

Teamwork within a Senior Capstone Course: Implementation and Assessment

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ABSTRACT

Although senior capstone courses and projects globally are growing in popularity for undergraduate students in political science, with the potential to integrate prior curriculum and assess student learning, students generally undertake this milestone as individuals. In contrast, we present a teamwork-based capstone course wherein key student submissions—including the final project—are created in teams. Having conducted this course for several years, we describe in this article how we incorporated teamwork and demonstrate how students evaluate teamwork in in-person, online, and hybrid course formats.


Senior capstones are increasingly part of political science curricula around the world. Today, political science majors in the United States are more likely to complete a capstone project than students in almost all other majors (National Survey of Student Engagement 2010). As Hummer (2014) demonstrated, this is understandable because capstone projects can create a “rite-of-passage” feeling among students as well as provide curriculum integration and assessment of student learning (Ishiyama, Breuning, and Lopez 2006).


Following a college-wide decision that requires all programs to provide a senior capstone at our medium-sized, metropolitan, research-intensive, private non-profit university in Turkey, and dissatisfied with the amount of teamwork in our curriculum, the political science faculty decided to put teamwork at the heart of the new course. Our examination of capstone courses (and related scholarship) did not reveal much student group work in political science senior capstones. The course that we designed to fit our needs was considerably different from most political science


capstones, in which students are expected to have a MA-thesis-like experience (Hummer 2014). Our senior capstone course, which is required for all international relations and political science majors, has been offered every semester since being added to the curriculum in Fall 2017; currently, about 80 students take the course every academic year. Having taught the course every semester now for several years, we describe in this article how we incorporated teamwork into our senior capstone as well as the relevant data.

We concur with Burcu’s (2020, 141) assessment that “group work not only contributes to students’ personal development and their learning experience, but it also prepares them for their future professional life by allowing them to play to their strengths and better their weaknesses, developing professional accountability, as well as tolerance and respect for each other.” Through teamwork, students consider team composition, free-riding issues, communication, negotiation, conflict, work division and delivery, and varying motivation. Although teamwork skills are important for students’ careers and successful research projects (McDermott and Hatemi 2010), they are not being developed in young adults (Oakley et al. 2004).

We contribute primarily in two ways. First, we demonstrate how senior capstones can be used to achieve skill-based learning outcomes such as developing teamwork skills, which—as far as we know—has not received much attention in political science, and we present data on which dimensions of teamwork appear to be

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working better for students. Second, our data enable us to examine whether and how teamwork might have been affected in three different educational settings: in-person, online, and hybrid instruction (Bayer, Turper, and Woods 2022), where hybrid refers to in-person instruction for approximately the first half of the course and online for the second half. In this way, we contribute to discussions about bringing teamwork into research projects (Brunsbach, Kattenbach, and Weber 2021; Warner 2016).

TEAMS IN SENIOR CAPSTONES

We use the definition of “teamwork” as “a process involving two or more students working toward common goals, through interdependent behavior with individual accountability” (Riebe, Girardi, and Whitsed 2016, 620). Students tend to have a negative view toward teamwork (Hansen 2006). We try to overcome this resistance by situating teamwork at the heart of the senior

certainly was possible that the transition to online education could negatively affect students’ recognition of interdependence and accountability, resulting in more free-riding behavior. Moreover, reflection on theory, research, and data might be impacted negatively, resulting in a decline in group learning, dynamics, and outcomes (Haslam, Madsen, and Nielsen 2021; Savin-Baden 2014). Given that students in the social sciences generally perform worse online compared to in person than those in other disciplines (Xu and Jagggers 2014), this is a particular concern for political science faculty. In addition, even during the pandemic, students reportedly preferred in-person interactions to virtual alternatives due to netiquette issues (Haslam, Madsen, and Nielsen 2021). Students in the past also reported fewer positive interactions in online courses (Glazier and Harris 2020). Moreover, a lack of face-to-face (i.e., in-class) meetings also has been found to result in poorer group dynamics (Wolfe 2012), which suggests that a

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capstone design and emphasizing it throughout the semester (Brunsbach, Kattenbach, and Weber 2021; Chapman and van Auken 2001). Time is allocated during class to discuss teamwork, most (including graded) assignments must be completed as a team, individual assignments are connected to the group project, self- and peer evaluations are completed, and workshops are conducted. These techniques are part of an overall strategy to improve students’ skills in “team processes, consensus-finding and coordinated team behavior” (Brunsbach, Kattenbach, and Weber 2021, 455), with a specific focus on listening and speaking, time management, problem solving, and collaboration within teams. Because our course design also requires students to reflect on and report team dynamics in the initial and final stages of teamwork collaboration, our expectation is that they will assess and develop their teamwork skills over the course of the semester.

