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Project 1: Themed Escape Room

EDTC813

Advanced Using Integrated Software

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The popularity of Escape room has greatly increased within last the few years. In the United States, their amount grew from 44 facilities in 2014 to over 2,200 in 2018 (Mallenbaum, 2018). Several factors are contributing to the to the dramatic increase of this activity.

One of the contributing factors is our overall societal readiness for solving puzzles and cognitive challenges. We, contemporary Americans, love putting our brainpower to test and are hungry for the new opportunities to do so. As Johnson points out in his book *Everything Bad Is Good For You*, we have become a smarter nation comparing to the previous generations. We have been trained in solving puzzles and figuring out challenges, thanks to the intellectually infused exposure of the television programming and gaming industry (Johnson, 2006).

Another contributing factor is related to the game theory it is based on. Educational application of the gaming elements, otherwise known as gamification, has been recognized to increase student engagement and focus (Kapp, 2012). From the elements of competitiveness to the added factor of beating the clock – the escape rooms provide a true gaming experience, with its full spectrum of physical and emotional attributes.

From the learning design perspective, Escape rooms exemplify effective implementations of how people learn. They carry out multiple attributes of the Universal Design for Learning (UDL) framework (CAST, 2018). From the recruiting interest of being part of the story to sustaining an effort to find the clues to the puzzles, the Escape rooms provide ample engagement opportunities. (CAST, 2018). By varying the means of displaying information and involving multiple communication channels (visual, auditory, tactile), the Escape rooms increase the level of participant perception, which is the first step in promoting representation (CAST, 2018). By employing decoding, puzzles, and multiple media illustrations, the Escape rooms provide opportunities for solving problems, utilizing language and symbols. These steps are critical for

the comprehension piece, supported by activating the background information and finding patterns and relationships in maximizing knowledge transfer and generalization (CAST, 2018).

Being physically involved in the storyline does not only attract participants but also promotes learning experience. As the last component of the UDL framework focuses on action and expression, the Escape rooms allow for the “room-size” learning and navigation with optimized access to the objects needed for solving puzzles. It provides the ample opportunity for the real-seized construction and composition, which in turn, enhances the capabilities for the executive function to progress towards the end-goal (CAST, 2018).

While designing Escape rooms, the creators have to be mindful about the balance of challenges versus affordances. From Norman’s perspective, participants’ interaction with the room objects should be intuitive and friendly (Norman, 2013). However, the creator’s objective is almost the opposite – the interaction with the room objects should be challenging, but not impossible. It should be clever and promote critical thinking, yet affordable to build a relationship with (Norman, 2013).

Escape rooms exemplify the unique combination of features from the learning design perspective. Using Bers’ analogy, they could be attributed to supersized playpens rather than playgrounds (Bers, 2012). Limited by the concealed physical space with a pre-selected set of “toys” to play with, they provide opportunities for learning, but in limited ways. Having experienced a particular Escape room once, participants may go back to it again, only if they could not escape at first. However, a single successful attempt prevents any further experiences from the same environment due to the lack of interest and relevance.

My example of the Escape room is called “Network is Down.” It takes place in the Network Hub with several computers and printers. This scenario provides a realistic opportunity

to practice technical support skills and enhance problem-solving using technology. Learning with and about computers is a centerpiece of Constructionism theory (Papert & Harel, 1991).

The quest starts in the Network Hub room, which contains several computer desks, a printer, a pair of armchairs and a round table with various network and computer equipment (see Figure 1). The computers are disconnected with loose cables hanging from the monitors. The router shows no lights. The printer is disconnected and has no toner, which can be found in one of the drawers. Various network equipment can be found all over the room, and the missing cables are hidden underneath the seat cushions of the armchairs.

Once the printer is filled with toner, plugged in and turned on, it prints a picture of the thermometer showing 93 degrees Fahrenheit and the message “Server Room Alert!”. When the missing cables are found and connected properly between the monitors and processor cases, the router starts blinking.

One drawer has a keypad combination lock. Under the keyboard, the note states, “don’t forget to change default password”. The word “password” is the code for the lock. Once the drawer is opened, the participants can find a motherboard with RAM chips missing from the open slots. The motherboard has a hidden button. Once touched, it starts playing parts of the song “Memories” from the musical Cats. This music is a clue about adding more memory to the motherboard. RAM chips can be found around the room and installed in the missing slots.

The server room door is locked with a numeric code (see Figure 1). The sum of all memory chips’ capacities is the code for the combination. The thermometer on the wall in the server room shows 98 degrees Firefight. The room fans are turned off and need to be turned on for the temperature to start decreasing. There is a room heater that is turned on and needs to be turned off.

The server room contains a server rack (see Figure 1) with dangling wires, that need to be connected in the proper ports. Inside the server rack, there is another motherboard, which has a missing CPU and its cooling fan. Both of them can be found in various locations of the room upon thorough search. Once the fan is attached to the CPU, and both of them are attached to the board, the printer the first room prints a picture of the thermometer showing 70 degrees Fahrenheit.

