfort than the presence of an observer.

So, although the use of video recordings could have helped securing data (completeness), allowed for multiple re-visions and decreased to work load of the researcher (decreasing the need for taking real-time notes), side effects of their use could affect other data of interest. Faced with this trade-off, video recordings are believed to only have been advantageous in condition 2, where the researcher could not observe all three locations at the same time.

6.2.3. Research design
In this study, two conditions have been used, condition 1 using the CCRAAAFFFTING projects non-specified post-exercise discussion and condition 2 using the AAR. However, there is not only the post-exercise discussion structure that separates the two condition. The two conditions also differ with respect to the type of teams that are put together and the exercise.

Although the exercises, being of the same duration and taking place in micro-worlds (both exercises occurs in dynamic and complex environments where all the underlying mechanisms and developments within these environments are not visible for the participants), other aspects of the exercises might affect whether or not AAR is a suitable method. Although such aspects are not known by the author, a research design where the same exercise were used would have eradicated the possibility of differences in exercises to influence the results.

The two conditions also differ in regard to the type of team that is put together. It is argued that the teams in condition 1 can be considered multidisciplinary ad hoc teams (see 3.3.) were highly skilled and independent members come together for a limited time to solve a specific task without having any or limited prior knowledge and experience of working together (Sukthankar, et.al., 2009; van der Haar, et.al., 2008). Whereas teams in condition 2, on the other hand, can be consider “regular” teams as defined by Salas, et.al. (1992, cited in Johansson, et.al., 2018b). Team members in condition 2, have been provided with a common goal, assigned their roles and allowed to work together for the period of the entire course. The time differences in the team’s lifespan may affect aspects of team learning. Team member whom have been working together for a longer time might have been able to create an psychologically safe environment over time, whereas time to create a safe environment is non-existing in ad hoc teams. Although results from this study show no differences in experienced psychological safety between the two types of team, underlying team mechanisms and (in this study) uninvestigated team dynamics might have influenced the results. For example, in condition 1 is it possible that team members quickly have to establish a common mental model of existing knowledge within the team, thus focusing more on the team learning interpersonal behavior of sharing and less on reflection. Thus, the implementation of a reflective tool might be of greater use in condition 1 than condition 2, were team members know each other and have the same mental models and can focus on reflection throughout their exercise, thus experiencing the
guided reflection to be less useful. In order to minimize influences such as these, the same types of teams should have been used in both conditions.

However, none of these changes could have been made within condition 2 since this condition is created by the Swedish Defense University, and where the researcher was allowed to attend. An alternative would therefore have been to not attend the Swedish Defense University exercise, creating condition 2 by using the exercise within the CCRAAAFFFTING project, recruiting and team up participants who do not know each other. In this way both condition 1 and condition 2 would consists of the same types of team performing the same exercise. Although there are advantages to such a research design, execution would have been more problematic. First, if conducted completely within the CCRAAAFFFTING project, more games would have been needed to be scheduled for the autumn of 2018, so that some teams could have experienced condition 1 and some participants could have experienced condition 2. However, since there was no more than two scheduled game-sessions, an execution of this proposed research design, would have resulted in the author, on her own, trying to execute of the exercises. This would probably not have worked out since there are multiple people involved in running the exercise (see 2.3.). Even if the author would have succeeded in running the exercise, other factors would have contributed to changes between the conditions, such as the demographics of participants (because students usually manage to recruit other students), amount of testing participants been subjected to during the exercise and so on.

The problems arising from applying this research design, and the extra time that such a procedure would entail, speaks against this research design being feasible. The currently used research design might therefore be considered as the best alternative.

6.2.4. Excerpts and citations
The excerpts and citations used in this thesis were translated from Swedish to English by the author. This is important to note since actual meaning, subtle undertones and nuances can be lost in the process of translation. In order to prevent this type of loss from affecting the analyzes, all analyzes in this study have been carried out in Swedish. Only after completing the analyzes has a translation into English been made. Although this might minimize the impact on analysis, the presentation can still be affected. To avoid this, excerpts and citations are presented in both their original and translated language in Appendix XII, to allow readers to create an understanding for themselves.
7. Conclusions

The purpose of this project was to study the current structure of the CCRAAAFFFTING project’s post-exercise discussion and the possibility to implement a structured debriefing method. This was supposed to be done by observing the current post-exercise discussions, investigate how participants experienced these discussions and compare these experiences with the experiences of participant taking part in After Action Reviews. However, as contradictions were found between what was observed during post-exercise discussions and the answers provided in the participants questionnaire (condition 1), no conclusions could be made regarding participants experiences of the CCRAAAFFFTING project’s post-exercise discussions. This also had negative impact on the possibility to compare the two conditions, making it impossible to use these results to motivate a potential implementation of the AAR. However, observations of the CCRAAAFFFTING projects post-exercise discussion reveal a structure that, at a superficial level, resembles the AAR. But, since the structure do not include the elements of Active self learning, Developmental intent, Specific events and Multiple information sources, these discussions cannot be classified as debriefings. And as the current post-exercise discussions fail to support reflection and divert focus away from the exercise, it is argued that it is more of a concluding conversation rather than an active learning activity. It is therefore concluded in this study, that the implementation of AAR’s is beneficial, since AAR helps participants to derive knowledge from what has been experienced by guiding them through the process of reflection. Using the AAR would also provide a structure for transferring knowledge back to participants home organizations, which could lead to the occurrence of organizational learning and increased resilience.

