Press START to Begin

Gamification uses proven techniques to influence human behaviour, is used by big businesses the world over, and is an ever-growing industry (Pickard 2017). Most military training is dull, dry, and uninteresting – but it doesn't have to be so. Gamification can be used to enhance the Army's training, and should become a consideration in the Systems Approach to Defence Learning (SADL). Yu-Kai Chou's Octalysis model could be considered a worthy starting point for improving Army training with Gamification.

Where do games come from and where are they now?

Games are deeply embedded in our history – starting as early as 2500 B.C. (Pace 1983). In modern times, the story likely starts in 1913 with H.G. Wells publishing his title 'Little Wars' – a set of rules for playing table top battles (Timpson, T 2013). Wells' renowned creativity led him to develop a system for structured play with his painted toy soldiers in what became the first published rule set for table top war gaming. Ever able to envisage the future, 'Little Wars' turned out to be just another of Wells' accurate predictions – albeit via Call of Duty, Company of Heroes, the Total War series, or any of the other numerous digital games. Yet modern gaming encompasses more than just video games – the resurgence of board games is in full swing (Jolin 2016), and there are more table top war games than ever before[1]. The latest Zombicide board game alone raised over $3 000 000 in crowd funding to support its development. Further, we are now seeing hybrids between the two, with board game

[1] Examples include the popular Warhammer, Bolt Action, Flames of War, Star Wars: X-Wing, Star Wars: Armada and Infinity.

mechanics supporting action skirmish style games[2]. Behind all of this, there are the 'hard-core' military war gamers who happily whittle away the hours on realistic tactical war games[3]. Additionally, more and more people are taking to Role Playing Games (RPGs) (Phillips, C 2013), which started with Dungeons and Dragons in 1974**.**

The Army Can Be Boring

When was the last time you can honestly say you had fun at work? Ask a child how much fun they thought becoming a soldier would be and you would likely get a myriad of responses, ranging from 'pretty cool' to 'outrageous'. We were all enthusiastic about our Army training when we entered Kapooka, ADFA, or RMC. I'd argue that the people stepping out of those buses, whilst nervous, are nothing if not full of anticipation for the excitement to come; for the adventure that they are about to have; for what is going to be fun. Sadly, this doesn't always last, and somewhere along the way Army training can become mundane. I first recognised this when doing Basic Parachuting Course, where common discussion amongst the trainee paratroopers went something like 'the Army even managed to suck the fun out of sky diving.' Many of us simply can't wait to finish the day, just to get some time to ourselves so we can have fun. Many of us turn to games for that fun.

Games, gaming, gamers, gameology, gamification and many other similar terms likely bring different ideas to mind for many of you. Some of you probably haven't played a game since childhood and think of them as only entertainment. Some of you may even believe games are beneath you, something for children, which adults should not partake in. Some of you probably consider yourselves 'gamers'. Regardless of what you understand, you may not be aware that elements of game design can be, and are, used on a daily basis to influence and motivate you.

What is Gamification?

Gamification is applying the principles that make games so enjoyable to make real-world activities more engaging. Ask yourself, what makes people play World of Warcraft for 60 or more hours a week? Then ask, can we use these reasons to make other aspects of our lives better? Can these influences, biological or otherwise, affect us without our knowing? This is what Gamification attempts to achieve.

Whether you recognise it or not you probably use elements of game-play in your day-to-day life. The world around you certainly does. In the 1930s a behaviourist named B.F. Skinner developed the theory of operant conditioning – the idea that behaviour is determined by its consequences, both reinforcements and punishments, which make it more or less likely that the behaviour will occur again (McLeod, S 2007). Before this, we only knew how to condition reactions (the Pavlovian dog approach). Skinner theorised you could actually condition volition – the reason people make the choices they do. He found that there were two key parts. Firstly operant conditioning works on humans, and secondly simply providing humans a reward every time they do an action isn't the best way to keep them doing that action. Rather, if you provide a reward after a person performs an action a random number of times, or give a reward every certain number of minutes – these methods are far more effective at encouraging a human to continue these actions.

---

[2] Examples include the popular Star Wars: Imperial Assault, Descent, Massive Darkness, Time of Legends: Joan of Arc, and Mythic Battles: Pantheon.

