Communication Training Battalion

Innovations in 21st century learning

by LtCol Arun Shankar, USMC, & Maj Paul L. Stokes, USMC(Ret)

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I n his *38th Commandant's Planning Guidance* (*CPG*), Gen David H. Berger cited a need *"to shift MOS school training from industrial age instruction to information age learning."*[1] In response, Commanding General, Training and Education Command, directed his subordinate commanders to embrace 21st century learning, a method of teaching that is focused on the student and outcomes from practical application rather than the legacy methods that focus largely on rout memorization and testing skills.[2] The Communication Training Battalion (CTB), Marine Corps Communication-Electronics School (MCCES),[3] immediately enacted wholesale modernization of curriculum and instruction to address this challenge (Figure 1). Through the use of the familiar planning, execution, and assessment operations cycle, training within CTB has been adapted to address the challenges of the future fight.

Planning

The act of deliberate planning within an FLC is known as curriculum development.[4] This methodical approach closely parallels the Marine Corps Planning Process (MCPP).[5] When conducted properly, this process inspires contributions from all levels of command—ranging from senior restricted and unrestricted officers to young NCO instructors. The learning that occurs during this process promotes a shared understanding of goals and intent across the command, consequently allowing junior leaders to easily take initiative in the absence of prescriptive guidance. Within CTB, this freedom has encouraged NCOs to individually research and employ creative 21st century learner-

centric, outcome-based instructional techniques that fit their teaching styles and student audience.

Tenets of Planning.[6] The act of planning within the Marine Corps is framed by three tenets: Top Down Planning, Integrated Planning, and the Single Battle Concept. Top-Down Planning of curriculum development is appropriately led by the CTB Commanding Officer through his Operations Officer and Academics Cell. The curriculums
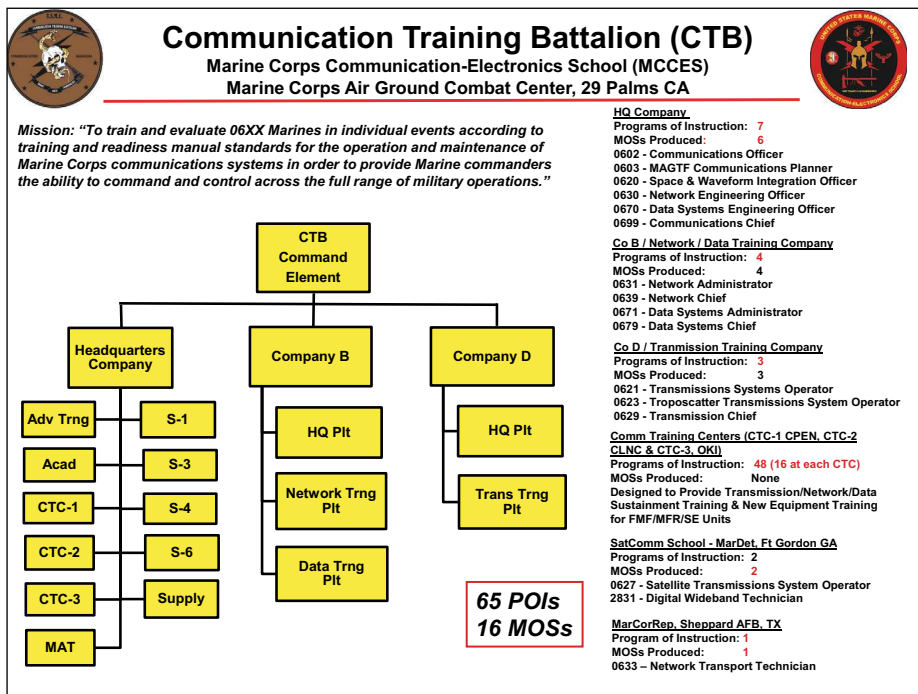

Figure 1. *(Figure provided by authors.)*

are developed within the intent of the MCCES Commanding Officer, focused on satisfying the CMC's intent of 21st century learning and the needs of the FMF.

Integrated planning encourages both vertical and horizontal integration of curriculum development efforts, preventing stove-piped outcomes that lack input from relevant stakeholders. Inclusion of input from the FMF is accomplished via Training and Readiness (T&R) Conferences[7] and the Course Content Review Boards.[8] Moreover, unique to CTB, senior curriculum developers are housed at the company-level vice the battalion level, allowing for more dynamic input from ground-level instructors. A recent restructuring of CTB now promotes the development of entry-level curriculum in tandem with advanced-level curriculum of the same occupational field, ensuring the material taught in these courses do not overlap and appropriately feed the next level of instruction. This vertical integration of curriculum development across programs of instruction (POI) is essential to an effective learner-centric, outcome-based lifelong learning program, as graduates progress through their careers and return for advanced training.

