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The History and Potential Development of Distance Learning at the Naval Postgraduate School (NPS)

by

Graduate Education Advancement Center

and

Teaching and Learning Commons

June 30, 2021



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COMMONS



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The History and Potential Development of Distance Learning at the Naval Postgraduate School (NPS)

This paper summarizes history, provides background information, discusses the current state, and proposes a way ahead for distance learning (DL) programs offered by NPS.

A. Overview, by the numbers

1. In 1994, NPS offered its first course in a DL delivery mode. Since the mid-1990s, NPS has made a series of changes within its four schools and its academic administrative support structure to offer more flexible learning options to students through DL.
2. Figure 1 provides a composite look at the 2002–2020 trends in NPS’s average onboard (AOB) number of DL students and DL course sections compared to the AOB number of resident students and resident course sections (B. Stettenbenz, personal communication, March 31, 2021). In short, the number of DL students and courses rose significantly in the past 18 years, while similar numbers for resident students began and ended at approximately the same levels. In the last two decades, DL students have been the driving force behind the significant growth in the size of the NPS student body.

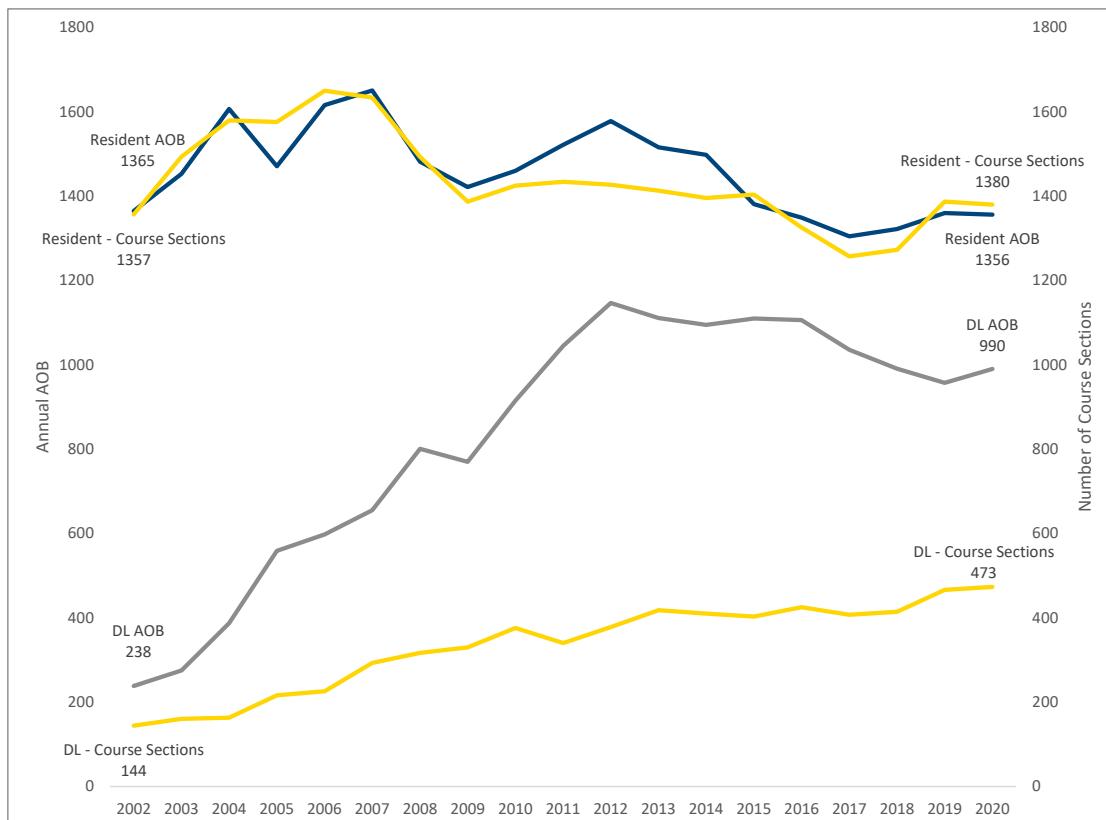


Figure 1. Number of Average Onboard (AOB) Students and Course Sections for NPS DL and Resident Programs, 2002–2020

3. The number of students enrolled in DL programs increased steeply from the early 2000s to 2012 and then decreased slightly between 2013 and 2020. The AOB number of DL students was a mere 238 in 2002, peaked at just under 1,200 in 2012, and decreased to 990 by 2020. The number of DL course sections enjoyed a steady but slower increase between 2002–2020, starting at 144 sections and ending the period with 473 sections. Unlike the resident programs, the AOB number of DL students is significantly higher than the number of DL course sections.
4. In contrast to the DL program, the AOB number of resident students and course sections has fluctuated within a much narrower range. Resident AOB students totaled 1,365 in 2002, peaked at 1,630 in 2007, and ended the period with 1,356 students in 2020. The number and trend for resident courses was comparatively similar to the AOB number of students: 1,357 resident course sections in 2002, a peak of 1,630 sections in 2006, and 1,380 sections in 2020.
5. While several factors have influenced these trends in DL and residence programs, Figure 1 indicates that there has been a growing demand for DL programs but not resident programs at NPS for the past 20 years. In 2002, DL students comprised 15 percent of the NPS student body and resident students accounted for 85 percent. At the 2012 peak of DL enrollments and again in 2020, 42 percent of students were in DL programs and 58 percent were in resident programs.
6. The COVID-19 pandemic prompted an abrupt transition to DL course delivery at NPS in April 2020 for both DL and resident students. This, and conversations in the Naval Education Enterprise (NEE), brought renewed attention to the question of the optimal mix of resident and DL programs at NPS. Given rapid advancements in information technology (IT), experience gained, and lessons learned from recent DL teaching and learning, NPS is now better equipped than ever to expand its DL offerings to meet the Navy’s evolving educational needs and to provide a wider range of educational opportunities for Sailors and Marines, not just at NPS but as a leading member of the NEE.

B. History and background of DL at NPS

This section chronologically highlights the history and background of NPS DL programs, including curriculum, classroom IT capabilities, and faculty involvement, an analysis that parallels the Western Association for Schools and College (WASC) Senior College and University Commission (SCUC) (WASCUC) thematic program review (TPR) areas (WASCUC, 2020).

1. Figure 2 illustrates the history of DL at NPS and some of the driving forces in the Department of Defense (DOD) and Department of Navy (DoN) that were affecting the adoption of DL at NPS and other military schools. These forces and developments are discussed in detail in this section. Figure 2 also highlights initiatives from 1994 to 2006 that supported the growth of DL programs at NPS.



