The use of META (virtual simulations) in Canadian junior military leadership development

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Abstract

Purpose – This paper aims to explore virtual simulations, merging artificial intelligence with real-world simulations, supporting Canadian armed forces (CAF) junior military leaders (JMLs) leadership development. Our research questions are: (1) How do virtual simulations support CAF junior military leadership development within a globalized and complex environment in the 21st century? (2) Could virtual simulations support a leadership culture change through efficacious "soft skills" training? In this paper, we explore the efficacy of virtual simulations for enhancing or developing leadership in JMLs in the CAF through a four-day pilot project with twenty JMLs (n = 20).

Design/methodology/approach – To assess the efficacy of virtual simulations for leadership development, we designed and studied a four-day leadership workshop for JMLs in the CAF using several virtual artificial intelligence leadership role-play simulations developed by McGraw Hill in their smart book textbook (Manning & Curtis, 2022) and several non-virtual in-class simulations for comparison. We selected four twenty to thirty-minute virtual role-play simulations that synergized with the in-person morning leadership workshop. We facilitated the three-hour leadership workshops and virtual/in-class simulations over four consecutive days. We emulated the ELESS model (De Freitas & Routledge, 2013) to assess soft and leadership skills.

Findings – The participants (JMLs) reported beneficial learning utility associated with the virtual simulations. Participants also expressed that further utility might be leveraged through virtual simulations incorporating greater complexity with multiple potential outcomes. They also suggested that leadership simulations designed around military situations would prove highly beneficial, something that was outside of the scope of this small pilot project.

Research limitations/implications – Since this phase of our research is a pilot project, we secured a small amount of funding to test our hypothesis that simulations enhance leadership development for JMLs. These funding limitations resulted in several constraints in the research, such as the availability of virtual simulations articulating leadership from a military perspective. However, we believed the assigned organizational leadership simulations in the McGraw Hill Smart Book ecosystem would approximate generic leadership situations enough to test the hypothesis with the JMLs. As a pilot project, our sample size was relatively small (n = 20 JMLs) since participation was voluntary amidst a busy spring season for the JMLs. Since this is a pilot project, we suggest that twenty JMLs are an adequate sampling to test the hypothesis that simulations enhance JML leadership development. We will expand the sample size in the next phase of our research as we work with the CAF to expand the pool of participants to at least forty JML participants (n = 40). We also plan to secure further funding to collaborate with subject matter experts to design virtual simulations based on Canadian military leadership scenarios.

Practical implications – The CAF host robust simulations capabilities for combat training, but have not exploited the potential training and analytical capacity of virtual leadership simulations for leadership

development within the CAF. We believe that virtual simulations provide an opportunity for the CAF to effect desired culture change through leadership development that leverages the substantial pedagogical benefits of simulations.

Social implications – The CAF encountered several detrimental leadership scandals that eroded the reputational capital of the CAF. In the current geo-political climate of an expanding North American Treaty Organization (NATO) and threats from several international actors, the CAF seeks to expand its capabilities by adding and enhancing its human capital. However, the CAF currently experiences a significant gap in its human capital aspirations. There is a unanimous consensus that the endemic traditional culture of the CAF, as expressed in the recent explosive leadership scandals, is a deterrent to recruitment and thus weakens the CAF's capability. The CAF targets leadership development with new leadership paradigms as pivotal to culture change. The CAF suggests that by enhancing leadership development in the CAF the new cadre of leadership will change the culture of the CAF and thereby enhance the reputational capital of the CAF. It is believed that this rejuvenated culture will lead to greater recruitment and retention, leading to a strengthened military. A strengthened military is important to provide effective support and protection for the Canadian people in these volatile and uncertain times. This expanded capacity will enable the CAF to address external military threats more effectively and also the increasing operations other than war (OOTW), such as the military support of long-term care facilities during COVID-19 or the military's support in fighting record wildfires and the military's support in climate change related disasters such as flooding.

Originality/value – The satisfaction measures indicated by the participants are typical evaluative measures of leadership development (Noe, 2023). These satisfaction ratings do not, however, indicate whether training has produced a change in behaviour (Brown, 2022). The implications of these outcomes for leadership education are that role-player simulations are useful leadership education and development tools because they provide a theatre of practice in which mistakes are not detrimental and serve as learning moments (Moore, 2012; Piro and O'Callaghan, 2021; Riotto, 2021). Further, the importance of role-player simulations that closely approximate the sector where leadership is experienced and practiced is perceived to enhance the experience. While the CAF invest in combat related simulations, but leadership development simulations are not as evident in the training and development array. This study seeks to assess their potential value as a leadership development tool within the wider context of character development as a leadership competency.

Keywords Military, Simulations, Teaching and learning of leadership

Paper type Research paper

Introduction

The Canadian armed forces (CAF) encountered several detrimental leadership scandals that eroded the reputational capital of the CAF. In the current geo-political climate of an expanding NATO and threats from several international actors, the CAF seeks to expand its capabilities by adding and enhancing its human capital. However, the CAF is currently experiencing a significant gap in its human capital aspirations. There is a unanimous consensus that the endemic traditional culture of the CAF, as expressed in the recent explosive leadership scandals, is a deterrent to recruitment and thus weakens the CAF's capability. The CAF targets leadership development with new leadership paradigms as pivotal to culture change. The CAF suggests that by enhancing leadership development in the CAF, the new cadre of leadership will change the culture of the CAF and thereby enhance its reputational capital. This rejuvenated culture is believed to lead to greater recruitment and retention, leading to a strengthened military. A strengthened military is important to provide effective support and protection for the Canadian people in these volatile and uncertain times. This expanded capacity will enable the CAF to more effectively address external military threats and also the increasing operations other than war (OOTW), such as the military support of senior homes during COVID-19, or the military's support in fighting record wildfires, and the military's support in climate change related disasters such as flooding.

