

“PLAYING DOOM”: A DESIGN CASE IN SELF-DEFENSE TRAINING

Mario S. Staller^{1,2}, Valentina Heil², Rüdiger Koch³, & Swen Körner^{2,4}

¹University of Applied Sciences of Police and Public Administration North Rhine–Westphalia;

²Institute for Professional Conflict Management; ³Federal Police, Germany; ⁴German Sport University–Cologne

We report a design case in the context of self-defense training, that was designed by participants of a coach development course for violence prevention coaches for emergency services. The game was designed to foster skill development with regards to the defense against knife attacks in the context of self-defense. Following pedagogical principles of representative learning design, this game gives an idea of how self-defense skills could be developed in a game-like and student-centered environment.

Mario S. Staller is a professor at the University of Applied Sciences of Police and Public Administration North-Rhine Westphalia. His research focuses on optimal learning environments in training settings regarding interpersonal verbal and (un-) armed conflict.

Valentina Heil is a researcher at the Institute for Professional Conflict Management in Langen, Germany. Her research interests include the conception of reality of violent encounters and tactical decision making.

Rüdiger Koch is a police use of force coach at a German Police Force. His research interests include the pedagogy of police use of force and self-defense training.

Swen Körner is a professor at the German Sport University Cologne heading the Department for Training Pedagogy and Martial Research.

Copyright © 2020 by the International Journal of Designs for Learning, a publication of the Association of Educational Communications and Technology. (AECT). Permission to make digital or hard copies of portions of this work for personal or classroom use is granted without fee provided that the copies are not made or distributed for profit or commercial advantage and that copies bear this notice and the full citation on the first page in print or the first screen in digital media. Copyrights for components of this work owned by others than IJDL or AECT must be honored. Abstracting with credit is permitted.

<https://doi.org/10.14434/ijdl.v11i2.24108>

INTRODUCTION

Through the lens of participatory issues, learning in the context of self-defense is a two-edged sword. While civilians may choose voluntarily to participate in personal protection programs (Heil, Staller, & Körner, 2017), law enforcement and emergency personal are subjected to mandatory trainings (Di Nota & Huhta, 2019; Rajakaruna, Henry, Cutler, & Fairman, 2017). Current research suggests that especially training in the area of physical confrontations does not transfer well into the real world (Jager, Klatt, & Bliesener, 2013; Renden, Nieuwenhuys, Savelsbergh, & Oudejans, 2015). As recently argued, this may be due to the traditional methodology employed, focusing more on isolated skill development than on the application of these skills in variable and representative learning tasks (Körner & Staller, 2018). Additionally, motivational deficits arising through this traditional methodology may account for sometimes observed low engagement and investment of individuals in such programs (Honess, 2016).

Drawing from suggestions of game design in the context of self-defense training (Staller, Heil, Klemmer, & Körner, 2017a), a coach development session of violence prevention coaches for emergency serviced was built around the principles of good game design and the opportunities for making mandatory self-defense training more fun and meaningful, thus promoting engagement, while equally ensuring skill development through representative learning design (Pinder, Davids, Renshaw, & Araújo, 2011). In the current paper, we report a design case for a game of self-defense developed by the participants of that coach development course.

THE CONTEXT OF THE DESIGN CASE

The coach development course was attended by 16 participants, who aimed at developing the competencies to plan and deliver violence prevention workshops within their departments in the near future. The course was conducted by three coach developers (MS, VH, RK) and lasted for two weeks. It took place in a seminar room within a library that was closed during the duration of the coach development course. Besides providing the future violence prevention coaches with the declarative and procedural knowledge of

conducting efficient training programs, the recurrent issue of a lack of motivation in former mandatory training settings was frequently brought up by participants of the program. Drawing from the literature of good game design (Pallesen, 2013; Schell, 2008) discussions revolved around how to account for representative task design in order to ensure skill transfer while simultaneously bolster motivation through the use of game design elements, specifically the use of a story, aesthetics and game mechanics.

