Raising the Bar

21st-century information age training in action

by Maj Paul L. Stokes (Ret)

> ***"We must change the Training and Education Continuum from an industrial age model, to an information age model. To that end, we need to determine the best way to effect the desired change, which includes the way we select, train and evaluate instructors throughout the continuum, but also the way we inspect formal school houses. … But first, we must codify what is meant by an information age model of training and educating Marines."[1]***
>
> ***—Gen David H. Berger***

The time has come to raise the bar and transform the Marine Corps training in support of the Commandant's priority focus areas of force design, warfighting, education and training, core values, and command and leadership. Upon receipt of the *38th CPG*, the leaders of the Marine Corps Communication-Electronics School (MCCES), the largest formal school in the Marine Corps (Figures 1-3), formed a four-week internal Operational Planning Team (OPT)—which created a 21st Century Information Age Campaign that established MCCES' priorities for over the next five years (i.e., 2019-2023 and beyond) as well as set the stage to establish the dialog and themes that will help MCCES compete at the Service level for resources.[2] This was done in the grand tradition of MajGen Commandant John H. Russell's decision to suspend all classes at the Marine Corps Schools, Quantico, VA, to focus on amphibious operations—thus resulting in the creation of the FMF in 1933 and the publishing of the *Tentative Manual for Landing Operations* in 1934.[3]

>Maj Stokes retired in August 2006 after 31 years of active duty service. A former Gunnery Sergeant and Chief Warrant Officer 3, he has served in a variety of Leadership and Communications billets from the team to theater levels. Maj Stokes has served as the Marine Corps Communication-Electronics School's Operations Officer, Deputy Operations Officer, and Future Operations/Plans Officer since January 2007.

The MCCES Information Age Campaign Plan[4] (Figure 4)

Based on the *38th CPG*, the *Training Education Command* (TECOM) *Strategic Plan* 2019-2024,[5] and visits to the 81st Training Group, Keesler Air Force Base, MS, and the U.S. Army Cyber Center of Excellence, Fort Gordon, GA, MCCES developed the following definition as the "base of fire" for its Information Age Campaign Plan:

> *The Information Age Training Model is a learner-centric, outcome-based, contextualized training methodology which leverages technology and information*

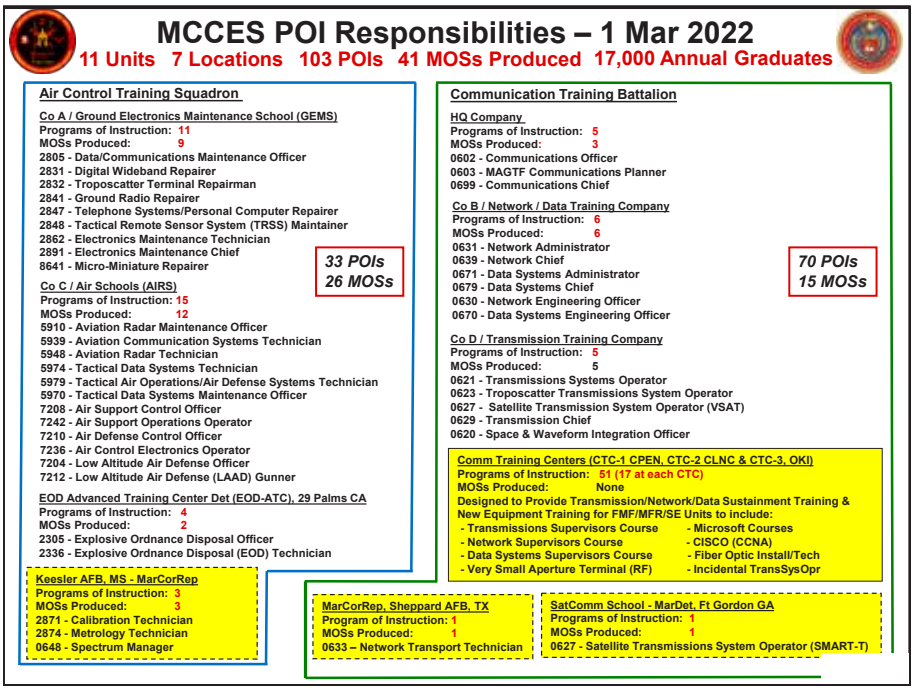

Figure 1. *(Figure provided by author.)*

ubiquity to maximize the training efficiency and problem-solving ability of individuals, teams, and crews.[6]

This definition enabled MCCES to develop the following lines of effort (LOE).

