Cadet-Faculty Research Teams

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Abstract

Faculty should consider incorporating cadets into their research efforts. Though incorporating cadets requires some time, the benefits generally outweigh the costs for both cadets and faculty. Cadets think critically, practice research methods, and develop valuable mentor relationships. Faculty enhance their research agendas with greater manpower while honing their own research skills. Individual faculty should incorporate cadets during a project’s literature review after sketching out a research design. Departments, too, have a role. Departments should consider cadet research cohorts to build a community of research and off-load some costs associated with research from faculty. Finally, institutions can stimulate research by establishing undergraduate research centers that award small research grants. Given West Point’s research requirement for academic promotion, incorporating cadets is a low-cost, high-benefit way to better both faculty research agendas and their cadet partners.

Cadet Oliva Simon stunned academic audiences in January at the Annual Meeting of the Southern Political Science Association. There, she presented not one, but two papers alongside professors and PhD candidates from across the nation. Learning and listening from her audience, Cadet Simon folded their feedback into her senior thesis and a co-authored article. These presentations are visible efforts of the months of directed research. Cadet Simon will graduate from West Point with two conference presentations and a peer reviewed publication – powerful additions to her curriculum vitae and an indicator of her passion for inquiry. Cadet Simon was West Point’s only American Politics Major to present at an academic conference that year, but she did not do it alone.

Cadet Simon and I researched together. Though I led the project that studied retired flag officer endorsements, Cadet Simon meaningfully contributed. She interviewed retired flag offices, coded our data, helped draft our paper, and solicited feedback at conferences. Her contributions allowed me to explore other topics of interest. In addition to our project on flag officer endorsements, I launched another project with Cadet Bryce Johnston and published a variety of commentary pieces. Though research with cadets took time, the benefits exceeded those costs. Research is an important requirement at West Point; this paper explores whether and how West Point should consider embracing research with cadets.
The research described in this paper differs from West Point’s thesis-driven Honors tracks. For that program, either individuals or small groups of high-performing cadets initiate those projects that produce discipline-based original research for an Academy audience (in most cases). This paper focuses on outcome centered, faculty initiated research for small groups of interested students to produce original, discipline-based research for professional audiences.¹

The paper proceeds as follows. First, I establish that West Point’s faculty should consider incorporating cadets into their research by weighing the costs and benefits while considering the unique nature of research at military institutions. Then, the paper distills undergraduate research best practices for faculty, departments, and institutions for the United States Military Academy and the Army to consider. Though focused on cadet research at the United States Military Academy, the implications apply across the military’s professional military education enterprise. At all levels, interested military students can and should further military knowledge through research.

Why Research

Including undergraduates in research comes with costs and benefits, though benefits generally exceed costs. By including cadets, I doubled my research output, mentored promising Army leaders, and deepened my knowledge of research methods by training them. The cadets also received benefits. They interviewed flag officers, coded data, wrote at a professional level, and acquired a new mentor. Because of my relationship with these cadets, I connected them with unique opportunities. As part of our research, I encouraged and obtained funding for them to attend academic conferences. I also invited them to social events, like a Swedish holiday fair, where we spent time together away from research. Though both parties benefitted, research came with costs. Time spent teaching research methods or coordinating is time not spent preparing for class or with family. Not unique to West Point, these costs and benefits are common across academia though our military focus adds special benefits.

Unlike other colleges, West Point graduates serve as officers in the Army after their education. Fortunately, cadet research supports goals of the Army and West Point. First, research supports two of the Army’s broader education goals set out by the Army University. Cadet research helps grow qualified students, while building a cohort of young officers able to improve professional research and publication.² The Army also needs officers who think critically and challenge assumptions – key characteristics of undergraduate researchers.³ Army leaders are better leaders when they understand causation. As Hill and Gerras put it in Parameters: “the better we understand the causal relationships in a system, the better our strategy for manipulating that system will be.”⁴ Research helps uncover these causal mechanisms – whether in science, technology, engineering, or math (STEM) fields or the social sciences. Research also supports “lead honorably” and

“demonstrate excellence” outcomes of West Point’s Leader Development Strategy. Through research, cadets solve complex problems and pursue intellectual expertise all while they practice effective communication and reflect on feedback.