Figure 2. Distance Learning History in DOD, Navy, and NPS (1994–2006)

2. In summer 1994, NPS offered its first online course, Aircraft Combat Survivability, through the Department of Mechanical and Aerospace Engineering with Professor Robert Ball as instructor (Miller, 2012a; Miller, 2012b). He used video-conferencing technology known as Video-Tele-Education (VTE), which relied on point-to-point digital phone lines (H. Thomas, personal communication, February 12, 2021). NPS equipped two classrooms with VTE systems in Root Hall. While the first DL student cohort began their DL master’s studies in software engineering in 1996, NPS’s initial DL programs were not listed in the *NPS Course Catalog* until 1998. These early course delivery modes were synchronous using VTE and asynchronous using digital video disks (DVDs), and textbooks.
3. As interest in DL gained momentum in higher education during the late 1990s, NPS was following and anticipating parallel early developments of the advanced distributed learning (ADL) strategy within the DOD and DoN. The School successfully leveraged emerging DL technologies to extend its offerings to students who could not attend courses in residence. Accordingly, NPS was poised to implement its 1998 *Strategic Plan* that included an initiative to “develop the technology-integrated DOD University of the Future” (NPS, 1998, p. 3). Within a year, NPS developed its *DL Strategic Plan and Migration Plan* to guide actions aimed at expanding and enhancing its DL programs. In 2000, the Systems Engineering Management (SEM) Product Development Leadership in the 21st Century (PD21) program was launched, laying a foundation for future DL programs at NPS (Miller, 2012).
4. In response to the 1999 Executive Order 13111, *Using Technology to Improve Training Opportunities for Federal Government Employees*, and the 1999 *Department of Defense*

Strategic Plan for Advanced Distributed Learning, the Office of the Deputy Undersecretary of Defense for Personnel and Readiness (ODUSD [P&R]) was directed to lead the Advanced Distributed Learning (ADL) initiative to promote distance learning (DL) throughout the Department of Defense (DOD).

5. By the late 1990s to mid-2000s, NPS had successfully launched multiple DL programs with enrollments increasing from 95 in 1999 (Miller, 2012) to 559 degree-program students and 293 certificate-program students in 2005 (L. Minik, personal communication, February 16, 2021). DL faculty and students were provided “smart classrooms,” equipped with Blackboard Learning Management System (LMS), PowerPoint, Articulate, Camtasia, Photoshop, Flash, HTML, XML, audio-video systems, streaming media, and other synchronous deliver systems such as Elluminate.
6. By the early 2000s, the increased need for DL student and faculty support at NPS led to the formation of the Office of Continuous Learning (OCL) and Distributed Learning Resource Center (DLRC) within the OCL (NPS, 1999; Reneker & Ciavarelli, 2000); C. Eoyang, personal communication, March 24, 2001).
7. In 2002, NPS established its first Fleet Concentration Area (FCA) Fleet Learning Center (FLC) in San Diego, California (O. Moses, personal communication, October 17, 2019). The purpose of the FCA/FLC was to provide DL facilities and support to NPS students and faculty and to serve as a mechanism for institutional advancement and outreach (NPS, 2013). NPS went on to establish additional FCAs/FLCs in Norfolk, Virginia, in the 2006 timeframe and in Arlington, Virginia, (i.e., National Capital Region [NCR]) around 2007. While student enrollments in San Diego have declined over the past few years, the FCA/FLC remains open to support NPS faculty in the area as well as NPS program advancement.) Due to declining student enrollments, NPS closed its NCR offices and classrooms in 2018 and its Norfolk facility in 2019 (O. Moses, personal communication, October 17, 2019).
8. Since DL program inception at NPS, andragogical (adult-learner) and learning technology support for faculty and logistical support for students have been relatively centralized, while academic degree and certificate program management, development, delivery, accreditation, and assessment have been largely decentralized to each of the NPS schools.
9. Enrollment, tuition management, and programmatic communication have been a combination of centralized and decentralized functions to varying degrees over the years with coordination between academic administration and the schools. Learning technology support in the past has been a collaborative effort, with the Information Technology and Communications Services (ITACS) in the lead in partnership with the Graduate Education Advancement Center (GEAC) and Office of Teaching and Learning (OTL), and its predecessor organizations. This support is now coordinated under the larger umbrella of the Teaching and Learning Commons (TLC).

10. Branding, to include advertising NPS DL programs, has been mostly decentralized to the schools with some limited involvement of GEAC and its former organizations, as well as the new office of Strategic Communications and Engagement (SC&E).
11. In November 2005, the NPS Associate Provost for Academic Affairs (AP-AA) Orin Moses directed a Reimbursable and Distributed Education Task Force to investigate NPS reimbursable education policies (R&DE Task Force, 2005) and to propose an updated business model. The R&DE Task Force made three recommendations in the major areas of program management, the tuition model, and a centralized R&DE support office.
12. With regard to program management, the Task Force recommended that the AP-AA be the focal point for R&DE management with program managers assigned in the schools to, among other responsibilities, apply a “standard indirect cost recovery rate to reimbursable education programs” (R&DE Task Force, 2005, p. 12). Rather than continuing with cost models that varied from one program to another, the Task Force recommended a standardized business model “with a campus-wide tuition rate [per credit hour] that produces a [more predictable] funding stream that is effective enough to meet faculty and program needs, provides for a program-level accountability for both direct and reimbursable R&DE programs, and offers NPS R&DE program managers a common baseline from which to efficiently manage program execution and strategically plan for future expansion” (R&DE Task Force, 2005, p. 20). Finally, the Task Force proposed that a new, more streamlined organization be formed, that would potentially subsume the OCL and serve as the “principal NPS advocate, promoter and broker for all DL education strategic planning and policy making efforts” (R&DE Task Force, 2005, p. 24).
13. In 2007, the NPS Department of Operations Research performed a comparative test of Elluminate software versus VTE and found more favorable attributes in Elluminate, which led to its adoption at NPS around 2010 (Fricker, 2008; H. Thomas, personal communication, February 18, 2021). Elluminate was purchased by Blackboard and rebranded as Collaborate, which most NPS DL faculty used until the end of 2020 when more user-friendly options such as Zoom, and MS Teams came into wider use (H. Thomas, personal communication, February 18, 2021). NPS also introduced Adobe Connect as a web conferencing capability as part of Defense Connect Online (DCO) sponsored by the Defense Information Systems Agency (DISA), which is available for meetings at two NPS locations (NPS, 2021). Faculty in the Graduate School of Engineering and Applied Sciences (GSEAS) have used Adobe Connect for SEM-PD21 courses.
14. In 2008, OCL along with the DLRC, evolved into the Center for Educational Design, Development, and Distribution (CED3) and the Faculty Development Department (FDD). FDD was subsequently renamed the Office of Teaching and Learning (OTL) in 2014. The primary mission of these organizations was to provide andragogical (adult-learner) and learning-technology support to faculty and staff in the areas of faculty development, instructional design, media graphics, videography, programmatic communication, and DL student logistical support. Subsequently, from 2008–2012, NPS realized its most significant growth rate in DL offerings and student numbers (Figure 1).

