The Reflective Engineering Advisor: A Paradigm for Learning-Centered Student Advising

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Mr. Francisco Castillo has a M.S. in Counseling with an emphasis in Student Development in Higher Education from California State University, Long Beach. For the past nine years at both two and four-year institutions, he has served students interested in Science, Technology, Engineering, and Mathematics (STEM). As the Assistant Director of Advising for the Engineering Student Success Center at San José State University, he supports students with personal, academic and professional growth.

Ms. Eva Schiorring

Eva Schiorring is Senior Researcher for the Research and Planning Group for California Community Colleges. Since joining the RP Group in 2000, she has served as project director for ten major projects, including a statewide, multi-year research project to increase transfer in professional majors, including engineering and nursing, and another on how community colleges can increase diversity at multiple levels of their institutions. She recently led an evaluation team assessing the impact of project designed to improve advising in engineering at San Jose State University’s College of Engineering. Ms. Schiorring has a strong interest in improving the STEM pipeline and has extensive experience with research and evaluation design and with the development, testing and application of measurement instruments. She works continuously to engage practitioners in conversations about their research priorities and about how they can use evidence to support improvements. The author of a wide range of research articles, Eva holds a Master’s Degree in Public Policy from Harvard University.
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Abstract

Improving student success and graduating more engineers often requires us to reach a set of students who are the least prepared for college-level work, have the most complex educational experiences and lives, and the greatest need for academic intervention and support. One method of improved intervention may be to change the dominant paradigm for academic advising, moving it from a little-rewarded service activity to a reflective, well-regarded aspect of teaching. We describe a curriculum for an engineering faculty advisor professional development program, designed to help faculty become more effective in their efforts to prepare students for professional practice as technically competent, socially responsible and globally informed citizen-engineers. In addition to a deep understanding of all of the policies, practices, programs, resources and personnel available for student support on their campus, the advisor also needs some knowledge of student development theory, and can become more effective with an appreciation of students and their challenges and contexts. The exemplar faculty advisor must also reflect on their practice, and deeply understand all aspects of the baccalaureate curriculum. Advising must help the student look beyond a semester-to-semester roadmap of isolated coursework and should help the student plan his or her trajectory through the program in terms of academic work, career planning, workplace engagement, and community involvement, all of which are critical steps on the way to becoming an engineer. In this paper, the theoretical frameworks for academic advising are presented; the concept of an advising syllabus is described, and results from our own professional development program for engineering faculty advisors are discussed.

The Need for Improved Advising

There were nearly 500,000 undergraduate engineering students in baccalaureate programs in the US in Fall 2011. It is expected that fewer than half of them will have earned engineering degrees by 2016. This low graduation rate is costly to institutions and has serious implications for our ability to compete in the global economy. Furthermore, matriculation as well as graduation rates are lower for the country’s growing minority population, particularly African American and Latino students. To compound such issues, public universities, often the post-secondary destination for students who are the first in their family to attend college, are undergoing drastic budget cuts, tuition increases, and loss of staff and full-time faculty. This reduction in services is happening in universities with students who are the least prepared for college-level work, who have the most complex educational experiences and lives, and the greatest need for academic intervention and support. If the country is to increase capacity for producing engineers and technical workers, yet the pool of students to draw from needs more support than engineering students who are well-prepared for college-level work, and the percentage of full-time faculty is decreasing, how are we to meet the need? One method may be to change the dominant paradigm for faculty academic advising, moving it from a little-rewarded service activity to a reflective, well-regarded aspect of teaching.
Over the last few decades, engineering educators have tackled many challenges of retaining students in engineering programs through a variety of efforts such as improving the effectiveness of classroom teaching and increasing awareness of diversity in learning styles. There has been some discussion of freshman advising for the purpose of helping engineering students select the right engineering major, and/or to determine whether to stay in the major. There have been discussions of improved advising processes and knowledge-based systems to automate the advising process and make the degree requirements easier for students to follow. However, there have only been a few publications on the role of faculty academic advising in the success and retention of engineering students. On the other hand, the mentoring relationship between engineering faculty and student, as exemplified in the research advisor/advisee relationship, has been addressed in numerous publications both within and outside engineering. Here we focus on the more limited interaction engagement known as academic advising.

