Rebooting Air Force Talent: Navigating the Skills Revolution in the Current and Future Technological Era

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ABSTRACT

This study serves as a pioneering examination of the technological era's impact on education and workforce development, with a specific focus on the evolving demands of the modern workplace. Unlike previous studies that have focused on the skills required to utilize emerging technologies, this research aims to identify the new skills required for human performance in a world where technologies such as Artificial Intelligence (AI) are increasingly integrated into daily use. As technology assumes many of the tasks previously performed by humans, it is essential to re-evaluate the skills sets required for optimal human performance. This study seeks to address the research question: What are the new required skillsets for Air Force Special Operations Command (AFSOC) Air Commandos within the current and future technological era? To answer this question, researchers developed, validated, and administered a skills-based survey to gather descriptive statistics on the perspectives of professionals regarding the required skills in specific job areas. The survey provided valuable insights into the educational and training needs of AFSOC. The findings of this study provide a foundation for the development of strategies to foster innovation and ensure a well-equipped force in a technology-driven world. The results have significant implications for the future of force development and provide a basis for further research into the impact of technological advancements on education and training. This paper provides recommendations for future training and development initiatives, with a focus on addressing the identified skill gaps and promoting a culture of innovation and agility.

ABOUT THE AUTHORS

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INTRODUCTION

The rapid evolution of technology is reshaping the talent landscape, demanding not only proficiency in new tools but also the development of novel skills and competencies (Soler Costa, et.al., 2024; Parveen & Alkudski, 2024). As Soler Costa (2024) notes, this technological surge has "generated disruptive changes in society", even prompting some to declare the dawn of a Fourth Industrial Revolution (4IR) (Alshammari, 2023). 4IR is characterized by the fusion of digital, biological, and physical technologies, leading to significant advancements in manufacturing, automation, and connectivity. At the heart of this transformation lies artificial intelligence (AI) as the current, most significant change disruptor. AI is described as a constellation of technologies that mimic human intelligence enabling data learning, machine learning algorithms, and defensible decision-making (Kim & Kim, 2022). The continued advancement and integration of AI is only accelerating the pace of change (Parveen & Alkudsi, 2024; Kim & Kim, 2022). This acceleration has propelled society into a more interconnected, hybrid context where technology has become indispensable (Mollick, 2024; Soler Costa, et.al., 2024). This reliance, in turn, has created new demands, habits, and a new trajectory for skills development. While societal norms have always evolved, the imperative for specific technology-driven skills and abilities is unprecedented (Soler Costa, et.al., 2024). For example, fostering AI literacy is becoming a critical component of educational curricula and workforce readiness programs (Bowen & Watson, 2024; Mollick, 2024; Parveen & Alkudsi, 2024).

To effectively navigate this evolving landscape, organizations must address two critical needs: closing existing skill gaps and filling newly emerging skill gaps (Parveen & Alkudsi, 2024; Alshammari, 2023). While seemingly similar, these represent distinct challenges. Closing the skill gap focuses on equipping individuals with the skills necessary to effectively use existing technologies. Filling the skills gap, however, involves the development of entirely new skills that arise as a result of technological advancements. Identifying and cultivating these emerging skills is the focus of this study.

Researchers entered the study hypothesizing the results that were later confirmed. This research fills a gap in present, evidence-based research on skills in the current workforce. This survey presents data on which skills are needed and which are foundational in the eyes of the current workforce.

While the importance of foundational workplace skills has been recognized for decades, the context in which these skills are applied is rapidly changing. A comprehensive report entitled, "Workplace Essential Skills: Resources Related to the SCANS Competencies and Foundation Skills", developed 25 years ago under the direction of the U.S. Department of Labor and the U.S. Department of Education, underscored the commonality in skill definitions across various national and international organizations. Although valuable, this report reflects the technological landscape of its time. More recent surveys of skill requirements tend to be conducted by smaller, independent organizations, such as the National Association of College and Employers (2022) and its assessment of Career Readiness Competencies or the Association of American Colleges and Universities (2007) and its Essential Learning Outcomes. They also tend to focus on closing the skill gap versus filling it. This highlights the need for updated, comprehensive analysis, especially considering the unprecedented acceleration driven by AI. Since its widespread adoption around 2022, AI has permeated daily life, gaining traction at an exponential rate unlike any previous technology. This has led to a compression of innovation cycles, accelerating the rate of change by as much as four times compared to previous technological shifts (Bowen & Watson, 2024; Mollick, 2024). This means technology can outpace its previous capabilities in a little as six months or less, demanding a more agile and responsive approach to skills development. With this rapid pace of change, skillsets are metamorphizing alongside technology, shifting expectations and needs for today's workplace.