15. The *NPS Strategic Plan 2018–2023* drove further improvements in DL and resident program support. NPS established the position of Associate Provost for Graduate Education (AP-GE) and named Mathematics Professor Raluca Gera as its first AP-GE. She was also designated the lead director of the new TLC. In 2018, TLC became a collaborative effort involving primarily CED3 (which was renamed GEAC in 2019), ITACS led by the Chief Information Officer, and Dudley Knox Library (DKL), Graduate Writing Center (GWC), Thesis Processing Office (TPO) led by the University Librarian. Since 2019, TLC has sponsored a campus-wide initiative entitled the DL Quality Initiative (DLQI) to advance DL andragogy and technology at the academic course, program, and certificate levels. Figure 3 highlights the evolution of offices providing support to faculty who teach in DL and resident classes.



Figure 3. Distance Learning Support at NPS, 2008–2020

16. In 2012, Gregory Miller, a NPS Senior Lecturer, wrote a paper, *Technology Support for Distributed Learning at NPS: A Story of Systems Evolution*, for the 2012 National Defense Industrial Association (NDIA) 15th Annual Systems Engineering Conference. This paper captured the history of DL at NPS with emphasis on learning technologies through 2012.

17. Figures 4 and 5 depict the trends in the number of students enrolled in NPS DL master’s degree and certificate/non-degree programs, respectively (OIR, 2021), based on their military branch and employment status. NPS experienced a significant upward trend in DL enrollments, from 598 master’s degree and 368 certificate-program students in 2006 to 1,147 master’s degree students in 2012 when enrollments peaked. The number of students enrolled in certificate programs fluctuated and also grew at a more moderate rate over this time period (L. Minik, personal communication, February 16, 2021).

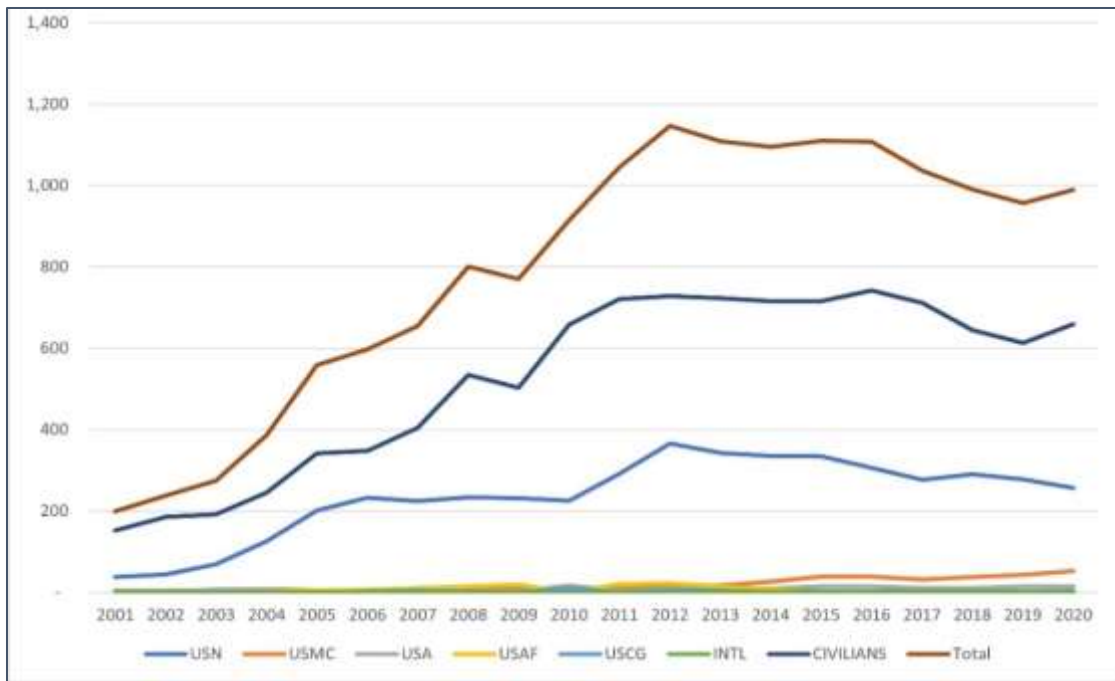


Figure 4. Trend in DL Degree Program Student Enrollment by Student Type, 2001–2020

19. The vast majority of DL degree programs result in master’s degrees. As shown in Figure 4, the total number of students enrolled in DL master’s programs rose from approximately 200 in 2001 to a peak of approximately 1,150 in 2012, and just under 1,000 in 2020. Civilians have consistently been the largest contingent, making up approximately 80 percent of these students in 2001 and 65 percent 2020. Service members in the U.S. Navy (USN) consistently have been the second-largest contingent in DL master’s programs: approximately 35 students in 2001 and 250 in 2020. Members of the other military branches enroll in NPS DL programs at very low numbers.

20. As shown in Figure 5, the total number of students enrolled in short-duration DL certificate programs rose from approximately 180 in 2001 to a peak of approximately 425 in 2020. While reflecting a positive growth trend, enrollments have significantly fluctuated year-to-year. Since 2008, most DL certificate students were civilians and, in 2002, they made up just over half of certificate-program students. USN service members and reservists are the second-largest contingent. In 2001, the USN enrollments were equal to those of civilians at approximately 75 students each. After 2008, civilian numbers grew significantly, while USN representation inched up to approximately 110 students in 2020. Still, USN numbers have grown each year since 2015. The United States Marine Corps (USMC) represents the third-largest cohort of certificate students at just under 50 students in 2020. Members of the other military branches and international militaries enroll in NPS DL programs at very low numbers, albeit at higher levels than in degree programs.

