



Abstract

Malicious or careless insiders can intentionally or unwittingly compromise an organization and threaten the safety and well-being of its workforce. To protect an organization and its employees, it is imperative that current and future leaders understand how to detect and mitigate these potential threats. This Research Note describes the development of a Problem-Based Learning (PBL) experience that uses an insider threat case study to educate current and future leaders about the types of organizational vulnerabilities and risks posed by insiders, the responsibilities they have to mitigate these risks, and the consequences of failing to do so.



About The Threat Lab

The Defense Personnel and Security Research Center (PERSEREC) founded The Threat Lab in 2018 to realize the Department of Defense (DoD) Counter-Insider Threat Program Director’s vision to incorporate the social and behavioral sciences into the mission space. Our team is headquartered in Seaside, California, and includes psychologists, sociologists, policy analysts, computer scientists, and other subject matter experts committed to workforce protection.

Teaching Organizational Risk Prevention and Mitigation Using Problem-Based Learning

OPA Report No. 2021-089 □ PERSEREC-RN-21-13 □ July 2022

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Introduction

Organizational leaders are responsible for setting policy, establishing organizational culture, and identifying and mitigating risks that threaten their organization, including risks posed by insiders. To effectively manage risk and promote a proactive security culture within their organizations, leaders must understand the principles of insider threat identification and mitigation (Bunn & Sagan, 2017). Leaders who understand these concepts are more likely to provide leadership support for insider threat programs and to promote and elevate awareness of risk prevention and mitigation programs within their organizations.

The National Insider Threat Task Force and the Office of the Under Secretary of Defense for Intelligence & Security tasked The Threat Lab, a division of PERSEREC, with developing learning curricula to teach current and aspiring organizational leaders the fundamentals of insider threat prevention and mitigation. To meet this need, we developed an educational case study activity.

Evaluating real-world problems using case studies promotes critical thinking and encourages learners to reflect on cause/effect relationships (Belt, 2001). Case studies develop analytical problem-solving skills through active reflection on, and comparison of, alternative available paths to achieve desired outcomes (Helyer, 2015). Learners are not expected to find the “right” answer, but rather to justify their analytical conclusions and provide actionable recommendations. In the context of insider threat events, case studies help learners evaluate organizational problems related to risk by teaching them to identify case-relevant details and apply theoretical concepts such as Shaw and Sellers’s (2015) Critical Pathway to Insider Risk (CPIR).

The purpose of this Problem-Based Learning (PBL) experience is to teach organizational risk prevention and mitigation to current and future leaders (henceforth referred to as participants). The goal of this research note is to describe how we developed this learning experience to engage participants and encourage them to critically evaluate concepts related to organizational



risk and insider threat, using a real-world case example (Jonassen & Hung, 2008).

Method

We designed a facilitator-led, PBL experience to engage and encourage participants to actively apply their learning to a real-world insider threat case. We selected a PBL approach and facilitator-led format to give participants the opportunity to apply their understanding of organizational risk to the problem of insider threat (Walker, et al., 2015). The activity is designed to supplement a graduate-level curriculum and may serve as a capstone project to summarize lessons learned about organizational risk factors and vulnerabilities related to insider threat. It may also be used as a free-standing learning experience, independent from a formal course curriculum.

Defining the Learning Objectives

We wanted the learning experience to prepare future organizational leaders to make thoughtful and informed risk management decisions in the prevention, identification, communication, and mitigation of risks from within their organization (e.g., workplace violence). To achieve this end, we designed the learning experience to achieve the following learning objectives:

- *Identify and categorize:*
 - Concerning behaviors displayed by the individual;
 - Risk factors introduced by the organization's culture, structure, and organizational controls (or lack thereof); and
 - Actions that the organization took in an effort to mitigate the potential threat posed by the individual.
- *Evaluate* the organization's preparedness and response, identifying which actions taken by the organization helped to mitigate the potential threat and which actions failed to mitigate, or even exacerbated, the potential threat.
- *Propose and discuss* alternative actions that the organization could have taken to prevent or mitigate the insider threat.