PURPOSE

Building upon the recognition that AI is rapidly reshaping the talent landscape and accelerating the demand for new skills, this research focuses on the essential skillsets required for optimal human performance within the Air Force Special Operations Command (AFSOC). This investigation moves beyond simple technological proficiency to identify the core competencies needed for Air Commandos to thrive alongside increasingly sophisticated technologies augmenting mission performance. Recognizing that technology is progressively automating tasks previously performed by humans, this study seeks to answer the critical question: What are the new required skillsets for Airmen to excel in the current and future technological era?

Departing from studies focused solely on technological proficiency, this research delves into the broader spectrum of human capabilities essential for success in a technology-driven workplace environment. Specifically, this includes an examination of human-machine teaming, exploring how Air Commandos can effectively collaborate with AI-powered systems. It also encompasses data literacy and analysis, ensuring personnel can interpret and leverage the vast amounts of data generated in modern operations. Furthermore, the study addresses cybersecurity awareness and digital literacy equipping Air Commandos with the knowledge and skills to navigate the digital realm security. Finally, it considers adaptive learning and technology fluency, fostering the ability to quickly acquire and apply new technological skills in a constantly evolving environment. In short, this research seeks to intersect recent advances in learning science, technology, and digital security.

While this research is centered on AFSOC, the findings are anticipated to have broader applicability. The insights gained from identifying essential skillsets for Air Commandos operating in technologically advanced environments are expected to be scalable and relevant to the larger Air Force organization and beyond. Additionally, the commonalities in operational environments and technology integration across Special Operations Command (SOCOM) and other sister services suggest that the results of this study may offer valuable insights and potential best practices for enhancing human performance across a wider range of military contexts.

By employing a skills-based survey, specifically designed for this effort, this study gathered and analyzed data from experienced professionals to identify and prioritize essential skills needed by AFSOC personnel. The findings provide a foundation for developing targeted training and development initiatives that equip Air Commandos with the competencies needed to maintain a competitive advantage in a technology-driven world. Ultimately, this research aims to contribute to a future-ready force, characterized by adaptability, innovation, and resilience in the face of evolving technological challenges.

LITERATURE REVIEW

The Evolving Landscape of Work in the Technological Era

Both Mollick (2024) and Bowen and Watson (2024) provided compelling arguments for a radical reimagining of education in response to the rise in AI, in particular. They converged on several key themes, including the need for human-centered AI integration, the emergence of new essential skills like prompt engineering, and the importance of cultivating critical thinking and ethical reasoning in learners. Similarly, Bowen and Watson (2024) stressed the need for students to add further value beyond AI generated outputs, emphasizing human creativity, critical thinking, and ethical decision making. This perception shift impacts both the workplace and skillsets.

The authors' divergence emphasizes focus and assessment. Mollick (2024) tasked a broader societal perspective, exploring the impact of AI on work, education, and daily life. Bowen and Watson (2024) offered a more focused examination of AI's implications for teaching and learning, providing practical guidance for educators navigating this shift. They delve deeper into the challenges of assessment in the age of AI, highlighting the need to redefine quality in student work and develop evaluation methods that prioritize critical thinking processes over AI generated outputs.

Automation and the Changing Nature of Tasks

Prompt-engineering is a crucial skill for the AI era (Bowen & Watson, 2024; Mollick, 2024). Mollick included it as part of the necessary "AI literacy" for effective human-AI collaboration while Bowen and Watson went further, citing its recognition by the World Economic Forum as a top job of the future and highlighting the need for "language maturity" to craft precise and effective prompts. Both also underscored the enduring relevance of critical thinking and problem-solving skills, even as AI automates certain tasks. These AI experts stressed the importance of teaching students to identify and bring their unique expertise to collaborating with AI and advocate for pedagogical approaches that cultivate critical thinking and problem solving alongside AI literacy.