Beyond the military environment, both cadets and faculty benefit from collaborative research. Cadets develop research skills and a passion for higher education while building tight connections with a mentor. Undergraduate research improves research skills and the likelihood of pursuing a doctorate. Russel et al., in a study of STEM students found that undergraduate research was associated with an 83% increase in research skills and a 19-29% increase in interest in doctoral research. Undergraduate research is “now a standard criterion for admission into competitive graduate programs” suggesting association with long-term improvement in academic attainment. In addition to these academic benefits, Falconer and Holcomb found that students most highly valued the personal relationships they developed with other students and faculty at a summer research internship. According to Thiry and Laursen, mentorship takes three forms recognizable to good military mentors: intellectual support, emotional support, and professional socialization support. Faculty provide intellectual support when they help students with problem-solving or identifying next steps in research. Emotional support concerns taking an interest in students. Finally, professional socialization support includes transmitting professional values along with essential disciplinary skills. Building both professional skills and new relationships, research benefit cadets.

Faculty also benefit from including undergraduates in four ways. First, undergraduate research assistance can allow faculty to “initiate or continue a productive research agenda” especially at schools, like West Point, where teaching is the primary focus. Second, working with undergraduate student forces faculty to hone their skills by teaching them to undergraduates. Returning to the basics may also trigger new research ideas or methods. Finally, many schools offer financial

9 Heidi A. Wayment and K. Laurie Dickson, “Increasing Student Participation in Undergraduate Research Benefits Students, Faculty, and Department,” Teaching of Psychology 35, no. 3 (July 1, 2008): 197, https://doi.org/10.1080/00986280802189213.
incentives for faculty that integrate undergraduate researchers. Though West Point does not offer funds for research with cadets, the Faculty Research Fund review board looked favorably on cadet integration on my applications. Grants approximating $2500 kick-started our research.

Despite these benefits, including undergraduates in research comes with challenges that fall primarily on the faculty member. Creating and integrating undergraduates into research requires significant time and resource investment in relatively few students. Shanahan identified three salient challenges with mentoring undergraduates. First, research requires expertise throughout the process. Second, students may lose interest in the project. Third, other student commitments may prevent research from being a top priority. Guterman corroborated these findings in her survey of the benefits of undergraduate research. She also concluded strong mentorship is an essential component. However, in interviews, faculty members mentioned the costs of integrating undergraduates twice as often as benefits. Student researchers want meaningful work, not to “wash dishes.” Integrating students into research beyond menial tasks requires significant mentorship and time-consuming guidance by faculty members. Finally, Awong-Taylor et al. recognize an important wrinkle to the resource limitations: few students from historically disadvantaged populations or first-generation college students will seek out these opportunities, either because they lack confidence or skills.

My own experience mirrors these challenges. Of the approximately 60 American Politics majors at West Point, I researched with two, investing tens of hours on each cadet over two years of collaboration. Neither came from disadvantaged populations or were first generation college students. As I integrated one junior and one sophomore into my projects, they began with different skills. Even my more advanced cadet required significant education and training in research methods. Though neither cadet lost interest, both faced time-constraints that limited our interactions when they were busy.

Based on both my research experience and a review of the literature, my conclusion is clear: faculty should strongly consider incorporating cadets into their research. Faculty projects accelerate with cadet horsepower, while research exposes cadets to new concepts, skills, and opportunities. Both parties gain from rich mentorship opportunities. Despite these benefits, research partnership comes with costs. Faculty invest significant time and resources in a small number of cadets, who face competing demands. Research opportunities may also leave out cadets unaware of research’s benefits, such as traditionally disadvantaged and first generation students. Fortunately, the literature

19 Awong-Taylor et al., “Undergraduate Research for All,” 11.
on how to integrate undergraduate students is both wide and deep. In the next section, I distill key lessons for faculty, academic departments, and institutions.