[3] Examples include Axis and Allies, Advanced Squad Leader, Memoir '44, or Tide of Iron

He demonstrated that primary reinforcers (biological needs – food, shelter, pleasure) have a satiation point, whereas secondary reinforcers, like money and social affirmation, generally do not. Many games use secondary reinforcers to get you to repeat an action that long ago lost its novelty. The power of these secondary reinforcers cannot be understated. I am certain many gamers can probably empathise when I say there has been more than one time that I finished a game, only to look back on it a week later and wonder why I sank 80+ hours into it! This is the power of secondary reinforcers. Most often these reinforcers manifests in Role Playing Games (RPGs), as they suit the game mechanics particularly well. As a result, many games are now using RPG elements to promote engagement and 'Skinner Box' satisfaction (Cherry, K 2017).

Join me, and we will rule the Galaxy as father and son!

Sadly, gamification has no morals and there is a dark side to gamification, which many companies are recognising. As an example, Gamification is already encouraging us to increase our debt. Merely look at the rewards for using your credit card, within which smarter companies have you 'level up' for accruing debt, or the progress bar on your frequent flyers – or indeed the 'achievements' some of these types of programs give for taking routes that are more economical for them. Woolworths offers collectable cards for your shopping, a gamification trait hidden under the guise of 'helping your children with their education or play' (enhancing an age-old tactic of convincing children to convince parents to buy). Even your coffee card is an example of Skinner Box satisfaction. But in the context of this article, these negatives only serve to further highlight the power that Gamification has over our primordial brains and our hormones. Regardless of ethical application, Gamification could be utilised to enhance our Military service (job satisfaction) and education (training).

Having More Fun

The elements that make up a game vary depending on who you speak to, but there is a general agreement that games are a fun experience that occurs through engagement. Throughout this article I've chosen to use Jane McGonigal's defining traits (Woolley, D 2012) for games and Yu-Kai Chou's Human-Focused Design (Yu-Kai, C 2014).

A real example of Gamification elements in effect can be seen in the Combat Shooting Courses, master-minded by Wayne Weeks and his team. My most recent experience with combat shooting at the Majura Risk Reduction Activity (RRA) in November of 2016 highlights the utility of Gamification, whether the training designers realised this or not. In a single five-day training period (which really only involved three and a half days of shooting training), the average shooting standards for students increased by 325% and '…significant improvement was observed in combat behaviour and weapon manipulation…'. These results are not unique, and replicate the results seen across the Army on similar such courses since the start of 2017.

In attempting to analyse why this was the case, the post course questionnaires indicated that the 'adult learning environment, the drills training, and the training methodologies to be the most valuable part of the training. All the students rated the learning environment and teaching methodologies to be more effective than any learning environment and methodology they have previously experienced in the ADF.' (Baker 2017[4]). Looking at both of these aspects through a lens of gamification serves to highlight just how effective it can be.

Good gamification takes the best elements of game design, applies them to course design, and alters the ways in which learners can progress and demonstrate mastery. Notable elements of gamification in the RRA were flexibility, rewards, clear rules, feedback, narrative, and quests. I'll expand on each in further detail (linking into Jane McGonigal's defining traits):

1. **Flexibility (voluntary participation, rules, goals).** Firstly, trainees had a flexible learning path (versus a normal linear progression). Key concepts and skills were scheduled to be taught in a structured, progressive manner; however, individuals were empowered to train these skills as they saw fit between sessions. An entire afternoon (as well as other, shorter periods amongst the training) was dedicated to flexible learning and the trainees were given access to multiple ranges. Here, they were allowed to train whichever skill they wished to (with both primary and secondary weapons) at their own pace. Their training became their responsibility, and the instructors were only involved on request of the trainees.
2. **Rewards (goals, feedback).** By testing shooting standards (tests designed to measure ability and speed with both primary and secondary weapons) as the first element of the course, the trainers set a baseline which could only be improved upon throughout the training. This instilled a degree of wonder, as the trainees could see the how 'powerful' they could become through the training, and encouraged performance and self-development. Every achievement afterwards became an internal reward for the trainees which further served to boost confidence and enjoyment. The trainers also dedicated time after each skill session to practice, offering their praise and reward readily for any and all degrees of improvement. As trainees were paired together to coach one another (an enhanced learning technique – another topic), small rewards were given between trainees as encouragement and through competitive spirit. At no time was any trainee punished, or had something taken from them, because of their performance.