Human-Machine Collaboration

Human machine collaboration is an advancing yet still imperfect solution (Paleja et al., 2024; Xing, 2024). Human workspaces have more machines entering them via collaborative robots or machine learning-based virtual agents (Paleja et al., 2024; Xing, 2024). Collaboration between these machines and humans is thought to increase productivity and enhance safety, but the reality is that human-machine collaboration is not entirely a point where this is effectively implemented. Training for both the humans and machines involved is required, such as through reinforcement learning (Paleja et al., 2024) prior to being able to employ the smooth collaboration that boosts productivity and enhances safety. Specifically, it is crucial to note that humans are diverse so no one set of rules or norms will allow machines to be trained to optimum collaboration. Solutions such as a braking control method (Xing, 2024) or the individual frameworks (Pang et al., 2024) have been proposed to fix the imperfect systems, but solutions such as these are still far from perfect and are not widely adopted.

Bowen and Watson's (2024) and Mollick's (2024) texts converging themes include Human in the Loop, Prompt Engineering, Critical Thinking and Problem Solving. Both texts emphasize the need for humans to retain agency and oversight in their interactions with AI. Mollick (2024) highlights the importance of the "human in the loop" who can effectively collaborate with AI while maintaining critical judgment and ethical awareness. Additionally, Spitzer et al. (2022) discussed that humans bring task-specific expert knowledge when it comes to technology adoption, specifically when addressing AI. The idea that the human serves as the subject matter expert (SME), and one idea is to train AI or technology using SMEs to be able to bring novices up to speed quickly (Spitzer et al.).

Skills for the Future Workforce

Skills, competencies, and abilities are all connected principles that require defining to discuss the significance between them. For the purposes of this paper, the U.S Air Force definitions will be used given the lack of definitions in other military training documents. Additionally, most of the literature on skills and workforce development also operated with an assumed definition of skills, competencies, and abilities.

A skill is "a present, observable, and measurable capability to perform related tasks" (U.S. Air Force, 2022, p. 33). The U.S. Air Force defined a competency as the combination of "knowledge, skills, abilities, and other characteristics that manifest in an observable, measurable pattern of behaviors" (p. 36). An ability is the "the present competence to perform an act, either innate or the result of learning and practice" (p. 31). Competencies can speed skill development.

Skills surmise two categories presently: existing skills that must be thought about differently or approached differently and skills that are emerging as a result of the shifting technological space. For example, the way critical thinking is approached has changed, particularly in the recent past. This leads to the need to enhance skills in new ways.

Currently Emphasized Workforce Skills

Academia, industry, and the military branches, including AFSOC, have all defined skills and competencies they see as being effective or all-encompassing to categorize setting up the user for success. Granillo-Velasquez et al. (2024) noted that the emphasized workforce skills vary by labor market and workforce demand, identifying common competencies that include c teamwork, problem solving, communication, computer skills, and analytical thinking. The competencies overlap with the categories of Air Education and Training Command (AETC) Airmen Competencies..

The U.S. Air Force (2022) developed the AETC Airmen Competencies, which are categorized into four categories: developing self, developing others, developing ideas, and developing organizations. These competencies are based

upon a collection of behaviors and skills that comprise the competency, leading to personnel success. Furthermore, there are levels within each competency of basic, intermediate, advanced, and expert; each level has corresponding example observable behaviors (U.S. Air Force).

Both AETC's (U.S. Air Force, 2022) and Granillo-Velasquez et al.'s (2024) skillsets align with the skills American Psychological Association's (APA) outline to prepare psychology students for the modern workplace; these are hubbed into five categories: cognitive, social, communication, personal, and technological (Naufel et al., 2018). While this skillset is tailored for psychology students, the skills mentioned transcend any one job category. Competencies or categories of skills for workplace readiness often overlap among different fields or presentations, as is seen with the American Association of Colleges & Universities (n.d.) Essential Learning Outcomes, categorized under four hubs: integrative and applied learning, knowledge of human cultures and the physical and natural world, intellectual and practical skills, and personal and social responsibility; these are the basis for this study. All the skills and groupings mentioned are examples of transferable skills, which Hill et al. (2022) noted is of utmost importance for learning.

The progress and incorporation of digital technology have generated a new paradigm where human beings are progressively adapting to new ways of learning, communicating, and relating to others. Many researchers have looked at this as closing the skills gap. Granillo-Velasquez et al. (2024) researched the most in demand knowledge, skills, abilities, and other characteristics (KSAOs), positing that people need to be adaptable to maintain readiness. These findings stressed that the most current in demand KSAOs relate to computer and electronic literacy, effective communication, monitoring, and critical thinking. These findings are reflected in multiple repositories of skills, including the AETC Airmen Competencies, the APA skillset, and the Essential Learning Outcomes.

