

Caveat Learner

Stop, collaborate, and listen

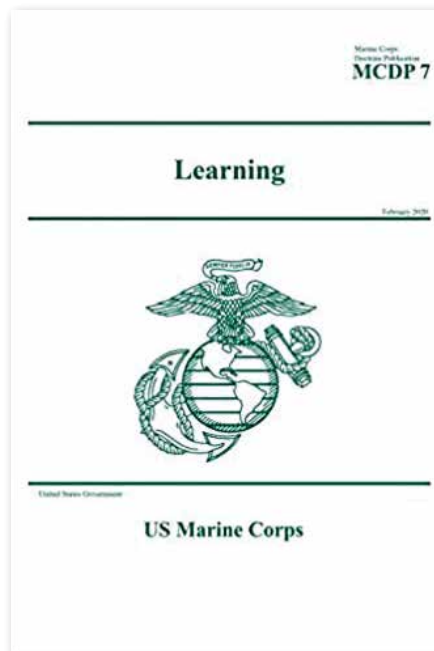
by Capt Joshua Marano & Dr. Shawn McCann

The threat of conflict with peer adversaries has spurred the Marine Corps' leadership to stress the need for adaptive, critical thinkers at the lowest level. To achieve this aim, Training and Education Command (TECOM) has focused their efforts on shifts in the learning continuum and enhanced instructor development. As a result, some Marine instructors shifted their facilitation from the passive, teacher-centered to active, student-centered experiences where students must engage and think through the curriculum.¹ Additionally, TECOM will look to implement new technologies for much-needed modernization. However, TECOM should heed the sage advice of Rob Van Winkle (aka Vanilla Ice) and *stop, collaborate, and listen!* TECOM must ask the simple question of, "how do we know this to be true?" Is it not concerning that there is no research, or science, much less the establishment of a theoretical foundation needed to define the paradigm shift required to achieve what TECOM defines as 21st Century Learning (21CL)?²

A central tenet of 21CL seems to be outcomes-based learning (OBL). While promising much, little research exists that can back up its claims.³ Creative constructs like OBL move TECOM toward new ways of perceiving learning. However, Marine Corps learning requirements are too serious to blindly follow ungrounded ideas like OBL. TECOM must therefore do the necessary, original research to prove the efficacy of their change initiatives. Without the theoretical foundation and empirical evidence, 21CL and OBL will be exposed as false promises that failed prodigiously. Our most valuable asset, our people, deserve that we get this right.

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Marine Corps Doctrinal Publication 7 Learning describes and guides the effort to build a Culture of Learning in today's Marine Corps. (MCDP 7 Cover.)

OBL and 21CL claim to hold answers to TECOM shortfalls, yet they provide no evidence of their efficacy. To make "evidence-based curricular, instructional, and even administrative decisions,"⁴ one must first conduct research based in the science of learning. OBL marks

a shift from TECOM's current view of learning; OBL provides no new foundation to replace the current paradigm, or philosophical way of thinking, of behaviorism. Behaviorism views learning as changes in observable behaviors.⁵ This article does not argue for a specific change in paradigm but instead for the establishment of one that is consistent with TECOM's desired end-state. As an alternative paradigm, we suggest constructivism, which distinguishes learning as the acquisition or construction of new knowledge by connecting it to a learner's current knowledge base.⁶ This may seem like a trifle; however, science requires that researchers first distinguish a paradigm,⁷ and it would prove difficult to measure or validate that changes occurred without a paradigm. Therefore, we argue that no significant change in the Marine Corps can occur without the very first step of investigating a new paradigm of learning—otherwise, there will only be more of the same.

New Terms

Thanks to a recent issue of the *Marine Corps Gazette*,⁸ the dust has settled on how TECOM defines the following terms:

- 21CL: *A continuum of dynamic, cognitive training and education ex-*

periences centered on the learner to continuously hone an intellectual edge; it will enable our Marines to rapidly adapt and achieve a decisive maneuver advantage in any domain through intelligent initiative.

- OBL: An approach to learning, managing, and delivering learning that uses observable outcomes to measure student development and learning effectiveness.⁹
- Learner-Centric Experiences: A continuum of learning opportunities that is traceable and adaptable to the unique requirements of each learner.

At first glance, these definitions sound like useful additions to the training and education lexicon. Actioning them, however, will prove especially difficult since no science or research reliably backs the promises of 21CL and OBL concepts. Simply adding fresh buzzwords without the significant weight of a professional field of practice—like adult learning and development—could result in unintentionally maintaining the status quo and habit-based bias.¹⁰

For instance, 21CL's promises to add new tools that allow for increased access to content will not necessarily lead to better learning for Marines or a more educated force. The measures of success require an update in addition to the technology. The following warning persuasively states why modernizing an organization's learning system does not necessarily result in that organization's members changing their paradigms:

The 6-year saga of MOOCs provides a cautionary tale for education policy makers facing whatever will be the next promoted innovation in education technology, be it artificial intelligence or virtual reality or some unexpected new entrant. . . . New education technologies are rarely disruptive but instead are domesticated by existing cultures and systems.¹¹

21CL

Beyond technology and varied facilitation, 21CL does not address the way that TECOM does business concerning the continuous evaluation of its curriculum. The technology-focused *Gazette* article on 21CL does not offer much more than additional work for instructional systems designers and developers



Industrial age models like “teach-once test-once” and the “lecture, demonstration, practical application cycle” still dominate much of the Corps’ education. (Photo by Sgt Jennifer Schubert.)