7.1. Recommendations

The following recommendations are based on the discussions in section 6.1.4.

Before implementing the AAR in the CCRAAAFFFTING project, it is recommended that:
- The CCRAAAFFFTING project appoints a new investigation which intends to study if, and how, sub-questions in the MSB's AAR can be reformulated to better fit the project’s scenario.
- Sub-questions, in accordance to what emerges from the above-mentioned investigation, are reformulated to better fit the project's scenario.

When implementing AAR in the CCRAAAFFFTING project, it is recommended that:
- AAR follow the structure postulated by MSB.
- AAR are executed as proposed by MSB.
- No less than 55-65 minutes are allocated for the AAR.
- Rules of conduct are to be stated before starting the AAR.
- Staff members of the CCRAAAFFFTING project are responsible for: 1) documentation of lessons learned in protocols, and 2) Distribution of these protocols to the participants' home organizations.
7.2. Future research
During this study, many interesting topics, which could be the subject for further research, was recognized. Of special interest for the CCRAAAFFFTING project, further research efforts could be directed towards determining whether or not AAR contributes to organizational learning. Follow-up studies, investigating if and how knowledge from these exercises have been implemented within each participant’s home organizations could help prove the usefulness of AAR and the exercise. Investigating the nature of potential changes within organizations could also help understanding how knowledge from these kind of simulator-based training occasions are used to increase resilience.

There could also be of interest to further study the feasibility of self-guided AAR, where the role of the facilitator is transferred to the whole team. During literature reviews, the author found one study where the researchers claimed to have used self-guided AAR’s (Reiter-Palmon, Kennel, Allen, Jones & Skinner, 2015). However, after examining the template used and reading through their descriptions, this thesis author concluded that the study was influenced by the AAR method, without actual carrying out AAR’s. The term, self-guided AAR, were therefore left out of this thesis. Although not finding more studies of self-guided AAR’s, hypothetical benefits of letting the team conduct their own AAR, using well designed templates, are the possibilities of more time efficient AAR’s and minimizing the potential negative effect of the presence of an external facilitator. However, self-guided AAR’s might not be suitable for dysfunctional teams, where all members dare not to talk or where members fail to ignore potential hierarchies. However, this is just hypotheses and further studies are needed.

As revealed in this study, there is no set time for how long an AAR should be. Therefore, further research efforts could be aimed towards investigating the potential relationship between the length of an exercise and the time required for reflection. Such a relationship would help secure the allocation of sufficient time, in relation to the lengths of the exercise, in the future. However, to do so, such a relationship needs to be supported.
8. References


MSB. (2016a). Hur kan vi handla mat och tanka när betalningssystemet slutar fungera?


## Appendix I: AAR: Main-questions and sub-questions

The following questions in Swedish are gathered from the MSB’s dialog guide (MSB, n.d.). The translations into English were conducted by the author.