In the past five years, due to negative and positive events, the Canadian armed forces (CAF) foregrounded leadership development as an organizational priority (Eyre & Gregoire, 2022). The traditional process of career progression within the CAF through seniority, recognition and recommendation may have led to the neglect of several critical character dimensions of effective leadership (McCaskey, 2017), so much so that the CAF now suggests as Eyre and Gregoire (2022, p. 6) highlight in the CAF ethos:

However, military performance can quickly be overshadowed by inappropriate conduct, which in turn can cause significant damage to the trust that the CAF maintains with Canadians, the Government, and our own serving members...It follows that this duty requires a commitment from our people to be of strong character. Even more so now than ever, character is just as important and indeed often more impactful, than competence.

The CAF host robust simulations capabilities for combat training but have not exploited the potential training and analytical capacity of virtual leadership simulations for leadership development within the CAF. We hypothesize that virtual simulations provide an opportunity for the CAF to effect desired culture change through leadership development that leverages the substantial pedagogical benefits of simulations.

This qualitative research (Klenke, 2016), therefore, explores virtual simulations, merging artificial intelligence with real-world simulations, supporting CAF junior military leaders (JMLs) leadership development (Brown, 2022). Our research questions are:

RQ1. How do virtual simulations support CAF JML leadership development within a globalized and complex environment in the 21st century?

RQ2. Could virtual simulations support a leadership culture change through efficacious "soft skills" training?

In this paper, we explore the efficacy of virtual simulations for enhancing or developing leadership in JMLs in the CAF through a four-day pilot project with twenty JMLs (n = 20). To assess the efficacy of virtual simulations for leadership development, we designed and studied a four-day leadership workshop for JMLs in the CAF using several virtual artificial intelligence leadership role-play simulations developed by McGraw Hill in their smart book textbook (Manning & Curtis, 2022) and several non-virtual in-class simulations for comparison. We selected four twenty to thirty-minute virtual role-play simulations that synergized with the in-person morning leadership workshop. We facilitated the three-hour leadership workshops and virtual/in-class simulations over four consecutive days. We emulated the e-leadership and soft skills (ELESS) model (De Freitas & Routledge, 2013) to assess "soft" and leadership skills.

The negative, positive, and aspirational impetus informing leadership development in the CAF

Negative events motivating leadership development within the CAF
The negative events motivating leadership development within the CAF are related to character failures within the members and leadership of the CAF. The aspiration for a different ethos and leadership approach began with the public's loss of confidence in the CAF due to a scandalous event in Somalia linked to racism in 1993 (Army Leadership Development, 1999; Kasurak, 2011; Minister of National Defence Advisory Panel on Systemic Racism, 2022; Parenteau, 2022). However, the erosion of public confidence continued over the last three decades with ongoing reports of racial prejudice and numerous sexual harassment allegations and the CAF's struggle to effectively address these issues (Anand, 2022a; Chief of Military Personnel, 2017; English & Westrop, 2007; Fish, 2021; Hillier, 2007; Kean, 2021; Martinelli *et al.*, 2022; Parenteau, 2022; Selberg, 2021; Taber, 2022). The gravity of the situation in the CAF concerning sexual harassment is exemplified, for example, in a 2017 class action lawsuit based on "discrimination, sexual harassment and sexual assault allegations," which received almost 19,000 claims (Martinelli *et al.*, 2022). The chilling effect of gender discrimination and sexual harassment within the CAF systemically impedes emergent leadership (Chaturvedi, Zyphur, Arvey, Avolio, & Larsson, 2012), and it further exacerbates the difficulty of assigned women leadership within the CAF (Waruszynski *et al.*, 2019). Since these matters are highlighted in

the public media, they also have a chilling effect on recruitment by embedding the dominant male warrior schema and reinforcing the recruitment of persons with this male warrior mindset or paradigm while also eroding a desire to serve in the CAF on the part of anyone who does not align with that schema (Fish, 2021; Parenteau, 2022; Waruszynski *et al.*, 2019). The Minister of Defence, tasked with changing the culture of the CAF and analysts of the CAF, suggest that character-based leadership, and by extension, effective leadership development, is critical to (re)shape the culture and the ethos of the CAF in a way that replaces the hegemonic male-dominated white supremacist culture with a culture of equity, justice, diversity and inclusion (Cummings, 2021; Eyre & Gregoire, 2022; Martinelli *et al.*, 2022). In line with some of the negative issues prioritizing leadership development, there are also supporting documents articulated by the CAF such as the final report issued by the Minister of National Defence Advisory Panel on Systemic Racism and Discrimination (Minister of National Defence Advisory Panel on Systemic Racism, 2022) and the Minister of Defence's Report to Parliament on Culture Change Reforms in response to former Supreme Court Justice Arbour's recommendations (Anand, 2022b). However, there are also positive motivations for leadership development within the CAF and we outline these in the next section below.