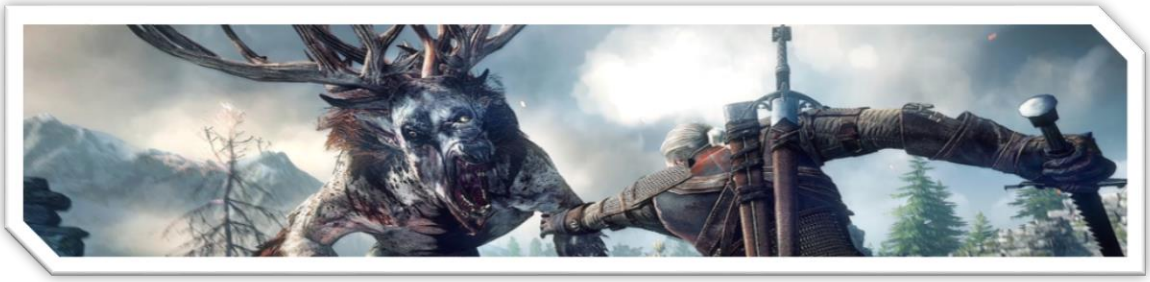
[4] *Evaluation of Combat Shooting Cell and National Combatant Centre Risk Reduction Activity*, Weapons and Combat Systems Division Defence Science and Technology Group, DST-Group-CR-2016-0311

3. **Clear Rules (rules).** From the beginning the rules were made clear through the provision of the course outcomes. Additionally, firing the shooting standards assessment as the first component of the training demonstrated the boundaries of the training, as well as a glimpse of the possible outcomes, to the participants. This pushed the trainees, as players of the game, to explore 'previously uncharted possibility spaces' – to work within the rules and employ creativity and foster strategic thinking to reach their goal (Woolley 2012). Rules were then further built upon through the instructor's common dialect and course narrative – building a combat mindset. Another key element was the definition of a 'perfect score' that everyone understood could be achieved (by mastering all shooting standards).
4. **Feedback (feedback).** Small feedback was continuous from both instructors and peers and, most importantly, it was timely. Response to your training was near instantaneous and resulted in rapid change. The key to this small feedback loop was trainees were able to apply the observation and make immediate improvement. Broader feedback was given at the end of a larger training period (several lessons or hours) and offered an open forum discussion where trainees could share their lessons learnt, encouraged by Socratic questioning that inspired critical thinking (The Foundation for Critical Thinking n.d.).
5. **Narrative (feedback).** From the moment the course commenced, all instructors spoke a common language and held to the course narrative – we were going to be gunslingers. This focused the trainees on what mattered, and inspired them with a 'cool factor' that served to significantly enhance intrinsic motivation.
6. **Quests (goals, feedback, voluntary participation).** As instruction progressed, oftentimes a learning period would be followed by a practice session. More often than not, this was shaped as a 'mini-quest' were trainees were asked to achieve certain objectives. Whilst the language was not in a 'game' fashion (i.e. they were not called quests, or objectives), they connected with a relevant element of learning and challenged the trainees – encouraging us to decide to achieve what 'objective' was being asked. Most of us didn't realise it at the time, which speaks to the point of Operant Conditioning, but we were constantly deciding to partake mini-quests to demonstrate the skills we had learnt and satisfy the need for achievement.

These elements of game design enhanced the training by *making it fun*. Many more elements to games could have been used as well; including avatars, micro-rewards, leader-boards, flexible achievement paths, teams and a more progressive/structured quest system. However, even without a complete 'game design' approach to the training, the gamification elements radically changed the learning environment for the better. It also served to influence trainees towards a *growth* mindset[5] that enabled constant improvement without damaging confidence or ego. I am certain, given a more traditional Army training model, that combat shooting could have been boring, yet these subtle differences yielded the opposite result

[5] *Growth* vs *fixed* mindsets is another topic worthy of understanding – and unsurprisingly gamification tactics can help in training people to adopt a great *growth* mindset. For more information see the book 'Mindset: The New Psychology of Success', by Carol Dweck, or her website https://mindsetonline.com/

Human Focused Design



Another world leader in Gamification is Yu-Kai Chou, the author of Actionable Gamification. I show his work here as an excellent starting point to conduct analysis on how you can develop better motivation for your training. Yu-Kai's Human-Focused Design 'optimises for human motivation in a system as opposed to optimising for pure functional efficiency within the system' (Yu-Kai 2014). His analysis led him to believe that everything we do is based on one or more of the eight Core Drives, which he then used to build his Octalysis Framework (Diagram 1).