We are developing, for our own institution, a curriculum for engineering faculty advisor professional development, which begins with the assumption that the purpose of advising is to help students transform themselves into entry-level engineers. In addition to a deep understanding of all of the policies, practices, programs, resources and personnel available for student support on their campus, the advisor also needs some knowledge of student development theory, and will be more effective with an appreciation of our students and their challenges and contexts, which are often far outside the advisor’s own experience. The exemplar faculty advisor must also reflect on their practice, and deeply understand all aspects of the baccalaureate curriculum and how it is to be utilized to prepare a student for professional practice as a technically competent, socially responsible and globally informed citizen. Thus the advisor has a role in the professional socialization of the engineering student and must help the student look beyond a semester-to-semester roadmap of isolated coursework; the advising engagement should help the student plan his or her trajectory through the program in terms of academic work, career planning, workplace engagement, and community involvement, all of which are critical steps on the way to becoming an engineer.

In this paper, the theoretical frameworks for academic advising will be briefly reviewed; the concept of an advising syllabus will be presented, and results from our own professional development program for engineering faculty advisors will be discussed.

**Theoretical Framework: Paradigms for Academic Advising**

Academic advising is a practice with roots in many different traditions. Since no one set of college degrees or training is generally required to serve as a professional academic advisor, and faculty advisors have training only in their curricular areas, academic advising is defined in various ways by different institutions, different degree programs, and different practitioners. One might almost say that every advisor has his or her own definition of its parameters and theoretical framework. However, there is a great deal of relevant literature in the field, much of it summed very nicely in an essay by Hagen and Jordan published in 2008.

The modern theoretical framework for academic advising arose from a 1972 paper by Crookston, in which the author juxtaposes prescriptive advising against developmental advising. Prescriptive advising utilizes a doctor-patient model, a transactional arrangement...
through which the student can expect a “cure” (the degree) by simply taking the prescribed “medicine” (the curriculum). A failure of the cure is considered the fault of the “patient” (student), as the “doctor” (advisor) is considered infallible and in possession of all the expert knowledge. The prescriptive style is attractive because it does not require any training of the advisor beyond rules, policies and curricular roadmaps. The “doctor” needs to know his meds, but doesn’t need any “bedside manner.” This style of advising may be effective for some students, particularly those who are highly self-motivated, come prepared to advising sessions, and do not have any personal, emotional, financial, academic or other barriers to a smooth academic path. However, even for the most well-prepared students, mentoring opportunities will be lost by using only the prescriptive style in all situations. The developmental advising style contrasts with prescriptive advising in that it is interactive and focuses on the growth and development needs of the student, and is based on student development theory.

The 70’s saw much significant research into student development theory, giving rise to the concept that higher education personnel should support students as they developed into adults. Student development theories include psychosocial-identity formation theories such as the work of Chickering\(^{18}\), cognitive development theories, including the work of Kohlberg\(^{19}\), and type theories, such as Meyers-Briggs\(^{20}\) and Kolb’s work on learning styles\(^{21}\).

Crookston applied the idea of student development to advising in the following way

…developmental counseling or advising is concerned not only with a specific personal or vocational decision but also with facilitating the student's rational processes, environmental and interpersonal interactions, behavioral awareness, and problem-solving, decision-making, and evaluation skills. Not only are these advising functions but … they are essentially teaching functions as well.

O’Banion\(^{22}\) described five dimensions to academic advising as (1) exploration of life goals, (2) exploration of vocational goals (3) program choice (4) course choice and (5) scheduling courses. Chickering\(^{19}\) emphasized a more holistic engagement with students in their personal growth. In any case the relationship between student and advisor is considered a critical part of advising effectiveness and vital to college student success and retention, a view shared by both Kuh\(^{23}\) and Tinto\(^{24}\).