**Incorporating undergraduate researchers: best practices**

Cadet contributions to academic research benefit both the cadet and faculty member. Both parties maximize their benefit if the cadet is tightly integrated into the project throughout the entire research process. My own experience indicates that faculty interest in integrating cadets is enough. Both of my projects resulted in academic conference presentations and published papers. However, academic departments and institutions can bolster research incentives. Departments can foster undergraduate research cohorts. Institutional centers focused on undergraduate research increase participation, especially when they award funds to stimulate research. In this section, I outline best practices at the faculty, department, and institutional level.

**Faculty-level**

Like the military, academia has a long history of teaching undergraduates new skills through an “apprenticeship” model. In this model, faculty members work one-on-one with promising undergraduates. After years of stagnation in undergraduate research, the 1998 *Boyer Commission on Educating Undergraduates in the Research University* report to the U. S. Department of Education two tenants. First, undergraduate education should include inquiry based learning in the first year. Second, faculty should mentor undergraduates in research. Brush et al. add two further considerations for faculty: challenge undergraduates to present at conferences and align them with internships or opportunities that advance their research or development. Beyond these broad guidelines, faculty play important roles throughout the research process (Figure 1). Faculty members may integrate undergraduates anywhere in this process.

1. Develop a project and research question
2. Review relevant literature
3. Select the method
4. Collect data
5. Analyze data
6. Make conclusions
7. Write up results
8. Present

**Figure 1. Research Process Model**

At the outset of a project, faculty members may have only a rough idea of the project’s direction or research question. Guterman found student involvement in project development had

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low correlation with desirable outcomes, like enhanced research skills. They should also avoid integrating undergraduates in short term projects. Cox and Andriot found projects with shorter time horizons (one-semester or a summer) did not tend to develop desired skills, though students still reported positive interactions with mentors. On balance, delaying integration will allow faculty to assign cadets to projects that are longer in duration and to give them tasks more likely to develop desirable skills.

Faculty should think hard about a project’s complexity and methods when determining how to integrate undergraduates. Though not directly connected to combined project, Laursen et al. identified four characteristics of good undergraduate research projects. First, the projects must begin at the theoretical level of the undergraduate. Second, students must be able to quickly learn the skills necessary for the project. Third, the project should have a modest scope that can be ramped up or down depending on student success. Finally, the project should have a good chance of success in the timeframe available. With a well-scoped project, faculty must then recruit their undergraduate.

Recruitment efforts should cast a wide net. Students from non-academic or disadvantaged backgrounds are less likely to apply for research opportunities. Faculty are also less responsive to research inquiries from women or racial minorities. When recruiting my cadet partners, I relied on our department’s academic counselor to nominate bright, motivated cadets who I then screened with a writing assignment. This approach identified quality cadets, but prevented interested cadets from opting-in. Though the literature on recruiting undergraduate researchers is sparse, researchers should consider well-advertised open applications that review packets blind. West Point cadets are busy, so faculty should consider academic, military, and physical performance along with interest. Faculty should also consider whether a student’s other coursework dovetails with the research project. Cadet Simon studied civil-military relations in her course and on our project, which led to research synergies and better products for both efforts. As research is a long-term effort, faculty members should select undergraduates with care.

After determining the research question and recruiting, literature reviews are the best place to integrate the cadet. Reviewing literature consumes significant amounts of time because they require critical reading and synthesis. Undergraduates can assist with this process, but “direct instruction on how to write a literature review is essential.” Cisco and Price reach similar conclusions, arguing faculty should train undergraduates and focus them on theme- or discipline-based literature reviews. Undergraduates deepen knowledge of relevant fields when reviewing

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23 Guterman, “What Good Is Undergraduate Research, Anyway?”
literature. If excluded from this step, the researcher will need to invest significant time to get the cadet up-to-speed. Better to integrate them from the outset. After reviewing relevant literature, the faculty member should decide what method to employ.