<table>
<thead>
<tr>
<th>Main question (Swe)</th>
<th>Sub-question (Swe)</th>
<th>Main Question (Eng)</th>
<th>Sub-question (Eng)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Vad förväntades hända</td>
<td>- Vilket var det ursprungliga målet</td>
<td>1. What was intended to happen</td>
<td>- Which was the original objective</td>
</tr>
<tr>
<td></td>
<td>- Vilken var uppgiften</td>
<td></td>
<td>- What was the task</td>
</tr>
<tr>
<td></td>
<td>- Vad skulle göras</td>
<td></td>
<td>- What was to be done</td>
</tr>
<tr>
<td></td>
<td>- Vad skulle räddas</td>
<td></td>
<td>- What was to be salvaged/saved</td>
</tr>
<tr>
<td></td>
<td>- Var målet bra formulerat före insatsen</td>
<td></td>
<td>- Was the objective well formulated before the operation</td>
</tr>
<tr>
<td></td>
<td>- Hur förbereder vi oss bäst inför en sådan här uppgift</td>
<td></td>
<td>How to best prepare for such an operation</td>
</tr>
<tr>
<td>2. Vad hände</td>
<td>- Vilken typ av händelse gav upphov till insatsen</td>
<td>2. What happened</td>
<td>- What kind of event gave rise to the operation</td>
</tr>
<tr>
<td></td>
<td>- Vad orsakade händelsen</td>
<td></td>
<td>- What caused the event</td>
</tr>
<tr>
<td></td>
<td>- Vad var det som faktiskt hände under insatsen</td>
<td></td>
<td>- What did really happen during the operation</td>
</tr>
<tr>
<td></td>
<td>- Vad gjorde vi och varför gjorde vi det</td>
<td></td>
<td>- What did we do and why did we do it</td>
</tr>
<tr>
<td></td>
<td>- Vad räddade vi/inte</td>
<td></td>
<td>- What did/did we not salvage</td>
</tr>
<tr>
<td></td>
<td>- Vad blev det faktiska resultatet</td>
<td></td>
<td>- What was the actual result</td>
</tr>
<tr>
<td>3. Varför blev det som det blev</td>
<td>- Vad gick bra och varför</td>
<td>3. Why did it happen</td>
<td>- What went well and why</td>
</tr>
<tr>
<td></td>
<td>- Vad gick mindre bra och varför</td>
<td></td>
<td>- What went less well and why</td>
</tr>
<tr>
<td></td>
<td>- Hur gick vi tillväga för att uppnå målet</td>
<td></td>
<td>- How did we go about achieving the objective</td>
</tr>
<tr>
<td></td>
<td>- Vilka konsekvenser fick det</td>
<td></td>
<td>- What were the consequences</td>
</tr>
<tr>
<td>4. Vad kan förbättras och hur</td>
<td>- Hur kan teamets uppgift lösas bättre,</td>
<td>4. What can be done differently and how</td>
<td>- How can the team solve the task better,</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>snabbare, säkrare och effektivare nästa gång</td>
<td>faster, safer and more efficient next time</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Kunde metodvalet ha sett annorlunda ut</td>
<td>- Could the choice of method have been different</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Vad behöver vi i teamet utveckla och öva mer på</td>
<td>- What more do we need to develop and practice on</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Vad ska vi fortsätta göra, sluta göra och börja göra</td>
<td>- What should we continue to do, stop doing and start doing</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

5. Vad ska spridas vidare

| Kan någon annan lära sig något av detta eller ha nytta av våra erfarenheter | 5. Who else needs to know |
| Vem/vilka? Inom organisationen eller på annat håll | Can anyone else learn from or benefit from our experience |
| Hur sprider vi vår erfarenhet | Who? Within the organization or elsewhere |
| Vilka kanaler kan vi använda | How do we transfer our experience |
| Vem ska spreda teamets erfarenheter till andra | Which channels can be used |
|  | Who should transfer the team’s experiences to others |
## Appendix II: Observation checklist: Feedback during exercise (swe)

Datum: ___________,  Tid: _______________,  Antal deltagare: ___________,  
Sessionstid: ____________min.

<table>
<thead>
<tr>
<th>Vad</th>
<th>Observerat</th>
<th>Kommentar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tydligt formulerade läromål</td>
<td>Ja</td>
<td>Nej</td>
</tr>
<tr>
<td></td>
<td>Antal:</td>
<td>Feedback på alla:</td>
</tr>
<tr>
<td>Användes hjälpmedel för visualisering av feedback</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fick gruppen feedback</td>
<td>Beslutspunkt 1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Beslutspunkt 2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Beslutspunkt 3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Beslutspunkt 4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Beslutspunkt 5</td>
<td></td>
</tr>
<tr>
<td>Nivå:</td>
<td>Vad görs:</td>
<td></td>
</tr>
<tr>
<td>□ Grupp</td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Individ</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Övrigt:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Vad sägs:</td>
<td></td>
</tr>
</tbody>
</table>
Appendix III: Observation checklist: Feedback during exercise (eng)
Authors translation

Date: ____________, Time: ____________, Number of participants: ____________.
Duration of session: ____________ min.

<table>
<thead>
<tr>
<th>What</th>
<th>Observed</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clearly formulated learning objectives</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>How many:</td>
<td></td>
<td>Feedback on all of them:</td>
</tr>
<tr>
<td>Were any aids/tools used to help visualize feedback</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Did the group receive feedback</td>
<td>Decision point 1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Decision point 2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Decision point 3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Decision point 4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Decision point 5</td>
<td></td>
</tr>
</tbody>
</table>
| Level: Group                                                        | Yes
| Individual                                                         | No
| Anything else:                                                      | What is done: |
|                                                                     | What is said:  |
## Appendix IV: Observation checklist: Post-exercise discussion (swe)


<table>
<thead>
<tr>
<th>Vad</th>
<th>Observerat</th>
<th>Kommentar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tydligt formulerade läromål</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ja</td>
<td>Nej</td>
</tr>
</tbody>
</table>

Antal:
Feedback på alla:

Tydliga förhållningsregler att följa under eventuell diskussion

Användes hjälpmedel för visualisering av feedback, minneshjälp etc.