At the end of the coach development course, coaches had to design and conduct a training session about a chosen topic in order to be licensed as a violence prevention coach. A group of four coaches chose the topic of “coping with knife attacks” for their final coaching test. The participants of the training session, with a total of 45 minutes, were the other participants ($n = 12$) of the course. The training session comprised of a small targeted warm-up with subsequent representative partner interactions on a 1:1 basis with a focus on adaptive behavior against knife attacks. This training section took place in a cleared area (no obstacles, etc.) next to the library. After 25 minutes, the participants were presented with the final task, a self-defense-game called “Doom”.

A GAME OF SELF-DEFENSE

The self-defense game “Doom” had a similar narrative as the 1993 classic computer game from ID Software: In a research facility, a portal to hell has been accidentally opened, so that demons invaded the facility. The players had to escape from the facility through the main exit, which requires to find and use two different key cards. These key cards have to be found by the players, while simultaneously avoiding and fighting against attacking demons on the facility, while demons continuously patrol the premises. After retrieving the two key cards, participants were able to open the main gate and escape the research facility. Before the key cards could be inserted, the key card slots had to be powered up by the energy wrist bands the player were wearing from the beginning of the game.

The Creation of “Doom”

The design team chose “Doom” as the template for the self-defense game for two reasons: First, discussions in the coffee breaks regularly revolved around pop cultural media such as movies and games throughout the coach developing course. As such, the designing team knew that participants of their game would acknowledge references to popular culture within their training session and that the game centered learning environment would relate to participants’ real-life experience.

Second, the coach development course heavily focused on designing learning environments that (a) allow for high amounts of representatively designed self-defense interactions between the learner and his/her environment, (b)

include direct and immediate feedback, (c) allow for different difficulty levels and (d) that are engaging. Concerning representatively designed interactions, the recently postulated partner interaction paradigm (Staller & Körner, 2018; Staller, Körner, & Heil, 2019a) provided the rules of engagement with regards to the interactions. Within this framework, the person in the center of the learning process is termed „player“ being responsible for the health and safety of their counterparts (the „simulators“), while acting as close to the behavior in the field as possible. The simulator is responsible for providing high amounts of representative interactions that include the information variables that are likely to be encountered in the field while providing feedback with his/her behavior depending on the actions of the player. Within the coach development course, the first author (MS) referred to “Doom” as a good example of a video game with high amounts of interactions with direct and immediate feedback for the player through which video games learn adaptive gaming behavior in an engaging way (Staller et al., 2017a). The designing team took this example literally by actually creating a Doom game for the context of self-defense practice.

The design decisions were based around four intertwined aspects of good game design: a story, aesthetics, game mechanics and technology (Schell, 2008). The story and the aesthetics were taken from the classic Doom game, which lead to cheering and laughter of the participants when they were introduced to the game. The technology mainly focused on interactions between simulators and players in order to allow for functional skills to developed. This was intended to be achieved by incorporating well-designed game mechanics, which will be explained in the next session.

The Game Mechanics

The Playing Area

The game took place in a library with small corridors and lots of shelves that was located next to the cleared training area that was used before in the training session. Players had to move tactically around the corners of the shelves in order to not get surprised by a demon. The main exit was indicated with a white curtain and two key card slots (see Figure 1). The playing area, with its narrow aisles and lots of corners, constrained behavior of the players in a way that they have to carefully enter new areas of the playing area by slicing corners and displaying other forms of adaptable behavior, in order to not get surprised by a demon. Without a direct focus of this tactical aspect within the training session, the designing team incorporated this design aspect intentionally into the game, since tactical behavior has been considered as an important characteristic of expert self-defense performance (Staller, Abraham, Poolton, & Körner, 2018).