Evolving Cognitive Skills

Bowen and Watson (2024), Mollick (2024), and Granillo-Velasquez et al. (2024) stressed critical thinking and problem-solving skills as essential even in the AI, technology rich world. They also stressed the importance of critical thinking and problem solving as skills that complement AI literacy and literacy within varying labor markets. Skills like critical thinking and problem-solving intertwine with reading comprehension, oral expression and comprehension, and written comprehension, allowing people to solve complex workflow structures.

Project-based learning helps the development of skills, such as time management, methodical thinking, problem-solving, collaboration, conflict resolution, and creativity (Jollands et al., 2012; Semanko et al., 2024; Wurdinger & Qureshi, 2015). Project-based learning serves as an effective way to develop competencies, becoming another way to develop the evolving cognitive skills in the modern workplace and bridging gaps (Semanko et al., 2024).

Evolving Social and Emotional Skills

Communication and collaboration are of heightened importance in conjunction with AI or other technologies in the current market (Granillo-Velasquez et al., 2024; Parveen & Alkudsi, 2024). Being able to communicate and collaborate with these technologies are new skillsets that are evolving rapidly with the market. Clear and concise communication is thought to be a foundational skill from which others can springboard (Granillo-Velasquez et al.). Furthermore, the ability to adapt based on feedback and continue the communication cycle remains a key skill needed in the current workforce (Grenillo-Velasquez et al.).

Evolving Digital Literacy and Technological Fluency

Technological skills, such as AI literacy, are essential in the workforce since there is a need for baseline understanding of technology and a need to adapt to new digital tools or platforms as they are presented in the marketplace (Granillo-Velasquez et al., 2024; Parveen & Alkudsi, 2024). Additionally, Hill et al.'s (2022) research posited that the possession of technical skills aids adopting and learning additional 4IR technologies, potentially fitting into the lens of competencies can be developed easier from having base skills.

Evolving Learning Agility and Adaptability Skills

Continual learning and professional development are tenets of the modern workforce since the technological era of today keeps defining itself and redefining itself; workers must continue to evolve with the market to stay relevant

(Parveen & Alkudsi, 2024). Additionally, Granillo-Velasquez et al. (2024) stressed importance of active listening and expression, which are essential in both learning agility and adaptability. Alshammari (2024) supported the need for continued learning agility, stating that the workforce is evolving and shifting; some knowledge or jobs have disappeared, while others have evolved or emerged.

Military Workplace in the Technological Era

The 2022 National Defense Strategy (NDS) (U.S. DoD, 2022) discussed a new framework for readiness, where skills and competencies have direct application, which built upon the 2018 NDS's foundation. The 2022 NDS presented the need to develop a force for the future that is sustainable, resilient, agile, and responsive, among other qualities. Continued development of the force requires skill development to build such a force.

Furthermore, the need for developing the person has become necessary since the United States no longer has the technological advantage against other adversaries, like it has had in the past (Bevins, 2022). Similarly, Granillo-Valasquez et al. (2024) noted the impact of technological developments, specifically AI, on the job market and on skill development. Therefore, to remain effective and resilient, skill development is the way forward.

Despite the needs outlined in the NDS, Bevins (2022) presents the ideals that in the military there is not a focus on advanced education, innovation, and professional engagement opportunities, creating obstacles to the need for skill enhancement and continued elevation of the trainee within the technological era.

The Unique Demands of Military Operations

Military operations present unique demands that are separate from the standard job market or workforce. As such, situations, such as the special operation forces environment, have different requirements for skills and competencies. One potential solution is in works, as outlined in the 2022 NDS (U.S. DoD), to present a framework for readiness, but the path to get there is not clearly defined. The need for an agile, sustainable, responsive, and resilient force is outlined (U.S. DoD), but the path to build such a path and identify the specific skills or ways to train is not as clearcut.

The need to develop warfighters that utilize critical thinking, be leaders, adapt to changing conditions, transition between operations, and apply judgement are relevant to all services and the doctrines that drive training for each. However, within these doctrines, as a general rule, nothing specifies specifically which skills must be trained for. Instead, the scenarios or situations that may be met are described, and the skills or competencies are left the assumption. Blanket statements such as "assignment-oriented skills" are used instead (TRADOC). The exception is the Navy who calls out the need to "foster critical thinking and analytical skills, fluency in critical languages, and integration of insights from the social and behavioral sciences," aligning with aforementioned skillsets in the current workforce (U.S. Navy, 2023). Other services call out specific skills in relation to specific trainings, such as the U.S. Marine Corps (2023) discussing the Infantry Marine Course and its focus on critical thinking and decision making, or the Army lists attributes under specific goals, such as the optimization of the army as a learning organization and five dimensions, with attributes, that build this.