Feedback

Nivå:
- ☐ Grupp prestation
- ☐ Individ prestation

Uppmuntrades deltagarna till diskussion/dialog?

Hur:

Fokus:
- ☐ Moment som gick bra
- ☐ Moment som gick mindre bra
Annat:

Deltog samtliga gruppmedlemmar i diskussion?

Hur deltog dem:
- ☐ Egna reflektioner/åsikter
- ☐ Medhåll
<table>
<thead>
<tr>
<th>AAR:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Vad förväntades hända</td>
<td></td>
</tr>
<tr>
<td>2. Vad hände</td>
<td></td>
</tr>
<tr>
<td>3. Varför hände det</td>
<td></td>
</tr>
<tr>
<td>4. Vad kan vi göra</td>
<td></td>
</tr>
<tr>
<td>5. Vem ska veta</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Övrigt:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Vad görs:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Vad sägs:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix V: Observation checklist: Post-exercise discussion (eng)

Authors translation

Date: ______________, Time: _______________, Number of participants: ____________.
Duration of session: ________________ min.

<table>
<thead>
<tr>
<th>What</th>
<th>Observed</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clearly formulated learning objectives</td>
<td>Yes</td>
<td>How many: Feedback on all of them:</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Clear rules of conduct to follow during the discussion</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Were any aids/tools used to help visualize feedback</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feedback</td>
<td></td>
<td>level:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>□ Group performance</td>
</tr>
<tr>
<td></td>
<td></td>
<td>□ Individual performance</td>
</tr>
<tr>
<td>Were participants encouraged to participate in discussion/dialog?</td>
<td></td>
<td>How:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Focus:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>□ Actions that go well</td>
</tr>
<tr>
<td></td>
<td></td>
<td>□ Actions that did not go well</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Something else:</td>
</tr>
<tr>
<td>Did all team members participate?</td>
<td>Kind of participation:</td>
<td></td>
</tr>
<tr>
<td>----------------------------------</td>
<td>------------------------</td>
<td></td>
</tr>
<tr>
<td></td>
<td>□ Provide own thoughts and opinions</td>
<td></td>
</tr>
<tr>
<td></td>
<td>□ Agreeing</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Structure</th>
</tr>
</thead>
</table>

**AAR:**
1. What was intended to happen
2. What happened
3. Why did it happen
4. What can be done differently
5. Who else needs to know

<table>
<thead>
<tr>
<th>Anything else:</th>
<th>What is done:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| What is said: | |
|---------------| |
Appendix VI: Questionnaire: Concluding group discussion (swe)

Nedan följer 5 frågor. Syftet med dessa frågor är att få en större förståelse för dina upplevelser och åsikter om den avslutande gruppdiskussion som genomfördes efter övningen.

I vilken utsträckning upplever du att du, under diskussionen, fick:

<table>
<thead>
<tr>
<th>Feedback på gruppens övergripande prestation</th>
<th>Väldigt Liten</th>
<th>Liten</th>
<th>Varken eller</th>
<th>Stor</th>
<th>Väldigt Stor</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Feedback på din individuella prestation</th>
<th>Väldigt Liten</th>
<th>Liten</th>
<th>Varken eller</th>
<th>Stor</th>
<th>Väldigt Stor</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Feedback på moment som gått bra</th>
<th>Väldigt Liten</th>
<th>Liten</th>
<th>Varken eller</th>
<th>Stor</th>
<th>Väldigt Stor</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Feedback på moment som gått mindre bra</th>
<th>Väldigt Liten</th>
<th>Liten</th>
<th>Varken eller</th>
<th>Stor</th>
<th>Väldigt Stor</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Diskutera gruppens prestation</th>
<th>Väldigt Liten</th>
<th>Liten</th>
<th>Varken eller</th>
<th>Stor</th>
<th>Väldigt Stor</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Diskutera hur eventuella problem kan undvikas i framtiden</th>
<th>Väldigt Liten</th>
<th>Liten</th>
<th>Varken eller</th>
<th>Stor</th>
<th>Väldigt Stor</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Diskutera hur eventuella styrkor ska kunna upprepas i framtiden</th>
<th>Väldigt Liten</th>
<th>Liten</th>
<th>Varken eller</th>
<th>Stor</th>
<th>Väldigt Stor</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

I vilken utsträckning upplever du att:

<table>
<thead>
<tr>
<th>Diskussionsmomentet var väl förberett</th>
<th>Väldigt Liten</th>
<th>Liten</th>
<th>Varken eller</th>
<th>Stor</th>
<th>Väldigt Stor</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Diskussionsmomentet var strukturerat och följde en röd tråd</th>
<th>Väldigt Liten</th>
<th>Liten</th>
<th>Varken eller</th>
<th>Stor</th>
<th>Väldigt Stor</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Det fanns tydliga förhållningsregler för att följa under diskussionen</th>
<th>Väldigt Liten</th>
<th>Liten</th>
<th>Varken eller</th>
<th>Stor</th>
<th>Väldigt Stor</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Diskussionsmomentet bidrog till gruppens lärande</th>
<th>Väldigt Liten</th>
<th>Liten</th>
<th>Varken eller</th>
<th>Stor</th>
<th>Väldigt Stor</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Diskussionsmomentet bidrog till ditt individuella lärande</th>
<th>Väldigt Liten</th>
<th>Liten</th>
<th>Varken eller</th>
<th>Stor</th>
<th>Väldigt Stor</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Utbildningsledaren uppmuntrade till diskussion i gruppen</th>
<th>Väldigt Liten</th>
<th>Liten</th>
<th>Varken eller</th>
<th>Stor</th>
<th>Väldigt Stor</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Utbildningsledaren var objektiv och välkomnade allas tankar och åsikter</th>
<th>Väldigt Liten</th>
<th>Liten</th>
<th>Varken eller</th>
<th>Stor</th>
<th>Väldigt Stor</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Utbildningsledaren använde hjälpmedel för att ge feedback och underlätta diskussioner</th>
<th>Väldigt Liten</th>
<th>Liten</th>
<th>Varken eller</th>
<th>Stor</th>
<th>Väldigt Stor</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Utbildningsledaren bidrog till ditt lärande</th>
<th>Väldigt Liten</th>
<th>Liten</th>
<th>Varken eller</th>
<th>Stor</th>
<th>Väldigt Stor</th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
17. Du kände dig bekväm med att prata om dina tankar och upplevelser i gruppen

<table>
<thead>
<tr>
<th>Välligt</th>
<th>Litet</th>
<th>Varken eller</th>
<th>Stor</th>
<th>Välligt Stor</th>
<th>Förekom inte</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

18. Diskussionsmomentet fick tillräckligt med tid

<table>
<thead>
<tr>
<th>Välligt</th>
<th>Litet</th>
<th>Varken eller</th>
<th>Stor</th>
<th>Välligt Stor</th>
<th>Förekom inte</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

19. Vad har du lärt dig under denna Gruppdiskussion?


20. Om du anser att denna Gruppdiskussion bidragit till ditt och gruppens lärande, vad var det som du ansåg var viktigast för lärandet?


21. Har du några förslag på hur dessa Gruppdiskussioner kan förbättras?


Tack för din medverkan!
Appendix VII: Questionnaire: Concluding group discussion (eng)
Authors translation

This survey consists of 5 questions. The purpose is to gain a greater understanding of your experiences and opinions about the feedback session, conducted after the exercise.

<table>
<thead>
<tr>
<th>To what extent did you feel that you got:</th>
<th>Very small</th>
<th>Small</th>
<th>Neither nor</th>
<th>Large</th>
<th>Very Large</th>
<th>Did not Occur</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Feedback on the group’s overall performance</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>2. Feedback on individual performance</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>3. Feedback on elements that went well</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>4. Feedback on elements that did not go so well</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>5. To discuss the group's performance</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>6. To discuss how potential problems can be avoided in the future</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>7. To discuss how potential strengths can be secured and repeated in the future</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>To what extent did you feel that:</th>
<th>Very small</th>
<th>Small</th>
<th>Neither nor</th>
<th>Large</th>
<th>Very Large</th>
<th>Did not Occur</th>
</tr>
</thead>
<tbody>
<tr>
<td>8. The Discussion was well prepared</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>9. The Discussion was well structured and had a clear cohesion</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>10. There were clear rules of conduct to follow during the Discussion</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>11. The discussion contributed to the group's learning</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>12. The discussion contributed to your individual learning</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>13. The facilitator encouraged discussion in the group</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>14. The facilitator was objective and welcomed everyone's thoughts and opinions</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>
15. The facilitator used tools to provide feedback and facilitate discussions

| 1 | 2 | 3 | 4 | 5 | □ |

16. The facilitator contributed to your learning

| 1 | 2 | 3 | 4 | 5 | □ |

17. You felt comfortable talking about your thoughts and experiences in the group

| 1 | 2 | 3 | 4 | 5 | □ |

18. Feedback session was given enough time

| 1 | 2 | 3 | 4 | 5 | □ |

19. What have you learned during this feedback session?

---

20. If you think this feedback session contributed to your and the group's learning, what parts of the session do you consider most important for learning?

---

21. Do you have any suggestions on how to improve these feedback sessions?

---

Thank you for participating!
Appendix VIII: Questionnaire: Background (swe)

För att få fram ditt IDnr gör du enligt följande: Din mors initialer som ogift + det datum i månaden som du är född + din fars initialer

**Exempel:** Mors namn som ogift – Mona Andersson – -> **MA**. Datum i månaden som du är född – (14:e mars) -> **14**. Fars initialer – Bertil Svensson -> **BS**. Alltså -> **MA14BS**

IDnr:_______________ Datum:___________

Bakgrundsfrågor

1. **Ålder:**___________år.