Furthermore, the game designers switched off the lights in the library area partially, so that some areas were darker than others. Finally, loud rock music was playing during



FIGURE 1. The main exit of the game with a key card slot to the left and to the right. In front, a player (left) is fighting against an attacking demon (right).

the game. Both features (darkness and loudness) were intentionally built into the game to (a) make it harder for the player to track and locate the demons and (b) to incorporate characteristically features of real-world conflict situations into the game (Staller, Körner, Heil, & Kecke, 2019b). As such, surprise attacks of demons occurred quite often, complementing results of research identifying surprise as one of the key features in hand-to-hand combat situations (Jensen & Wrisberg, 2014).

The Demons

The simulators within the game were “the demons” that were played by three of the four coaches. Since the learning goal of the self-defense session was to defend knife attacks, the demons were armed with training knives made of wood (see Figure 2). In previous training sessions, participants and coaches have learned to train representatively while taking care of the health and safety of the partner (Staller, Zaiser, & Körner, 2017b). While the demons tried to stab the players with the wooden knives, the players were only allowed

to mark their punches and kicks on the demons for safety reasons. In the coach development sessions, all participants of the course learned about the concept of extrapolation within partner interaction. This refers to the ability of the simulator to extrapolate from the marked attack and react as if this attack would have been hit. As such, the demons (as simulators) were able to react interactively to the actions of the players depending on how hard the players marked their attacks and to what area they aimed for (e.g., head, body). If the player marked enough counter-attacks on the demon, he fell to the ground indicating that the player has won this encounter (see Figure 2). The demons “resurrected” after five seconds by standing up again and continuing attacking the other players, who were looking for the key cards. This allowed the player to consider the current problem as solved while ensuring future interactions to be possible with the demon. The attacking behavior of the demons progressed throughout the game in order to provide players with new challenges and variability in order to trigger the adaptation of their behavior. While initially, the demons moved slowly



VIDEO 1. Frame taken from a video clip depicting the players searching the facility for key cards while avoiding and defending demons. **Note: This video contains potentially triggering content which includes simulations of physical violence.** The video clip is archived and accessible at: <https://purl.dlib.indiana.edu/iudl/media/c08h445f54>.

towards the players, demons became faster every two minutes of the gameplay.

The Players

Twelve players, which were the participants of the training session, had the assignment to find the key cards in the library while avoiding and defending attacks by the demons (see Video 1).

Each player wore an energy wrist band, which indicated his/her energy level.

The Rules

The rules of the game were as follows:

- The players had to exit the facility by using two key cards, which have to be found.
- Each player had to wear an energy wrist band and keep it till the end. Energy wrist bands were used to power up the key card slots for opening the exit gate at the end.
- If a demon hit the player with the knife, the player lost his/her wristband. Health could be restored by performing attacks on a pad in the "health restore area" (see beginning of Video 2). After 20 seconds of aggressive attacks, the player's health was restored and he/she was given the energy wrist band back.

The design element of the energy wrist band allowed for two aspects: First, players received immediate and direct feedback (by losing their energy wrist band), when they could not defend an attack. And second, besides representative partner interactions, the player had an opportunity of practicing their striking and hitting skills as well as their explosive aggression as a second task throughout the game.

Overwatch

One coach of the design team was in charge of the game as a whole. He took the time, made sure that demons moved in the defined speed, made sure that players ran to the pad area when losing their wrist band, and made sure that they returned after 20 seconds working on the pad. Also, this coach reacted to more passive players by directing the demons towards them. The three coach developers (MS, RK, VH) were allowed to walk through the library but were marked with yellow vests, so they could be easily identified as being not part of the game. MS shot photos and recorded video footage that is presented within this article.