The Air Force stands slightly separate, being the sole branch to address training and skill needs at a slightly more granular level. AETC specifically is transitioning to a competency-based training model, allowing for a breakdown of competencies for each category of airmen. For example, there are Career Field Education and Training Plans that identify skill level training requirements and the desired competencies at each career progression level (Department of the Air Force, 2025). However, like the other branches, many of these competencies are high level and are not specific enough to determine exactly what is needed to be trained to progress. The organization management competency has several sub-competencies but has no tie to the progressing technological world or individual skills.

Specifically, regarding training and development, each military branch has unique existing programs that work to enhance the modern-day warfighter. As previously discussed, AETC is using competency-based modeling for skills, aimed at leveling up professionals. The Army specifically calls out the need for "new learning and developing core competencies, technologies, and processes" to remain relevant and prepare soldiers for the future (TRADOC, p. 11). Furthermore, the Army utilizes the Army Talent Attribute Framework (ATAF), a framework to identify a soldier's attributes, skills, behaviors, and preferences. The Marine Corp calls out their learning management system, which has tools for skills-gap problems. The Department of the Navy has goals to continue strengthening the Navy, including

plans for implementing a learning continuum for the force. However, none of these aspects solve the need to develop the framework for readiness designed by the 2022 NDS. This remains an area requiring further development.

Long-Term Implications of Technological Advancements

Training for skills we are not aware of yet or new-to-be-developed skills is a present gap in the literature, and this research looks to target closing this research gap. Many skills are evolving at a rapid pace, redefining their standard. For example, in this context, redefining what it means to communicate or collaborate as technology evolves is one way to understand this change.

Research findings aligned with some of what the military is presenting for training. Granillo-Velasquez et al.'s (2024) discussed the idea that skills required center around teamwork, problem solving, communication, computer skills, and analytical thinking, which overlap with the categories of AETC Airmen Competencies. However, there needs to be a tie to the implications of technological advancements on how these skills stay relevant and help the warfighter become a force for the future that is sustainable, resilient, agile, and responsive, among other qualities (U.S. DoD, 2022).

Bevins (2022) also discussed the ideals of the NDS, calling out the need for fighting "wars of the future" (p. 23) and that innovations within science and technology are the way to win such wars. The way to do this is through the development of skills that seek to benefit our warfighter in step with and alongside technological advancements. Alshamamari (2024) posited that technological advancements are staples that will remain and it becomes essential to keep developing the trainee for the workplace to utilize skills and have higher readiness to be effective.

METHODOLOGY

Research on skills analysis surveys primarily centers on assessing the current workforce's capabilities by mapping both technical and soft skills against organizational demands. Many studies aim to evaluate competencies such as adaptability, digital literacy, problem solving, and communication—often using metrics like frequency of use, proficiency, confidence, and developmental desire (McGuire et al., 2023). These surveys serve as a diagnostic tool to identify skills gaps and mismatches, providing organizations with data that guides investment in training and workforce planning.

Some of the literature also explored the potential for surveys to forecast future skill requirements. For instance, Brasse (2024) reviewed data-driven methods for identifying future skills and found that while there is recognition of the rapid technological change affecting work roles, many surveys tend to aggregate technological competencies under broad categories, such as digital literacy or technical proficiency. In other words, although the concept of future skills is acknowledged, most instruments do not drill down into the specific competencies needed for cutting-edge technologies (e.g., AI, virtual reality, or neurotechnology); rather, they address technology in a general sense.

Overall, the literature suggests that while forecasting future skill needs is an important goal, most existing skills analysis surveys remain relatively conventional in their approach. They tend to focus on generic technology-related skills rather than isolating the evolution of specialized technical competences required in today's rapidly evolving, tech-driven workplaces. This gap points to an opportunity for future research to develop targeted survey instruments that can more precisely capture the nuances of emerging technological demands (McGuire et al., 2023; Brasse, 2024).