2. **Juridisk könstillhörighet**
   - □ Kvinna
   - □ Man
   - □ Avstår från att svara

3. **Hur många år har du studerat:**___________.
Appendix IX: Questionnaire: Background (eng)

Authors translation

In order to get your ID number, do as follows: Your mothers initials as unmarried + the number corresponding to the day in the month you were born + your fathers initials

Example: Mothers name as unmarried – Mona Andersson -> MA. the number corresponding to the day in the month you were born – (14th of mars) -> 14. Fathers initials – Bertil Svensson -> BS. Hence -> MA14BS

IDnr:_______________ Date:____________

Background questions

1. Age:____________ years.

2. Legal gender affiliation

☐ Woman
☐ Man
☐ Refrains from answering

3. How many years have you been studying:____________.
Appendix X: Questionnaire: Facilitators (swe)

1. Ålder: __________ år.

2. Juridisk könstillhörighet

☐ Kvinna  
☐ Man  
☐ Avstår från att svara

3. Tidigare erfarenhet av att utbilda  ☐ Ja  ☐ Nej  
   Om ja, hur många års erfarenhet: __________.

4. Har du tagit del av MSB’s utbildningsmaterial för After Action review  ☐ Ja  ☐ Nej

5. Följdes metodens struktur (skulle hända, hände, varför, annorlunda)  ☐ Ja  ☐ Nej

6. Deltog samtliga studenter i diskussionen  ☐ Ja  ☐ Nej

7. Användes hjälpmedel för att ge feedback eller underlätta diskussion  ☐ Ja  ☐ Nej  
   Om ja, vilka: ________________________________________________.

8. Vad upplevde du var bra med MSBs AAR metod?

9. Vad upplevde du som mindre bra med MSBs AAR metod?

10. Skulle du använda MSBs AAR igen? MOTIVERA
Appendix XI: Questionnaire: Facilitators (eng)
Authors translation

1. Age:__________ year.

2. Legal gender affiliation
☐ Woman
☐ Man
☐ Refrains from answering

3. Previous experience of educating others ☐ Yes ☐ No
If yes, how many years of experience:__________.

4. Have you gone through the AAR training material provided by MSB ☐ Yes ☐ No
5. Did you follow the structure (intentions, what happened, why, different) ☐ Yes ☐ No
6. Did all participants participate ☐ Yes ☐ No
7. Did you use any aids/tools to provide feedback or facilitate discussion ☐ Yes ☐ No
If yes, which:_________________________________________________________.

8. What did you considered to be the strengths of the MSB AAR method?

9. What did you considered to be the drawbacks of the MSB AAR method?

10. Would you use the MSB AAR method again? MOTIVATE
### Appendix XII: Excerpts and open-ended answers

**Authors translation**

The following tables show the excerpts and open-ended answers cited in this thesis, in both Swedish and English. The original language is Swedish, all translations have been made by the author. The excerpts and answers are presented in the same order as they appear in the text.

#### 5.1.1. Condition 1: feedback during exercise (observations)

<table>
<thead>
<tr>
<th>English</th>
<th>Swedish</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The game leader informs the team that their sales have plummeted [points to food-indicator], arguing that this might be due to the team’s decision to close some of the smaller stores and limiting food sales to basic goods in the remaining ones. The game leader then points to two additional food-indicators [hoarding and stealing] and says that as a result of fewer stores being open and the team deciding to add more guards, the team has counteracted the trends of increased hoarding and increased stealing.</td>
<td>Spelledaren informerar laget om att deras försäljning har sjunkit [pekar på livsmedelsindikatorn] och hävdar att detta kan bero på att lagets beslut är att stänga några av de mindre butikerna och begränsa livsmedelsförsäljningen till grundvaror i de återstående. Spelledaren pekar sedan på två ytterligare matindikatorer [hamstring och stölder] och säger att som ett resultat av att färre butiker är öppna och laget beslutar att tillsätta fler vakter, har laget motverkat trenderna för ökad hamstring och ökade stölder.</td>
</tr>
<tr>
<td>2. The game leader holds up a news tabloid. The heading and picture of the tabloid seems to indicate a growing problem with empty shelves in stores. The game leader informs the participants about the empty shelfs becoming a problem, not yet to the extent of excessive hoarding taking place, although enough to have arisen concerns among citizens.</td>
<td>Spelledaren håller upp en löpsedel. Löpsedelns rubrik och bild tycks indikera ett växande problem med tomma hyllor i butikerna. Spelledaren informerar deltagarna om att de tomma hyllorna börjar bli ett problem, dock inte i den utsträckning att överdriven hamstra äger rum, men tillräckligt för att sprida oro hos medborgarna.</td>
</tr>
</tbody>
</table>