The Core Drives are Epic Meaning and Calling; Development and Accomplishment; Empowerment of Creativity and Feedback; Ownership and Possession; Social Influence and Relatedness; Scarcity and Impatience; Unpredictability and Curiosity; and Loss and Avoidance. If you are a gamer, I'm sure just reading this list you will be able to relate how games use these drives for enjoyment.

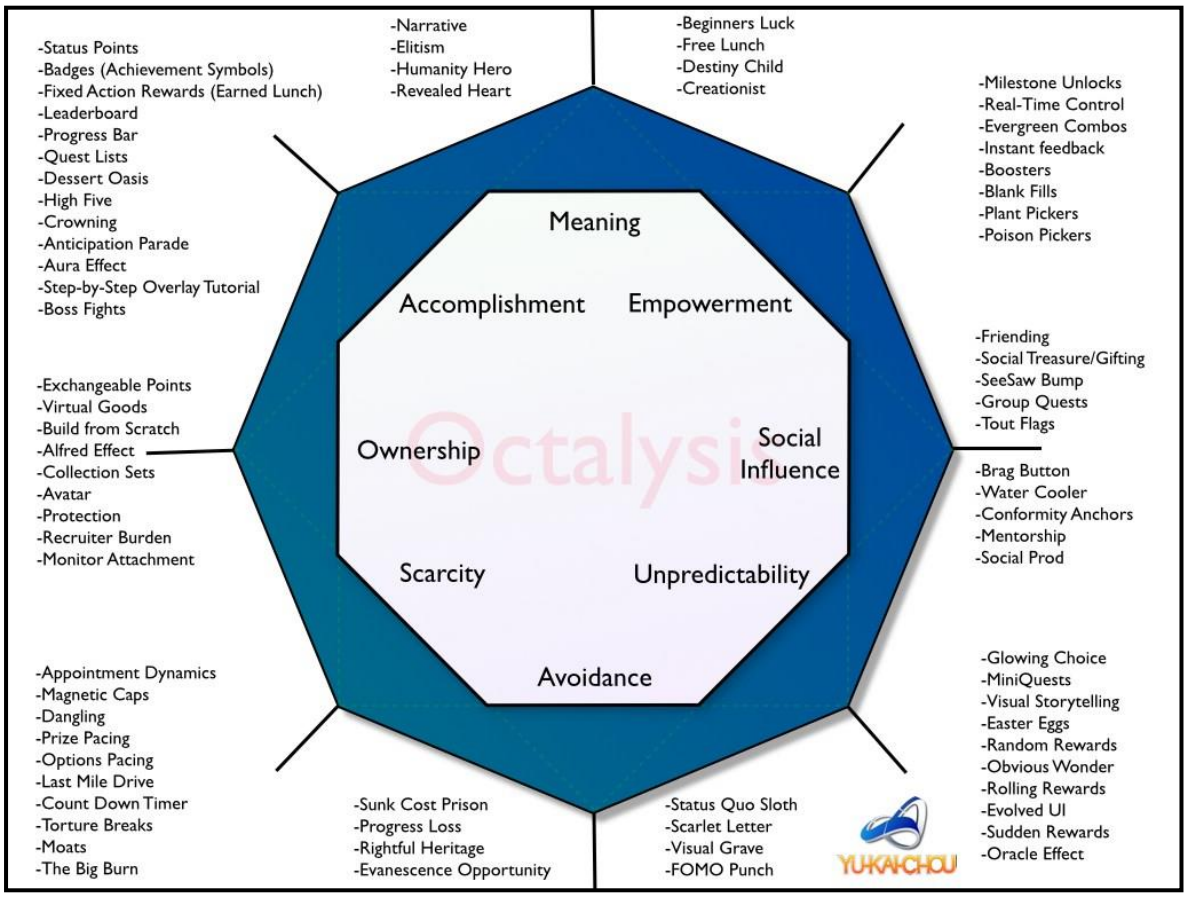


Diagram 1
Octalysis Framework
http://yukaichou.com/gamification-examples/octalysis-complete-gamification-framework/

For more detail on each of these Drives, you'll have to read the book, but going back to the notable elements of the Combat Shooting RRA, each of them shows one (or more) of Chou's drives in the following way:

1. **Flexibility** – Empowerment of Creativity and Feedback; Unpredictability and Curiosity
2. **Rewards** – Epic Meaning and Calling; Empowerment of Creativity and Feedback; Social Influence and Relatedness; and Loss and Avoidance.
3. **Clear Rules** – Development and Accomplishment; Empowerment of Creativity and Feedback.
4. **Feedback** – Empowerment of Creativity and Feedback
5. **Narrative** – Epic Meaning and Calling; Social Influence and Relatedness.