Positive motivations for leadership development within the CAF

Organizations in every sector recognize the primacy of leadership development for organizational effectiveness (Elkington, Pearse, Moss, Van der Steege, & Martin, 2017; Erakovich, Kolthoff, & States, 2017; Forde & Torrance, 2017; Sarfraz, 2017; Scott, 2017; Whitten-Andrews, 2017). The CAF believes that effective leadership is pivotal to culture change (Government of Canada, 2022; Nigh, 2022) and to align with this belief that… "Existing approaches to leadership development include training and development focused on inclusivity and diversity. A different method for leader selection – where senior leaders are assessed and evaluated on their approach to diversity and inclusion…(Government of Canada, 2022)." Additionally, a positive motivation for foregrounding leadership development arises from the emerging nature of the CAF as a military service involved in OOTW that require a broad spectrum of leadership skills and mindsets in addition to the battlefield leadership paradigms and approaches (Cummings, 2021; Gunderman & Mendenhall, 2008; Martinelli *et al.*, 2022).

Aspirational impetus for leadership development within the CAF

In addition to the specific contextual negative and positive events motivating effective military leadership development in the CAF, the usual organizational improvement aspirations are commonly linked to leadership development (Adair, 2021; Kean, 2021; Koss, 2016; Messervey, Dean, Nelson, & Peach, 2021; Okros, 2010; Stouffer, 2007; Watola & Woycheshin, 2016).

These negative, positive and aspirational aspects informing leadership development in the CAF led us to explore the hypothesis that virtual simulations could support effective leadership development and culture change within the CAF. We deployed the methodology outlined in the next section to explore this hypothesis.

Methodology

We approached this research as a phenomenological study (Baden & Major, 2013) because we hoped to understand how the JML's experienced the phenomenon of virtual role-play simulations against the backdrop of leadership lessons and discussion intersecting those simulations. Further, we hypothesized that lectures and discussions around select leadership

themes coupled with related virtual simulations would enhance leadership learning and development. Thus, In April of 2023, we collaborated with the leadership of Canadian army simulations to invite participants to a four-day leadership development opportunity using the ELESS (De Freitas & Routledge, 2013) model (Figure 1 below). As a result of this invitation, twenty JML officers who were not fully qualified in their respective occupations voluntarily joined us for a four-day leadership development workshop at Canadian forces base Gagetown during the last week in April. In the CAF, a junior officer is a commissioned officer holding a lower position in the military rank structure. For our purpose, the term JML refers to officer candidates undergoing training to be qualified in their respective military occupations. The four-day workshop was structured to support the ELESS model with six components:

(1) In-person sessions that were three hours long (9 am – 12 pm).

(2) A textbook chapter to be read before the in-person session.

(3) Group Socratic discussion intersecting the leadership theme under focus.

(4) Creative problem-solving or interactive application of critical concepts using virtual tools such as Jam Boards and Whiteboards.

(5) A virtual role-play simulation focused on the leadership concept in each session to be completed in the afternoon following the morning session.

(6) A digital journal reflection on the key learnings from each session.

In collaboration with the Canadian army simulations (SIMS) leadership team which included officers at the rank of Captain, Major and Lieutenant, and based upon existing literature, we developed learning objectives grouped into four key sections of personal leadership, people leadership, results leadership and strategic leadership. We assigned the following learning outcomes to these sections.

Figure 1.
The ELESS model
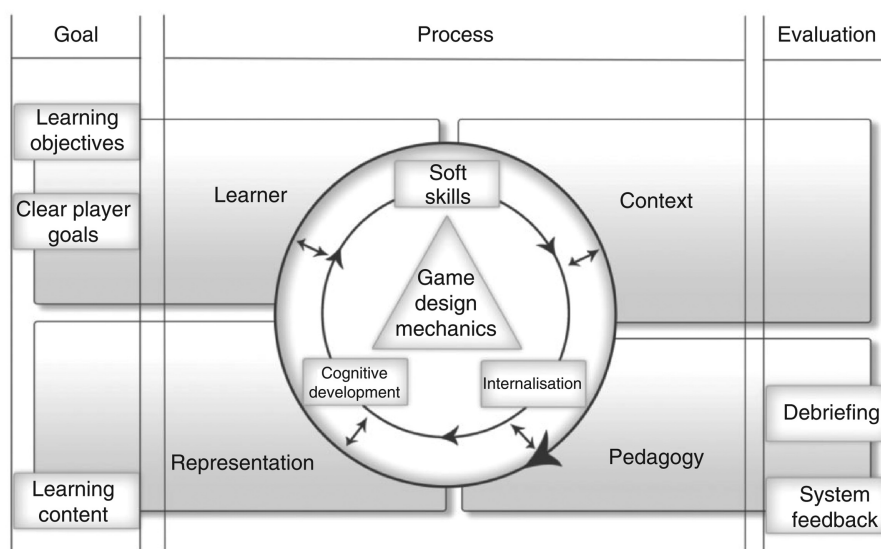
Source(s): ELESS model diagram from the paper (2013); De Freitas and Routledge (2013)

Personal leadership

(1) Recognize the importance of non-technical leadership skills for effective military leadership practice (Manning & Curtis, 2022, p. 305).