#### 5.1.2. Condition 2: feedback during exercise (observation)

<table>
<thead>
<tr>
<th>English</th>
<th>Swedish</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The representative [participant] was met by a journalist [teachers]. Questions were asked and answered. After ending the interview, the journalist returns to the original role of a teacher. The participant answers additional questions about the experienced situation and what message s/he had wanted to convey. After listening to the participant's answers, the teacher compliments the participant on a job well done, stating that s/he had provided concise answers without getting in to long complicated answers or explanations.</td>
<td>Representanten [deltagaren] möttes av en journalist [lärare]. Frågor ställdes och besvarades. Efter avslutad intervju återvände journalisten till den ursprungliga rollen som lärare. Deltagaren svarade på ytterligare frågor om den upplevda situationen och vilket meddelande hon hade velat förmedla. Efter att ha lyssnat på deltagarens svar berömde läraren deltagaren och menade att denne gjort ett bra jobb och att denna hade givit konkreta svar utan att krängla in sig i långa komplicerade svar eller förklaringar.</td>
</tr>
</tbody>
</table>
5.2.1. Condition 1: Post-exercise discussion (observation)

<table>
<thead>
<tr>
<th>English</th>
<th>Swedish</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The game leader instructs the participants to share their responses one at a time, but hands over the decision on who to start to the participants themselves. One participant responds, facing the game leader, saying that s/he has gained a greater understanding for how everything is connected. Another participant adds to the answer by stating that s/he have realized the importance of collaboration. A third participant agrees, highlighting the existence of dependencies between the actors which s/he had not known before.</td>
<td>Spelledaren informerar deltagarna om svaren kan ges genom att gå varvet runt. Spelledaren överger beslutet om vem som ska börja deltagarna. En deltagare svarar, vänd mot spelledaren, och säger att hen har fått en större förståelse för hur allt hänger samman. En annan deltagare håller med, och lägger till, hen inset vikten av samarbete. En tredje deltagare håller med de båda föregående samtidigt som hen påpekar förekomsten av beroenden mellan de aktörer som hen tidigare inte tänkt på.</td>
</tr>
</tbody>
</table>

5.2.2. Condition 2: Post-exercise discussion (observation)

<table>
<thead>
<tr>
<th>English</th>
<th>Swedish</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. One participant produced a digital map over the area using the projector. The map had drawn symbols on it, representing various events that had occurred during the exercise, e.g. fires and roadblocks. The participant stated that this map had served as visual support, providing the team with current information of what happened in the area so that new, or altered, plans could take this in to consideration. The participants then moved on to talk about the alternative approaches they had considered during the exercise, and how they, with help of the map [and additional information], either had discarded them or decided to continue working on them.</td>
<td>En deltagare producerade en digital karta över området med hjälp av projektorn. På kartan fanns ritade symboler som representerade olika händelser som hade inträffat under övningen, t.ex. bränder och vägspärrar. Deltagaren uppgav att denna karta hade fungerat som visuellt stöd, vilket gav teamet aktuell information om vad som hände i området, så att nya eller ändrade planer kunde ta hänsyn till detta. Deltagarna fortsatte sedan med att prata om de alternativa tillvägagångssätt som de hade arbetat med under övningen, och hur de, med hjälp av kartan [och ytterligare information], antingen hade förkastat dem eller beslutat att fortsätta arbeta med dem.</td>
</tr>
<tr>
<td>2. The team talked about an episode when it was difficult to keep track of everything that happened. One participant commends the team's efforts and directed a special thanks to one team member. The participant stated that if it was not for [team member] who, in addition to the own tasks, also helped organize and structure incoming information, they [the team] might have committed major errors and endangered the whole mission.</td>
<td>Teamet pratade om en episod då det var svårt att hålla reda på allt som hände. En deltagare lovordade lagets ansträngningar och riktade ett speciellt tack till en teammedlem. Deltagaren uppgav att om det inte var för [lagmedlem] som förutom de egna uppgifterna också hjälpte till att organisera och strukturera inkommande information, kunde de [laget] ha begått stora fel och äventyra hela uppdraget.</td>
</tr>
<tr>
<td>3. Participants talked about the importance of communication. An uneven distribution of workload had resulted in one participant receiving a much heavier workload than the</td>
<td>Deltagarna pratade om vikten av kommunikation. En ojämn fördelning av arbetsbelastningen hade resulterat i att en deltagare fick en mycket tyngre arbetsbördan</td>
</tr>
</tbody>
</table>
others. One participant argues that s/he [the participant with heavier workload] did a fantastic job but should have called attention to the skewed workload earlier. Another participant agrees on the good job part, but state that the team should have been more vigilant and asked how everyone was doing.