In recent decades, additional advising paradigms have been presented that move the field beyond developmental advising into areas more amenable to faculty practice. Lowenstein\(^{25}\) articulated the idea that prescriptive and developmental advising are not opposing frameworks, but rather embody different interaction styles. He suggests that all advising is developmental in its content, but that prescriptive advising is a one-way interaction style, which should be contrasted with an interactive engagement style. To Lowenstein, the purpose of academic advising should be academic growth of the learner, as opposed to the personal growth of the student, which is not specific to the mission of the university. He suggests that broadly trained (i.e. liberal arts) faculty are the most appropriate for academic advising. Further, he links a learning-centered paradigm for advising to the learning-centered paradigm of teaching:

the excellent teacher keeps students motivated by keeping the logic behind the course in the forefront and thereby helping students understand why the facts matter… an excellent
advisor does the same for the student’s entire curriculum that the excellent teacher does for one course…whereas the individual course is the domain of the professor, the overall curriculum is most often the domain of the academic advisor, and the excellent advisor coaches the student through the process of learning the curriculum.

Hemwall and Trachte\textsuperscript{26} elaborate on this concept and present a new perspective on faculty advising focused on “advising as teaching”. Hemwall\textsuperscript{27} suggests three steps towards “realizing the potential of faculty advising,” namely: (1) changing the concept and language of advising by making the link to learning and teaching; (2) changing the support of faculty advisors with large scale strategies, such as emphasizing it in hiring and retention and promotion, and (3) changing the support for faculty with small-scale strategies such as honoring their work, providing released time, and providing professional development.

To further tie the advising role to that of the teaching role of faculty, consider these remarks from Terenzini\textsuperscript{28} about how students learn:

The research from cognitive science, psychology, sociology, anthropology, and higher education tells us a good deal about student learning. Among an impressive array of findings, we know that learning: 1) requires an encounter with a challenge to the learner’s current knowledge and belief structures; 2) requires active learner engagement with those challenges; 3) occurs best in a supportive environment that promotes reflection, consolidation, and internalization; 4) is relational and social, occurring best in the company of others and providing both enjoyable interaction and personal support; 5) is maximized in settings where both the learning activity and the learning outcome(s) have meaning for the learner, and 6) is neither time nor location bound…these characteristics of student learning … are common across a wide array of educational outcomes and an equally broad array of different student experiences, both inside and outside the classroom.

All of these learning environments can be met in an advising relationship if it is structured to be a learning experience – which usually requires an interaction rather than a one-way transmission of information. In 2006 the National Academic Advising Association (NACADA) presented the Concept of Academic Advising\textsuperscript{29} as comprising curriculum, pedagogy and learning outcomes. This Concept includes a basis in developmental advising as well as advising as teaching, and is part of an overall effort in the advising profession to view and practice advising as part of the academic mission of the institution. In particular, the Concept states:

Academic advising is integral to fulfilling the teaching and learning mission of higher education. Through academic advising, students learn to become members of their higher education community, to think critically about their roles and responsibilities as students, and to prepare to be educated citizens of a democratic society and a global community. Academic advising engages students beyond their own world views, while acknowledging their individual characteristics, values, and motivations as they enter, move through, and exit the institution. Regardless of the diversity of our institutions, our students, our advisors, and our organizational structures, academic advising has three components: curriculum (what advising deals with), pedagogy (how advising does what it does), and student learning outcomes (the result of academic advising).
Some institutions have taken this concept, and in combination with their institutional mission statement, arrived at a definition of advising which may be appropriate for professional staff or disciplinary faculty, or both, on their particular campus. In fact such a definition is usually the first entry in an advising syllabus which may be provided to both advisors and students.