(2) Differentiate between leadership and management (Manning & Curtis, 2022, p. 11) and recognize the importance of each to military organizational effectiveness.

(3) Understand and apply French and Raven's six power classifications (Manning & Curtis, 2022, p. 164) to the military leadership context.

(4) Apply practical strategies to help people solve problems through coaching and mentorship (Manning & Curtis, 2022, p. 403).

People leadership

(1) Classify the relationship between task and relationship for effective military leadership (Manning & Curtis, 2022, p. 18).

(2) Differentiate between administrative leadership skills and interpersonal leadership skills (Manning & Curtis, 2022, p. 414).

(3) Interpret a strengths-based approach to leadership and discover and develop leadership strengths for military leadership.

Results leadership

(1) Analyse the type of leadership required to create a constructive military leadership context.

(2) Analyse and apply Grint's taxonomy of problems (Grint, 2005) to the military leadership context.

(3) Understand and Integrate the Vroom Jago contingency model into effective decision making (Daft, 2018).

Strategic leadership

(1) Understand the significance of the military organization as a complex adaptive system and apply systems thinking to military leadership.

(2) Evaluate the importance and application of inclusive leadership in military contexts.

To achieve these learning objectives, we utilized the textbook: Manning and Curtis (2022). *The Art of Leadership (7th ed.)* New York, NY. McGraw Hill Publishers. We also used the following participation method:

(1) Group Socratic discussion (in-person). Daily*:* We hosted four in-person sessions in which several leadership styles related to military leadership were analysed and discussed by all the participants. These group discussions were connected to the course material, focussing on unpacking the intersection of leadership theory and the practice of military leadership within the CAF.

(2) Textbook reading daily pre-session: The textbook reading assignment was designed to enhance the participants' comprehension of essential leadership concepts.

(3) Daily in-session team presentations/problem solving (in-person): During the in-class sessions, we had teams work on real-world leadership issues related to military leadership using tools such as Jam Boards, Whiteboards, etc.

(4) Post-session virtual role-play simulations via McGraw Hill Connect: In the afternoon following each session, we asked participants to engage in a high-fidelity virtual role-play simulation through the McGraw Hill Connect ecosystem.

(5) Post-Session structured virtual journal reflections on a Google Form. The daily journal protocol is included in the "Analysis. . ." section below.

In collaboration with the JML participants, we adhered to the steps outlined in the ELESS Model as follows.

(1) Goal:

- Learning objectives: Can learners absorb the vast array of theoretical and technical information associated with leadership theory (Walumbwa, Avolio, Gardner, Wernsing, & Peterson, 2007)?

- Clear player/simulation goals: The players identify the goal to master the elements of a particular leadership theory using the leadership simulation.

- Learning content: Leadership theories are presented and discussed during the in-class pre-simulation focus on the leadership approach under review.

- Provide learners with the opportunities to apply leadership theory by using the virtual and in-class simulations and the additional capacity to reflect on these experiences through journaling. Learning objectives: Can learners absorb the vast array of theoretical and technical information associated with leadership theory (Walumbwa et al., 2007)?

(2) Process:

- Learner: Read the assigned chapter discussing the leadership theory under focus and discuss the leadership theory in an online discussion process with the facilitators and fellow officers.

- Representation: Here, the fidelity of the role-play simulations intersects the leadership theory under review.

- Context: The simulation occurs in a closed virtual environment with institutional support.

- Pedagogy: Through the simulations, the learner embarks on exploratory learning (De Freitas & Routledge, 2013), experiential learning (Beckem & Watkins, 2012; Dalakoura, 2010; Kirchner & Akdere, 2019; Rhodes & Brundrett, 2009), inquiry learning (Morris & Wood, 2011) and social interactive learning (de Freitas & Liarokopis, 2011) cited by De Freitas and Routledge (2013).

(3) Evaluation:

- Debriefing and insights: This occurs in feedback to the students concerning their Journal entries, pre-course and post-course perceptions of leadership capacity and leadership knowledge in an end of week focus group and in-class discussions concerning lessons learnt through the simulation process.

- System feedback: Students respond to simulations as an immersive learning experience. Simulations decrease the resistance that arises from information overload and a sense of detachment from an understanding of the practical implications of the leadership theory under review (Beckem & Watkins, 2012; Byrnes & Lawrence, 2016; Eder, Antonucci, & Monk, 2019; Jozwiak, 2013; McCoy et al., 2016; van Esch, von der Heidt, Frethey-Bentham, & Northey, 2020).

Analysis: The efficacy of virtual simulations for junior military leadership development

As previously outlined, the CAF is emerging from a reputational crisis linked to embedded cultural issues manifesting in sexual harassment and racism. The CAF identifies leadership development and the anticipated resulting character strengths as one of the critical mechanisms for culture change in the CAF. The complexity of assessing leadership development efficacy raises an important question, how do we measure leadership development (Brown, 2022)? For the purposes of this pilot study, we assess leadership development efficacy based upon the perceptions of the JML participants as reported in their daily journal entries and the final session focus group (Saks & Haccoun, 2019, p. 324; Noe, 2023, p. 259). The daily journal requested participants reflect on their experience of the leadership development sessions and the simulations as follows. We include in vivo quotes from the daily journals and the focus group in the section below: leadership lessons gleaned from the JML four-day program.

