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**Selections from the**

**EDUCAUSE Security Professionals Conference 2018**

**August 21, 2018|12:00 - 4:30 PM EASTERN**

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>>> We're back, thank you for your patience. Our next session is escape room, capturing their attention, while sharing your message. Joining us is Linda Ludwig, we're so happy to have you join us.   
  
>> Thank you. Well, what is an escape room? It's a series of puzzles and challenges set within a theme to be tackled by a team within an allotted time. Before I talk about the advantages of escape room, I'd like to ask how many of you, we have a poll question that I'll have them put up there, that we'll see how many of you have ever done an escape room. So go ahead and answer the poll and then I'll talk a little bit about the advantages of an escape room. When I started creating my escape room, I had never done an escape room, so it's okay if you've never done one. I just got yours and started digging in. So looks like several of you have never done it. And some of you have done it once. So you're about in the same category I was when I first started looking at the escape room. So we'll go on with the talk and I'll talk about how I created mine. So the advantages of escape room that I found are it's a fun way to learn, it's interactive, it's team building, and encourages critical thinking. And because it is a fun way to learn, I have been invited to present my escape room as a team building activity or as another activity for people so it's nice that they're reaching out to me to present it and not me having to try to get them to invite me. So my escape room, obviously, in this scenario, I can't have you guys all try my escape room, so I'm going to talk about what I did and how I created my escape room. So what you see on the screen right there, the manila folder, the white envelope and the trash were the contents of my escape room. Those broke down into each of those had, I had encryption wheels, I had UV flashlight, I had invisible ink pencils, I used shredding and so you can see each of the envelopes had parts of the puzzles that they had to solve. I originally created my escape room for the national cybersecurity awareness month in 2017. I created a pregame room, where the participants would gather, they would read the scenario, and the rules, and then from the pregame room, I would escort them into where I had the escape room set up. Now, my escape room wasn't about figuring out how to unlock a door, but how to solve the puzzles. And the signup for 4-10 people, 4, sometimes was a little on the light side for the number of people and 10 sometimes was heavy, because you would get certain people not participating. What I found for the ideal number for my escape room was 6 and then it could vary anywhere from there. After national cybersecurity awareness month, I ended up developing a table top version of my escape room because I was being invited to large groups. Dining invited me to run it for their staff of 48 people, and so I had to have a table top version. What I found was I've got enough to do 15 groups at once, and the table top version works well for two or less. So I now rely on my table top version. Since creating it, last October, I've had 172 attendees, and 24 sessions, that number has jumped this last month with the gearing up of school, but my participants included faculty, staff and students, I even had senior leadership and senior staff invite me to run the escape room for them. I've been invited to multiple departments, as a team building activity. And then I worked with the resident’s hall staff to run it for them and then worked with them to run it for the students of their hall. So it's been able for me to get out and run it for a wide variety of people on campus. When I did the room setup, I had posters on the wall, I had pencils in a cup with a key hidden in the bottom, I had a small trash can with shredding hidden in it, I had booked scattered afternooned the room with bookmarked in it with clues hidden on the bookmarksings a password hidden under a keyboard, I had a computer that they had to log in and USBs to find a secret file. After I do the room setup and then developed a table top set up, I realized that the table top version had a lot of advantages, all the clues and puzzles are contained in three envelopes. You're able to run multiple escape rooms at once, it's very portable and it's quick to set up. So one of the advantages because it was so easy, I really relied now on the table top version. When I was working on designing my escape room, I had to think about what my learning out comes from, what did I want them to learn by doing the activities? The first one is I wanted them to be able to recognize Phishing indicate TORs, to understand the dangers of USBs and to learn how to build strong passwords and with those three in mind, I built my puzzles that got the participants to look at some handouts and posters that talked about those three learning outcomes. So here, is one of the puzzles. This was a bookmark that was hidden in one of the books and they had to figure out the combination for this lock. Now, this was their clues that they've got. And I was going to have this be a poll for you to figure out the lock, but if the poll sits in the middle there, I'm not sure how you'll be able to solve the clues. There it goes. It's off to the side. What is the number of the lock? With using the clues, I'll give you just a little bit of time to figure out what the solution for that is, and then we'll talk about it. So you have to solve all of these to eventually figure out what that lock is. What's the value of the lock? So I'm not sure anyone is answering, I'm not seeing -- you're still figuring it. Now, the answers are starting to come in. It does take time and there are some tricky points to that. So let's go on. I see a few people have answered it. We'll see what the solution was. Well, one of them with the lock, the stumbling block, was that last line. And if you didn't get the right answer, don't worry, because I purposely made it tricky. The first three lines were easy, but the last line, because not everybody recognizes the order of operations, which had a division, and then, also, a lot of times, people didn't notice that there were two keys. So that was our -- the two sum stumbling blocks. The solution for the lock was 8 and once they had figured that out, they could unlock the combination that I had that they had to get into to get some more of the puzzles. For my escape room, hi the goal set up -- I had the goal set up as they had to find a user name, they had to figure out the password for that user, and then, they had to find and decrypt a top-secret file. So what I did is by having them focus on Phishing messages, I had this poster called the top 7 Phishing indicators, and if you'll see the poster, you see that gold writing in my image? That was an invisible text that could only be seen with the UV flashlight. So I had invisible ink pens, that I wrote the hidden text on, which would allow me to give clues. And then they also had a crinkled-up message that was encryptd that basically when they decrypted it, it told them that the Phishing indicators was the order of the Phishing message. They had to figure out, they had 9 e-mail and 7 of the 9 were Phishing and two were real. By using the Phishing e-mails, they could start building the password. They had to match the Phishing e-mail to the indicator. Now, we all know that Phishing messages usually have more than one indicator. So I used my hidden text to allow the participants to register which indicator I was focusing on. And it also reinforced that indicator. So in this example, a very short message would be an indicator, and they would pair it up with the 7 indicators, what number. So in the Phishing message, also one bold word that they had to find and then, once they had that word and the order figured out, they would have a sentence. And then from there, I had a password poster that talked about what they needed to do with that sentence. So here's two more examples. This one, this Phishing message on the left had no signature and it was a blind CC. So that would then pair up with number 4 indicator, which is generic greeting and/or no signature. And the one on the right was -- they were asking for verification. So verification equals sign in with the user name and password. That was paired up, the account was the second word of the secondens, and -- sentence and help was the fourth word of the sentence. I had a password that password poster that talked about the do's and don'ts of passwords, why is a password better and then what I had highlighted was turn a sentence into a password