Identifying a Case

We selected the case of Doug Williams, a Lockheed Martin employee who shot and killed his coworkers in a racially motivated attack. This case was selected for its complex narrative, high-impact outcome, and variety of organizationally relevant themes for the participants to discuss.

To develop the case synopsis the research team identified case relevant details, including key events, a timeline, and the identities of the perpetrator and the victims. Next, the research team collected additional case details from open-source databases (e.g., Google Scholar), a legal database (i.e., LexisNexis), and a database of court records (i.e., the Public Access to Court Electronic Records, more popularly known as "PACER"). The research team plotted a timeline of the main events in the case and then used additional case information to build out the narrative structure.

Results

The resulting learning experience is a facilitator-led case study that uses discussions to identify and categorize concerning behaviors and organizational factors that contributed to an insider threat incident. It was designed to be completed as a single 90-minute case study activity, with the additional expectation that participants would complete a pre-class reading assignment and worksheet. We expect the facilitator to have sufficient knowledge of workplace violence and organizational insider risk to lead an in-class, discussion-based, case study activity, using an actual insider threat case. Additionally, participants are expected to be familiar with the Critical Pathway to Insider Risk (CPIR; Shaw & Sellers, 2015) in order to effectively evaluate the preparedness and response of the organization and propose a recommendation for organizational risk mitigation and prevention.

Introduction

The learning experience begins with an introduction to the case study, including an overview of the activity, and a description of the purpose, learning objectives, and recommended agenda. The introduction also provides a brief refresher of the CPIR model.

Small Groups Discussion

Following the introduction, the facilitator will direct participants to work in small groups (ideally of four individuals each), to identify and categorize:

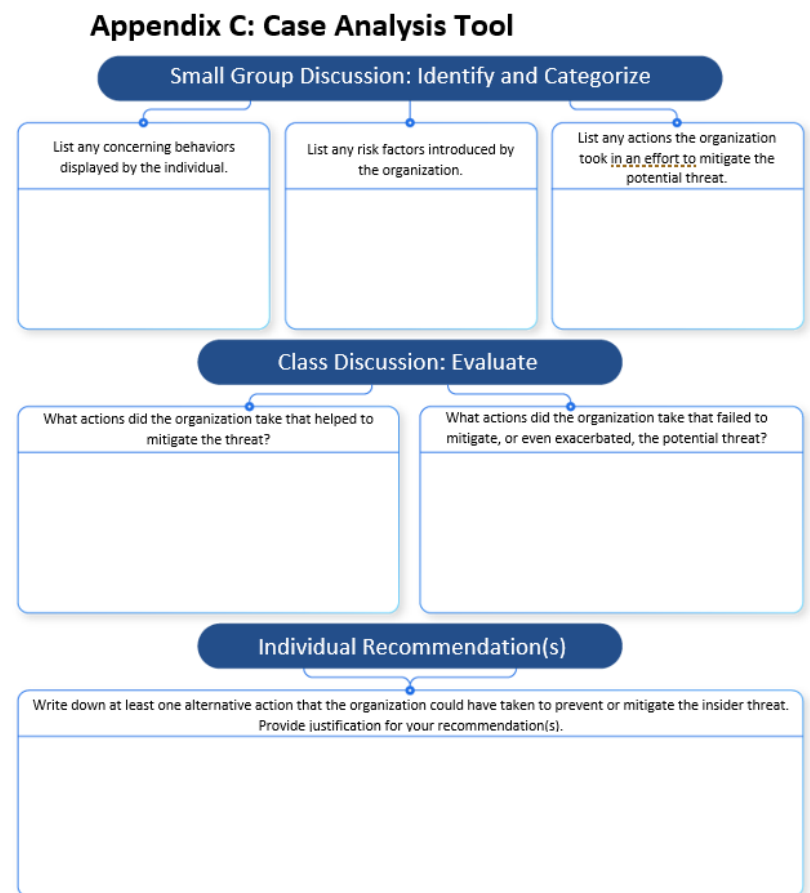
- concerning behaviors displayed by the individual,
- risk factors introduced by the organization (e.g., through the organization's culture, structure, and organizational controls), and
- actions the organization took in an effort to mitigate the potential threat.