LOE 1: Force Design[7]

- **Major Objective (MO) 1.1:** Properly restructure MCCES by creating Unit Identification Codes (UIC) at the battalion, squadron, and company level with full tables of organization and equipment based on derived mission statements and tasks.
- **MO 1.2:** Submit a table of organization and equipment change request (TOECR) by UIC, based on a mission-function-task analysis of what additional resources are needed and which can be divested.
- **MO 1.3:** Submit military construction (MILCON) and Facility Sustainment Renovation and Modernization requirements necessary for an Information Age Training Campus.

LOE 2: Enable Warfighting[8]

- **MO 2.1:** Develop a talent management paradigm to select, train, and evaluate instructional faculty and staff focused on the tenets of effective learning.
- **MO 2.2:** Provide a continuum for career-level development and enhancement of skills our Marines need to operate as decisive adaptive leaders in the FMF.
- **MO 2.3:** Create a repository of interactive, self-directed learning courseware and virtualized labs and simulations that serve MCCES as well as Marines at home station.

LOE 3: 2st Century Learning[9]

- **MO 3.1:** Transform our training such that students are immersed in a learner-centric environment that uses observable outcomes to measure learning effectiveness.
- **MO 3.2:** Transition to teaching methodologies that are based on proven best practices in adult learning coupled with a rigorous assessment program.
- **MO 3.3:** Incorporate experiential learning that is consistent with the threat and anticipated operational challenges, to include contested maritime spaces.

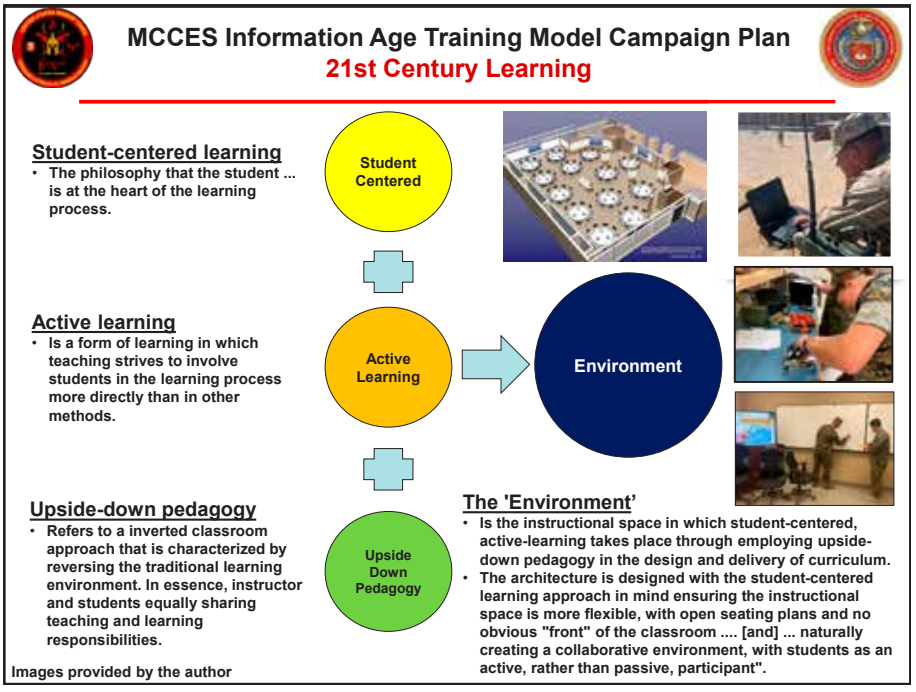

Figure 2. *(Figure provided by author.)*

Once the campaign goals were established, MCCES completed the following LOE 1 actions:

LOE 1: Force Design Completed Actions

- Conducting a mission-function-task analysis, resulting in the development of mission statements down to the company level. The table of organization and equipment (TO&E) from the current single MCCES UIC (M35200) was then used to create TO&Es down to the company level, in accordance with the Mission Statements. All new TO&Es were created from existing MCCES TO&E personnel and equipment. (MO 1.1)
- Submitting a consolidated UIC TOECR in accordance with MCO 5311.E, Total Force Structure Process.[10] (MO 1.2)
- Preparing a follow-on manpower TOECR for future submission once the Commandant makes his decision(s) on force design. (MO 1.2)
- Revising the MCCES facilities modernization plan, to include studying the option of relocating MCCES as a whole—or portions thereof—to the Information Age facilities of the U.S. Army Signal School in Fort Gordon, GA, the U. S. Navy Information Warfare Training Center (IWTC), San Diego, CA, Camp Pendleton, CA, or an alternate location. Construction of a new schoolhouse campus and relocation to Fort Gordon, IWTC, Camp Pendleton, or an alternate location would help usher MCCES into 21st-century facilities with modern training capabilities and allow the Marine Corps, Navy, and Army to jointly leverage commonality in training and resources in support of the FMF and *38th CPG*. (MO 1.3)

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The Student-Centered Active Learning Environment with Upside-down Pedagogies (SCALE-UP) Initiative (LOE 3, MO 3.2)

Concurrently, MCCES implemented, on a pilot basis, the SCALE-UP approach to training for a number of its Programs of Instruction (POI).[11]

- This decision is because the traditional classroom model that we are familiar with in military and civilian learning institutions is lecture and practical application-based or, as a result of technological advancements, blackboard or distance education-based. The entry-level training that is provided by nearly all Marine Corps TECOM subordinate training units revolves around the lecture and practical application model, with an expectation of on-the-job training to be conducted by the gaining units. Today's learners are data consumers with high expectations for learning content. Current teaching methodologies are too inefficient to meet training requirements for this generation.[12]
- The SCALE-UP initiative is a shift to better focus on how students learn by integrating education, training, and experience in ways that allow them to learn anytime, anywhere throughout their careers.[13]
- SCALE-UP transforms the traditional training paradigm, inverting the concept of listening to a teacher lecture into a teacher-structured, but student thinking, environment. The students learn from each other, and the time spent in the classroom focuses on students working together. Class time is spent doing hands-on activities, discussing interesting topic-specific questions and problems, or performing simulations.[14]

The Expansion of Learning Management Systems (LMS) (LOE 2, MO 2.3)

MCCES is employing the Marine Corps College of Distance Education and Training (CDET) MOODLE application and the DOD Cyber Range. Our intent is to learn how the Network Simulation/Virtualization Applications on these venues can be used to support courses at the MCCES Main Campus at Twentynine Palms and to have them available to the MCCES Communication Training Centers at Camp Pendleton, CA, Camp Lejeune, NC, Camp Hansen, Okinawa, and the FMF.

Our eventual goal is to use this tool for performance-based evaluation—simulating a modern wargame environment.

MCAGCC Twentynine Palms, CA, Campus Commercial Wireless Solution (LOE 1, MO 1.3)

Our current training network is rapidly reaching the end of its service life and will not support the future mission. Subsequently, MCCES—in coordination with the Deputy Commandant, Information, TECOM, and Training Command (TRNGCMD)—is implementing a campus-wide commercial wireless solution that will provide Infrastructure as a Service—thus solving current bandwidth issues, reducing annual manpower and equipment costs, and providing a more reliable and scalable network.

This initiative will enable MCCES to leverage cloud-based DOD platforms/LMS and transition into a modernized learning environment.