Validation of the Assessment Instrument

Literature on skills analysis surveys consistently reveals that existing instruments tend to address a diverse set of competencies—ranging from digital literacy and critical thinking to adaptability and technical proficiency (DeVellis, 2017). However, many of these surveys aggregate technological competencies under broad umbrella categories without explicitly forecasting the specialized skills required for emerging tools and digital innovations. Several studies have noted that while forecasting future skill demands is acknowledged, most instruments do not differentiate between general technological literacy and the nuanced competencies demanded by rapidly evolving work environments (Kirkpatrick & Kirkpatrick, 2016). This gap in the literature underscores the need for assessments that evaluate both current competencies and predict emerging skill requirements with greater precision.

Our Workplace Skills Forecasting and Utilization Assessment was developed to address these limitations by integrating foundational workplace skills and specific competencies related to emerging technologies. An initial critique of the instrument—mirroring critiques found across the literature—revealed areas for improvement, including the need for consistent rating scales, clear definitions for each skill dimension, and streamlined content to minimize respondent fatigue. These points of critique were critical in refining our instrument to improve its internal consistency and construct validity.

To validate our instrument, we implemented a multi-step, triangulated approach aimed at establishing content, construct, and criterion validity. First, an AI-powered critique was conducted to evaluate the instrument's alignment with established survey instruments in our field. This step leveraged advanced language processing models to assess internal logic, clarity, and overall face validity. Second, we generated 25 personnel profiles using AI that were representative of the organization being surveyed. These simulated profiles allowed us to have the AI "answer" the assessment, and we subsequently collected, analyzed, and interpreted these responses as an exploratory method to assess the instrument's performance. It is important to note that although this AI-driven validation step innovatively complements traditional approaches, its limitations include potential biases present in training data, challenges in capturing the full nuance of human judgment, and constraints in generalizability relative to actual human responses.

The third component of our validation involved disseminating the assessment to 16 instructional design and organizational subject matter experts. Notably, experts emphasized that constructs such as emotional intelligence should be distinctly captured, as research indicates that emotional intelligence remains a uniquely human skill. This skill was originally captured under the Advanced Technology Skills heading because recent studies have reported that AI is often perceived as being more compassionate than humans (Mollick, 2024; Bowen & Watson, 2024) suggesting that emotional intelligence may need to be considered as a foundational workplace skill for development.

Although the use of AI for validation purposes is emerging as an innovative exploratory method, several limitations warrant caution. In addition to the aforementioned biases, reliance on AI-generated profiles may inadvertently overfit responses to simulated scenarios rather than real-world contexts. Furthermore, while AI can efficiently process large datasets and simulate responses, it cannot fully replicate the depth of human decision-making and nuance inherent in self-report survey responses. These limitations underscore that AI validation should complement, not replace, traditional validation modalities in instrument development. For that reason, dependent upon response rate, initial data collected from human participants will be considered for further assessment validation.

Our validation process—combining AI critique, simulated personnel responses, and expert evaluations—provides comprehensive evidence for content, construct, and criterion validity of our assessment instrument. Future research should continue to refine exploratory AI methods alongside conventional approaches, ensuring assessments of skills—especially those capturing the uniquely human aspects such as emotional intelligence—remain robust and actionable.

FINDINGS AND DISCUSSION

A total of 144 Unit Training Managers (UTMs) were invited to complete and distribute our Workplace Skills Forecasting and Utilization Assessment. Of these, 26 participants completed the full instrument, yielding an 18% response rate. Respondents represent a diverse range of enlisted, officer, and civilian ranks. Our integrated analysis reveals several significant trends across three skill domains: Foundational Skills, Technologically Advanced Skills, and Human Interaction Skills. The quantitative evaluation, which included descriptive statistics across the dimensions of Frequency, Proficiency, Importance, Confidence, and Developmental Desire (using ordinal mappings), is complemented by qualitative "write-in" feedback. Together, these findings not only highlight the strengths within the current skill set but also uncover critical opportunities for evolving the framework to better reflect modern workplace needs. Of note, initial demographic data produced an average of zero years of experience with AI and Extended/Virtual Reality (XR/VR).

The assessment asked respondents to report their frequency of use, using the range Never, Daily, Weekly, Monthly, or Yearly. These were then converted to a 1-to-5-point scale, with Never aligning with 1 and Yearly aligning with 5. Similarly, the proficiency, importance, confidence, and development desire all were reported using the same scale: Not at all, slightly, moderately, very, or extremely. These numbers were once again converted to a 1-to-5-point scale, allowing for statistical analysis.