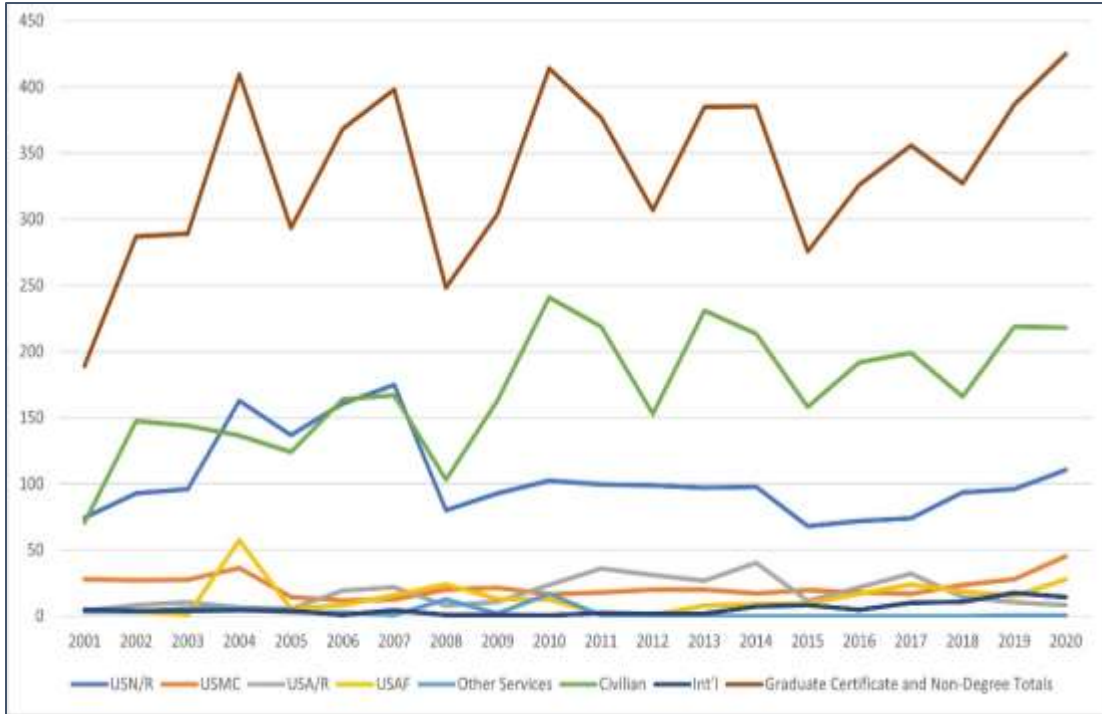


Figure 5. Trend in DL Certificate and Non-Degree Student Enrollment by Student Type, 2001–2020

20. By 2019, NPS was offering a total of 20 degree programs with 957 students: four DL master’s degree programs in the Graduate School of Defense Management (GSDM), 12 in GSEAS, and four in the Graduate School of Operations and Information Science (GSOIS) (NPS, 2019; L. Minik, personal communication, February 16, 2021). Figure 6 shows the percentage of DL sections offered by each school in master’s and certificate programs. As expected, GSEAS provided 48 of the total sections, followed by GSDM at 26 percent, and GSOIS at 21 percent. The School of International Graduate Studies (SIGS) offered 5 percent of the total DL sections, all to certificate students.

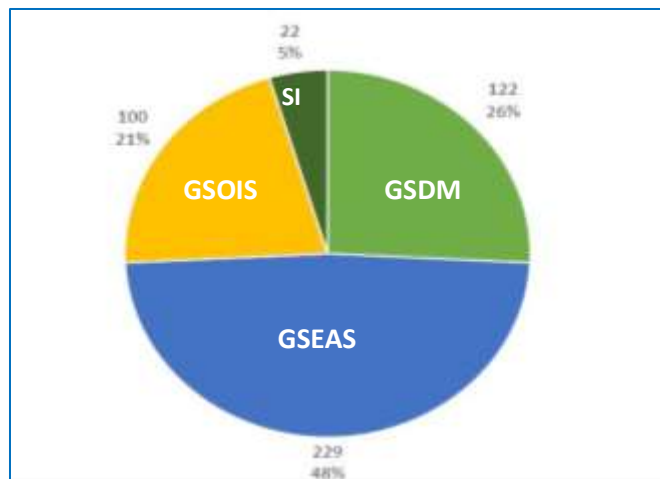


Figure 6. Percentage of DL Sections Offered by NPS Schools in 2019

22. Also, in 2019 and as shown in Figure 7, 43 percent of NPS students (1,685 of 3,919 total) had at least one DL class, and 32 percent of graduates (379 of 1,183 total based on 2018 figures) were associated with DL course delivery (Lester, 2019). At the same time, 23 percent of NPS degree programs (20 of 87 total) and 70 percent of certificate programs (19 of 27 total) were classified as DL. This year also saw 21 percent of NPS class sections (488 of 2,238 total) and 37 percent of teaching faculty (179 of 481 total) involved in DL offerings. Additionally, 30 percent of the total number of theses and capstone and final-project reports published by the TPO in 2019 were authored by students in DL programs, while 7% of GWC coaching appointments were with DL students in 2019 (S. Leavitt, personal communication, April 29, 2021).

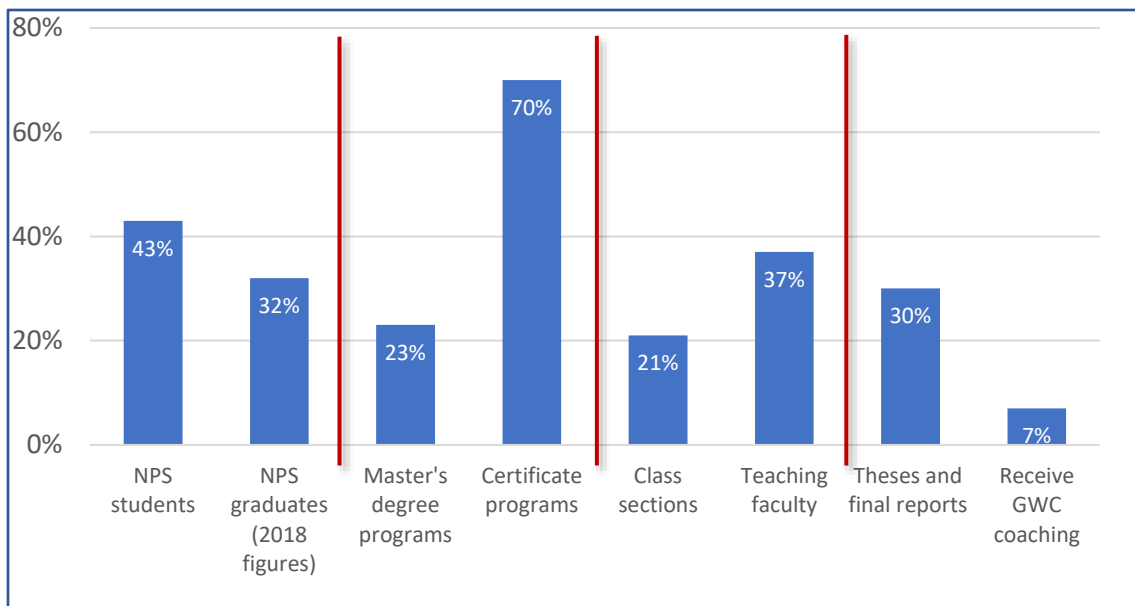


Figure 7. Distance Learning as Percentages of NPS's Totals, 2019

23. By 2019, NPS had 990 DL degree program students and 425 certificate program students (L. Minik, personal communication, February 16, 2021). Figures 8 and 9 show the trends in the type of delivery mode for DL courses and the type of faculty involved in teaching DL courses for NPS from 2009 to 2020.