SCALE-UP, the Expansion of LMS, and the Campus Commercial Wireless Solution are facilitating the implementation of LOE 2, Enable Warfighting, and LOE 3, 21st Century Learning, to include:

LOE 2: Enable Warfighting Completed Actions

- MCCES leadership is actively engaged with the 06XX Communications, 28XX Ground Electronics Maintenance, 59XX Aviation Command and Control (C2) Electronics Maintenance, and 72XX Aviation C2 Operations Occupational Field Sponsors and Monitors during the Instructor Screening and Assignment Process. (MO 2.1)
- Expanding our Instructor Development Program to include Innovative Instruction Workshops and training concepts like SCALE-UP. Likewise, all faculty and staff will be part of an Academic Development Program. (MO 2.1)
- Leadership/Critical Thinking is an integral part of the 06XX, 28XX, 59XX, 72XX, and 23XX Force Modernization Training Continuums, which are designed to produce well-rounded Marines who can be successful in any situation. (MO 2.2)
- Officer/senior non-commissioned

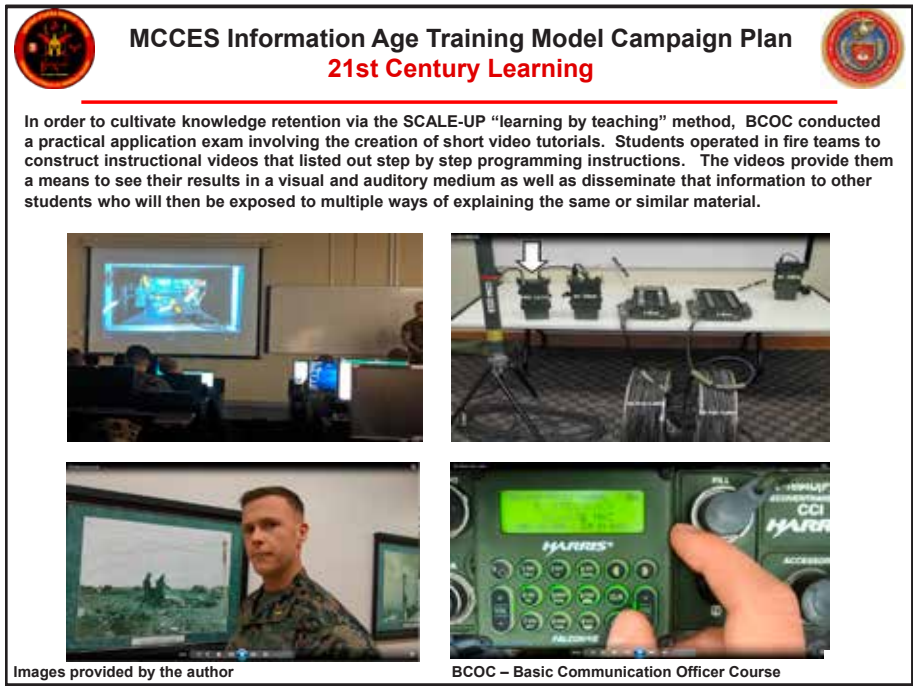

Figure 3. *(Figure provided by author.)*

officers' professional military education and the Entry-Level Transformation Enhancement Plan have been integrated across MCCES for both students and permanent personnel. These emphasize the "five themes" of Corps values, maneuver warfare, leadership development, resiliency, and force fitness. (MO 2.2)

- We are developing, acquiring, and implementing new learning technologies to accelerate and more efficiently enable student learning via self-paced syllabi under the supervision of instructors, requiring the demonstration of proficiency via a series of evaluations and practical applications to advance/graduate. (MO 2.3)
- These technologies include MOODLE Software, Computer Based Training, LMS, Simulations and Courseware Depositories hosted at CDET, and the DOD Cyber Range. (MO 2.3)