The Single Battle Concept also pays a role in curriculum development. The mantra "*actions anywhere can lead to actions everywhere*" refers to minor changes in one curriculum having third and fourth order effects in other curriculums, as well as FMF readiness. For instance, a reduction of focus on virtualization in an entry-level systems course could have considerable effects on FMF units that are highly reliant upon virtual servers. It could also require more emphasis on this topic in the NCO and SNCO follow-on advanced courses. Curriculum development teams are to remain aware of this web of potential effects throughout the process.

MCPP. Curriculum development parallels the MCPP, as shown in Figure 2. Curriculum development begins with the proposal and approval of T&R standards that are largely developed with input from the FMF.[9] This step is akin to problem framing because the T&R standards are much like a mission and

operational approach for curriculum developers. The updated T&Rs feed the Course Content Review Boards where COAs for changes to the POIs are developed. One or more pilot courses can be executed to wargame the proposed changes. The commander will review the outputs from the pilot and choose to approve certain changes. Then the POI is developed and transitioned to the instructors.

tion of these elements helps students to recall what they learn in an assortment of ways across varied time intervals, resulting in better retention of practical skills.

Early Graduate Program. Entry-level students in networking and data systems curriculums are permitted to pass tests and practical application exams ahead of their peers if they have the aptitude to do so. The program particularly lends itself to these curriculums because many

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Execution

Execution is defined as the act of instruction within the FLC. At CTB, instruction is absolutely focused on using 21st century learner-centric, outcome-based techniques that leverage cutting edge technology and encourage students to demonstrate creativity, communication, and collaboration. The combina-

students have already been introduced to these subjects in either high school or introductory college-level study prior to joining our Corps. We leverage this student background knowledge to accelerate graduation and allow these Marines to proceed from "street to fleet" as soon as possible.
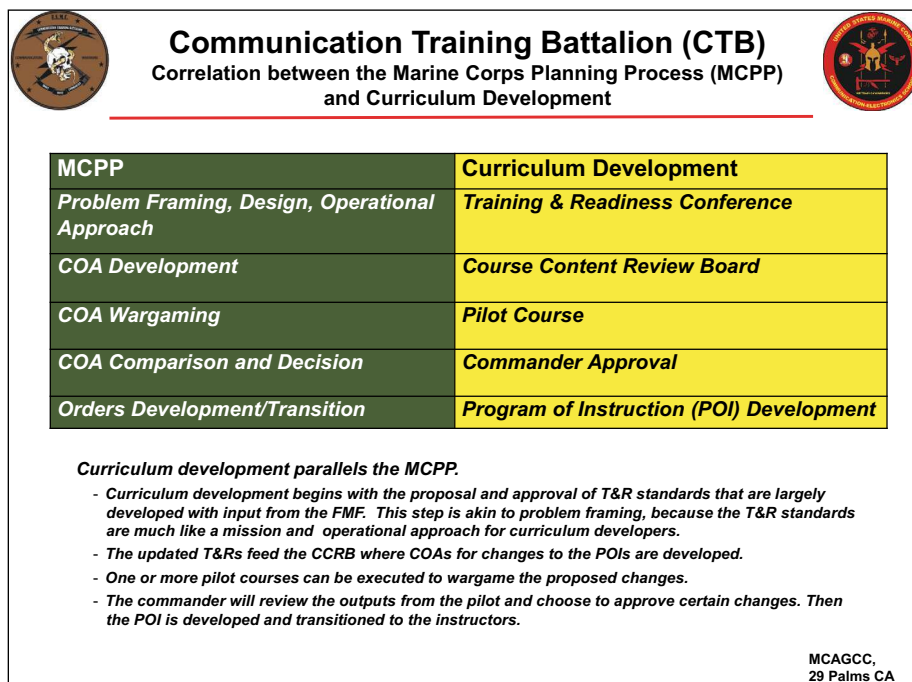

Communication Training Battalion (CTB)
Correlation between the Marine Corps Planning Process (MCPP) and Curriculum Development

MCPP	Curriculum Development
Problem Framing, Design, Operational Approach	*Training & Readiness Conference*
COA Development	*Course Content Review Board*
COA Wargaming	*Pilot Course*
COA Comparison and Decision	*Commander Approval*
Orders Development/Transition	*Program of Instruction (POI) Development*