(e.g. creating both a virtual and a face-to-face solution for one outcome).

Contrary to the article's assertion, 21CL's interoperable and on-demand technologies *will not* result in achieving an intellectual edge—another poorly-defined buzzword with no measure beyond “win without fighting in a strategic competition” or “win any fight that it must engage in.”¹² The 21CL learning architecture *will* increase access to organization-wide data and theoretically provide accurate information for better decision making. Unfortunately, it may also make it difficult for Marine Corps leadership to resist micromanaging training and education.

Nowhere do these proposed changes mention eradicating industrial-era requirements and reporting. Current inspectable requirements on the schoolhouse, such as the training schedule, program of instruction, and curriculum files, often push instructional systems design professionals at the formal learning centers to default to a teach-once-test-once mindset of measurement, and a lockstep lecture, demonstration, and practical application cycle of instruction. Even if instructional systems design professionals provide learner-centered content within their current constraints, a blind and sweeping shift to OBL will not change the TECOM learning paradigm.

OBL

OBL proponents make the unsubstantiated claim that their approach

teaches adaptability, critical thinking, and decision making.¹³ Rooted in theory, hypothesis and research provide answers to the question as to the efficacy of OBL.¹⁴ The OBL literature is tenuously (at best) connected to theory, and the grand claims lack research-backed data. OBL seems to use problem and project-based learning,¹⁵ although it has been communicated thus far solely as tactical decision games.¹⁶ Additionally, OBL only goes so deep as to claim the use of specific facilitation methods that promote knowledge retention such as interleaving, spaced learning, and desirable difficulties.¹⁷ But there is no research concerning the impact of OBL on far-term transfer or the application of knowledge to evolving situations.

In the *Gazette* article titled “The Future of TECOM,” the authors misrepresented the only valid, research-based concepts presented when they discussed interleaving, spaced learning, and desirable difficulties. Although sound concepts, the authors jump to conclusions, a developmental pitfall known as leaping up the inferential ladder,¹⁸ when attempting to put the concepts into practice. As an example, interleaving is not about keeping the student confused or in the dark and desirable difficulties are not about constant failure.¹⁹ Integration of interleaving requires more investigation than simply mixing up topics,²⁰ and a sweet spot for desirable difficulties may be at the failure rate of 15 percent.²¹

OBL presents itself as an amalgamation of supposed best practices, not

unlike Outcomes Based Education (OBE). And like the extensive criticism of OBE, for OBL, “the problems crop up in the details.”²² Therefore, research is required to confirm assumptions and make better inferences about the actual outcome of the learning intervention. Furthermore, the misapplications of desirable difficulties and interleaving leave OBL without nuance, specificity, calculation, or measure.

Expertise

Novice applications of scientific theory, as well as lacking or misused research, can prove dangerous for the learner. As an example, the spouse of the lead author of this article is a doctor of physical therapy with over a decade of serving the physical performance and recovery of people through research and research-based treatment. It would be foolish for someone to attempt to perform kinesiotaping or blood flow restriction therapy, much less lead others in the training of such therapy, without proper training and credentials. As an expert and strong advocate in research-based science, she stated,

Novice taping, if applied on an individual with cardiac or renal complications, can result in organ failure. Uneducated blood flow restriction can cause deep venous thrombosis leading to traumatic physical damage or death. It is bothersome to see so many people jumping on the bandwagon of ‘trendy fitness’ without understanding why and how such practices work or, more importantly, the negative results of their inept applications.²³

Readers may acknowledge they would prefer a trained and credentialed health care provider; however, some readers may not even consider if their learning environment was designed, implemented, and studied by a trained scientist. Unfortunately, the TECOM paradigm remains unchanged. Well-intentioned occupational experts, the vast preponderance of whom are indoctrinated in the failed system TECOM desires to change, are directed to plan and execute data collection and analysis for service/occupation-wide proofs-of-concept without any requisite training. This results in opinion-based and not

data-driven course design and development. This is highly concerning given the potential for long-term damage to our Marines’ cognitive development, much like uninformed attempts to serve a patient’s physical development, which could be mitigated by leveraging true subject-matter expertise.