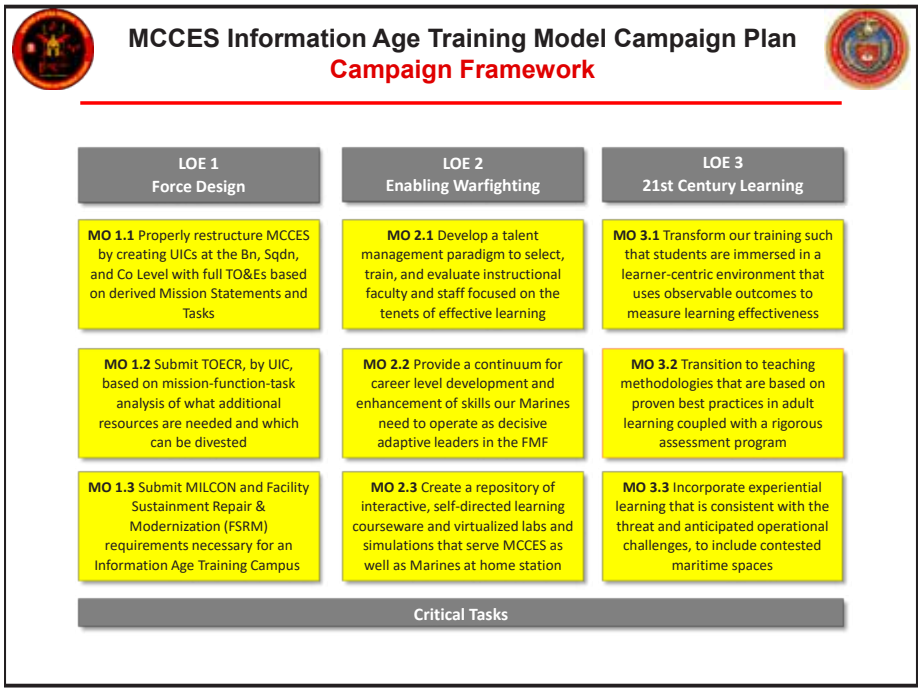

Figure 4. *(Figure provided by author.)*

LOE 3: 21st Century Learning Completed Actions

- Expansion/Enhancement of Learner-Centric/Blended Seminar Courses using tenets of the SCALE-UP model and incorporation of CDET/DOD Cyber Range resources to include: (MO 3.1)
  - 0631 Network Administrator Course (average grades over one percent above traditional courses).
  - 0671 Data System Administrator Course.
  - 0621 Transmission Systems Operators Course.
  - 06XX Basic Communication Course.
  - 28XX Basic Electronics Course.
- These actions have resulted in an increase in student mastery of required 06XX Training and Readiness events (measured in grade-point average increases), a reduction in the Marines Awaiting Training (MAT) population, enabling early graduation opportunities through a self-paced curriculum, and reduced Transient and Training time at MCCES, returning Transient and Training calendar days to the fleet.
- Continued implementation/expansion of innovative instruction workshop learning methodologies in current POI. (MO 3.1)
  - 0602 Basic Communication Officer Course.
  - 0603 MAGTF Communication Planners Course (MCPC).

We are developing, acquiring, and implementing new learning technologies ...

  - Chief Courses (0699, 0629, 0639 & 0679) reduce failure rates and increase score averages.
- Continuation/enhancement of the MCPC blended non-resident/resident POI. (MO 3,1)
  - Tripled MCPC class size (from 11 to 35).
  - Expand the ability to provide classified training in the resident portion of MCPC.
- Implementation of CDET as MCCES' LMS to include hosting of courseware, labs, testing, evaluations, End of Course Critiques, and assessments—a one-stop-shop. (MO 3.1)
- Naval Integration (MO 3.3).
  - MCCES has implemented composite warfare, stand-in forces, expeditionary advanced base operations, and naval/amphibious C2 in a denied, degraded, contested environment into its officer and staff noncommissioned officers POIs.
  - MCCES is exploring how to establish an instructor exchange program with the Navy IWTC, which will enable the synchronization of Navy/Marine C4 training.
  - Basic Communication Officer Course has used the Landing Force Operations Center Simulator at the Marine Corps Tactical Systems Support Activity Camp Pendleton, CA, for Naval C2 operations training.
- Communication Training Advisory Group.
  - The Communication Training Advisory Group serves as the forum for significant 06XX training issues and to advise the Deputy Commandant for Information, Command, Control, Communications, and Computers Operations Branch to make recommendations to the Deputy Commandant, Combat Development and Integration for concurrence/endorsement.

