Interdisciplinary Project-Based Learning Prepares Students for College and Career Readiness

1. Description of the Model

At IPoly, faculty members facilitate learning, guiding students along the path of inquiry. Teacher teams consist of one teacher from each core subject per grade, for a total of four teachers per grade level team. The 9th and 10th grade teams also include Language Other Than English and Physical Education teachers. Each team designs and implements semester-long interdisciplinary projects that address content standards in their subject areas. Teacher- and student-generated essential questions are the foundation for the projects, guiding students' decisions and progress throughout each project. Component contracts, rubrics, and related feedback forms are distributed to students and collected periodically throughout the semester to assess student work; student teams debrief with teachers as the semester unfolds, as well as at the completion of the projects. Throughout the school year, faculty, staff, and administration demonstrate a continued investment in project progress, encouraging students to take greater responsibility for their own learning. At the close of each semester, student learning is ultimately demonstrated through culminating trade shows, classroom presentations, school-wide performances, and multimedia productions.

All students complete two semester-long projects each year, incorporating student groups (typically 4 students per group). The final IPoly project students complete in 12th grade is called Senior Capstone. Students fulfill this project's requirements individually to reflect their personal career goals. Nevertheless, the same project-based learning principles that direct group projects are present in Senior Capstone: sustained inquiry, student voice and choice, critique and reflection, public product, and deep learning.

Instead of only experiencing individual or competitive learning, IPoly students thrive in a collaborative learning environment, just as they will in the workplace and throughout their postgraduate endeavors. Students work together to complete their projects, engaging in the process of inquiry through continual investigation, research, and presentation. Students remain in the same team throughout the semester, promoting a sense of belonging and responsibility to others. They learn by developing and refining critical questions, exploring global issues and events from different perspectives, and building interdisciplinary bridges among subjects. Each project requires students to read, research, and analyze information to solve authentic, current real-world problems, a literacy-rich process inherent in CCSS. The components of the IPoly model benefit all student populations and subgroups, including struggling learners, special education, and culturally diverse learners. Heterogeneous grouping allows students to make academic gains equal to or better than those generated by other models. All students at IPoly have access to a broad range of learning opportunities in the classroom through the use of multiple instructional strategies and assessments, using technology when appropriate. As of the 2018-19 school year, all ELA classes make use of laptop carts dedicated to each grade level; other departments share iPad carts and four additional laptop carts. In addition, students have continual access to classroom desktop stations and a computer lab with design and multimedia applications to support their project and classwork.

In *The Global Achievement Gap*, Wagner (2010) addresses the need for educational institutions to teach "survival skills" necessary for students to thrive in today's global economy. These skills, essential in project-based learning, include problem-solving, critical thinking, data analysis, adaptability to setbacks, initiative, curiosity, consistent collaboration, leadership, and clear communication. The IPoly model was adopted to help students develop these skills and address the educational needs—academic and social—of the 21st century student. As a result, during the 2016-17 school year, the school decided to enhance its ESLRS to the 6 Competencies (or 6 Cs) of IPoly: Think Critically, Communicate Effectively, Work Collaboratively,

Embrace Culture, Demonstrate Character, Develop Creativity. All stakeholders engaged in a process of redefining IPoly's mission, vision, and school goals, resulting in the adoption of a new vision and mission. Since then, IPoly identifies the 6 Cs as our core values and has created six components per competency related to personal, social, and academic growth and development, which drive all curricular and organizational decisions. All of IPoly's projects are fundamentally bound to the 6 Cs, though phrases appearing in each project contract have been updated to reflect consistency across the grade levels (i.e. "Students will demonstrate character by taking responsibility," "Students are expected to think critically," "Students must communicate effectively with their entire group," and so on). These principles foster student interest and encourage daily participation, evidenced by the 98% average daily attendance rate for the past three years, no expulsions, and only four suspensions.

2. Implementation and Monitoring of Model Practice

Responding to the dynamic nature of projects requires the effort and dedication of a diligent professional learning community. Thus, IPoly's rigorous curriculum and instructional efficacy are supported by the regularity of faculty engagement and professional discourse. IPoly teachers are empowered to fine-tune learning and instructional strategies, reinforcing the significance of the project-based learning model upon which IPoly was built. Grade level teams meet at least twice each week for one block (86 minutes), allowing for common planning, timely curricular decisions, discussions of student learning and support needs, adoption of new classroom management skills, and program adjustments. Furthermore, weekly staff meetings are scheduled to allow for consistent faculty and administrative exchanges, as well as the incorporation of the school community in decisions regarding ongoing improvement and student achievement. Professional development over the summer allows the team of faculty and staff to revisit curriculum, analyze student achievement, look critically at their practices, and refine project components accordingly. For example, in the summer preceding the 2018-19 school year, all faculty and staff completed a Project-Based Learning Workshop administered by the Buck Institute of Education, an industry leader in providing project-based learning resources and support. Overall, the time allotted for faculty collaboration fosters innovative teaching methods, encourages colleagues to share best practices, and inspires teachers to adopt current, research-based practices in their classrooms.