Daily journal protocol

Day # _____

Leadership Theory Focus for Today:

I learnt the following concepts related to leadership today:

The simulation today focused on:

I have the following reflections concerning the simulation as a leadership learning/ development tool:

I feel that the simulation could be improved by:

The simulation was helpful to my leadership development in the following ways:

We sought to further explore participant perceptions of the utility of the leadership lessons, discussion and simulations through an end of program focus group.

Focus group protocol

Welcome and introduction. Welcome, everyone, and well done! You made it through an intensive four days of leadership development, learning and training. In this final session together, our goal is to support a conversation around what you learnt this week and what was helpful to you. We also want to know what could have been more practical and valuable and how we might improve the leadership development and learning process. We request that you respect the confidentiality of your colleagues participating in this pilot research project.

Focus Question #1.

What was the major leadership concept or lesson that you learnt this week?

Focus Question #2.

What was most helpful in supporting your leadership learning and development this week?

Focus Question #3.

When you began this journey, we asked you what one leadership theory or approach you most wanted to learn. Were you able to better understand this approach or theory this week? What steps will you take to learn this leadership approach or theory if not?

Focus Question #4.

Were the Textbook readings helpful in understanding the leadership theories and approaches we discussed this week?

Focus Question #5.

How helpful were the virtual role-play simulations in supporting your leadership learning and development?

How would you improve these simulations?

Focus Question #6.

How would you improve the leadership learning and development you experienced this week?

We were not seeking to assess whether or not the participants enjoyed the training program, though we hope it was enjoyable. Rather, we sought to gain insight concerning the JML's sense of the utility of the leadership education program coupled with experiential learning opportunities in preparing them for today's complex operational environment (Albrecht, 2010). The use and efficacy of virtual and real-world simulations is widespread both in the military (Riotto, 2021) and across many other sectors (Almalki, Rabelo, Pastrana, Marin, & Bhide, 2015; Eder *et al.*, 2019; Jozwiak, 2013; McCoy *et al.*, 2016; McCreight, 2013; Piro and O'Callaghan, 2021; Suárez, Jung, & Lindeman, 2021; van Esch *et al.*, 2020). The CAF host robust simulations capabilities for combat training but have not exploited the potential training and analytical capacity of virtual leadership simulations for leadership development within the CAF. However, we hypothesize that virtual role-play simulations enhance leadership learning and leadership development (Janfada & Beckett, 2019) among JML's within the CAF and this leadership development could translate into culture change within the CAF as these JML's model the leadership approaches and styles learnt in the course.

To explore our hypothesis, we facilitated open and axial coding (Howell, 2013) of the participant's daily journal entries, and the final session focus group. The key themes that emerged seem to provide validation of our hypothesis, albeit nuanced in some respects, as detailed in the following paragraphs. Significant themes that emerged from the coding are illustrated in Figure 2 below.

Leadership lessons gleaned from the JML four-day program

This section highlights the critical leadership learnings that emerged from the four-day workshop. These leadership concepts are "key" because they align with previously articulated learning objectives and might allude to the type of culture change that could occur if CAF leadership espoused these leadership styles and approaches. As previously mentioned, these learning objectives were tied to JML knowledge skills and attitudes (KSAs) identified by the CAF leadership with whom we worked on this program. The participants identified the following leadership learnings gleaned from the four-day program through their daily journal entries and the final session focus group.

Situational leadership (21 occurrences in the journals and focus group)

The technical definition of situational leadership refers to the Hersey and Blanchard SLII model (Northouse, 2022, p. 109), in which leadership is either supportive or directive, based on a particular follower's competence and commitment. However, the participants viewed situational leadership in a broader sense of adapting the leadership approach according to the context or the followership. For example, several participants highlighted in their journal entry that on Day 1, they learnt the tri-partite impacts of leader, context and followership for leadership effectiveness. During the focus group discussion, several participants highlighted the utility of the Vroom Jago decision-making model (Vroom, 2000) for effective situational leadership. For example, one participant stated it this way:
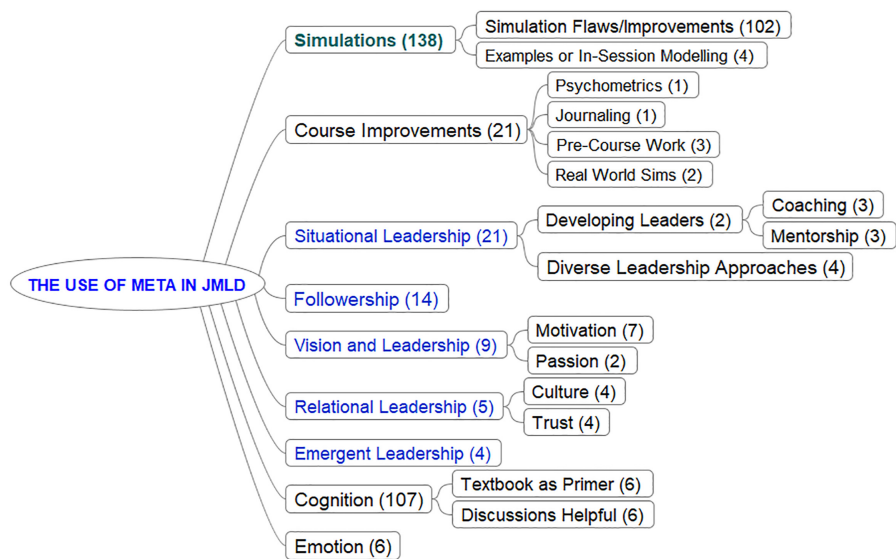
Source(s): Figure by authors