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situation in which students have only online meetings would cause teamwork dynamics to suffer.

Conversely, other findings suggest that as undergraduate students become more technologically savvy, they may prefer online education (Zalite and Zvirbule 2020). In addition, during the pandemic lockdown period, when online education became the norm, student motivation and general positivity toward online learning increased in classes in which there was more (digital) teamwork (Haslam, Madsen, and Nielsen 2021).

Overall, previous research leads to conflicting expectations of extensive to no differences in teamwork outcomes among the various settings. Our over-time data relating to different teaching modalities help in the evaluation of these expectations; however, we first describe our senior capstone design, with a particular focus on the teamwork component.

COURSE DESIGN DESCRIPTION

Figure 1 is an overview of the design used in the most recent fully face-to-face, hybrid, and fully online semesters (see the online

Figure 1
Overview of Design

Week 1 →	Week 2 →	Week 3–4 →	Week 5 →	Week 6–7 →	Week 9 →	Week 10 →	Week 13 →	Week 14 →	Week 16 →
Discuss and emphasize teamwork from first session onwards; display past capstone projects' posters	3–5 Member Groups finalized	Outside meeting facilitation; Group meetings in-class/breakout rooms; Meeting with instructors	Group Proposal due (15% grade); first peer/self/group evaluation	Feedback to students on group project	Individual Assignment connected to Project (15% grade)	Poster Preparation Trainings	Individual Assignment connected to Project (15% grade)	Poster Session (5% grade)	Group Final Project submitted (25% grade); second peer/self/group evaluation

Note: 75% of the total grade is based on project items shown above; remaining 25% is from active participation in class sessions

appendix for modifications from previous semesters). In initial class sessions, we make it a point to discuss class structure, show past group posters, and describe how this course differs from previous courses, emphasizing participation and teamwork as well as explaining how teams will be formed. The primary output for the course is a final group project, presented in a poster session open to other faculty and students. In addition to being a focal point in the syllabus, each course is team taught. This is unusual for our students and having all faculty members present in the first session creates an impact. This team-guided approach also prevents the criticism that senior capstones overly reflect faculty members' research interests (Hummer 2014).

To create student teams, students are asked at the end of the first week to confidentially indicate a few classmates with whom they want to work and/or those with whom they cannot work. These preferences are considered when assigning students to avoid teams composed of only friends or "enemies." This strategy also helps students to become more accustomed to working with those outside of their immediate friend groups. Students learn their team assignments during week 2. In addition to setting time aside for team members to meet during class sessions (or online via "breakout rooms"), we provide students with one another's email address and ask them to establish other ways of remaining in contact electronically. From the beginning, teams are encouraged to meet regularly to work on their group project (with components of it due throughout the semester) as well as to discuss and debate each week's material in preparation for class.

In week 5, the first major component of the group project—a short proposal describing a case and justifying its relevance and importance to political science—is submitted by each team (see the online appendix for titles). Teams also are asked to indicate their proposed division of labor and the intended format for the final project; previous projects have included traditional papers, magazines, and video documentaries. The project must be modeled on material used in class and related to academic political science literature. To help students prepare their proposal, part of one class session is devoted to examining their topic ideas and brainstorming how they might be scaled down to create a case similar to those used in class and the same topic scaled up to discuss a particular literature, as required by subsequent milestone papers. Each team member receives the same grade, and written feedback

and level of teamwork as well as to consider how these indicators might be improved.

Graded coursework includes two individual papers. In week 9, students submit their first paper, in which they are expected to gather relevant data and analytically present it; each team member focuses on a specific aspect of their case. Depending on the project, this may include exploring the strategy of a given actor, organizing the primary (statistical) data, or examining a dimension of a given issue. For their second individual paper in week 13, students engage with different types of theoretical and policy discussions, the actors involved, and possible solutions. In both assignments, team members should coordinate with one another to avoid focusing on the same dimension.

The poster session occurs on the last weekday before final exams begin. Each team presents its poster to attendees, answers questions, and accepts feedback. For online courses, presentations are recorded in advance for the convenience of students and attendees, with feedback provided during the actual session. To prepare for the task, students receive additional training on the design and technical aspects of poster and video presentations during the semester through collaboration with the university's Office of Learning and Teaching.