Findings reflected the researchers' hypothesis, confirming the need for skill development and filling a much-needed gap in the research by identifying the specific skills that are required to remain operationally effective and which skills are essential for the workforce. Additionally, the researchers wanted to see what new skills needed to be considered beyond the staple skills, such as time management or communication; this led to the realization that many digital skills, once thought as auxiliary or nice-to-have, have now become foundational skills to remain effective in both the workforce and to be operationally ready.

In the domain of Foundational Skills, respondents reported exceptionally high ratings for core competencies such as Adaptability, Communication, Collaboration, Organization, and Time Management. These skills emerged as consistently strong receiving average ratings above 4.6 across all five dimensions, indicating both perceived value and applied confidence in daily contexts. In stark contrast, Negotiation surfaced as a statistically reliable outlier. While rated "Very" or "Extremely" important (average score = 4.58), it is consistently underperformed in Proficiency (3.13) and Confidence (3.04), with moderate Frequency scores (3.35). Development Desire remained high (4.42), suggesting both awareness of the gap and motivation for skill growth. This gap suggests that the conventional conception of negotiation may be outdated in the context of modern, digitally mediated work environments. In light of evolving communication channels (including virtual and cross-cultural interactions), an expanded definition of negotiation—one that incorporates digital strategies, ethical considerations, and collaborative problem solving—may be warranted to ensure workplace readiness.

Foundational Skills	Frequency	Proficiency	Confidence	Importance	Developmental Desire
Communication	4.85	4.77	4.73	4.92	4.65
Collaboration	4.88	4.75	4.70	4.90	4.58
Time Management	4.83	4.71	4.67	4.89	4.60
Problem Solving	4.80	4.66	4.58	4.85	4.50
Negotiation	3.35	3.13	3.04	4.58	4.42

Table 1. Foundational Skills Domain Results

Within the Technologically Advanced Skills domain, two stark patterns emerged. First, a cluster of cognitively intensive skills: Task Switching, Logic Thinking, Problem Decomposition, Discernment, and Language Maturity were frequently used (average score ≥ 4.6) and confidently applied (≥ 4.5). These traits suggest they already function as operationally foundational skills despite their current categorization. Second, a clear gap emerged in execution-oriented digital skills. Prompt Engineering (average Proficiency = 2.12, Confidence = 2.25) and Programming (Proficiency = 2.06) were rated highly important (~4.45) but used infrequently (< 2.5) and self-rated as low proficiency areas. Developmental Desire averaged above 4.6 across these skills, indicating strong motivation to upskill as foundational workplace skills. This gap underscores a critical need for targeted training initiatives aimed at bridging the divide between strategic importance of digital competencies and their actual execution.

Technological Skills	Frequency	Proficiency	Confidence	Importance	Developmental Desire
Prompt Engineering	2.31	2.12	2.25	4.42	4.73
Programming	2.09	2.06	2.14	4.48	4.67
Human-Machine Teaming	2.45	2.33	2.38	4.54	4.62
Data Visualization	2.78	2.63	2.74	4.41	4.49
Task Switching	4.88	4.77	4.81	4.91	4.60
Logic Thinking	4.79	4.73	4.75	4.89	4.52

Table 2. Technological Skills Domain Results

In the Human Interaction domain, Emotional Intelligence stands out as a cornerstone ability, unanimously rated "Extremely" across all five dimensions by all 26 respondents (Frequency = 5.00, Proficiency = 4.95, Importance = 5.00, Confidence = 4.96, Development Desire = 4.85). Notably, open-ended responses provided additional qualitative insights pointing to the critical distinction between merely communicating information and truly engaging in effective listening. Respondents emphasized that true communication requires not only the transmission of information but also comprehensive listening and understanding—a nuance that the current instrument does not fully capture. Moreover, skills such as Question Asking and Memory (Encoding & Decoding) showed consistent underdevelopment, receiving comparatively lower confidence ratings of 3.05 and 3.18 respectively despite their frequent use, signaling an opportunity to refine these competencies within the assessment framework. These findings underscore the enduring importance of human interaction skills, even as technology becomes more prevalent. As AI takes on more routine tasks, the ability to effectively communicate, collaborate, and empathize becomes even more critical for humans to maintain their unique contributions in the workplace. The data suggests that the value of improving or evolving human interaction skills will be essential to maintain the strong contribution as the 'human in the loop' within the modern workforce. The term 'human-in-the-loop' refers to systems where a human operator is actively involved in the decision-making process, particularly in situations where AI or automated systems require oversight, guidance, or intervention.