I didn't mention this, but that's an incredibly helpful tool, and I definitely think I'll be using that in the future. I think it was a fantastic thing to be exposed to at this point because you don't necessarily always know what the right approach is supposed to be for any particular situation, but that gave us a good framework of, okay, maybe in this situation I should be a little bit more autocratic you know I've got to make the decision get it done maybe you know I should be a little bit more facilitative maybe I should be more supportive maybe I should be more participative...

While another participant highlighted the utility of situational leadership in this way:

Having taken the course, I can now actually put names to it. It's the autocratic versus the democratic ways of being a leader. Because being a combat arms trade personally, there are situations where democratic is the best option and situations where that's simply not possible, and you have to go with autocratic. So, when to go with each different type of leadership and how to build the social capital bring it back to that in a democratic setting and to get knowledge through (the) democratic setting so when you have to be in an autocratic situation, you have the knowledge there that says you have the confidence and your team has confidence in your ability to make decisions in an autocratic way without having the time to consult them or for whatever reason you cannot do a democratic leadership style.

Followership (14 occurrences in the journals and focus group)
Followership is an individual's role interdependently with leadership to achieve mutually important goals (Linville & Rennaker, 2022). Followership is emerging as a critical component of leadership effectiveness within military contexts (Hallowell, 2014; Uhl-Bien, 2021). JMLs became increasingly aware of the pivotal importance of followership to effective leadership over the four-day workshop. As one participant stated:

I never thought that having followers that were fitting the role of followers that were making a difference. I just thought by doing some type of stuff you end up having good followers.

This humanizing and prioritizing of followers in the leader, context and follower triad for leadership effectiveness might be a critical insight for culture change within the CAF. We plan to explore the prioritizing of followers in phase 2 of our research. In phase 2 we will use the serious gaming simulation "Fligby" (www.fligby.com) which produces psychometrics around three key areas: FLOW (FLOW is a psychological concept that describes a state of being in which a person is functioning at their best) leadership, VUCA readiness and Leadwell. The Leadwell psychometric assess the wellness impact of the leaders style, choices and approach on the followers. In our phase 2 research we also plan to include three sessions of executive coaching for each participant to enable them to address areas where their leadership might adversely affect their followers. Intersecting this thought we highlight the following statement from another participant:

> So for me, I have a background in like leadership as well and it's just from my schooling but we only ever touched on it's the interplay between the leader and the followers and the fact that there is also a context involved and it's a pyramid relationship... interesting to me and then we tied it back it so was the second lesson and then we learned about the top ten qualities that a leader needed in the last lesson.

The ten qualities mentioned by this participant are located in chapter three of the textbook (Manning & Curtis, 2022, p. 26–29). Based upon the textbook's expanded definition of these qualities, we suggest that at least six of these ten qualities are follower focused. For example, vision (a common purpose around which followers and leaders rally), enthusiasm (a contagious commitment to the achievement of the common purpose), stability (how the leader's and follower's worlds mutually intersect), concern for others (the heart of caring leadership), charisma (generates others' interest and causes them to follow) and integrity (honesty, strength of character and courage).

Vision and leadership (9 occurrences in the journals and focus group)
The American military coined the acronym "VUCA" to describe the new theatre of war as volatile, uncertain, complex and ambiguous (Bawany, 2016; Hood, 2015; Moore, 2014). In this VUCA environment visionary leadership is pivotal (Yoder-Wise, 2021) and collaborative leadership/followership vision generation is essential (Chang, 2019; Tyler, 2015). The importance of a compelling vision collaboratively constructed proved to be an important leadership lesson and paradigm shift for several of the participants. One JML stated the importance to effective leadership of a co-constructed meaningful vision eloquently:

> Like you know vision is really important but who makes the vision right? In my head I thought the leader makes the vision and having (the facilitator) explain immediately no the stakeholders make the vision (it's co-created). . . . but if I had read that in the textbook before and then came into class I'd just kind of think what I have read in the book, I'd say the stakeholders and the leaders right . . .

Relational leadership (5 occurrences in the journals and focus group)
This code surfaced as participants articulated their insights into the critical link between effective leadership and meaningful, healthy relationships with followers (Middlebrooks, Allen, McNutt, & Morrison, 2020, p. 115–118). The intersection of effective leadership and relational connectivity warrants further treatment with the JMLs to discuss the importance of boundaries, professionalism, modelling expected behaviours, etc. A four-day workshop did not provide the opportunity to unpack this critical theme further. Still, it is heartening to note that the participants reflected on the importance of relationships and social capital in effective leadership. As one participant commented:

> Something that came out of real life is the formal social elements of leadership. Leadership goes beyond technical proficiency like managing a task and making sure it's executed properly, and it

goes beyond the technical proficiency, beyond having a vision. They also have to remember the pyramid that (the facilitator) talked about (with) various multiple levels of social interactions that were developed with timing having connected with a person.