The final project is due during final exams week. It is emphasized in advance that projects must be a comprehensive and cohesive whole, presenting the issue(s) to be considered and responsive to any concerns raised during the poster session. After the team project is submitted, students submit a second confidential self- and peer review. This evaluation alerts us not only to issues that may have arisen during the semester—including potential free riding—but also helps students consider how team dynamics and the level of teamwork might change and how an individual's specific indicator-related actions impact team dynamics over time.

EVALUATING TEAMS

To evaluate team dynamics and progress in teamwork skills, we relied on multiple dimensions of self- and peer evaluations. To assess how teamwork dynamics varied across different teaching modalities, we analyzed self- and peer-evaluation forms completed at the end of the Fall 2019, Spring 2020, and Fall 2020 semesters representing in-person, hybrid, and online teaching methods, respectively (anonymized data are available on

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on the proposed group topic is provided to students. Teams are asked to make an appointment with the faculty member or teaching assistant to discuss the proposed topic in more depth. Students also complete the first confidential self- and peer review, which provides feedback about group dynamics during the initial stages of teamwork collaboration. These reviews are expected to help students increase awareness of the current team dynamics

(request). As part of the self- and peer evaluations, students were to confidentially evaluate each team member's level of contribution to their group project using a five-point scale that ranged from "no or poor contribution" to "outstanding contribution"; "acceptable contribution" was presented as a middle-response category. As shown in table 1, our analysis of end-of-semester self- and peer evaluations reveals that the average reported

Table 1
Overview of Self- and Peer Evaluations

Teaching Mode	Fall 2019	Spring 2020	Fall 2020
	Face to Face	Hybrid	Online
Number of Evaluations			
Submitted	147	297	96
Outstanding Contribution	59 (40%)	170 (60%)	65 (68%)
Less Than Acceptable Contribution	10 (6.8%)	18 (6.1%)	1 (1.1%)
Evaluation Score (Mean, Standard Deviation)			
	4.08 (0.95)	4.29 (1.00)	4.58 (0.68)

contribution was lowest for the Fall 2019 semester ($M = 4.09$, $SD = 0.95$), followed by the Spring 2020 semester ($M = 4.29$, $SD = 1.00$; $t(443) = 2.017$, $p = 0.044$). For the semester in which we used online teaching methods throughout and students collaborated remotely with their teammates on their senior capstone projects, students' self- and peer evaluations, on average, were much more favorable compared to both the Fall 2019 and Spring 2020 semesters ($M = 4.58$, $SD = 0.68$; $t(241) = 4.453$, $p = 0.000$; $t(391) = 2.674$, $p = 0.008$). These results are especially interesting because our additional questions, which explored how students were affected by the pandemic during the Fall 2020 semester, suggested that—when compared to a regular semester—80% and 72% of our students found it more difficult to concentrate on their studies and to communicate with their peers, respectively. This corroborates the findings of Haslam, Madsen, and Nielsen (2021) who reported that in a digital environment, students prefer teamwork.

On self- and peer-evaluation forms, we asked students to report how often team members were engaging in certain courses of action (e.g., completing assigned tasks by deadline, treating team members respectfully, and offering alternative solutions that built on ideas of others), with response categories of “rarely,” “often,” and “always.” A comparison of teams with and without members whose contributions were evaluated below “acceptable” reveals that unfavorable peer evaluations also were associated with less frequent reporting of desirable courses of

action taken by team members during teamwork collaboration. On a scale between 0 and 2—0 means expected courses of action for well-functioning teams were rarely observed and 2 means team members always exhibited these behaviors—the mean score for the desirable courses-of-action index was 1.49 for teams in which at least one member's contribution was evaluated unfavorably ($M = 1.49$, $SD = 0.63$). This is significantly lower than the mean score for teams in which all members' contributions met peer expectations ($M = 1.83$, $SD = 0.41$; $t(108) = 3.4335$, $p = 0.001$). Further inspection of table 2, which presents the number of evaluations for each course of action, demonstrates that the problems most frequently encountered by teams were related to the establishment and maintenance of a constructive learning environment wherein members build their contributions on ideas from one another and each member feels treated respectfully. Team members not completing assigned tasks by deadline was not identified as a problem area because only one student was evaluated as rarely meeting deadlines for assigned tasks. The quality of work produced by team members similarly was seldom problematized.