Throughout the semester, projects are broken down into components coordinated by the teacher teams and ultimately united into a coherent whole, culminating in an end-of-the-semester presentation. To facilitate parent and community engagement in students' work and accompanying presentations, projects are introduced by means of a project packet or contract, which require parent signatures and acknowledgement of the expectations. Students regularly meet beyond class time—during lunch, after school, on the weekends—to complete work in their project groups, stressing the support and attention of students' families if projects are to be completed meaningfully. IPoly's model has also increased parent and community involvement authentically, considering they often provide expertise and knowledge on projects by serving as mentors and coaches in their fields and as audience members for final performances. Parent and community involvement play an integral role in IPoly's model program.

As the semester progress checks and project components are completed, further communication regarding academic progress is coordinated through school-wide use of Google Classroom, a Constant Contact email outreach program, and two online portals, Naviance and Aeries. Through Google Classroom, teachers provide meaningful, easily accessible feedback for students and may invite parents to view all assignments and corresponding grading. Naviance allows stakeholders to access college and career opportunities, such as applying for scholarships, and encourages research into postsecondary interests; Aeries allows students

and parents to immediately access up-to-date grade reporting. In addition, students are encouraged to self-monitor their academic progress on a daily basis. Grading of projects and related components has become more transparent, as grade level teams have implemented the following procedures to facilitate student self-assessment and reflection in direct relation to projects:

- Senior teachers meet with seniors periodically to have students explain their own progress about their senior project.
- Seniors deliver monthly presentations before the class to explain their progression on research, mentorships, interviews, and project-related activities they have conducted.
- The junior teacher team completes student assessments at the end of each semester project, utilizing a panel interview of each project group (5-6 students per group) and verbal peer assessment.
- Junior students compose a self-assessment narrative explaining their reasons for deserving a particular grade. Their writing is then compared to and corroborated by the assessments of the rest of their project group.
- The sophomore teacher team also conducts student self-assessments at the conclusion of each semester project through a panel interview format.
- Sophomore teachers periodically schedule one-on-one interviews with students struggling academically.
- The freshman teacher team also conducts student self-assessments at the conclusion of each semester project through a panel interview format.
- Freshman teachers accept student written self-assessments at the end of each semester, which are considered in the final assessment of the related project.

These procedures provide teachers and students feedback regarding the quality of student work, the challenges faced, the successes encountered, and team dynamics. Students are guided through self-reflection by pondering questions such as, "What have I learned?" "How can I apply this to other situations?" and "How did I contribute to this process?" During the aforementioned assessments, students also have the opportunity to voice misunderstandings or confusion with any aspect of the projects. This allows teachers to not only determine whether required goals were met, but also to evaluate whether students reached the objectives and content standards that were being assessed and adjust instruction as needed. Assessment is integral as it "promote[s] student learning and inform[s] instruction" (Condliffe et al., 2017, p. 10). Additionally, students receive feedback on components or overall projects from parents, students, mentors, and teachers of other grade levels, consisting of recommendations and commendations delivered during Q & A sessions or written on feedback forms collected by teachers.

In this way, all stakeholders are involved in the development and on-going assessment of the project-based learning through data analysis, student and parent surveys, staff meetings, professional learning communities, and district support. These types of interaction and monitoring contribute to the positive, supportive culture that characterizes the IPoly learning environment. This model aligns clearly with our district's Local Control Accountability Plan, emphasizing student success and achievement in a positive school climate, providing all students with access to courses necessary for graduation, and maximizing student engagement in learning, staff engagement in teaching, and parent engagement in supporting their children under a shared vision of learning.

3. Results and Outcomes of the Model Practice

Student success is evidenced by our CAASPP scores, our high graduation rate, and college acceptance rates. During the 2017-18 CAASPP administration, we had 96% of students scoring "standard met" or "standard exceeded" in ELA overall achievement and maintained above state standard in overall Math proficiency. On both the SAT and ACT tests, IPoly students score above district and state averages. As of the 2017-18 school year, IPoly students have steadily increased their college and career readiness.