Game Progression

The design team incorporated several features that made sure that (a) each player had many opportunities to interact with the demons (and as such practice their self-defense behavior), (b) the difficulty of the game was adapted according



VIDEO 2. Frame taken from a video clip depicting a player restoring her health by performing aggressive attacks on a pad. **Note: This video contains potentially triggering content which includes simulations of physical violence.** The video clip is archived and accessible at: <https://purl.dlib.indiana.edu/iudl/media/950495111m>.

to the self-defense skills of the players. First, the designing team only hid one key card in the library. The players did not know that fact, as such continuing looking for the second key card and thus providing continuous opportunities to encounter demons and to move tactically aware between the shelves. The second key card was hidden by the game designers ten minutes after the game started, in order to allow for enough training time and numerous interactions between demons and players. As such, the players did not have the possibility to finish the game earlier and spent the planned training time with the three main activities of (a) moving tactically between the bookshelves, (b) defending knife attacks, and (c) practicing hard and aggressive attacks on the pad. The time limit was not known by the players, since otherwise, the players may have displayed reduced motivation to move within the facility if they knew that their efforts were in vain at this stage. After the players retrieved the two key cards and every player wore an energy wrist band, the exit gate could be opened (see end of Video 2).

REFLECTIONS ON THE GAME

After reflecting on the game after its completion, we noted several issues. First, the game felt loud, noisy and very chaotic from the perspective within the game. This provided the players with a challenge in completing their assignments. However, the game designers (overwatch and the three demons) seemed to have everything under control,

while players struggled with the unfolding chaos within the playing area. Players were regularly surprised by demons, screamed while defending themselves and were immediately confronted with the next problem, e.g., discriminating friend from foe when turning around or looking for the best route to get away from the demon. From a skill development perspective, the chaotic nature of the game provided players with a key characteristic of real-world conflict situations (Körner & Staller, 2019), allowing them to practice and to attuned the needed skills for such situations.

The second issue is related to the first one: Players displayed adaptive behavior throughout the game. It seems that the demands posed by the game, lead to (a) the adaptation of already learned skills and (b) to the emergence of sometimes new behaviors that were not trained before. For example, some players, when caught off-guard by the demons, had to cope with new attacking angles, yet succeeded in applying the principles that were taught to them. Other players demonstrated new behaviors, like using books to fend off an attacking demon. Adaptability has been identified as a key skill in real-world conflict situations (Boulton & Cole, 2016; Preddy, Stefaniak, & Katsioloudis, 2019). Hence, the game offered opportunities for practicing an important conflict management skill.

Third, the players had fun playing the game and were clearly engaged in the game. Players searched the bookshelves



FIGURE 2. A player (left) has defeated a demon with a knife (right). The demons continuously resurrected after five seconds, thus posing continuous problems to the players, that searched for the key cards.

in detail for the missing keys and really put the effort in to complete the tasks. Besides the observed tension, when clearing corners or defending an incoming demon, the player laughed a lot. They enjoyed the little details the game designers brought into the game (e.g., masks, key cards, energy wrist bands, etc.). With each new detail players discovered within the playing area, short moments of laughter and enjoyment could be observed. Also, after the players completed the game, they laughed in relief and talked a lot about this great experience of the game. From a motivational perspective, having positive experiences in training settings promotes subsequent attendance in similar training (Salas, Tannenbaum, Kraiger, & Smith-Jentsch, 2012; Sitzmann, Brown, Ely, Kraiger, & Wisher, 2009). As such, the game contributed to the motivation for further attendance in similar settings within the participants. This was evidenced a year later when the coaches showed up for a continuous professional coach development session and still talked about the game, that was played a year before.

Forth, we reflected on the quality of the observed player-demon interactions within the game. While interactions generally had the quality we aimed for (e.g., representative attacks by the demons, representative defenses of the players), some interactions lacked quality. This was the case when players only defended the knife attack without counter-attacking. In such cases, demons often just stopped attacking and turned to another player. However, from a skill development perspective, it would be preferable, when the demons would stick with the player and keep attacking, in order to provide the necessary cues, from an ongoing knife-attack, which is likely more close to real world dynamics of violence. Hence, the game would increase its effectiveness concerning skill development, the more representative each interaction is carried out. As such, they are able to perform representative interactions is a key prerequisite for playing this game.