Participants will be encouraged to use their previously completed Information Gathering Worksheets, to identify and categorize pertinent information using the Case Analysis Tool in their Participant Guide (See Figure 1).

Class Discussion

A Class Discussion follows the Small Group Discussion, to bring the class together to discuss the organization's preparedness and response to the insider threat event. The facilitator will lead the class in a discussion that addresses predictability of the event, risks related to employee termination practices, organizational responsibilities, practices to protect employees, and post-incident organizational responses that can prevent these events from reoccurring.

Figure 1
(U) Case Analysis Tool



Participants will use information collected on the Case Analysis Tool to help answer these questions, establishing the basic case details they need to evaluate the incident and the organization's preparedness and response. The evaluation portion of the in-class portion of the learning experience serves as a launching point for each participant to reflect on as they generate their individual recommendations.

Individual Recommendations

At the end of the Class Discussion, each participant will draft their own recommendation for an action that the organization could have taken to prevent or mitigate the insider threat. Participants will review the organizationally relevant facts of the case on their own and critically evaluate the organization's response. Participants will be asked to write down at least one alternative action that the organization could have taken to prevent or mitigate the insider threat

Review of Recommendations and Wrap-Up

The learning experience concludes with a review of the participant's recommendations. The facilitator will encourage participants to justify their conclusions and tie the recommendations back to the CPIR Model. Facilitators will give participants feedback on the efficacy and feasibility of their recommendations and how these recommendations might affect organizational risk.

Materials

Materials for the learning experience include a Facilitator Guide, a Participant Guide, and a set of Instructional Slides. All participant and facilitator materials developed for this activity are 508 compliant/accessible¹, and are described below. Materials can be found and downloaded from the Center for Development of Security Excellence (CDSE) website.

Facilitator Guide

The Facilitator Guide serves as a step-by-step guide to help the facilitator lead the learning experience. It includes an overview of the in-class activity that outlines the purpose, target audience, activity assumptions, facilitator preparation, scope, learning objectives, materials, and facilitator role. The Facilitator Guide outlines how facilitators should prepare to lead the in-class portion of the learning experience, including the assumptions and expectations that the facilitator be sufficiently knowledgeable about the case to lead a group discussion on insider threat and workplace violence in relation to the case. The guide also includes a set of case-specific prompts for facilitators to use during the Class Discussion to encourage the class to consider details of the case that they may have overlooked. These questions also help the facilitator assess participants' understanding of the case and identify gaps in participants' knowledge (Reich, 2003). The Facilitator Guide also includes an "Answer Key" that provides general guidance on the responses they might expect for the Informational Gathering Worksheet and the Case Analysis Tool.

Participant Guide

The Participant Guide includes all the materials a participant needs to complete the case study, presented in a step-by-step fashion, including: an overview, the agenda, the Doug Williams Case Synopsis, an Information Gathering Worksheet, and the Case Analysis Tool.

The Participant Guide should be distributed approximately three- to five days prior to the in-class portion of the learning experience with advice to review the Doug Williams case synopsis and complete the Information Gathering

¹ Section 508 of the Rehabilitation Act requires that Federal Agencies ensure their electronic and information technology is accessible to employees and members of the public with disabilities.

Worksheet in preparation for the activities. The Information Gathering Worksheet will help participants identify individual and organizational factors that may have contributed to the attack, including the perpetrator's motives, concerning behaviors, and concerning communications and organizational risk factors such as situational opportunities, group norms, organizational goals, and security controls.

Instructional Slides

The Instructional Slides provide the facilitator with a deck of Power Point slides they can use to help facilitate the activity. The slides also provide "Suggested Language" and "Important Points" for the facilitator to reference throughout the learning experience.