**Advising as Teaching: the Advising Syllabus**

Appleby explores the idea that if advising is teaching, then there must be a syllabus associated with it\(^3^0\). Many examples of advising syllabi from different institutions are now available on the NACADA Clearinghouse website\(^3^1\), although none are for engineering programs. Such syllabi are meant to be distributed to both students and advisors. Like a course syllabus, it is a sort of contract and spells out the roles and responsibilities of both advisor and student. It is meant to be updated each semester and contains practical information such as resources, deadlines, and relevant campus offices. It also should contain learning objectives or outcomes. Such a syllabus can then provide a basis for assessment of an advising program or individual advisors.

If the ideas of Lowenstein\(^2^4\) are applied to the syllabus, i.e. that the advisor’s job is to inculcate the student with the entire curriculum, both formal and informal, then the advising syllabus would be expected to differ for liberal arts degrees and professional degrees. In the case of engineering degrees, we propose that the purpose of major advising is to assist the student in their journey from high school graduate to competent entry-level technical professional. The exemplar advisor engages in dialogue with the student, providing a perspective of the academic program as a process of socialization into the profession, rather than a series of disconnected course requirements.

In other words, the advisor’s job is to help the students understand what it means to be an engineer. Rather than relegating the professional issues to the capstone project or the internship, it is the goal of the advisor to facilitate the student’s learning about what is the role of an engineer in society, why is the entire curriculum necessary to produce the kind of engineer the institution is known for, what is the purpose of the general education components of the degree program, and what co-curricular activities are most useful, to name a few aspects. This orientation towards advising will help the advisor to explain to students, for example, the necessity of the pre-requisite stream and why it is important to do well in math and science. If the mission of the College is to produce technical professionals who are broadly educated, socially responsible, globally informed and technically competent, then we have to assume that it is our curriculum, all of the curriculum, that will make this transformation happen. Thus the effective advisor, the one who aspires to be an exemplar, believes in the power of this curriculum to produce such a professional. It is also, conversely, the role of the advisor to comprehend when a wishful student has not demonstrated the wherewithal to undergo this transformation and kindly help them find resources to choose another major. Lowenstein\(^2^4\) describes this approach as “learning-centered advising,” in which:

> Every time the student needs to make a choice (of majors, of tracks within a major, of individual courses), the advisor has a teachable moment, and the excellent advisor seeks to help the student decide, in the context of his or her
emerging understanding, the direction and goals as well as the logic of his or her education as a whole.

For example the advisor would help students using some of the following questions at different points along their academic career:

- Identifying whether engineering is in fact their vocational goal
- Helping them to understand what an engineer does
- Helping them to understand what it takes to complete an engineering curriculum
- Guiding students in a positive way to other advisors if it becomes clear that engineering is not a practical goal
- Discussing different careers in engineering, and whether a graduate degree is necessary
- Distinguishing between a PhD research career, and a BS or MS practitioner
- Asking about and offering information about internships and research opportunities
- Offering assistance with electives and emphases in the major
- Providing positive perspective about general education requirements
- Referring students to other campus resources such as financial aid, counseling services, general advising centers and the disability resource center

A syllabus may also provide a simple way to make curricular milestones clear to students, such as completing general education requirements, or lower division math and science. In some institutions, different advisors may serve freshman, sophomores, entering transfers, probation students, or for those still in lower division courses. A syllabus may indicate when a student “graduates” to a new advisor.

An advising syllabus should begin with the mission statement of advising for the institution, which should align with the institution’s mission statement. For example, “the mission of the College of Engineering advising program is to assist the student on his or her journey towards becoming a broadly educated, technically competent, socially responsible and globally informed professional prepared for an entry-level engineering position.” Next the advising syllabus should include the roles and responsibilities of the advisor and the advisee (see further on in this article for an example of the former).