When determining the method, faculty members should assess the student’s methodological training. West Point’s Department of Social Sciences meets the political science curricula recommendations set out by the American Political Science Association: “a common introductory course, a methods course taken early, and a senior seminar or capstone course at the end.” However, foundational training in methods may be insufficient for larger projects. Shanahan surveys several articles that point out teaching the technical skills, methods, and techniques necessary to conduct scholarly work in the discipline is the mentor’s primary responsibility. After selecting the method, the research team must then train the undergraduate on the skills necessary to collect data.

Undergraduates may be eager to jump into data collection. Faculty members should take care to ensure undergraduates know which data to collect and adhere to guidelines from Institutional Review Boards. Undergraduates can collect data in many ways: building new data sets, interviewing, administering surveys, running experiments, etc. The cadets I worked with did these same tasks. Cadet Simon added demographic data to a new dataset and interviewed retired flag officers. Cadet Johnston designed and administered a survey of Congressional staff members, interviewed stakeholders, cleaned data, and researched cases. After collecting the data, undergraduate researchers can also support analysis.

Depending on the undergraduate’s skills, analysis and developing conclusions may require significant assistance from faculty. For example, West Point’s American Politics majors lack the statistical skills necessary for regression analysis. When selecting a research method, the faculty member should select undergraduates with the necessary skills or ability to learn them. When partnered with Cadet Simon, I analyzed our dataset after she built it. This partnership worked fine, but her lack of exposure to the analysis step made it harder for her to help develop conclusions and to write up the results.

With the data analyzed, the research team can make conclusions and write up the results. Assigning undergraduates clear tasks with due dates can mitigate miscommunication and missed deadlines. Undergraduate writing will typically require revision to meet scholarly standards, but an initial draft is a powerful launching point for the faculty lead. Undergraduates are also well equipped to proofread and ensure citations are correct.

After concluding and writing, researchers present to solicit feedback and inform. Though this narrative presents the research process linearly, researchers will often present at intermediate points as they hone their working papers. Undergraduate researchers gain valuable oral communication

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skills, especially if they can present at low-stakes faculty or undergraduate workshops before academic conferences.33 34

Faculty can and should incorporate undergraduates throughout the research process. Faculty should consider developing a project and research question before integrating undergraduates, as they benefit little from the development stage. Incorporating them after the project is designed also helps ensure the student’s skills match the project’s anticipated requirements. After incorporating them, undergraduates should remain engaged in the process. Dropping them out of one step, such as analysis, limits their ability to participate in subsequent steps to the project’s hindrance. Though faculty can integrate undergraduates in research unilaterally, support from the faculty member’s academic department and the broader institution create a supportive environment necessary for research partnerships to thrive.

Department-level

Department-level emphasis strengthens research by building community. Bender et al. describe the department community as “an essential part of any undergraduate research program.”35 These communities motivate progress and help resolve issues.36 Often these communities include regular research workshops where Cadets present work to other Cadets working on issues.

A key ingredient to building community is deliberate effort.37 Departments interested in stimulating undergraduate research should do three things. First, encourage faculty to recruit cadets interested in research, but then carefully screen them to match students with faculty teams.38 Cast a wide net to find students with the interests and skills necessary to contribute. If recruiting several undergraduates for several research projects, departments should consider a double-blind application process where faculty and cadets each select their preferred partners similar to the popular dating application “Tinder.” Matches could then interview each other before entering into a research team.

Then, after selecting students, department cohorts should begin the academic year with ice-breaker events focused on research. Bender et al. suggest activities like “library-database search and identification of congressional representatives responsible for science policy” that are rewarded with research-related prizes.39 These prizes should motivate participation and further research capabilities.