To trace the progress of teamwork skills over the course of project collaboration, we compared average team scores for the desirable courses-of-action index from the first and second rounds of self- and peer evaluations. Our analysis of 18 teams highlights a significant improvement in index scores for 10 of these teams, which indicates that the propensity of team members to engage in teamwork facilitating actions increased during the course of project collaboration. We also found that in two other project teams, remarkably high index scores were maintained, despite the growing challenges of managing the team project. However, for the remaining six project teams, index scores decreased significantly from the first to the second round of evaluations.

Closer examination of the self- and peer evaluations of those six teams with deteriorating index scores reveals that they faced challenging issues (e.g., team members becoming partly or completely unavailable due to health or family emergencies, and experiencing anxiety problems due to emerging pandemic conditions). These exogenous shocks to collaboration dynamics reportedly disturbed initial time-management planning and division of labor among team members. Nevertheless, inspection of the final grades that these teams earned indicates that all six teams successfully completed a final project that met or exceeded

Table 2
Evaluations of Teamwork Collaboration

	Teams With All Members Contributing at an Acceptable Level			Teams Without All Members Contributing at an Acceptable Level		
	Rarely	Often	Always	Rarely	Often	Always
Group members offered alternative solutions that built on the ideas of others	2	15	42	5	21	25
Group members engaged other team members in ways that facilitated their contributions	0	15	44	7	21	23
Group members completed assigned tasks by deadline	1	2	56	0	10	41
Group members' work was thorough, comprehensive, and advanced the project	0	12	46	1	24	26
Group members supported a constructive team climate by treating team members respectfully	0	1	58	5	18	27
Index Score (Mean, Standard Deviation)	1.83 (0.41)			1.49 (0.63)		

faculty expectations. This indicates that these team members actively continued to problem solve as they worked toward common goals. Student comments that shed light on teamwork collaboration experiences suggest that team members experiencing unexpected disruptions in dynamics nevertheless were able to develop teamwork skills that were not captured by our measures. These skills include empowering the talents of others;

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taking initiative; and utilizing emotional intelligence, flexibility, and resilience to sustain collaboration (Gilbert, Tozer, and Westoby 2017). For example, one member of a Spring 2020 team became mostly unavailable due to health issues around the same time that another member faced travel restrictions. These factors, which were mostly outside an individual team member's control, severely restricted their ability to not only meet with other team members but also to contribute to the project at each stage. However, the self- and peer-evaluation accounts suggest that, despite these challenges, all members completed assigned tasks on time and contributed to a final project that achieved one of the highest grades of that semester. This happened because certain team members took the initiative and followed a flexible task-allocation strategy that matched the skill sets and time availability of team members.

CONCLUSION

Individual senior capstone projects understandably occupy a central role in undergraduate political science programs. Institutions including the College of Wooster and Princeton University regularly are recognized by *US News and World Report* (2021) for their student capstone experiences. However, for departments like ours, in which the undergraduate student intake each year is 50 or more (in addition to faculty's work with graduate students and other responsibilities), an individualized capstone project for all undergraduate students would not be possible for practical purposes. As Bain (2004, 128) reported, many faculty rely on "permanent small, heterogeneous groups within a larger class." Our approach is similar in spirit in that we rely on team-based senior capstone projects. Our experience with emphasizing teamwork in the senior capstone has been positive. It has allowed us to provide a capstone project within a team setting to students who otherwise would not have had the opportunity while simultaneously allowing students to develop their teamwork soft skills. Most political science departments claim to teach soft skills; the senior capstone experience can provide another avenue for their development. Our data show that team projects work well in different formats. Given the increasing shift to online education, our data showing that teamwork can work well in an online setting are particularly noteworthy.

This option understandably creates unique challenges that might be off-putting—such as establishing teams or assessing

group work—that are not present in individual senior capstone projects. However, as described in this article, these problems are not insurmountable. Our approach to team-based projects has evolved over the semesters and remains a work in progress. As McKeachie (1999, 159) noted, one of the most effective methods of teaching is "students teaching other students." As we strive toward this goal, a team-based senior capstone project

provides opportunities that are not available in individual projects.

ACKNOWLEDGMENTS

The authors thank Ayşen Üstübcü, Güneş Ertan, Paul Gronke, and the reviewers.

DATA AVAILABILITY STATEMENT

Research documentation and data that support the findings of this study are openly available at the *PS: Political Science & Politics* Harvard Dataverse at <https://doi.org/10.7910/DVN/2LOEKN>.

SUPPLEMENTARY MATERIALS

To view supplementary material for this article, please visit <http://doi.org/10.1017/S1049096522000476>.

CONFLICTS OF INTEREST

The authors declare that there are no ethical issues or conflicts of interest in this research. ■

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