Finally, the syllabus needs to have stated learning outcomes – for both the student and the advisor. Hemwall and Trachte provide ten principles of advising which can be used to create the learning outcomes for the advising process. For example, their Principle 1 “Academic advising should facilitate student learning about the mission of the college”. This could indicate that the mission should be clearly stated on the syllabus; this is in direct accord with the requirements of engineering accreditation, which require that the program’s mission and student outcomes be posted publicly and shared with students. Principle 4 states that “academic advisors should view students as actively constructing their understanding of the mission of the institution, including concepts like becoming responsible citizens, liberally educated persons, and critical thinkers.” Again this is direct accord with ABET student outcomes. If this is a required outcome of the advising process, it then requires faculty advisors to consider the general education, study abroad, and other experiences as important parts of the student experience.
Principle 9 states that “Academic advising must be a dialogue in which the academic advisor guides the learner” suggests that the faculty advisor engage in a dialogic relationship rather than one-way prescriptive style of engagement. Thus the advisor gets to know the student and becomes more knowledgeable about the student body. The exemplar advisor is a reflective advisor and learns from the process, just as the exemplar teacher is reflective.

The advising frameworks, paradigms and advising syllabus concept have been used to develop a professional development curriculum for faculty advisors in our College of Engineering. The primary assumption of this program is that advising is a form of teaching, and that faculty can learn to use effective advising techniques through their involvement in a community of advising. The program and initial results are described below.

The Designated Faculty Advisor Development Program at San José State University

For the past three years, the College of Engineering at San José State University has been engaged in a significant effort to improve faculty advising because we believe it will improve retention and graduation rates and because it will ultimately result in better educated, more satisfied students with enhanced career potential. Beginning in AY 2009-10, the College brought together faculty advisors from the eight departments to discuss best practices, establish new academic policies, and to begin to draw all the departments towards convergence in advising methods. It soon became clear that to reach convergence on new college-wide advising practices, a program with faculty support and recognition was needed. Consequently in AY 2011-12, the College launched the Designated Faculty Advisors (DFA) program, for which the Dean and the Provost split the funding needed to provide course released time for 16 faculty advisors. In addition to expanding their advising repertoire, the presence of engineering faculty from every department lent legitimacy to the advising activity, positioned advising as an important faculty contribution, and encouraged the untenured faculty that advising would be considered a significant aspect of their faculty portfolio.

San José State University is part of the 23-campus California State University system and the 7th largest in terms of undergraduate population (the largest in terms of graduate students). The College of Engineering serves approximately 3000 undergraduates and 1500 masters’ students and awards almost 350 bachelors’ degrees and 600 engineering masters’ degrees annually (average of 2008-2012 data). Fall 2011 data show our engineering undergraduate population is about 14% women; 41% Asian-American/Pacific Islander, 18% Hispanic, 23% White, 3.3% Black, 0.2% Native American, 6% international and 7% other or decline to state. About 40% of our undergraduates come in as junior transfers, primarily from community colleges. About 35% of our incoming freshmen place into calculus, another 40% into pre-calculus, and the rest are in developmental math or college algebra. Helping students complete the degree remains a high priority of the University and a challenging endeavor for many. Improving the effectiveness of faculty-student interactions in the advising domain (and by extension in the classroom domain) is a priority for the University and for the College. In addition to faculty advisors, the Engineering Student Success Center staff includes the executive director, 5 peer mentors, and 2.5 FTE academic advisors who focus on general education and probation advising. Engineering students are required to see a faculty advisor in their major every semester; a registration hold will be removed only after they have seen a major advisor.
DFA Program elements