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- *Curriculum development begins with the proposal and approval of T&R standards that are largely developed with input from the FMF. This step is akin to problem framing, because the T&R standards are much like a mission and operational approach for curriculum developers.*
- *The updated T&Rs feed the CCRB where COAs for changes to the POIs are developed.*
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- *The commander will review the outputs from the pilot and choose to approve certain changes. Then the POI is developed and transitioned to the instructors.*

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

Naval Integration. Unrestricted entry level officer students participate in exercises incorporating elements of MEU nodes as well as simulated Landing Force Operations Centers located at the Marine Corps Tactical Systems Support Activity, Camp Pendleton, CA, and within the CTB. The realistic scenarios force the young communications officers to think like they are aboard naval vessels with the associated limitations. Additionally, Communication Training Center-3 on Okinawa provides an amphibious communications seminar, in conjunction with Expeditionary Strike Group-7, to teach Marines in the FMF about the integration of blue and green communications. (Figure 3.) Future efforts include the integration of Expeditionary Warfare Training Group Pacific (EWTGPAC) naval warfare simulations in officer and SNCO communications courses.

Instructional Technology. Instructors are using Tango Touchscreens,[10] Kahoot quizzes,[11] and Nearpod media to immerse their students in interactive learning with technology.[12] Students use their personal devices to take quizzes, watch videos, answer questions, draw pictures, and conduct research that is eventually aggregated and displayed on a large Tango Touchscreen in front of the class. Additionally, instructors can privately track each student's level of interaction and knowledge retention. The students enjoy learning under these conditions and are therefore more apt to retain their knowledge. (Figure 4.)

Outsourced Concepts. Efforts are underway to outsource some portions of entry-level instruction to professional civilian agencies. This could allow certified individuals to virtually teach routine, foundational concepts, and release Marine instructors to focus more on practical application and troop leadership. It would also provide students a learner-centric, outcome-based platform with virtual labs and resources intended to meet the learning styles of a variety of students.

Escape Rooms. Instructors have developed and implemented Escape Rooms for all the enlisted 06xx entry-level curriculums. These tents and classrooms have been refurbished to appear like

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

the inside of a small combat outpost. Students are immersed in noisy, low light environments that closely simulate the fog and friction of combat circumstances. Radio operators are given 30 minutes to program a radio and send a series of messages. Network and systems administrators have a similar time period to build a network and pass data over it. Students generally enjoy this portion of the course the most because it connects their technical study to actions within a combat environment (Figure 5 on the following page).

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

Distance Learning. Moodle, a self-paced online learning platform, is extensively used by the instructors to enable distance learning objectives.[13] The Moodle websites are managed by the curriculum developers, allowing students lifelong access to all course materials and resources—excluding the graded examinations. The platform is largely utilized when students arrive in a restriction of movement status and cannot physically attend class or when students or instructors are occasionally placed in isolation because of COVID-19 exposure. It is also used by students to study or complete homework after hours and perhaps encourage early graduation.

Moodle is also used in the MAGTF Communications Planner's Course to administer the nonresident portion of this two-part course. Furthermore, Moodle enables lifelong learning for all Marines. It is particularly useful to Marines returning to the FMF from special duty assignments (i.e., drill instructor, recruiting, etc.) because it allows them to refresh their MOS knowledge online, prior to reporting to their unit.

Gamification. Instructors use interactive games to help students recall information under stress in different environments, thereby enhancing knowledge retention. A popular game called Heads Up engages the class to provide clues to a chosen student about a word on a flashcard that he has on his forehead and cannot see but must eventually guess correctly. Students also play Pictionary and Jeopardy, where they are asked to guess the name of a computer virus based on characteristics that affect users and networks. The timeless classic, Battleship, is employed in a similar way, but the ships are renamed to those of naval amphibious vessels. These activities foster group participation, student engagement, and memory retrieval.
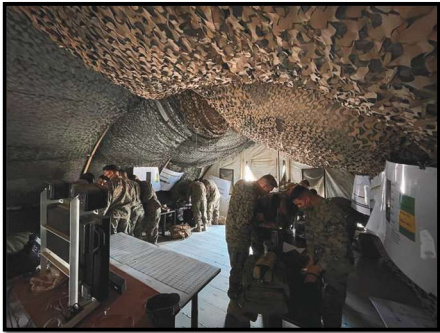
Guest Instructors. Advanced-level courses are largely driven by participation from quality guest lecturers from across the Service. This year's MAGTF Communications Planner's Course hosted various AC/S G-6s, Communication Battalion/ Squadron Commanders, the Chairman, Joint Chiefs of Staff (CJCS) J6, and the Deputy Commander of USCYBERCOM. Other courses

Communication Training Battalion
21st Century Information Age Learning Methods
Systems and Networking Escape Rooms

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Photos Courtesy of the Authors.