39 Bender, Blockus, and Webster, “Creating Community in Your Undergraduate Research Program: It Isn’t Spontaneous!” 9.
Third, the research cohort should take special field trips and participate in research focused seminars. The cohort might also enroll in a course focused on entering research. While the cohort’s primary focus might be research, they should also include more practical subjects like how to set up a poster or prepare for an academic presentation. At the University of Wisconsin-Madison, *Entering Research* is the first course for undergraduate researchers. It focuses on research skills, communication, and professional development. Another option is the “journal club.” These reading and criticism groups help budding scholars learn research methods, and how to critique journal articles, which builds their own knowledge of research methods and hones critical thinking skills while building community. Finally, departments should not ignore the power of t-shirts and other swag in attracting and retaining student interest.

![Hierarchical structure of Cornell’s Laboratory for Rational Decision Making](image)

Figure 2. Hierarchical structure of Cornell’s Laboratory for Rational Decision Making

Departments interested in research can also establish multilevel organizations to increase efficiency. Cornell’s Laboratory for Rational Decision Making employs graduate and undergraduate researchers in a hierarchy led by one faculty member (Figure 2). That lab integrates efforts through a well-documented manual that standardizes efforts. The University of Kentucky found similar success pairing first- and second-year students with graduate students to teach research skills. Both parties benefited from the arrangement, and co-authored published works. Though West Point lacks graduate students, rotating military faculty could fill this role under a department’s PhD-holding director of research. West Point’s *Modern War Institute*’s research initiatives roughly follow this model, with Dr. Lionel Beehner leading research efforts there. Beyond the efforts of interested

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40 Bender, Blockus, and Webster, 9–11.
41 Balster et al., “Entering Research.”
43 Bender, Blockus, and Webster, “Creating Community in Your Undergraduate Research Program: It Isn’t Spontaneous!,” 9.
44 Weldon and Reyna, “How to Successfully Incorporate Undergraduate Researchers Into a Complex Research Program at a Large Institution,” 193.
Faculty and departments, institution wide efforts demonstrate emphasis and commitment to undergraduate research.

**Academy level**

Leading schools establish undergraduate research centers to promote and synchronize efforts. These centers are common at both research universities and prestigious liberal arts colleges. They often match undergraduates with research teams and apportion research funds. The Massachusetts Institute of Technology (MIT) led this effort when it founded the Undergraduate Research Opportunities Program in 1969 with the goal of allowing any student to start research. MIT employs 2.5 full-time equivalent personnel to manage projects for 4,400 undergraduates.47 The University of California Berkeley’s Undergraduate Research Apprentice Program pairs undergraduates with research teams to produce original research. Berkeley provides $500 per student integrated into research and supports approved student-initiated projects for up to $2,000.48 These amounts are similar to West Points Faculty Research Funds, though those cannot be spent on cadets. These funds defray the costs associated with expanding teams and can provide resources for faculty without research grants.

A possible model for West Point is Harvard University. Harvard pairs undergraduate research resources with their fellowship application programs in their Office of Undergraduate Research and Fellowships.49 This center matches undergraduates with researchers, provides access to research funding, and assists high-performing student applications for prestigious scholarships. As research is increasingly required for these fellowships, a pairing between these efforts makes sense. West Point could house such a center in the Department of Social Sciences which already leads the Academy’s scholarship efforts by assigning 1-2 staff.

**Conclusion**

Research begins with curiosity, but requires time and resources. Individual faculty should absolutely integrate cadets into their research efforts. Cadet assistance will help faculty meet requirements for academic promotion, while building their own skills and establishing powerful mentor relationships. However, both cadets and faculty benefit from department- and institutional-level emphasis on undergraduate research. Departments should establish undergraduate research cohorts. Centers should consider hierarchical models where a director of research guides rotating faculty members who mentor participating undergraduates. These cohorts build community and reduce individual time commitments associated with training undergraduates. Finally, West Point should consider an Academy-wide undergraduate research center that promotes undergraduate research by matching cadets with researchers and awards funds to competitive teams.

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48 “Sponsored Projects for Undergraduate Research.”