On the exit door, there is a diagram showing four servers and their backup schedule around the clock every day of the week. It can be concluded from the diagram that when one server the being backed up, the other three are 'On'. This should provide the final clue for the exit door as 247 with the network being on 24 hours a day, 7 days a week.

This experience is relevant for building basic hardware troubleshooting skills and applying critical thinking and problem-solving abilities in a real life like situation. It is not cost-prohibitive as hardware gets obsolete quickly and recycled pieces of equipment can be used for this setup. The safety should be approached with great care as many activities involve dealing with electricity-driven equipment. All wiring and switching have to be concealed and protected with required insulated layers.

This Escape room uses a very practical educational approach and will provide the opportunity to "play" with hardware without risking to lose data or expose the security of the real system.

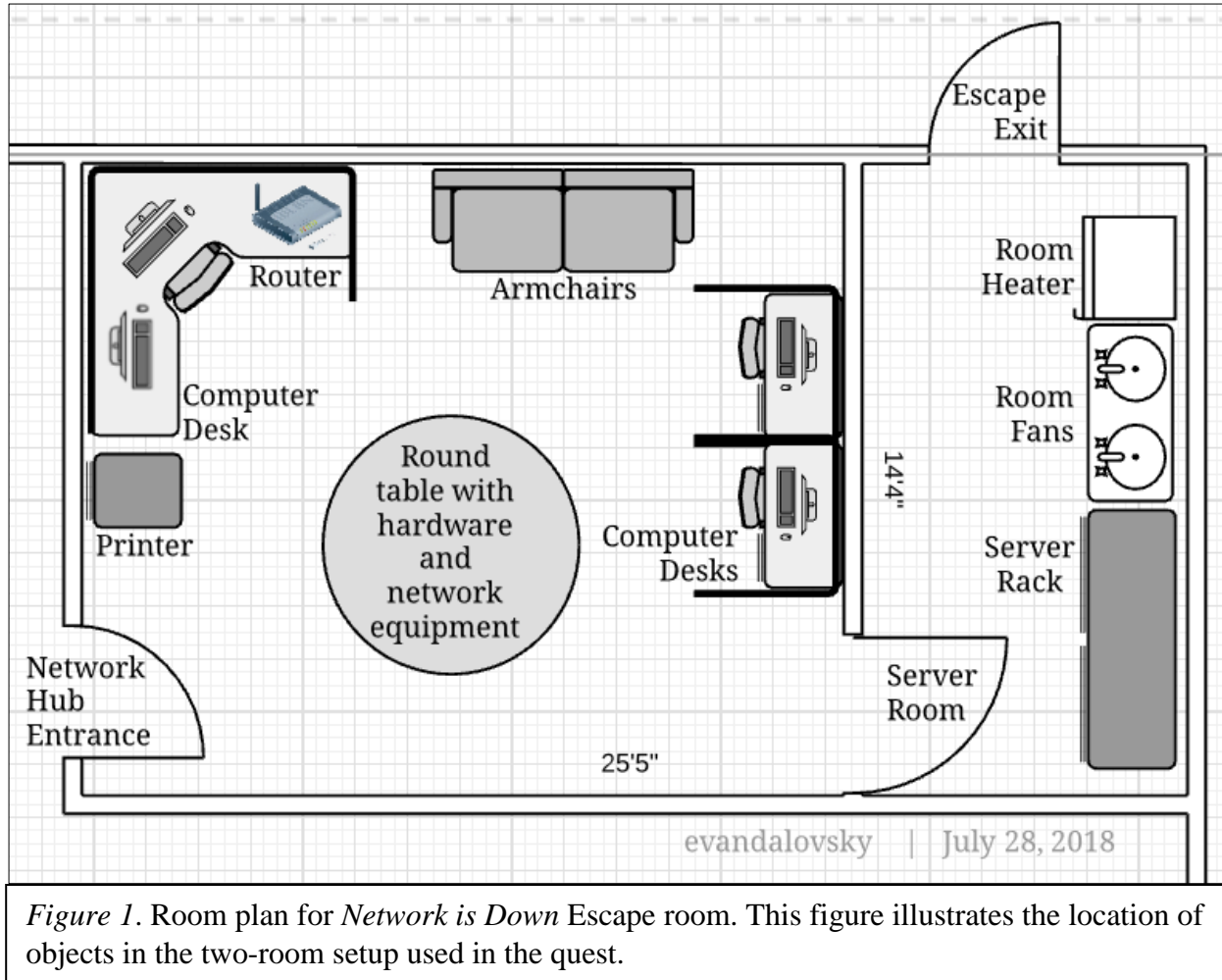


Figure 1. Room plan for *Network is Down* Escape room. This figure illustrates the location of objects in the two-room setup used in the quest.

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