24. In Figure 8, note the gradual increase in the number of class sections taught in synchronous delivery mode and the stable number of courses taught in other delivery modes. With regard to course sections, 426 (26%) of the total 1,853 course sections offered during 2020 were DL (NPS, 2020).

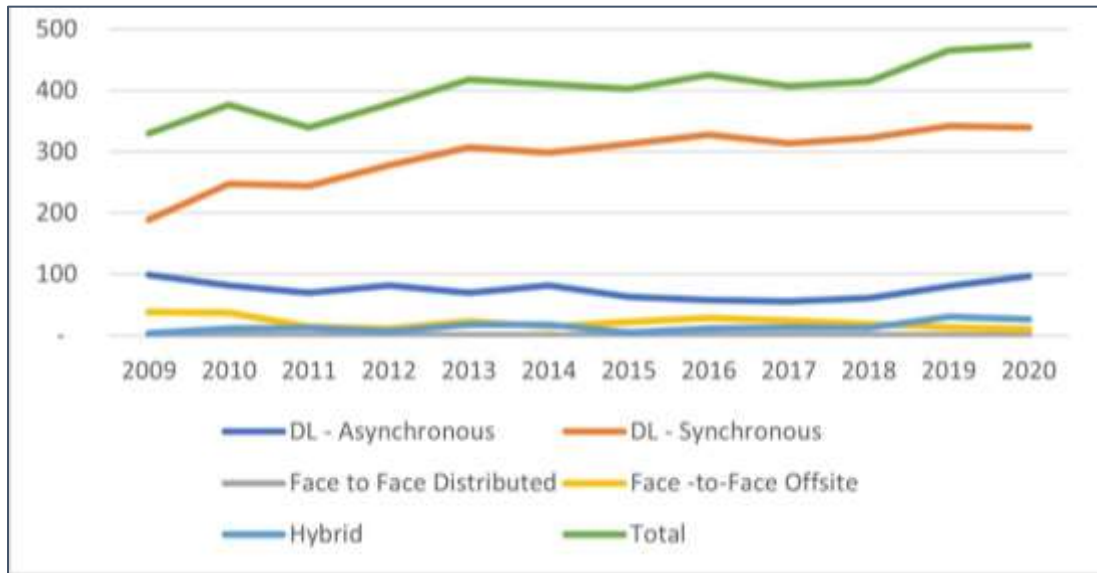


Figure 8. Number of DL Course Sections Offered in Various Formats, 2009–2020

25. Figure 9 illustrates the types of faculty teaching DL from 2009–2020. Over the course of the decade, NPS experienced an uptick in the number of non-tenure track (NTT) faculty teaching DL, while there was a decrease in the number of tenure track (TT) faculty teaching DL. By 2020, NTT faculty were teaching 62 percent of the DL sections offered, while TT faculty were teaching 28 percent of these classes. The remaining 10 percent were taught by military faculty (MILFAC), staff, and contractors. For comparison, 47 percent of resident course sections were taught by TT faculty, 33 percent by NTT faculty, and 19 percent by MILFAC and others (NPS, 2020).

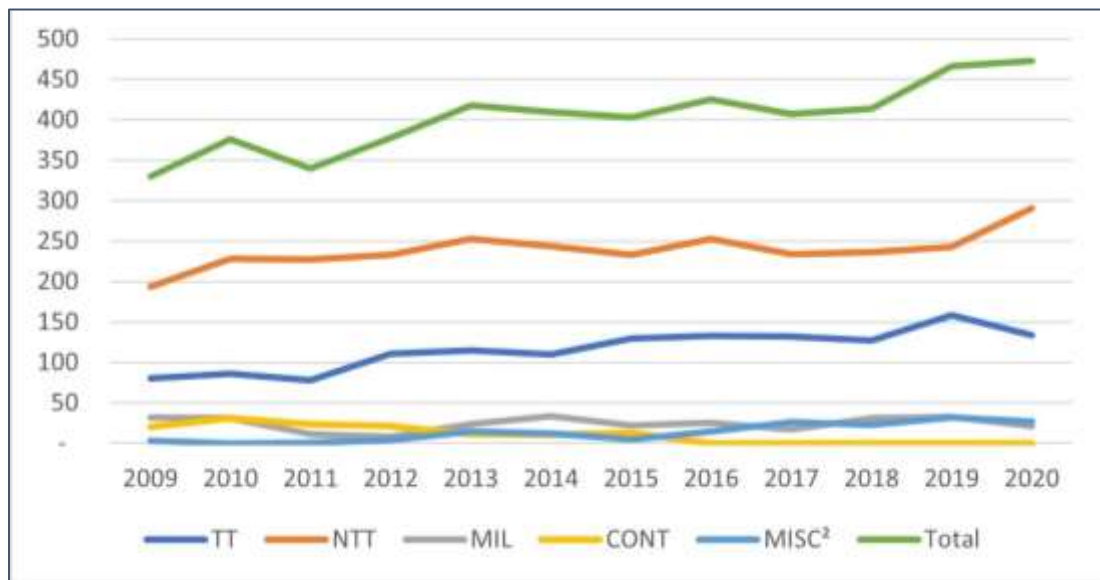


Figure 9. Number of Faculty Teaching DL Courses by Faculty Type, 2009–2020

26. Due to the COVID-19 pandemic, all but classified NPS courses were delivered in DL mode starting in late March 2020 when most winter-quarter courses had completed. In subsequent quarters, while some faculty and students participated in a limited number of simultaneous face-to-face and synchronous sessions in what has been referred to as “NPS Flex,” these sessions were experimental in nature, with the preponderance of teaching and coursework completed in a combination of synchronous and asynchronous DL modes.
27. Despite the extra challenges to faculty and students caused by the immediate transition to DL, the TLC and schools offered workshops, brownbag sessions, and one-to-one training on a variety of learning systems, such as Zoom web conferencing, Sakai LMS, and a variety of other collaboration tools to encourage best practices in higher education for teaching and learning. The helpdesk functions of TLC organizations, as well as the smooth transition to Zoom-based and asynchronous writing coaching, helped mitigate risks. Indeed, spring 2020 brought the highest number of GWC coaching appointments in a spring quarter since the center’s founding in 2013 and the third-highest level of coaching in any quarter (S. Leavitt, personal communication, April 21, 2021).
28. NPS captured preliminary lessons learned in a point paper, *Just-in-Time-Training (JIIT) during COVID-19 Operations: Creating a More Efficient Design* (Gera, Lester, & Leavitt, 2020), that was written at the request of the ADL Program Office. Additionally, TLC and the Office of Institutional Research (OIR) conducted regular surveys (OIR, 2020a; OIR, 2020b) to identify and respond to issues and minimize negative impacts on faculty, students, and learning outcomes.