Enduring Challenges: MAT and Resources

The enormous fall/winter trimester shipping schedule after the Marine Corps Recruiting Commands June-July-August-September (JJAS) initial accession surge at the Marine Corps Recruit Depots remains the biggest contributor to MAT populations at TRNGCMD's Formal Learning Centers. The next attributable factors are the instructor staffing gaps, which limit the number of students trained.[15]

The MCCES academic calendar has a proportional relationship to the JJAS surge. A JJAS synced academic calendar requires that additional personnel, facilities, and equipment be provided collectively—the "three-legged stool" analogy—for increased throughput.

MCCES' manpower analysis has determined that they are short instructors because they are filling other vacant mission-essential support/enabler billets on the table of organization (T/O) or billets that are not on the T/O at all. In order to facilitate Information Age training, MCCES must be staffed to its organizational goals across all MOSs and the T/O needs to be adjusted for mission and task—including the addition of a MAT platoon structure. Furthermore, MCCES must be funded to hire/fill vacant civilian billets. Funding of existing unfunded MILCON projects and proposals to relocate MCCES, or portions thereof, to other locations would satisfy facility requirements.

To facilitate the transformation of our training continuums, the MCCES OPT submitted a TOECR to properly restructure MCCES by creating UICs down to the company level with full TO&Es based on derived mission statements and tasks and a subsequent TOECR that adjusts the T/O, per new UIC, based on Mission-Function-Task analysis. The OPT also yielded MILCON and facility requirements necessary to provide an Information Age Training Campus as well as campus relocation options. Once the TOECR moratorium is lifted, TRNGCMD will submit the TOECRs to TFSD. Furthermore, TRNGCMD is also exploring options for the relocation of MCCES or portions thereof.

The Future Looks Bright

As MCCES marches forward, its future is bright as we prepare our students for the expanded role of 21st Century Information Age Training in support of MAGTF operations, which opens opportunities for training not only in our Corps but in the Joint community as well. The Marines of MCCES are continuously exploring how they can improve training in the most efficient manner possible, never forgetting, *The key to success will be trust, teamwork, and the constant pursuit of excellence in everything they do!*

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Notes

1. Gen David H. Berger, *38th Commandant's Planning Guidance*, (Washington, DC: July 2019).

2. The mission of MCCES is: "*To train Marines in ground electronics maintenance, communications, and aviation command and control operations and maintenance in order to ensure that Marine commanders at all levels have the ability to exercise command and control across the full range of military operations.*" MCCES has 700 permanent personnel and is comprised of 11 units at 7 locations that teach 99 POIs, which produce 42 MOSs in support of the 06XX Communications, 28XX Ground Electronics Maintenance, 23XX Explosive Ordnance Disposal, 59XX Aviation C2 Electronics Maintenance, and 72xx Aviation C2 Operations Occupational Fields and has an annual throughput of 17,000 Marines.

3. LtCol Kenneth J. Clifford, *Progress and Purpose: A Developmental History of the United States Marines Corps 1900–1970*, (Washington DC, Headquarters Marine Corps History and Museums Division, 1973).

4. Marine Corps Communication-Electronics School, *MCCES Information Age Training Model Campaign Plan*, (Twentynine Palms, CA: October 2019).

5. Training and Education Command, *Training and Education Command (TECOM) Strategic Plan 2019–2024, Working Draft (O-6 Review),* (Quantico, VA: August 2019).

6. *MCCES Information Age Training Model Campaign Plan.*

7. Ibid.

8. Ibid.

9. Ibid.

10. Headquarters Marine Corps, *MCO 5311.E, Total Force Structure Process,* (Washington, DC: November 2015).

11. Capt A. W. Pinkney, "Information Paper, Subj: SCALE-UP," (Kessler AFB, MS: March 2019).

12. Ibid.

13. Ibid.

14. Ibid.

15. Marine Corps Communication-Electronics School, *MCCES Information Paper Subj: Marines Awaiting Training (MAT) Report (Top Three)–November 2019*, (Twentynine Palms, CA: December 2010).