Finally, we would like to focus on the specific context the game takes place. The specific group that attended the two weeks of coach development were unique insofar,

that they shared a common enthusiasm for popular culture in general. While references to movies and games were a general theme within this course, and coaches discussed the benefits of good game design, the creation of the Doom as a self-defense game was the climax of this shared group effort. The design team enjoyed creating this game as much as the players that played the game. However, it has to be critically taken into account that this game was a perfect fit for this specific group within the specific context of a two-week coach development course. Since motivations and expectations of individuals differ, it may be possible that participants that have other expectations of a violence prevention workshop or a self-defense training program have to be treated differently.

CONCLUSION

The presented “Doom” game related to participants’ real-life experience and provided the players with many motivating opportunities for performing the self-defense skill in focus (in the current case: defense against knife attacks) through playing a game. As such the design case provides an idea of how elements of game design could foster skill development and behavioral adaptability in the context of self-defense while keeping representativeness and safety high (Staller et al., 2017a). In the context of mandatory training like emergency services, this could be a fruitful avenue for further research on student-centered design of learning environments. Future studies have to empirically investigate how learning and motivation is affected by game design with regards to conflict management and self-defense.

REFERENCES

- Boulton, L., & Cole, J. C. (2016). Adaptive flexibility examining the role of expertise in the decision making of authorized firearms officers during armed confrontation. *Journal of Cognitive Engineering and Decision Making*, 10(3), 291–308. <http://doi.org/10.1177/1555343416646684>
- Di Nota, P. M., & Huhta, J.-M. (2019). Complex motor learning and police training: Applied, cognitive, and clinical perspectives. *Frontiers in Psychology*, 10, 167–20. <http://doi.org/10.3389/fpsyg.2019.01797>
- Heil, V., Staller, M. S., & Körner, S. (2017). Motive in der Selbstverteidigung – Eine qualitative und quantitative Studie am Beispiel Krav Maga und Wing Chun [Motives in self-defense training – A qualitative and quantitative study of krav maga and wing chun]. In S. Körner & L. Ista (Eds.), *Martial Arts and Society. Zur gesellschaftlichen Bedeutung von Kampfkunst, Kampfsport und Selbstverteidigung* (pp. 146–159). Hamburg: Czwalina.
- Honess, R. (2016). The mandatory delivery of ongoing training within the police service of England and Wales and its relationship to the adragogical principle of self-motivation (Unpublished dissertation). Canterbury Christ Church University.
- Jager, J., Klatt, T., & Bliesener, T. (2013). *NRW-Studie: Gewalt gegen Polizeibeamtinnen und Polizeibeamte [North Rhine-Westphalian study: Violence against police officers]*. Kiel: Institut für Psychologie, Christian-Albrechts-Universität.
- Jensen, P. R., & Wisberg, C. A. (2014). Performance under acute stress: A qualitative study of soldiers’ experiences of hand-to-hand combat. *International Journal of Stress Management*, 21(4), 406–423. <http://doi.org/10.1037/a0037998>
- Körner, S., & Staller, M. S. (2018). From system to pedagogy: Towards a nonlinear pedagogy of self-defense training in the police and the civilian domain. *Security Journal*, 31(2), 645–659. <http://doi.org/10.1057/s41284-017-0122-1>
- Körner, S. & Staller, M. S. (2019). „Es ist ja immer irgendwie eine andere Situation...“ – Konflikt- versus Trainingserfahrungen von Polizist*innen [“It is always a different situation...” - Experiences of conflict and training of police officers]. In M. Meyer & M. S. Staller (Eds.), *Teaching is learning: Methods, contents and role models in the didactics of martial arts - 8th Annual Symposion of the dvs Kommission “Kampfkunst und Kampfsport”* (pp. 25–26). Vechta.
- Pallesen, L. (2013). *8 principles of good game design*. Retrieved from <http://www.redkeybluekey.com/2011/09/8-principles-of-good-game-design.html>
- Pinder, R. A., Davids, K., Renshaw, I., & Araújo, D. (2011). Representative learning design and functionality of research and practice in sport. *Journal of Sport & Exercise Psychology*, 33, 146–155. <http://doi.org/10.1123/jsep.33.1.146>
- Preddy, J. E., Stefaniak, J. E., & Katsioloudis, P. (2019). Building a cognitive readiness for violent police-citizen encounters: A task analysis. *Performance Improvement Quarterly*, 5(4), 1–22. <http://doi.org/10.1002/piq.21288>
- Rajakaruna, N., Henry, P. J., Cutler, A., & Fairman, G. (2017). Ensuring the validity of police use of force training. *Police Practice and Research*, 18(5), 507–521. <http://doi.org/10.1080/15614263.2016.1268959>
- Renden, P. G., Nieuwenhuys, A., Savelsbergh, G. J. P., & Oudejans, R. R. D. (2015). Dutch police officers’ preparation and performance of their arrest and self-defence skills: A questionnaire study. *Applied Ergonomics*, 49(c), 8–17. <http://doi.org/10.1016/j.apergo.2015.01.002>
- Salas, E., Tannenbaum, S. I., Kraiger, K., & Smith-Jentsch, K. A. (2012). The science of training and development in organizations. *Psychological Science in the Public Interest*, 13(2), 74–101. <http://doi.org/10.1177/1529100612436661>
- Schell, J. (2008). *The art of game design*. New York, NY: Elsevier.
- Sitzmann, T., Brown, K. G., Ely, K., Kraiger, K., & Wisher, R. A. (2009). A cyclical model of motivational constructs in web-based courses. *Military Psychology*, 21(4), 534–551. <http://doi.org/10.1080/08995600903206479>
- Staller, M. S., & Körner, S. (2018). Your partner makes you better: The partner interaction paradigm in conflict training. *Movement - Journal of Physical Education Sport Sciences*, 11(3), 169.
- Staller, M. S., Abraham, A., Poolton, J. M., & Körner, S. (2018). Expert consensus in self-defence: Results of an international Delphi poll. *Journal of Martial Arts Research*, 1(2), 12. http://doi.org/10.15495/ojs_25678221_11_50