Emergent leadership (4 occurrences in the journals and focus group)

It was surprising to observe the impact on the JMLs of our discussion concerning emergent leadership. Emergent leadership is an important leadership concept (Paul, 2008; Pierce, 2011; Stewart, 2001; Walter, Cole, der Vegt, Rubin, & Bommer, 2012), and equally important for military leadership (Dixon, Weeks, Boland, & Perelli, 2017). This theme sparked intense interest among the Junior Military Leadership Development (JMLD) in our in-class discussion concerning the theme and the subsequent in-class simulation titled "the helium stick and the eight." Perhaps, most striking is the observation by one of the JMLs that we also modelled emergent leadership during the in-class session:

> . . . when (the Commander) was explaining that little bit that was about emergent leadership that (we saw) natural emergent leadership in the class, and the way that (the facilitator) was able to (let the Commander speak because the facilitator acknowledged) here's somebody who has skills, knowledge and you know abilities who is giving their input and coming in and answering some of these questions for the group. . . .the way that he (the facilitator) then took that and acknowledged the knowledge skills and abilities that he might not possess that was you know necessary for answering those specific questions qualifying the like the whole story thing, crediting, and then redirecting back to the concepts that we are learning and now . . . he was able to use the emergent leadership to then emphasize the point of what the lesson was, and not just that one time

Another JML suggested that one of the major leadership concepts learnt in the four-day workshop was: "For me, it was how to navigate leveraging emergent leadership, especially as a junior military leader." Another participant stated: "There was a large amount of content discuss today, but I think I would say the one thing that stood out to me the most was emergent leadership." Is it possible that if CAF leadership sees emergent leaders in the cadre of followers they are privileged to lead, this might change how they lead and the culture associated with the old leadership style?

The utility and efficacy of the virtual leadership SIMS in the JML four-day program

The four-day workshop highlighted a key leadership theme each day with in-class lecturing, group Socratic discussion, problem-solving and several simple in-class in-person simulations. The participants then adjourned for lunch and afterwards returned to the room to utilize the CAF assigned laptops to complete the online virtual simulation. The virtual simulations were tied to the leadership theme under focus and the following virtual simulations were sequentially deployed:

Day 1: A Clean Cut of Leadership (a simulation tied to Chapter 1 of the Textbook, addressing "The Leadership Equation (Manning & Curtis, 2022, p. 13)."

Day 2: Navigating the Managerial Grid (a simulation tied to Chapter 1 of the Textbook, addressing "The Leadership Behaviour Theory (Manning & Curtis, 2022, pp. 17–19)."

Day 3: Transactional vs Transformational Leadership (a simulation tied to Chapter 1 of the Textbook, addressing "The Leadership Behaviour Theory (Manning & Curtis, 2022, pp. 23–25)."

Day 4: Company Values: Personal vs Corporate Values (a simulation tied to Chapter 1 of the Textbook, addressing "The Leadership Behaviour Theory (Manning & Curtis, 2022, pp. 23–25)."

The participants perception of the utility and efficacy of the virtual leadership SIMS (138 occurrences in the journals and focus group)
Were the simulations useful as a leadership development tool? We posed this question in the structured journaling each day and in the final day focus group. The responses to this question were robust and multifarious, but overwhelmingly positive. Most of the participants suggested that the simulations were helpful to their leadership learning. For example, one participant stated: "I was able to see the impact of individual performance incentives when taken too far." Another participant suggested that the Day 4 simulation was:

> The most interesting simulation so far, as it highlighted how quickly workplaces can become toxic and non-performing if leadership focuses too much on individual output. Great at highlighting how most people value communities at work/home, to the extent where an erosion of that is met with vitriol.

It is interesting to note that the focus of the day-four session was organizational climate and leadership communication (verbal and non-verbal). This theme was included as the culminating leadership focus to draw the learnings from the previous sessions together under the important banner of culture change. It was hoped that the lesson and the simulation would promote the idea of culture change through leadership modelling good character and simultaneously communicating the CAF ethos. The simulation enhanced this learning objective according to a participant who stated:

> The simulation helped me understand how important it was to understand the values and culture of your people. Being able to understand and build/base performance strategies on what your subordinates value is the mark of a great leader and sometimes we forget that in the quest to meet the deadline/goal/mission. Nothing is greater than the performance output generated when your goals and values align with the goals and values of those generating the "work" per se.

Yet another participant stated concerning the day four simulation:
> The simulation is a great example of how important it is that leaders(ship) understand the qualities and values inherent in a workplace before enforcing policy/procedural changes. It is important for good leaders to understand that each each organization has its own shared cultures, built and transformed by the people who work there, and that going against their interests erodes the basic foundations of the organization.

Other participants articulated similarly positive responses about the efficacy of the simulations from the other sessions/days. For example, concerning the day three simulation a participant states:

> Simulation was great at highlighting the conflicting interests that are often in play in large organizations. This is especially relevant to the CAF, as there are so many tributary bodies, each with their own purpose and mission, but which ultimately have to look after the overarching mission (i.e. security of the nation etc). It was a good tool to showcase where each type of leadership is more effective/efficient and that you do need a mix of both to be able to be an effective leader. Understanding the nuances of when which style is to be utilized is the mark of great leadership.