Human Interaction Skills	Frequency	Proficiency	Confidence	Importance	Developmental Desire
Emotional Intelligence	5.00	4.98	4.96	5.00	4.85
Memory	4.20	3.10	3.05	4.65	4.56
Question Asking	4.34	3.22	3.18	4.72	4.60
Fact Checking	4.10	3.15	3.20	4.60	4.58
Judgement	4.58	4.35	4.28	4.75	4.32

Table 3. Human Interaction Domain Results

Integrating these quantitative and qualitative responses leads to several key recommendations for evolving our understanding of workplace skills. First, foundational skills such as Negotiation and Communication should be expanded to reflect modern realities. Specifically, the Negotiation category can be enriched by incorporating dimensions related to digital negotiation techniques, cross-cultural sensitivity, and ethical persuasion methods. Similarly, effective listening should be explicitly emphasized within the Communication domain, or even introduced as a distinct foundational subskill, given its critical role in fostering comprehensive understanding. Second, our findings suggest that certain competencies traditionally designated as technologically advanced—specifically Prompt Engineering, Programming, and Human-Machine Teaming—are so integral to daily work activities that they merit inclusion in the foundational skill set. Finally, effective Question Asking and Memory Encoding and Decoding, although originating in the Human Interaction category, is essential for catalyzing deeper understanding and fostering a culture of inquiry; thus, it is recommended that this skill be reclassified as a core, foundational competency.

Overall, these findings provide a dual lens: while they affirm that many core competencies are robustly established within the workforce, they also reveal both quantitative gaps and qualitative opportunities for advancing the skill framework. The integration of traditional skill measures with emergent competencies such as effective listening, creative thinking, and ethical reasoning signals a need for continuous reassessment and refinement of our definitions of workplace readiness. Furthermore, these findings align with the categories of the AETC Airmen Competencies outlined above, demonstrating the continued relevance of focusing on these skills. Determining how to train these skills and how to ensure these skills evolve appropriately tie future research efforts. Future research should build on these preliminary findings using larger samples and more advanced statistical techniques (e.g., factor analysis) to further validate and refine the instrument. This iterative process will ensure that organizations can effectively target training initiatives and continuously align their workforce development efforts with the evolving dynamics of modern work environments. This comprehensive synthesis aims to provide both an academic rigor and an accessible interpretation of our findings, laying the groundwork for future refinement of workplace skills assessments and targeted professional development initiatives.

FUTURE RESEARCH

Building upon the preliminary findings of this study, several avenues for future research emerge. Many traditionally advanced digital skills have become foundational or will continue to become foundational over the coming years as technology is integrated more cohesively alongside humans. This does not negate the need for present foundational human interaction skills to remain operationally effective. Together, the continued exploration of how these skills develop and how we continue to train for both categories will be the key to operational readiness.

Now that key skills have been identified, a critical next step is to investigate effective training methodologies. Training programs must be designed to evolve as rapidly as the technology and the workforce, ensuring America's Warfighters remain mission-ready, as emphasized in the National Defense Strategy (U.S. DoD, 2022). To gain a deeper understanding of the evolving skill landscape, in-depth interviews and focus groups should be conducted to explore the nuances of human interaction skills within AI-driven workplaces. This qualitative approach can provide richer insights into how these skills are evolving and the specific challenges individuals face. Furthermore, a longitudinal study tracking the development of specific skills (e.g., Data Analysis, Human-Machine Teaming) over time would be valuable to assess the effectiveness of current training interventions and identify areas for improvement. There is also a need to continue identifying future skills that are required for the future and identifying ways to tweak the nature by which we train these skills. Lastly, while this study was conducted with AFSOC personnel, there is additional research that could provide broad spectrum application to other military branches and beyond. Comparative analysis of skill profiles of high-performing and low-performing teams could identify the key differentiators in terms of human interaction and technological skills. Also, comparative analysis of weighted components such as learning science, technology, cybersecurity differently for different audiences could also highlight key differentiators. Additional research should be conducted to discover the impact of generational differences and if there are differences in perceptions of skill requirements between remote workers and in-person workers.

SUMMARY

This research identifies the evolving skillsets essential for Air Force Special Operations Command (AFSOC) in the age of AI, highlighting the critical need to develop both technologically advanced and human interaction skills to maintain a competitive advantage. The findings underscore the enduring importance of the "human-in-the-loop" in an increasingly automated environment, with potential scalability to the wider Air Force, Special Operations Command (SOCOM), and other government/military organizations through further research.

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