Next Steps and Future Directions

This Research Note describes the development of a PBL case study activity for organizational leaders. If resources are available, we recommend that future efforts include:

- Pilot testing the activity with a group of aspiring organizational leaders who have some prior exposure to insider threat concepts (including the Critical Pathway Model) to revise and improve the activity (for details of the pilot see the Addendum: Initial External Pilot Testing),
- Creating additional case studies of varying complexity (e.g., beginning, intermediate, and advanced) to challenge participants to tackle cases with varying levels of organizational risk,
- Planning outreach and networking events that link organizational leaders to relevant, research-based interventions and mitigation strategies from PERSEREC's The Threat Lab and our organizational sponsors and partners,
- Hosting ideation sessions, or Black Swan workshops², for organizational leaders where these PBL activities are used to prompt candid discussions of organizational risk factors and the benefits of building resilience and wellbeing within the workforce,
- Turning the Information Gathering Worksheet or Case Analysis Tool into an interactive online tool to help users organize case-relevant information for learning about organizational risk assessment, and
- Developing immersive case studies designed to present information in a realistic and novel ways; technologies such as virtual reality could create fully immersive case experiences that allow users to "step" into the role of the investigators or another person close to the case.

Case studies are useful tools for teaching and understanding key elements of insider threat cases and the efforts to detect, deter, and mitigate organizational risks. We recommend that The Threat Lab continue to explore novel ways to assemble and disseminate case studies.

² Black Swan workshops explore the implications of events that are extremely rare or difficult to predict, but which have significant impact (e.g., the 2008 financial crisis). They are commonly used in Enterprise Risk Management to encourage leaders to identify risks and develop risk mitigation plans (Taleb, 2010).

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Addendum: Initial External Pilot Testing

As noted in Next Steps and Future Directions, we recommended pilot testing the activity with participants who have some prior exposure to insider threat concepts (including the Critical Pathway to Insider Risk Model) to revise and improve the activity. An initial pilot was conducted as an in-person, facilitator-led, training at a conference center in Arlington, Virginia with facilitators and participants who had not been involved in the development of the learning materials. The primary facilitator was an experienced InT professional who works within the National Counterintelligence and Security Center, Enterprise Threat Mitigation Directorate, National Insider Threat Task Force as a Liaison Officer. This facilitator was assisted by a second facilitator, also an experienced InT professional. Approximately 20 government employees, most of whom work within U.S. Government InT Hubs, were invited to participate. Fifteen participants attended the in-person event. Following the pilot, the facilitators presented participants with a brief, supplemental training on how to respond in the event of an active shooter situation. This supplemental active shooter training was not formally assessed as part of the pilot, although anecdotal feedback regarding the “pigtail” was very positive.

We provided the facilitators with all learning materials including the Facilitator Guide, Participant Guide, and Instructional Slides, and asked them to pilot the learning experience as described in the materials. The research team provided limited direction to the pilot facilitators and encouraged them to present the learning experience as described in the Facilitator Guide. We explained that the goal of this pilot activity was to ensure the learning experience could be easily executed, as currently designed, by facilitators who were not involved in the development of the learning materials.

Collection of Feedback

We collected feedback about the pilot in four ways. First, a trained research analyst attended the pilot in-person to observe the event and record observations. This team member evaluated the pilot using a structured observation protocol that included opportunities to reflect on the event design, the facilitators, event logistics, and the success and effectiveness of the event overall. Second, the facilitators developed and administered a short worksheet that asked participants for high-level feedback about what they 'liked' and 'disliked'. Following the event, the facilitators shared this feedback with the research team. Third, the facilitators completed a written, online evaluation of their facilitation experience. The online evaluation was a 15-item review of the learning experience developed as part of the ongoing evaluation effort of The Threat Lab products and services (TO40.15). Finally, the research team conducted a de-brief interview with the facilitators after the event. The facilitator de-brief interview followed a semi-structured interview protocol, and was conducted by members of the product evaluation team (TO40.15). The interview included approximately 12 questions designed to measure the facilitator's experience presenting the learning materials. The feedback that we collected using these four approaches is summarized below in Table 1, by feedback source.