These positive responses by the participants to the efficacy of the simulations are replicated across each of the simulations. However, improvements are suggested by the participants for both the simulations and the course. We discuss the suggested course and simulation improvements and the perceived value of the simulations in the next section.

Discussion: the efficacy of virtual simulations in developing leadership in JMLs
The JMLs who participated in the four-day leadership development workshop appeared to be an excellent group of people. They were engaged, reflective, articulate and motivated.

The sessions were lively, and often filled with humour. The participants asked excellent questions and the presence of two military SME's in support of the facilitator was helpful. The ranks of the Subject Matter Expert (SME) (Major and commander) were not revealed to the participants until the final session to ensure we did not stultify the positive in-class atmosphere and inhibit the level of discussion. We hypothesized that virtual simulations would enhance the leadership learning and leadership development of JMLs. We developed this hypothesis on the overwhelming and compelling evidence that simulations have enhanced training both within the combat trades of the CAF, and across many other sectors (Barbee & Army, 2013; Scott, 2017; van Esch *et al.*, 2020; Van Slyke, 2008). The evidence emerging from the daily journals and the focus-group is compelling, but there are nuances and caveats to account for in the leadership development process of JMLs. The JMLs were almost unanimously positive in the utility of the simulations but added the suggested improvements articulated in Table 1 below. We highlight that given our limited budget and novel nature of this study, we used non-military leadership simulations that were text based but Artificial Intelligence (AI) driven. These simulations were non-complex and short in length, between ten to twenty minutes. The suggested improvements in Table 1 included below hosts *in vivo* quotes from the participants.

The satisfaction measures indicated by the participants are typical evaluative measures of leadership development (Noe, 2023). These satisfaction ratings do not, however, indicate whether training has produced a change in behaviour (Brown, 2022). The implications of these outcomes for leadership education are that role-player simulations are useful leadership education and development tools because they provide a theatre of practice in which mistakes are not detrimental and serve as learning moments (Moore, 2012; Piro & O'Callaghan, 2021;

Suggested improvement	Description	Proposed remediation
Allowing for more creativity in problem solving and leadership. Too much like a reading comprehension test, not enough like a test/exploration of leadership tactics	This criticism highlights the uni-directional design of the simulation. A multi-directional simulation that offers a range of options that lead into greater complexity would address this concern	In the next phase of the research we will utilize a hybridized approach of virtual human role players (Suárez *et al.*, 2021), more complex simulations like Fligby, and in-class case discussions and role-playing
The simulation could have been longer in its duration	The simulations are generic and short due to budget constraints	It is hoped that we can secure funding to build longer and more complex simulations
Teaches me about different types of leadership attributes. But there is always a clear, this is the proper answer, which I find to be irksome. I would love to be able to try multiple different leadership styles out to see which ones work best in different environments! Having an in-depth simulator that is intelligent enough to build different worlds where different types of leaders are required would be a phenomenal tool for instructing new leaders in the art of discovering what types work best in what environments as well as what doesn't work at all	The simple uni-directional nature of the simulations is tied to their broad audience, and their use as a support to the leadership textbook used for the workshop	We hope to use more complex simulations and a hybridized approach that ties simulations, case-studies, discussions and role playing together
Source(s): Table by authors		

Riotto, 2021). Further, the importance of role-player simulations that closely approximate the sector in which leadership is experienced and practiced is perceived to enhance the experience.

Conclusion and areas for further research concerning the efficacy of virtual simulations in developing leadership in JMLs

CAF leadership development is complex. Future research could examine the impacts of virtual simulations on leaders' development at different stages. Further, the population who volunteered for our workshop was not fully qualified in their military occupation. Their immediate focus was at least in part on learning the technical aspects of the job. In the future, comparing these two populations may enhance understanding of the value of simulations at different points in a leader's development.

Since this phase of our research is a pilot project, we secured a small amount of funding to test our hypothesis that simulations enhance leadership development for JMLs. These funding limitations resulted in several constraints in the research, such as the availability of virtual simulations articulating leadership from a military perspective. However, we believed the assigned organizational leadership simulations in the McGraw Hill Smart book ecosystem would approximate generic leadership situations enough to test the hypothesis with the JMLs. As a pilot project, our sample size was relatively small (n = 20 JMLs) since participation was voluntary amidst a busy Spring season for the JMLs. Future studies could explore the long-term value and effects of simulated learning as an assistive learning tool to enhance leadership development and effect culture change through real-world scenarios in a simulated environment. Research might also explore the efficacy of virtual simulations for leadership development in other sectors.

Noting the outcomes of this pilot project, we designed a phase 2 research project to explore the themes surfaced in this pilot project. In Phase 2 of our research, we plan to explore the impact of a complex multi role-player serious gaming simulation designed to support character development through awareness, as well as VUCA readiness and the wellness impact of leadership upon followership. The participants for phase 2 will include ranking Officers such as lieutenants, majors and captains. The research design for phase 2 includes three coaching sessions with International Coaching Federation (ICF) certified coaches to assist participants apply the leadership lessons learnt from the pre-simulation workshops and from the simulation itself. The coaching will also seek to assist participants' surface personal development pathways where the simulation surfaces areas for improvement.

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