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Figure 5. *(Figure provided by authors.)*

have either hosted senior leaders from around the Corps or taken staff rides to personally visit their areas of operation. These interactions bring vital context to the classroom instruction.

Assessment[14]

Planning and execution have little value without regular assessment. Regular surveys of leaders within the FMF measure effectiveness, while graduation surveys of students generally measure performance. Both programs have been enhanced in recent months to solicit critical feedback aimed at continuous process improvement. Courses have been revised to be more focused on the practical application of skills most commonly employed in the FMF. Advanced-level courses have reemphasized focus on training senior SNCOs and restricted officers to be technical supervisors and planners in their fields.

Future efforts

The pivot to Expeditionary Advanced Based Operations (EABO) has necessitated a review of communications MOS skillsets, and appropriate curriculum enhancements within the schoolhouse are already underway. EABO promotes the deployment of small teams, in contested and distributed maritime spaces, with the ability to transmit information back to higher headquarters outside the weapons engagement zone (WEZ). These teams must be versatile and capable of performing all functions of communications with very few Marines. Consequently, *the development of a senior NCO or SNCO "Expeditionary Communicator"* that has expertise in transmissions systems, networking, and server applications is an absolute requirement for the next major conflict.[15] Moreover, the assurance and security of these communications capabilities can be greater enhanced by the eventual provision of a flat domain across all garrison and tactical networks. In this case, expeditionary communicators will not have the burden of hosting and securing large, cumbersome networks and applications locally but can instead focus almost entirely on end user devices, local area networks, and transmissions systems.

Furthermore, emphasis on instruction about the information domain, within SNCO and officer communication courses, will be fruitful for future leaders in the FMF. The majority of the competition phase of warfighting takes place in the information domain. War-

fighters can only remain in competition, and prevent crisis, when communications capabilities are aligned to enable these actions. Our senior communicators must understand their role in this effort.

Lastly, the schoolhouse needs to be more proximate to academia, industry partners and our sister Services to enable its instructional capability. The current location of CTB was established over 50 years ago, when communications training was primarily focused on field radios, telephones, and teletypes. Today, the knowledge of cutting-edge networks, software applications, cybersecurity tools, and a variety of transmissions systems demands physical interaction with civilian partners that do not exist in the Mojave Desert. Specifically, the ability to teach artificial intelligence/machine learning, cloud computing, and mobile application development is reliant upon a habitual relationship with industry experts that can only be replicated within technology corridors across the United States. The Corps' greatest contribution to the next conflict will likely be in the information domain, so CTB must be ready to meet this challenge.[16]

Notes

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

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

3. The Marine Corps Communication-Electronics School is located at the Marine Corps Air-Ground Combat Center, Twentynine Palms, CA.

4. Headquarters Marine Corps, *Marine Corps Order 1553.2B, Management of Marine Corps Formal Schools and Training Detachments*, (Washington, DC: April 2011).

5. Headquarters Marine Corps, *MCWP 5-1, Marine Corps Planning Process*, (Washington, DC: August 2010).

6. Headquarters Marine Corps, *MCDP 5, Planning*, (Washington, DC: July 1997).

7. *Marine Corps Order 1553.2B.*

8. Ibid.

9. Ibid.

10. Tango touchscreens are commercial, off-the-shelf, electronic devices that allow multiple users to interact simultaneously using their fingers or the high precision stylus. Information available at https://tangotouch.com.

11. Kahoot is a commercial, off-the-shelf application that enables the creation of quizzes and other type of examination material. Information available at https://kahoot.com.

12. Nearpod is a commercial, off-the-shelf, cloud-based platform that is designed to enhance the learning process in classrooms and distance learning. Information available at https://nearpod.com.

13. Moodle is a commercial learning management system that is supported by the Marine Corps College of Distance Education and Training on MarineNet.

14. *Marine Corps Order 1553.2B.*

15. Commanding Officer, MCCES, *Communicator of the Future Decision Brief to Director, Information, Command, Control, Communication and Computers (Dir IC4),* (Twentynine Palms, CA: September 2020).

16. Headquarters Marine Corps, *Exploration of Alternative Locations for MCCES Decision Paper 1000-35*, (Washington, DC: October 2020).