Table 1*(U) Table of Affirmative Feedback and Recommended Changes by Feedback Source*

Feedback Source	Affirmative Feedback	Recommended Changes
Observer Feedback	There was a clear chronological order of discussion points. Although the discussion was so lively it often got carried away to other points and (the instructor) had to reel them back in to discuss the next question.	I wish the course included the response education that (the instructor) presented at the end. Everyone seemed really captivated by it and it really concluded the training with lessons on how to actually respond if an active shooter is present.
	I think everyone loves to play investigator with case studies and this one in particular provided several issue areas that could be discussed (mental health, HR, racism, life stressors)	I think it could have been extended for another 30 minutes to allow everyone to really get their comments out but not too long to where it was becoming too repetitive.
Participant Feedback	It was outstanding! Robust conversation among very informed SMEs.	Older case synopsis. Maybe something more recent and relevant to our times.
	Real-life, scenario-based case study always is the best way to learn.	No true dislikes, wish it was more time to discuss to dive in and speak to current situations and new work environment.
		Need more time - felt like the large group discussion did not give the chance for everyone to share.
Facilitator Feedback (via online evaluation)	I feel the most important thing the learning experience gave the students is the Organization needs a good and healthy Organizational culture that gives the total workforce a sense of security and trust.	I think the big thing I would adjust in the future is the timing. I see this as a three hour block of instruction.
Facilitator Feedback (via semi-structured interview)	Yes, I think if I just used yours (information gathering worksheet with answers) it would have gone just as well. It is just a personal preference. I wanted to bring something more to the table than they already learned in the reading and materials, so I wanted to go outside the boundaries.	I think most participants would have said time was the biggest hurdle as well.
		A lot of the time went to recommendations and many participants shared stories of similar signs and behaviors occurring in their own workplace. Everyone was eager to participate.

Summary of Feedback

Overall, the learning experience was well-received; participants were engaged and facilitators moderated a productive dialog about organizational risk prevention and mitigation. The primary change recommended by facilitators, participants, and the observer was to increase the length of the learning experience to provide additional time for introductions, transitions, and discussions. Participants also identified facilitator preparation strategies that had been helpful in adhering to the training timeline, and suggested changes to the learning experience that could further assist in effective time management. They noted that providing additional structure for the small group discussions could help participants to effectively use the available discussion time. They also noted that effective pre-event planning and preparation allowed facilitators to maximize the use of the available time. Finally, feedback indicated that the supplemental training on active shooter situations was well-received and could be valuable to future participants.

Modification of the Learning Experience to Address Feedback

To address this feedback, we made the following changes to the learning experience:

1. Modified the length of the training from 90 minutes to 3 hours to build in additional time for introductions, breaks, moving into the small groups, and discussions.
2. Provided additional directions for participants on how to structure their small group discussions, in order to maximize the time available.
3. Emphasized to facilitators the importance of pre-event planning (e.g., setting up the groups ahead of time, bringing materials such as markers, name tags, over-sized paper flip-charts, and additional worksheets) to ensure that these tasks do not interfere with the facilitator's ability to move quickly from one part of the activity to another.
4. Revised the Facilitator Guide to note that facilitators may wish to provide Run-Hide-Fight violence response training as an optional activity following this learning experience.

Extending the duration of the learning experience will also provide additional time for participants to build group rapport, which will be especially important for stand-alone workshops where attendees might be unfamiliar with each other. The additional time will also ensure that critical elements of the learning experience (e.g., final reflection and recommendations) are not abbreviated to end on time. Similarly, adding instructions for participants as they enter the small groups and emphasizing elements of pre-event planning will minimize uncertainty at critical decision points and save time. These changes will be implemented in the final version of the materials and submitted for approval and dissemination on the Center for Development of Security Excellence (CDSE) website.