C. Current state of DL at NPS

This section captures the current status of NPS DL programs and identifies strengths, potential areas for improvement, opportunities, risks, and key success factors in keeping NPS at the forefront in the delivery of high-quality graduate education to the DOD and its partners. In addition, this section incorporates findings from recent reports by organizations internal to NPS, such as OIR and GEAC, and external organizations, such as WSCUC and ODUSD (P&R).

1. NPS strengths based on an internal view of DL programs

- a. NPS schools develop, deliver, and assess DL curricula and courses in close cooperation with Government sponsors using a rigorous set of educational skill requirements (ESRs).
- b. Learning technology has kept relatively good pace with innovations in delivering courses in hybrid formats, which involves a combination of synchronous and asynchronous modes.
- c. There are a total of eight classrooms at NPS with unsecure video conferencing and two additional areas for secure video conferencing using what NPS refers to as software conferencing support. An additional 11 classrooms have been retrofitted with document cameras, dual monitors, and speakerphones to support the simultaneous teaching of students face-to-face in the classroom and online. These capabilities have exceeded

demand during COVID operations and are forecast to meet the projected DL demand when NPS returns to normal operations based on DL and resident enrollment projections. While web conferencing capabilities such as Zoom do not anchor faculty or students to the limited number of VTE classrooms, they usually require some augmentation with other collaboration tools for effective DL course delivery.

- d. The vast majority of NPS faculty now have experience in teaching DL, particularly due to the rapid shift to DL and hybrid course delivery during the COVID pandemic.
- e. Significant support is available to DL faculty in the areas of developing and implementing best practices, including the appropriate integration of andragogy and technology.
- f. Based on OIR survey data collected from faculty during the summer and spring quarters of 2020 during COVID operations, a relatively high percentage of faculty believed that virtual course delivery did not significantly affect the quality of teaching and learning. See survey reports for additional details and data (OIR, 2020a; OIR, 2020b).
- g. The TLC has served as an effective mechanism to consolidate and apply the knowledge, skills, and resources of its partner organizations to promote best practices in teaching and learning for both DL and face-to-face environments. This perspective was reinforced by the WSCUC team during its recent TPR. See their report (WSCUC, 2020) for additional details.
- h. The recent NPS DL program and course review conducted by Arizona State University (ASU) under the sponsorship of the ODUSD (P&R) ADL program office noted that NPS received strong scores in several rating areas at the institutional level. See the report for additional details (Craig, Siegel, & Li, 2020).

2. Considerations and potential areas for improvement based on an internal review of NPS DL programs

- a. DL student enrollments in degree programs have been relatively flat from 2015 to 2020 (dipping slightly from 1,110 to 990), even though the number of sections being offered in the DL mode has increased a moderate 17.5 percent, from 403 to 473. According to the SE department chair, its DL programs have not grown of late primarily due to two factors: “1) the Defense Acquisition Workforce Development Funds (DAWDF) or 852 funds have dried up (most commands used these funds for graduate tuition), and 2) greater competition from other schools offering DL or opening satellite classrooms next to Navy bases (e.g., Virginia Tech outside of NAVSEA’s gate at Dahlgren and John Hopkins outside of NAVAIR’s gate at Pax River)” (R. Giachetti, personal communication, February 12, 2021).
- b. There are some disparities in teaching DL versus resident courses that should be investigated and resolved. For example, there are differences in the minimum number of students required for DL courses (tuition-funded) and resident courses (mission-funded), with the former requiring more seats filled to be viable. Moreover, departments are paid

- different amounts per student depending upon the delivery mode, with DL courses garnering less per student than resident courses. Despite this, based on experiences during COVID-19, faculty are having to commit more time to teach DL courses, which can negatively impact their other responsibilities and even their willingness to teach DL sections. Another area for further investigation is the employment status of faculty (e.g., NTT versus TT versus MILFAC or contractor) who normally teach DL compared to resident courses.
- c. There is no universal brand for DL programs, or for residence programs (G. Miller, personal communication, February 12, 2021). This can have a negative impact on quality control, promotion, and brand/customer development. Furthermore, NPS has not yet established a clear value proposition to use as a foundation for effective branding.
 - d. While TLC actions have been effective in promoting DL quality, NPS has no implementation plan of action pertaining to improving the quality and number of DL programs, particularly at the institutional level as specified in the *NPS Strategic Plan 2018–2023* (NPS, 2018).
 - e. A March 2018 report entitled *When and Why Do Naval Postgraduate School Distance Learning Students Withdraw?* (Mastre & Roberts, 2018) contained results of student surveys from 2005–2017. The surveys revealed that students who withdrew from DL programs, compared to those who did not, tended to believe that:
 - 1) Course objectives did not align with their personal needs, which could indicate better communication is needed in marketing
 - 2) They did not feel well connected to faculty and other students, which can be mitigated through various teaching strategies, such as group projects, breakouts during synchronous classes, weekly online discussion forums, and coaching at the GWC
 - 3) They tended to be less satisfied with the amount of interaction with other students
 - 4) They did not feel they had much in common with other students in their classes, which again may be mitigated through various teaching strategies
 - 5) They were less satisfied with the amount of interaction with the faculty
 - 6) Work demands and personal responsibilities interfered with their coursework, which is difficult to overcome, given that most DL students work full time
 - 7) They tended to feel that they received less encouragement from their leadership at work in pursuing their educational goals
 - 8) They believed the coursework was not as relevant to their jobs and future possibilities
 - 9) They reported that the material was not presented in a clear manner

10) They were less satisfied with the quality of instruction

The above are the reported top 10 statistically significant factors for why students withdrew from their DL program. Approximately 40 percent of the withdrawals occurred in the students' first two academic quarters. Incidentally, graduation rates at the time of this report were 15% lower for DL students than resident student.