A description of the Roles and Responsibilities of advisors (See Figure 1) are provided to the faculty before their selection for this program. As part of DFA responsibilities, faculty are required to attend an Orientation Training in August (see Figure 2). DFAs are encouraged to use a variety of on-line tools to improve advising including the Advisor Blog, an on-line discussion group site which provides a confidential location for faculty to ask difficult advising questions and respond to each other, (see example conversation in Figure 3). In addition to answering many questions, the Advisor Blog serves to build the advising community and to encourage advisors to ask questions. The DFAs met once per month throughout the academic year for lunch and a variety of presentations. Each meeting started with an opportunity for faculty to share a recent positive experience with advising. Many of the sessions were used for discussing policies, procedures and practices, while other sessions included presentations such as “Asian-American students, the model minority?” “Cultural issues for Latino/a students,” “Financial Aid 101,” “Understanding FERPA” and a student presentation on MyRoadmap, an in-house designed iPhone app.

| SJSU College of Engineering Designated Faculty Advisor Program |
| Attributes, Roles and Expectations |
| Attributes of Designated Faculty Advisors |
| Approachable, patient, and respectful of students |
| Compassionate and caring, fair and consistent, flexible but capable of toughness |
| Cares about the academic program and its integrity |
| Recognizes the relationship of advising to accreditation |
| Effective communicator |
| Willing to grow |
| Roles of Designated Faculty Advisors |
| Advises undergraduate students |
| Helps each student develop and follow a roadmap appropriate for him or her |
| Responds to student emails in a timely manner |
| Completes and updates all department forms and files on each student |
| Reviews transfer student course record within a few weeks of matriculation |
| Responsible (along with Department Chair) for Transfer Orientation Advising sessions |
| Consults frequently with other program faculty advisors and chair |
| Interacts and consults with professional advising staff in AARS and ESSC |
| Uses technology tools for advising as appropriate |
| Reviews, monitors and maintains up-to-date departmental student communications |
| May be responsible for all undergraduate student petitions |
| Identify curricular bottlenecks and report back to department undergrad committees |
| Expectations of Designated Faculty Advisors |
| Works towards student success |
| Knows when and where to refer students for further help and counseling |
| Contributes to development of best advising practices for the College |
| Interested in learning about student development and the challenges faced by students |
| Continuously updates knowledge about Dept, College and Univ policies and practices |

Figure 1. Attributes, Roles, and Expectations of Designated Faculty Advisors in Engineering

The DFA August orientation agenda is shown in Figure 2 and the components of the training were assessed by an online survey immediately after the event. A large majority of participants
(88%-94%) found nine of the ten training components to be “useful” or “extremely useful.” The toolkit training component (PeopleSoft screens and other electronic tools available on campus) was rated by the largest number of participants as “extremely useful”. It was also noted that the use of advising tools is very uneven across the tools and across the group of advisors. There is thus an opportunity to increase both awareness and use of these tools. Participants also selected among six proposed themes for additional training, and identified very clearly as their top choice “informal discussions about effective Major Advising sessions,” which can be interpreted as an expression of the desire for community among advisors, reflected in later feedback about the program as well. Overall the training session was very well received; one respondent commented: “Great meeting – well organized, easy to understand. I learned a lot – thank you.” The DFA Orientation was the first time many of the College advisors had met as a group, or met with the Engineering Student Success Center staff, and also the first time many of them had met professional staff from campus student support units such as counseling services, the disability resource center, and the University advising center.

<table>
<thead>
<tr>
<th>Time</th>
<th>Agenda</th>
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<tbody>
<tr>
<td>9am</td>
<td>Moving Towards Excellence: A Look at the Data</td>
</tr>
<tr>
<td>930am</td>
<td>Who Are Our Students? Student Development/Student Involvement 101</td>
</tr>
<tr>
<td>1030am</td>
<td>Knowing When to Make Referrals to Counseling and Disability Resource Center</td>
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<tr>
<td>1130am</td>
<td>Advisor Toolkits: Peoplesoft/Custom CoE Advisor Toolkits/Case Studies</td>
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<tr>
<td>12 pm</td>
<td>Lunch Discussion</td>
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<td>1 pm</td>
<td>How Do We Know We’re Getting Better? Assessing our Work</td>
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<tr>
<td>2 pm</td>
<td>Policy and Process: Probation/DQ/Reinstatement/Change of Major Processes</td>
</tr>
<tr>
<td>3 pm</td>
<td>Working Together for Student Success: Coordination of Campus Advising Resources</td>
</tr>
<tr>
<td>4 pm</td>
<td>Meeting Graduation Requirements: Requirements, Substitutions, Mechanics of Transfer</td>
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Figure 2. Designated Faculty Advisor Orientation Agenda