Staller, M. S., Heil, V., Klemmer, I., & Körner, S. (2017a). "Be like Doom" – Eine trainingspädagogische Sichtweise auf Gamification in der Selbstverteidigung ["Be like Doom" - Gamification in self-defence from a coaching perspective]. In S. Körner & L. Istaş (Eds.), *Martial Arts and Society. Zur gesellschaftlichen Bedeutung von Kampfkunst, Kampfsport und Selbstverteidigung* (pp. 196–206). Hamburg: Czwalina.

Staller, M. S., Körner, S., & Heil, V. (2019a). Das Partner-Interaktions-Modell für physische Simulationen: Validierung durch Trainierende im polizeilichen Einsatztraining [The Partner Interaction Model for Physical Simulation: Validation through police training trainees]. In M. Meyer & M. S. Staller (Eds.), *Teaching is learning: Methods, contents and role models in the didactics of martial arts - 8th Annual Symposium of the dvs Kommission "Kampfkunst und Kampfsport"* (pp. 41–42). Vechta.

Staller, M. S., Körner, S., Heil, V., & Kecke, A. (2019b). „Draußen ist es nie so wie es hier ist“ – Die Wahrnehmung von Einsatz- und Konfliktsituationen von Polizeikommissaranwärter*innen [„It is different out there than in here“ – The experience of operational situations and conflict of police recruits]. In A. Niehaus (Ed.), *Abstracts of the 7th Annual Conference of the Committee for Martial Arts Studies in the German Association of Sport "Experiencing, Training and Thinking the Body in Martial Arts and Martial Sports," November 15-17, 2018, Ghent, Belgium* (p. 33). *Journal of Martial Arts Research*, 2(2). http://doi.org/10.15495/ojs_25678221_22

Staller, M. S., Zaiser, B., & Körner, S. (2017b). From Realism to Representativeness: Changing Terminology to Investigate Effectiveness in Self-Defence. *Martial Arts Studies*, (4), 70–77. <http://doi.org/10.18573/j.2017.10187>.