On the other hand, the SE department has observed that graduation rates for DL students versus resident students compared favorably a few years ago and attribute this result to using a synchronous delivery mode to keep a "steady drumbeat" for the course (R. Giachetti, personal communication, February 12, 2021). This suggests teaching methods and IT are important for student satisfaction. Gregory Miller (personal communication, February 12, 2021) also noted that NPS's DL-student attrition rate of 80 percent may not be significant when compared to other institutions with DL systems engineering programs: University of Florida–86%, Penn State University–85%, George Washington University–83%, and Northeastern University–83%.

- f. A report by NPS faculty members Marigee Bacolod and Latika Chaudhary (2018), titled *Distance to Promotion: Evidence from Military Graduate Education*, captured the impacts of DL on academic outcomes and job performance based a study of seven cohorts at NPS from 2006–2013. This study also found a negative impact on student retention as well as a negative impact on academic outcomes for DL students.

On the other hand, SE Department Chair Ron Giachetti noted (personal communication, February 12, 2021): "In our ABET [engineering accreditation] review in 2012, we submitted two separate applications, one for the resident [Master's of Science in Systems Engineering] MSSE and one for the DL MSSE. We were concerned whether deficiencies in DL, whether real or perceived, would drag down the resident program. In our ABET 2019 review, we again submitted two packages. During the review, the ABET review team asked us to consolidate the two packages because the degrees were the same, same courses, and taught by the same faculty. I think this indicates a significant change in how the engineering community now views DL as equivalent to resident instruction."

- g. Based on OIR survey data collected from faculty for the summer and spring quarters 2020 during COVID operations, DL courses required more time and effort than face-to-face courses. See survey reports for additional details (OIR, 2020a; OIR 2020b).
- h. Based on feedback from students with regard to their DL experiences during COVID-19 operations, some expressed frustration with the use of different course support tools (such as the LMS arrangement) by different instructors, which they said added to their difficulty in completing coursework.

- i. The assessment of the quality of DL courses does not consider the nuances associated with DL programs at the institutional, degree program, certificate program, and course level as noted by reviewers during the *2020 WSCUC TPR Report*. This issue also was discussed in the presentation, *Current Tracking of DL Quality*, by O. Moses, L. Minik, P. Candreva, R. Giachetti, S. Brown, S. Leavitt, and D. Lester (2020) that was delivered to the NPS President.

The TLC DL Quality Initiative (DLQI) has led to the development of course-level criteria and guidelines. In 2020, GEAC delivered the initial checklist and guidelines focused on the course level, considering WSCUC and Council of Regional Accrediting Commission (C-RAC) standards, and benchmarking a wide variety of higher education institutions across the country. However, these criteria and guidelines have not been consistently socialized and incorporated across campus.

- j. The WSCUC TPR noted that NPS needs to “develop and integrate data on student achievement of program and institutional learning outcomes into their quality improvement process for teaching and learning.” The WSCUC reviewers also pointed out in conversation that NPS should consider the distinctive aspects of distance education such as the support of DL student transition at NPS and the process for handling student complaints in its review of the quality of DL offerings. See the report for additional details including areas for follow up that pertain to DL (WSCUC, 2020).
- k. The recent DL program review conducted by ASU in support of the ODUSD (P&R) ADL program office noted that NPS should consider increasing its use of data analytics and video at the course level to improve pedagogy and student experiences. See the report for additional details (Craig, et al., 2020).

3. DL program opportunities

- a. Provide more flexible options to earn graduate degrees and other academic credentials at times and places driven by prospective student and sponsor preferences as well as professional commitments
- b. Develop a strategic communication and marketing plan that will help NPS right-size and promote NPS DL programs
- c. Implement a more robust and integrated learning technology piloting program that identifies and leads to the implementation of solutions based on best practices in teaching and learning
- d. Implement a more robust assessment system that provides data for fact-base decision-making and investment in DL programs and suggests the appropriate mixes and types of synchronous and asynchronous activities in hybrid learning environments

- e. Explore innovations in the areas of modeling and simulation (M&S), virtual reality (VR), and augmented reality (AR) that show promise for enhancing learning experiences through greater engagement among students, faculty, and course content
- f. Exploit and leverage programmatic, technical, and infrastructure advancements being sponsored and promoted by the ODUSD (P&R) ADL program
- g. Lead the way for the Navy to take actions identified in the *Navy Education Strategy*, particularly in the areas of identifying how best to deliver curricula in various modes to mid-career officers and exploring options for a Navy enterprise LMS that goes hand-in-hand with other learning technology solutions

4. Risks to future DL programs at NPS

- a. Budget cuts and economic pressures to reduce expenses associated with brick-and-mortar infrastructure
- b. Competition with other higher education institutions that are providing high-quality and flexible learning options (e.g., hybrid, accelerated, and distributed) from the standpoint of attracting and retaining students and faculty
- c. Competition with professional, trade, technical, or vocational schools that prepare students for various occupations
- d. Complications with scheduling students who take a combination of resident and online courses (A. Gera, personnel communication, February 11, 2021)
- e. Limitations on student use of communication and collaboration devices at military installations due to security constraints (e.g., Navy-Marine Corps Internet [NMCI])
- f. Frequent changeover of senior Navy personnel who oversee the NEE and ambiguity with regard to implementation priorities and timing of the *Naval Education Strategy*

5. Key factors for future success of NPS DL programs

- a. Appropriate balance of centralized and decentralized authority and responsibility in the planning, execution, and assessment of DL programs to include a clear definition of roles and responsibilities
- b. A plan for implementing a DL program strategy that includes a refinement of and alignment with current institutional strategy
- c. Accurate and timely data that can be used for decision making and investment in DL programs

- d. Faculty who are deeply involved in designing, developing, delivering, and assessing the effectiveness of DL programs
- e. Flexibility in approaches to completing academic degree, certificate, and credentialing coursework
- f. High-quality faculty and staff, particularly given high cost-of-living locations like Monterey
- g. Collaboration with other entities in the NEE, other higher education institutions, and other DOD organizations promoting the advancement of educational best practices and learning technologies; some of this can be done through the existing the military higher-education consortia on DL, IT, libraries, and writing centers
- h. Educational research to identify options for delivering high-quality education, including building a portfolio of educational research activities that may attract reimbursable funding from sponsors such as the National Science Foundation (NSF), National Institutes of Health (NIH), and OUSD (P&R) ADL program office
- i. Powerful value proposition for NPS graduate education that is shared regularly with sponsors, potential students, and alumni
- j. Exemplar graduate degree programs delivered in various modes that are benchmarked for best practices

D. Near-term way ahead for DL at NPS

To improve and expand NPS's DL program offerings, this section contains proposed actions for the near term based on a review of the history, background, and current state of NPS DL programs and infrastructure.