by using the first letter of each word, and then I had hidden characters saying it was 8 characters, so that told them that their password was going to be 8 characters long, and it would be from a sentence that they used the first letter. And case was important when they were pulling those out. So the next poster that I directed them towards was my USB riddle. When they unlocked the combination lock, they found this poster, that talked about the dangers of USB, and then, two USB's. I created cardboard versions when I went to the desk top version. And so, they had the riddle. You have in front of you two USB sticks, one contains the file you need to complete the mission and one contains a malicious virus, which will you choose? On this bookmark, if they paired these two -- this up with that poster, you will find that line three, word two, was the hidden text, line and word in a box. A lot of times they miss the fact that I had a box around there. They had to look at the USB stick warnings and then count line three, which gave them the next, line 14, word 7, so if they counted down, that gave them safe, and then 11, USB, so when they deciphered all of those, they get the safe USB, is the one encrypted friend. So now, they have to figure out which one of these two is encrypted friend. So they move on to the next riddle, which I had this photo of the G and the arrow, which was the key to this encryption wheel. And with this encryption wheel, they could then decipher the two USB's, and one basically was encrypted friend, and one was encrypted family. And I had to make sure I used two words that were both in my USB warning, so they couldn't just say, oh, friend is the only one that's in here. So where to start? So think about the flow. Things will start slowly. Because they sit down to the kit they don't really know where to begin. But think about having an easy win at the beginning, easy wins build confidence and excitement. So one of my easy wins was turned out to be harder sometimes, was to find the key that got them into the envelope. And then, the other thing that you need to worry -- do is to test and retest. When I first created it, I tried it on family. And you'll -- if your mind, you're going to see that it should flow and it should be obvious, but it's not going to. So that's the advantage of the hidden ink where you can write the clues in invisible ink so they get going in the direction they need to go. And by testing it, you know where you need to add the additional clues. One of the things that I found that was an easy win is when they suddenly discover with the UV flashlight that they could see hidden text. That, I could see in their faces, that was an adrenaline rush of where they were going. So they -- having that hidden text is an easy win. One of the things that kept me organized was a spreadsheet. The name of the prop that I had, the second column was the symbol that I associated with the prop. And it was -- the symbol was a very subtle clue on what items were tied together. So is the USB bookmark that had the numbers and the line and the numbers, was tied to the USB riddle by that symbol. And not all groups recognized that the symbol tied the props together, but the ones that did, it does help. And then, the third column is the location, so that when I'm building my kits, I make sure that I have the items in the location they need to be. So the four things that went into the small envelope. The eight things that needs to be associated with the large envelope, all the items in the mamanila envelope, it kept me organized and made sure I didn't forget anything. And then the fourth column, anything that was highlighted in yellow are things that I have to make sure I have handwritten with the invisible ink. And those are the things that they would need to discover with the UV flashlight. The items in here that are not written in yellow are just comments like the good USB was encrypted friend, the bad USB was encrypted family. I had 15 columns that I could check off as I was building each of my kits so I would know that I had each of the items in the kit. Some of the things that you can use for puzzle ideas, there's locks, encryptions, log ins, hidden items, math and counting problems, most of -- all of those with the exception of counting, I used in my kit. I had logs, encryptions. Other items are team activities, you can have your team be in two different rooms where they somehow have to communicate in one room, they count items and another they count -- you can do it a lot of different ways. Riddles, mirrors, light, UV, glow in the dark light patterns. Items hidden in plain sight. You would be surprised, I had a nonindustrial small trash can sitting next to the desk where I put my shredding in the room setup and that trash can got missed 25% of the time. So that would be an example of something hidden in plain sight. Using something in a different way is another item. So tips. I use hint cards. And what each kit contained three laminated hint cards that just said hint on them. And then what those were for is as a team would get stuck or wanted to speed their time along, they could use a hint card. The hint card did not do any penalize on time, it used it -- if I saw that they were stuck, example, when I had one group trying to decrypt my USB's, and they had the USB upside down, so they were using the symbols upside down. And so I.T. like, how did you come up with that answer? That -- I said, can I use a hint to tell you? And then I just simply said, turn the USB over. And then of course, they were able to solve it. I also keep a cheat sheet of puzzles handy, so if I have helpers, or if I need to verify the answer, I've had the cheat sheet handy. Helpers are very handy because they can float around, especially if you have a large group, when I had 15 tables, I needed helpers, we could quickly answer where they were stuck by observing. Eventually, you know where the points in your escape room that people get stuck. On my, I hid the key in a note pad and they couldn't find it. And that was important, if they hadn't found that key, within five minutes, I would usually say start trying to give hints, be sure to look through everything. Another point that they stuck on was they would pull the UV flashlight, shine it on one item, nothing happened, and it became a paperweight. But they -- a hint there would be sure to shine the flashlight on everything. So you would find as you do yours that there'll be spots where they get stuck. My supplies that I had, I bought my locks by the dozen, which allowed me to have at least 12 escape rooms that were keyed the same. Because the locks that I bought all used the same key. So I could just put a one on the lock, and a one on the key ring that I had for it and I wouldn't have to worry about making sure that I kept my locks and my keys straight. I do have 24 locks, so I do have some labelled with 2 and a 2. You can get the three combination or four combination padlocks, or combination locks, those can be set so you have your own combination, UV or invisible ink pens are real handy, and of course, I bought my UV flashlights by the five-pack. I also needed laminating sheets because anything that I knew I would be reusing, such as the wheels, the bookmarks, I would laminate them so they would have more durability. I got my ideas from -- I first heard about escape rooms when I read on one of my discussion boards about the FedEx escape room that was presented last year at the security aware conference, that sounded like a cool idea. So I started digging into escape rooms. I bought the book escape the game, how to make puzzles and escape rooms. And that gave me some ideas about the waiting room, rules, it gave me a few ideas. And then one of my faculty had gone to a conference and bought breakout EDU kit, and it was a large box with a smaller box that had the locks, it had combination locks, key locks, the flashlight, the pens, and so, she lent that to me for my first room version of the escape room. And that was real helpful as far as I was trying to get my wind wrapped around what I needed to do. Online resources, and lock, paper scissors, both online versions of the escape rooms. And I found them helpful. And then, Microsoft game store has the escape rooms and I played those, you can do several levels for free, because you have to buy it. Which is what I did. I just did the free levels to get ideas of things that could be added to an escape room. I found that real helpful. Ideas can come from anywhere. My -- what I called my spy math, I got that idea from FaceBook when I saw this McDonald's map. So from the McDonald's math that gave me the idea to create the spy map. You can do it. Be creative. Be fearless, dive in and give it a try! I'll take questions now.   
  