Being an expert in one domain does not automatically make someone an expert in other domains.²⁴ An expert batter may never become an expert batting coach. In fact, being an expert in an area, or someone who already knows the answers to problems posed, can create bias, preclude collaboration, and otherwise make it difficult to maintain an open and creative mind.²⁵ How might TECOM address the paradox of expertise?²⁶ We recommend a credentialed professional who can both address their own bias and apply their expertise in the field of adult learning and development.

Remove the Dichotomy of Expertise

Here is where we believe the Corps can let the beat drop on Rob Van Winkle’s 1989 hit and “stop, collaborate, and listen.” Stop following faux expertise, collaborate with scientists, and listen to the results of the research. While credentials are not the be-all end-all of ability, they communicate a capability for an individual to contribute to their field as an expert and to reflect on their assumptions and biases to address the potential impact on their specific research. Additionally, those with a terminal degree in the field of adult learning and development can also understand the literature, or peer-reviewed research, and make better inferences as to its applicability. These experts in adult learning and development can also replicate the research in their domain and, with their increased understanding, make fewer errors than non-experts.

The Navy and Marine Corps team’s renewed vigor on learning provides an ideal opportunity to expand the Marine Corps Doctor of Philosophy Programs. There is an overwhelming need to create leaders who merge their organizational expertise with credentials as experts in the field of adult learning and development. The programs listed below are a few that may best bridge

the scholar-practitioner gap and provide much needed rigor to the learning interventions and research required by TECOM to change their current model of learning:

- Harvard University: Ph.D. in Education—Human Development, Learning, and Teaching Concentration²⁷
- Columbia University: Ed.D. in Adult Learning and Leadership²⁸
- The George Washington University: Ed.D. in Human and Organizational Learning²⁹

Conclusion: People-Focused, First and Always!

The concept of 21CL, in its call to modernize the learning system, could potentially create wonderful opportunities for curious Marines. However, the addition of new technology will do little without the proper foundation and establishment of a Marine Corps learning paradigm. Implementing 21CL and OBL without associated research will force Marines in combat to serve as the proof-of-concept; this is unacceptable. TECOM must validate the hefty claims made by OBL proponents on learning. The Marine Corps investment must remain on people, first and always. Investing in active duty Marines, like education officers, to receive their doctorate in adult learning and development will provide TECOM with the science they currently lack, answers to questions they have not asked, and take a step closer to realizing an intellectual overmatch.³⁰

Notes

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5. George Graham, "Behaviorism," *The Stanford Encyclopedia of Philosophy*, (Spring 2019).
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17. Ibid.
18. Rick Ross, "The Ladder of Inference," *The Fifth Discipline Fieldbook: Strategies and Tools For Building A Learning Organization*, (Redfern, AUS: Currency, 1994).
19. Elizabeth L. Bjork and Robert A. Bjork, "Making Things Hard On Yourself, But In A Good Way: Creating Desirable Difficulties To Enhance Learning," *Psychology and the Real World: Essays Illustrating Fundamental Contributions to Society*, (New York, NY: Worth Publishers, 2011).
20. Sharon M. Noh, Veronica X. Yan, Robert A. Bjork, and W. Todd Maddox, "Optimal Sequencing During Category Learning: Testing A Dual-Learning Systems Perspective," *Cognition*, (Amsterdam, NED: Elsevier, 2016).
21. We need to emphasize the importance of the word desirable. Many difficulties are undesirable during instruction and forever after. Desirable difficulties, versus the array of undesirable difficulties, are desirable because they trigger encoding and retrieval processes that support learning, comprehension, and remembering. If, however, the learner does not have the background knowledge or skills to respond to them successfully, they become undesirable difficulties. See "Making Things Hard on Yourself, But in a Good Way"; and Robert C. Wilson, Amitai Shenhav, Mark Straccia, and Jonathan D. Cohen, "The Eighty Five Percent Rule for Optimal Learning," *Nature Communications*, (London, UK: Springer Nature Ltd., 2019).
22. Richard G. Berlach, "Outcomes-Based Education and the Death of Knowledge," *Australian Association for Research in Education*, (2004).
23. Personal interview between author and Laura Marano in June 2020.
24. John Baer, "The Importance of Domain-Specific Expertise in Creativity," *Roeper Review*, (Milton Park, UK: Taylor & Francis, 2015).
25. Experts are great individual contributors because of their pursuit of continuous improvement, efficiency, and perfection. But as managers, they can be problematic because they are so completely sure they are right. When subordinates talk about a my-way-or-the-highway type of boss, they are probably talking about someone operating from an Expert action logic. Experts tend to view collaboration as a waste of time ("Not all meetings are a waste of time—some are canceled!"), and they will frequently treat the opinion of people less expert than themselves with contempt. Emotional intelligence is neither desired nor appreciated. As Sun Microsystems' CEO Scott McNealy put it: "I don't do feelings; I'll leave that to Barry Manilow." David Rooke and William R. Torbert, "Seven Transformations of Leadership," *Harvard Business Review* 83, no. 4 (2005).
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