I've chosen to highlight his work here as a possible model for future gamification of military training. Using the Octalysis principles when designing training will help you to design training that targets each of the motivating factors, leading to better training design. The Octalysis tool is also an excellent 'after action' tool to understand the different motivators surrounding an activity, which can then inform improvements. As an example, diagram 2 shows a specific Octalysis Analysis of the RRA, as well as descriptions of how strong each of the Core Drives were in the training.

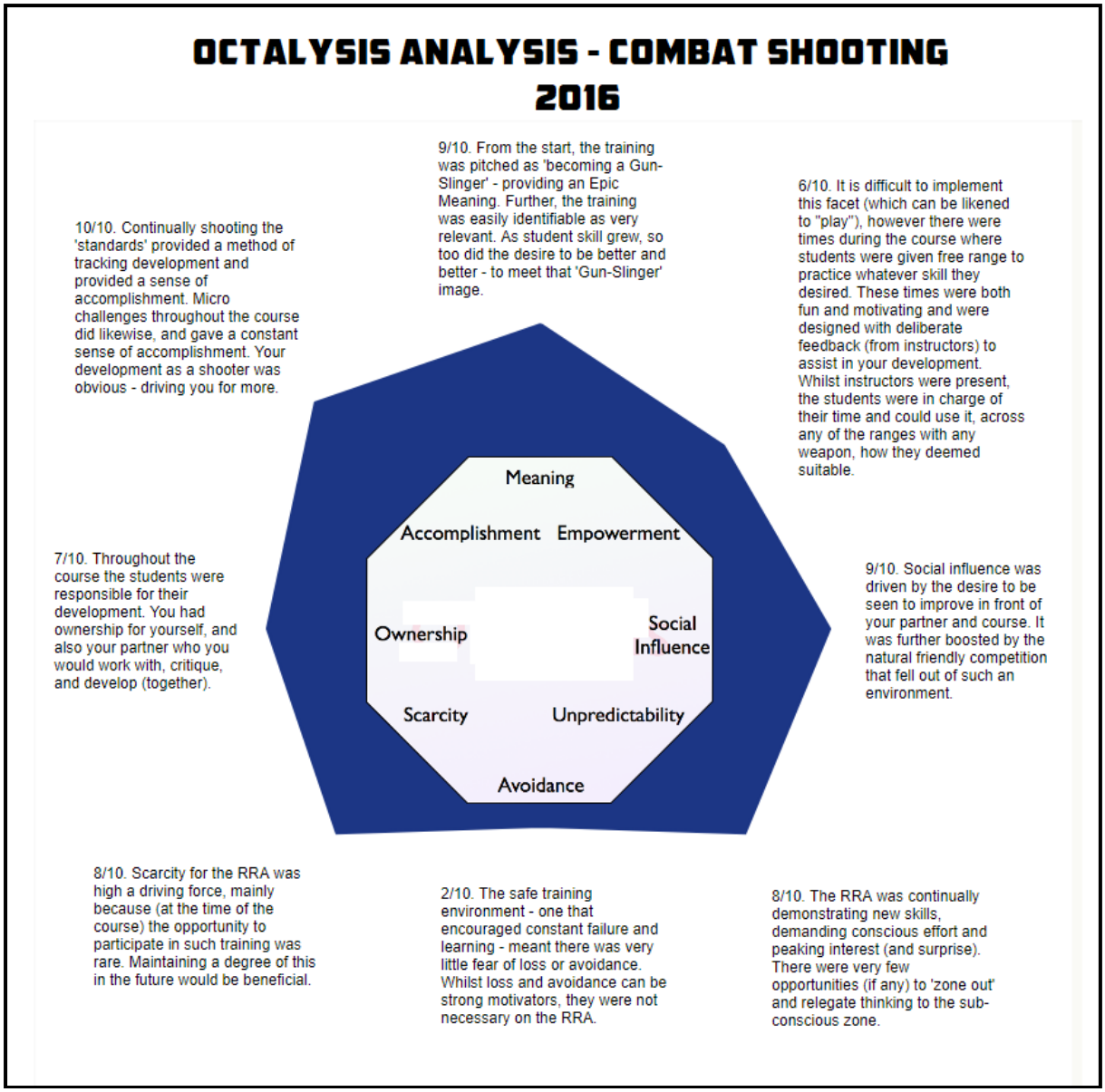


Diagram 2
Octalysis Analysis of the 2016 Combat Shooting RRA

Future application

I offer two examples of how Gamification could be utilised within the Army.