5.3.6.1. What whit AAR contributed to learning (participant questionnaire)

<table>
<thead>
<tr>
<th>English</th>
<th>Swedish</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. To exchange experiences</td>
<td>Att utbyta erfarenheter</td>
</tr>
<tr>
<td>2. To hear thoughts and reflections from people in other industries/organizations' based on their backgrounds and everyday life experiences</td>
<td>Att få höra människor från andra branscher/organisationers reflektioner och tankar utifrån deras bakgrund och vardag.</td>
</tr>
<tr>
<td>3. The importance of working up communication channels, both public/private, before the crisis comes</td>
<td>Vikten av att arbeta upp kanaler offentligt/privat innan krisen kommer.</td>
</tr>
<tr>
<td>4. We are dependent upon each other and need a better understanding of each other's challenges</td>
<td>Vi har behov av varandra och behöver bättre förstå varandras utmaningar</td>
</tr>
<tr>
<td>5. Reflecting upon what was learned</td>
<td>Att reflektera för eget lärande</td>
</tr>
<tr>
<td>6. Talking about strengths and weaknesses</td>
<td>Prata om svagheter och styrkor</td>
</tr>
<tr>
<td>7. What we (the team) performed well and what can be improved</td>
<td>Vad vi gjort bra och vad vi skulle kunna förbättra</td>
</tr>
<tr>
<td>8. /.../ received feedback linked to the team's decision</td>
<td>Att vi fick tydlig feedback kopplat till just vår grupps beslut</td>
</tr>
</tbody>
</table>

5.3.6.2. Suggested improvements (participant questionnaire)

<table>
<thead>
<tr>
<th>English</th>
<th>Swedish</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. /.../ how decisions affected the results</td>
<td>Längre diskussion om hur våra beslut påverkade resultatet.</td>
</tr>
<tr>
<td>2. More structure to clarify what have been decided during each discussion</td>
<td>Lite mer struktur för att tydliggöra vad man kommit fram till och beslutat under respektive diskussion.</td>
</tr>
<tr>
<td>3. Self-criticism (although it was good to first focus on formulating positive criticism)&quot;</td>
<td>Självkritik (fast det var bra att först tvingas formulera positiv kritik).</td>
</tr>
<tr>
<td>4. /.../ everyone a chance to speak</td>
<td>Ge alla en chans att tala</td>
</tr>
</tbody>
</table>

5.4.1. Strengths with AAR (facilitator questionnaire)

<table>
<thead>
<tr>
<th>English</th>
<th>Swedish</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Intuitive layout</td>
<td>Intuitivt upplägg</td>
</tr>
<tr>
<td>2. Covers the essentials</td>
<td>Täcker in det väsentliga</td>
</tr>
</tbody>
</table>
3. It [AAR method] provide an opportunity for the participants to reflect | Gav deltagarna en möjlighet att reflektera
4. Good conversation | Bra samtal
5. Many good aspects surfaced | Det framkom många bra aspekter
6. /.../ were deep and insightful | Tankarna som togs upp var djupa och insiktsfulla

### 5.4.2. Drawbacks of AAR (facilitator questionnaire)

<table>
<thead>
<tr>
<th>English</th>
<th>Swedish</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Requires a good facilitator, or a group that takes on the responsibility themselves</td>
<td>Kräver en bra facilitator, alternativt en grupp som tar sig an uppgiften bra själva.</td>
</tr>
<tr>
<td>2. Some difficulty working through the questions one by one. The participants jump between the various questions</td>
<td>Lite svårt att beta av en fråga i taget. Lätt att studenterna hoppade mellan de olika frågorna.</td>
</tr>
<tr>
<td>3. It [AAR method] requires trust, which was lacking between the participants, some spoke very little, did not want to speak</td>
<td>Den kräver förtroende, vilket saknades mellan deltagarna, vissa talade väldigt lite, ville inte tala</td>
</tr>
</tbody>
</table>

### 5.4.3. Use the AAR (facilitator questionnaire)

<table>
<thead>
<tr>
<th>English</th>
<th>Swedish</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. /.../ but it has to be included in the planning of the exercise with allocated time of 2-3 hours</td>
<td>Ja, men då måste den planeras in med 2-3 timmars tidsåtgång. Men den var användbar.</td>
</tr>
</tbody>
</table>

### 6.1.2.1. Result discussion, indicators on a broader focus

<table>
<thead>
<tr>
<th>English</th>
<th>Swedish</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. /.../ clear what the team arrived at and decided on during each discussion</td>
<td>Lite mer struktur för att tydliggöra vad man kommit fram till och beslutat under respektive diskussion.</td>
</tr>
<tr>
<td>2. /.../ how the teams decisions affected the results</td>
<td>Längre diskussion om hur våra beslut påverkade resultatet.</td>
</tr>
</tbody>
</table>