1. Academic programs

- a. Determine the "best-fit" of degree, certificate, and other credentialing offerings considering factors such as academic and research interests, faculty strengths, sponsor requirements, target enrollments, costs, resource availability, potential student interests, and faculty availability
- b. Incorporate DL quality standards developed by the TLC into all NPS academic degree and certificate programs. Almost all of these DL quality standards apply to resident programs as well. Refer to the presentation, *Current Tracking of DL Quality*, by O. Moses, L. Minik, P. Candreva, R. Giachetti, S. Brown, S. Leavitt, and D. Lester (2020) for additional considerations in moving forward in DL quality improvement

- c. Develop a plan of action and follow up on items that pertain to the Distance Education Review section of the *TPR of Accreditation Report* (WSCUC, 2020) with special emphasis on implementing a more robust assessment system that investigates student learning outcomes and informs institutional decisions. The WSCUC report stated that NPS should concentrate on analyzing data to “demonstrate the educational efficacy of DL” (WSCUC, 2020, p. 37). The report also pointed to the need for a more “transparent process for addressing academic complaints” as part of Student Support Services (WSCUC, 2020, p. 35)
- d. Investigate and reconsider the differences and disparities of teaching DL and resident courses, particularly in the areas of minimum class sizes, funding that departments receive for course sections, compensation that faculty receive for teaching in the different modes, and status of faculty in teaching DL versus resident sections

2. Andragogical support

- a. Have GEAC continue to deploy the DLQI checklist and guidelines with supporting reference materials across campus and complete a similar process with deliverables that focus on DL quality at the institutional, academic degree, and academic certificate program levels. To promote deployment of DL quality standards, GEAC should assist NPS academic associates, program officers, and program managers in self- assessments of curricula, courses, student support, and faculty support.
- b. Increase direct support of faculty for DL course design, development, delivery, and assessment. R. Giachetti’s (personal communication, February 12, 2021; personal communication, May 29, 2021) perspective reinforces this recommendation: “I think technology is important to DL delivery and education. Overall, I think NPS has done well. The bottleneck I see is developing engaging, high-quality learning materials for online instruction. I think faculty could use more support in this development. For example, Greg Miller used Doodly to create a short two-minute video on the radar range equation. It took him the greater part of the day to create the short video. GEAC has support for work like this, but they would probably need more if we wanted to do more development of online content. For the renovation of Bullard Hall, one of our ideas is to have a DL teaching room installed with various equipment to support such DL content development and delivery.”
- c. Increase support to DL students in their use of learning technology systems
- d. Identify best practices, avenues, and resources available to build DL students’ sense of community and engagement among fellow students, faculty, staff, and alumni
- e. Increase investment in educational research to explore options for better integration of andragogy that improves student and faculty experiences. This research should include completion of the Data Analytics Informing Hybrid Learning (DAITA HL) project, a new TLC initiative for 2021 that will build on previous significant data collection and analysis efforts that began in March 2020 in response to the COVID-19 pandemic.

3. Technological support

- a. Enhance collaboration between the TLC's partner organizations and NPS schools in the piloting and rollout of future teaching and learning support systems. For example, NPS may be moving away from Zoom as a web conferencing capability in the near future, so organizations should be preparing for this possibility. A new active-learning studio proposed as an unfunded requirement could serve as a sandbox for piloting new learning technologies and for promoting increased collaboration among faculty, staff, and students.
- b. Increase investment in educational research to explore options for better integration of technology that improves student and faculty experiences, which may include the use of M&S, VR, and AR
- c. Increase system interoperability between the NPS campus and distributed sites with emphasis on students who complete classes in military locations
- d. Increase process and system interoperability by implementing an NPS enterprise "learner record repository" for all education records (M. Alves, personal communication, February 12, 2021). This record repository would serve as a clearing house for data that will support institutional and program performance and effectiveness. The NPS Command Data Officer, with support from the NPS Data Governance Council, should be responsible for design, development, implementation, and maintenance of the record repository.

4. Resource requirements

- a. Provide funding and take procurement actions to continue the deployment of Flexible Learning Experience (FLEx) Spaces across campus to include the installation of robust collaboration and conferencing capabilities that support hybrid learning
- b. Provide funding and take procurement actions to maintain and upgrade systems that support DL
- c. Provide funding and take procurement actions to continue faculty support from TLC partner organizations and increase support to DL students

5. Organizational structure and staffing

- a. Conduct a review of the roles and responsibilities of campus organizations involved in DL, explore tradeoffs between centralization versus decentralization of associated functions, and make recommendations to leadership

- b. Reconsider the following recommendations from the *R&DE Task Force Final Report* that identified the need for more centralized management of DL functions (R&DE Task Force, 2005, pp. 24–25):
 - 1) Assist with new business development across the NPS institution
 - 2) Coordinate the NPS outreach mission
 - 3) Develop common student administrative support
 - 4) Offer program administrative support services to NPS DL directors, academic associates, and PMs
 - 5) Assist with technology support services
 - 6) Pedagogy support services
 - 7) Program assessments
- c. Benchmark other comparable institutions in higher education to investigate the advantages and disadvantages of internal online program management (OPM) (Lieberman, 2017; Lieberman, 2019; Purdue, 2021; University of Central Florida, 2021)
- d. Recommend and advocate for changes in organizational and staffing alignments to realize the implementation of DL strategy on campus and at distributed sites
- e. Consider Giachetti’s (personal communication, February 2, 2021) suggestion that “NPS needs a central person to coordinate and conduct marketing of our programs to sponsors. Many of the commands do not know about our DL programs. NPS needs somebody who is going to visit commands on a regular basis and maintain contacts with these sponsors. Wally Owen, [SE’s Associate Chair Distributed Programs and Outreach], at Doug [Orin] Moses’ request developed a PD [position description] for what such a person would do.” This PD is for the position of the Associate Provost for Distance Learning and Outreach.

6. Program promotion

- a. Develop a strategic communications plan to position DL programs in the appropriate target markets. Giachetti (personal communication, February 12, 2021) stated: “given [that] NPS must compete with other schools in DL, we need to think about how we position ourselves in the market. I think we need to emphasize our defense relevance, adaptability to sponsor's needs, and quality of instruction and content. One of my concerns with NPS's decentralized approach is I am not sure every program, especially some of the programs doing only online asynchronous delivery are upholding quality standards. Sponsors see NPS

as a whole, and if one program hurts our reputation, then we are all painted with the same broad brush.”

- b. Develop and distribute marketing materials to promote the NPS brand and DL programs.

For questions pertaining to this point paper, please contact AP-GE/GEAC or the contributors and reviewers that follow. Additional information may be found in the List of References.

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