>> Thanks so much, Linda, for your presentation, participants, you now have the opportunity to ask questions over the next minute or so. And we will get those as soon as we can. And so I see someone has asked if we'll provide a link to the presentation, yes, we can add that URL here in the chat. There will be resources for each session available from the agenda.   
  
>> I have all of my kit items in that resource, the only thing I department -- didn't include were the e-mails, the e-mails are better to be used from your own sources, you could use the 7 indicators and find your own Phishing e-mails that come to your own campus.   
  
>> Great. So that answers the second part of that question, which was asking from the resources, it sounds like, folks here could replicate your escape room. But someone is wondering, Linda, how long does it typically take to escape the room, they're talking about not the table top exercise, but your actual escape room?   
  
>> Whether it was the table top or the room setup, I gave them 40 minutes. And generally, for the most part, it took 30-40 minutes, and I had students who wanted to beat each other's times, that managed to get it in under 30 minutes and a small group of four that ended up taking longer. But whether it was the table top or the room, I gave them 40 minutes.   
  
>> Great. Good. And one more person is typing, I'm going to see if we can get one more question here before we wrap up. So what was your reach? How many people were able to do the escape room and then versus the number that you wanted?   
  
>> Well, I ended up -- I started it as I said in October, and as of when I made that PowerPoint in July, had reached 175 on campus. Since August started, I'm getting a lot of requests for new student activities, the science project, the international students, I'm getting requests now, so my reach as been 200 people on campus, and we're a small campus, so for me, that was a good reach.   
  
>> That's great. Congratulations.   
  
>> Thank you.   
  
>> Thank you, Linda, our time is up. I just want to thank you again for sharing your awareness efforts with us, and sounds like a creative, fun way to engage with end users. So we're going to just take a moment now to reset the stage for our next presenter, so we'll go silent for a few moments and be right back.   
  
>> Thank you. [ Please stand by for webinar to resume] [please stand by for webinar to resume] .