**Assessment of the First Year DFA Program**

Much of the first-year program assessment examined whether faculty did become more effective advisors. The assumption was that by providing faculty with knowledge and skills, and by building an advisor community, “better” advising would result. These indirect effects were measured in terms of faculty perception of personal change and student perception of their advising experience. Extensive formative and summative assessment was conducted throughout the first year of the program, with the following questions in mind:

1. How satisfied are students and the DFAs with the major advising?
2. What do students like and not like about the major advising?
What suggestions do students and the DFAs have for improvements?

What do students say is the impact of the major advising on their behavior and choices?

What do the DFAs say is the impact of the DFA on their advising?

Three instruments were used: An online student survey administered during Fall 2011 and Spring 2012, a yearlong online faculty Reflections Log, and an online faculty survey at the end of the academic year.

Faculty Perspectives on the DFA Program

Formative assessment and perspective was gathered from the Major Advisors throughout the year by inviting them to submit reflections on their advising experience to a Reflection Log. A total of seventeen log entries were submitted. A faculty survey was administered online at the end of the academic year, sent to all the DFAs as well as their department chairs. Fifteen individuals completed the survey, including 11 faculty advisors, 2 department chairs, and 2 chairs who also serve as DFAs.

In their Fall Reflection Log entries, several DFAs comment that they believe the quality of advising is increasing and point to the value of belonging to a community of advisors. “It is great for the faculty because we are building a community of excellence in advising, and you don’t feel you have to walk a hard path alone,” one Major Advisor notes. Another indicated, “I think the [DFA] meetings are very important for the following reasons: 1) We get to know each other. This makes interacting to solve student problems smoother. 2) Everyone is on the same page (at least in theory) and is informed of the rules and challenges. 3) It raises the profile of advising to a higher level.”

Several of their comments expressed satisfaction about having dispensed advice that made a difference. “There were many sessions where I felt my input was very helpful for charging an
Since the start of the DFA program, “efficient and personalized education plan,” one advisor noted. Advisors noted changes in students as well, “I feel students have accepted our intent to have a quality program built on fundamentals. I feel that it is much less likely that at-risk students will be overlooked,” while another observed “The students are better prepared, and less likely to get into problematic situations. The path to success is clearer, and the failure modes better identified.” Another notes that “more students are coming in to ask about program/career...Also, I'm observing students stopping by to just share information about how their job search or internship search is going.”

Table II shows some of the responses from the end of year faculty survey. More than half the respondents indicate change in the content of their advising session conversations. One advisor noted, “Now the questions change depending on what stage the student is at. New questions [come up]: What do you want to do with your EE degree? What is your favorite class? How are things going?”

In the spring 2012 survey, several DFAs again emphasized how much they enjoyed being part of an advising community. Several also expressed pride and satisfaction in the quality of services they provide to students. One DFA summed it up by stating: “This has been a very good idea for our students.” Faculty found the DFA meetings useful, noting “There is much better flow of information regarding the various advising issues.” They observed the changes in student expectations for the advising sessions; one advisor pointed out that “Students are viewing advising as a chance to discuss long range planning and career and internship opportunities. While getting the hold removed is important it's not always the sole reason for advising.”