Firstly, and simply, we can apply the defining traits of games to individual development within a team. Given a *goal*, a set of *rules* (how you train, for example), a *feedback system* (public notice boards, individual debriefs, well designed training programs) and *voluntary participation* then small teams can drastically improve the training environment. With a little creative thought, a team could record their skill development or work performance in a public place, registering individual scores in a competition. In fact, Mrs. Beer (a teacher of second-grade in the US) (Dweck 2012) found powerful application of this tactic in her classroom where she used race-horses on a board to mark how her students were learning. As they learnt more, their horse would slowly move closer to the finish line, in a race between each other to 'learn more'. This proved a powerful tool for motivating students, and also encouraged a *growth*

mindset. If this is the case, then why don't teams track their performance in PT? Writing their scores up daily, with the team commander allocating points based on the average performance – after a month, see who has 'levelled up'. After all, '*what gets measured, gets managed'* (Drucker 2008). Maybe commanders could assess individual skills inside routine training, allocating rewards to their soldiers. Another easy example where this could be applied is shooting. Why not expand the game to be played at all times – a commander could challenge soldiers with questioning (Intel Corporation 2007) throughout the day, and record the results. As an example, after a vehicle arrives at workshops for a major repair, query the Vehicle Mechanics on their assessment, and then ask them what they discovered after the repair is complete – and what they learnt. Or allocate routine tasks as 'Mission Objectives' to small teams, with minor rewards and feedback to inspire competition. Perhaps we can digitise stock-taking, so when you finish a component a small icon flashes on your tablet that congratulates you, and shows a percentage bar on how much progress you've made – maybe even after 10 complete stocktakes you earn a badge. Hide 'easter-eggs' in your presentations with a reward for finding them – ensuring the participants are paying attention as they vie to be the first to discover the secret (and the reward). We don't have to use game language, but can certainly harness the mechanics. With a little creativity, fair judgement, a commander could easily turn their routine work into a gaming environment.

Secondly, the ADF could invest in development of hardware, software, or physical games. Research in virtual reality is the obvious example – blending advanced hardware, with gaming specific software, to enable soldiers to experience realistic scenarios with minimum risk. Most of us are aware of this emerging capability (alongside augmented/blended reality) and imagine this as the ideal method of creating 'pre-combat veterans'. The downside of this is the evident cost, both initially and ongoing maintenance, and man-power effort to establish it in a readily available fashion for all. These decisions are well beyond my capacity to consider - but from where I sit, the benefits make proper investment in this field overwhelmingly worthwhile.

However, a simpler alternative, with a high pay-off (in my limited opinion) is the use of 'table-top games'. Why not utilise purposely designed board games that teach a specific outcome in an authentic fashion – that *bridge the gap between learning and understanding.* Let me give you a personal example. RMC ably instructs on the employment of all Battlefield Operating Systems, as well as their subordinate capabilities or technologies (the Manoeuvre BOS, and the M1A1 Abrams as an example). But do cadets understand? Well, it certainly communicates how these things are employed, and works extremely hard to demonstrate and instil this where it can – but it's hampered by limitations in time, funding, and availability of these capabilities for demonstration. An easy, time efficient method of bridging this gap is through the use of purposefully designed games. Picture the following:

> *"You complete a lesson on the employment of Armour (perhaps through some gamified, modern learning method). Afterwards you convene with your syndicate group and compete against each other in a simple, tailor designed board game that authentically replicates tactical actions. You size up against a class mate (and naturally, don't want to lose to them), and without any further feedback from instructors, you start your game. You've played it before, and understand the rules, but never with tanks. Your last iteration was two infantry platoons in a meeting engagement – but this time you have a troop of M1A1s! And what is best, your opponent has none (but he does have some AT-7s). Immediately after deploying your forces to the board you rush your Abrams at him, intent on a quick victory. With a grin on your face, you position your tanks as far forward as they can move in a turn and prepare to fire – but your opponent announces he is interrupting your turn to fire his AT-7, which were deployed in an ABF and have been triggered. Your smile wanes, but you are still confident… until your opponent removes one of your M1A1s and mobility kills another. Now you are worried, but it is back to your turn and you eagerly fire your main armament, your co-ax, and your pintel mount. But the enemy is dug in and moved to an alternate position – so your fire does little damage. Not an issue, you think, as I'll just fire everything at them until they are destroyed… except your infantry are not*

in range. Now your opponent is smiling, as he starts his turn and fires his AT-7 again."