During the 2016-17 school year, IPoly hired a Dean of College Admissions to support students in their transition from high school to college. The Dean facilitates project-based learning by pairing the rigors of college level coursework with the 21st century skills being taught and practiced at IPoly to further prepare students for college and career options. Through his endeavors, concurrent college enrollment at surroundings colleges and Dual Enrollment on IPoly's campus have expanded exponentially. Through these programs, students begin their college coursework while still in high school. The Dean also supports our student population by providing access to UC/CSU transferable courses at no or minimal cost to families who could otherwise not afford them. Currently, 87% of eligible juniors and seniors have participated, augmenting IPoly students' exposure to college and career opportunities. During the 2016 Fall semester, 110 total juniors and seniors participated in concurrent enrollment, a number which more than doubled during the 2017 Fall semester (242 students). Beginning in 2017, IPoly's partnership with Mount San Antonio College has doubled our concurrent college enrollment program. This is due to the fact that the school processes all the organizational pieces of qualification and guides each student to complete enrollment, in addition to holding classes directly on IPoly's campus, mitigating any transportation issues. According to anecdotal evidence and testimonies from the college professors who lead these courses, IPoly students deliver presentations and tackle group work without hesitation. Many professors have attested to IPoly students' abilities to think critically about complex issues and express reasoned analysis at a higher level than their college peers. Therefore, IPoly prepares students to illustrate their public speaking skills and collaborative experiences in a variety of professional and academic circumstances. Ultimately, 99% of IPoly graduates pursue higher education with an acceptance rate to four-year universities exceeding 76%.

With a consistent graduation rate above 98%, IPoly students have steadily increased their college and career ready status in English, moving from 61% to 93% being College and Career Ready. Our data shows that when a student enters IPoly, if they engage in the rigorous curriculum provided, they will gain the skills and knowledge necessary to perform well in their postgraduate endeavors and conduct themselves professionally in the working world. The expectation that students conduct themselves professionally while in their project groups is likewise communicated. Teachers form project groups strategically, often utilizing previous grade level teachers' knowledge and anecdotal data to assure that all students are supported and comfortable working with their peers, particularly students belonging to our English Learner and Special Education subgroups. However, the same expectations are maintained for specialized student groups to achieve success: project completion, graduation with a strong grasp of the 6 Cs, and various opportunities for postsecondary college and career exploration.

Where student success is concerned, the IPoly model generates both definite, measurable results and more subtly measured qualitative results. The former are found in the student's finalized projects and presentations, high graduation rates, and state proficiency or higher for standardized tests and subtests. The latter are found in our graduates' development of drive, purpose, creativity, empathy, and resilience. These traits are activated through experiential learning, not by poring through the pages of a textbook

(Markham, 2011). Moreover, by means of IPoly's project-based learning, students cultivate maturity and understand nuances of teamwork through trial and error. Over the course of a student's academic career at IPoly, he or she will work with dozens of peers who may or may not share their idiosyncrasies and learning approaches. Students are empowered to utilize management skills as they apply for leadership roles within each grade level project. During this self-directed learning, skills are acquired and honed as students plan, organize, and direct their resources and learning from one grade level to the next. Not to be understated is the ease with which IPoly students approach and engage unfamiliar audiences. At IPoly, certain characteristics have become standard practice for all: open-mindedness, respect for self and others, the ability to think critically and work collaboratively, and the pursuit of knowledge and self-discovery. Thus, the IPoly model merges these 21st century skills and College and Career Readiness Standards, contributing to students' overall motivation and academic achievement.

Further qualitative and quantitative evidence supports several of the successful student outcomes for our diverse student population as it relates to project-based learning. As a school, we continue to monitor best practices and self-reflect upon strategies to best prepare our students for college and career. This evidence is as follows:

- ❖ In 2016, *Newsweek* placed IPoly in America's Top High Schools in the nation.

- ❖ In 2017 and 2018, *U.S. News & World Report* awarded IPoly with Best High Schools in California.

- ❖ The average daily attendance rate for the past three years has been at 98%.

- ❖ For the past three years, there have been no expulsions and only four suspensions.

- ❖ Students' A-G completion rate for 2018 was over 93%.

- ❖ In core content areas, our "D" and "F" grades continue to decline with percentages as follows: Science, 6.5%; English, 5.6%; Math, 8.1%; Social Sciences, 6.5%.

- ❖ Upon graduation, 87.86% of current, eligible 11th and 12th grade students will have completed at least 1 college course.

- ❖ 99% of IPoly students matriculate to postsecondary institutions.

- ❖ Increased acceptance rates at local private universities from 2017 to 2018 as follows: Chapman, 0% to 61.5%; USC, 7.6% to 18%. Acceptance rates from top three UC campuses applied to as follows: Irvine, 10% to 51.2%; Los Angeles, 8% to 25%; Berkeley, 0% to 19.2%.

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