Whilst this is a simplistic example, if it occurred and was followed with a robust AAR, led by the instructional staff, an *understanding* of the employment of Armour could be better achieved – far beyond a PowerPoint lesson. I mention PowerPoint here to have a purposefully negative connotation, as we need to begin to apply what modern science can tell us about how we learn – including gamification. Many board games already exist that attempt to mimic tactical, and operational, activities. Examples include some of those listed above, as well as the particularly easy to learn Heroes of Normandie – which manages to capture some authenticity in its simple mechanics (surprise, concealment, suppression, etc).

These games already offer a learning opportunity, and could be nearly perfectly suited to our training with some minor adjustments (PS – I am happy to retire and create a games development company for just this purpose…)

Why Not?

The reality is the military has a history in gaming, as well as role-playing, and will continue to do so. Anyone who has ever conducted a Tactical Exercise Without Troops (TEWT) is role-playing, as are those who deploy as Opposing Force (OPFOR) on any exercise. What about the numerous simulation centres around the country? Or the Weapon Training Simulation Centre (WTSS)? Or indeed any time you participate in a blank fire activity? The German Army used games to train in the most austere and resource constrained training environment of the last century; and went on to terrify Europe in the infamous, and highly effective, Blitzkrieg. All prepared for with mud model and simulated gaming.

Many of us already game, and for good reason – because it appeals to us, when designed well, and it is fun. That is why we spend hundreds of hours achieving something that does not exist, and is gone when the save game is deleted. Many organisations have realised we can harness game design for motivation (for good, or for evil) and can improve our work life, and our training, which means – to me – the benefits are clear. Will you maintain the status quo, or take a bold step forward?

By Callum Muntz

References

Baker, R 2017, *Evaluation of Combat Shooting Cell and National Combatant Centre Risk Reduction Activity*, Weapons and Combat Systems Division Defence Science and Technology Group, DST-Group-CR-2016-0311

Cherry, K 2017, *What is a Skinner Box? Learning about Operant Conditioning*, Very Well Mind, <https://www.verywell.com/what-is-a-skinner-box-2795875>

Drucker, P 2008, *Revisiting Drucker: What Gets Measured Gets Managed*, Results Junkies, <https://www.resultsjunkies.com/revisiting-drucker-what-gets-measured-gets-managed/>

The Foundation for Critical Thinking n.d.,*The Role of Socratic Questioning in Thinking, Teaching, and Learning*, The Foundation for Critical Thinking, http://www.criticalthinking.org/pages/the-role-of-socratic-questioning-in-thinking-teaching-learning/522

Intel Corporation 2007, *Designing Effective Questioning – The Socratic Questioning Technique*, Intel Teach Program, <https://www.intel.com/content/dam/www/program/education/us/en/documents/project-design/strategies/dep-question-socratic.pdf>

Jolin, D 2016, *The Rise and Rise of Tabletop Gaming*, The Guardian, <https://www.theguardian.com/technology/2016/sep/25/board-games-back-tabletop-gaming-boom-pandemic-flash-point>

McLeod, S 2007, *Skinner – Operant Conditioning*, Simply Psychology, <https://www.simplypsychology.org/operant-conditioning.html>

Pace, E 1983, *Ancient Passion: Board Games,* New York Times, <http://www.nytimes.com/1983/10/18/science/ancient-passion-board-games.html?pagewanted=all>

Pickard, T 2017, *Five statistics that suggest gamification is the future of the workplace, plus the psychological theory of why gamification works*, Business.com, <https://www.business.com/articles/5-statistics-that-prove-gamification-is-the-future-of-the-workplace/>

Timpson, T 2013, *Little Wars: How HG Wells created hobby war gaming*, BBC News, <http://www.bbc.com/news/magazine-22777029>

Woolley, D 2012, *Reality is Broken: Why Games Make Us Better and How They Can Change the World*, Just Think Of It, <http://just.thinkofit.com/reality-is-broken/>

Yu-Kai, C 2014, *Actionable Gamification: Beyond Points, Badges, and Leaderboards*