<table>
<thead>
<tr>
<th>Since the start of the DFA program …</th>
<th>Has the effectiveness of your advising increased?</th>
<th>Has the accuracy of your advising improved?</th>
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<tr>
<td>Yes</td>
<td>40%</td>
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<th>Have you expanded the referrals you propose?</th>
<th>Have you changed the content of your advising sessions?</th>
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<td>No</td>
<td>36%</td>
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<td>Not sure</td>
<td>7%</td>
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<table>
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<th>Are you getting to know students better?</th>
<th>Do you feel part of an advising community?</th>
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<tbody>
<tr>
<td>Yes</td>
<td>43%</td>
</tr>
<tr>
<td>No</td>
<td>43%</td>
</tr>
<tr>
<td>Not sure</td>
<td>14%</td>
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Table I. Selected faculty responses to year-End Survey

**Student Perspectives on Advising**

Assessment of student perception of advising effectiveness was accomplished by means of an on-line survey conducted with students after they met with their major advisor. The survey
was designed to generate information that would address the following evaluative questions: How satisfied are students with the major advising? What do they like and not like about the major advising? What suggestions do they have for improvements?

A draft survey design was distributed for review and comment at the first professional development session for the Major Advisors. Input received from the group was incorporated into a revised version which was tested with a group of students. After final revisions, the survey was introduced and first disseminated about 5 weeks into the Fall 2011 semester. Each week every department provided lists of the email addresses for students who had seen their Major Advisor that week, and the Dean’s Office staff emailed the survey link to students as soon as possible following their major advising session. The email that arrived in each student’s mailbox was introduced by a letter from the Associate Dean, encouraging students to participate and ensuring them that their responses were anonymous. Incentives in the form of $20 gift cards were used to increase the response rate. A similar protocol was followed for the Spring 2012 survey, after it was revised and some new questions designed and tested. Some departments were more diligent than others in providing lists of appointments, so not every student who saw an advisor received a survey.

A total of 434 students responded to the Fall 2011 survey and a total of 590 in the Spring 2012, giving a 27% response rate in Fall, and a 36% rate in Spring. The respondents represent 14% of the Fall undergraduate enrolled student population, and 21% of the Spring. The survey respondents matched other college data in terms of the gender distribution, the ratio of native versus transfer students, and the self-reported GPA distributions.

The fall 2011 survey asked students to identify their main reasons for coming to the major advising session. Twelve reasons were provided and students were instructed to choose as many as they felt applied. Eighty-four percent of students indicated they had come in to have their major advising hold removed. The second most common response (57%) was to "[get] help with course selection for next semester." In reviewing the responses from the fall 2011 survey, we decided it would be useful to know how many students came in only to have their hold removed. Accordingly, the first response option for the major advising session was rephrased in the spring 2012 survey to read: "I came in only to have my major advising hold removed." While the change in language makes a direct comparison impossible, it is nevertheless interesting to see that in spring 2012 only 47% of respondents indicated that they came in only to have the major advising hold removed.

Table III shows the change in advising session topics between the Fall 2011 and Spring 2012 semesters. In every case, a wider diversity of topics was discussed in a useful way during Spring 12 than in the previous Fall, many of them pertaining to improving success or long-range planning. The percentage of students reporting that they talked with advisors about strategies for improving academic success increased from 26% in the Fall to 41% in the Spring; this may be attributable to the various advising workshops attended by the DFAs where they learned about campus resources as well as observed role models for listening to students more carefully. In addition, more advisors became familiar with the academic probation reports and thus were able to identify which students were at-risk and bring up these issues during advising.
There were several other interesting differences between the Fall 2011 and Spring 2012 survey responses. There was a significant increase in the percentage of students who reported coming to the DFA session to get help with course selection to degree completion (up from 25% to 39%). Other increases were found in the percentage of students who indicated they came in to get advice on internships and graduate programs. Further, the percentage of students reporting they came in for advice on how to do better in engineering courses increased by 6 percentage points between Fall 2011 and Spring 2012.

<table>
<thead>
<tr>
<th>Advising session topics:</th>
<th>% discussion was “very” or “somewhat useful”</th>
<th>% topic was NOT discussed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internships and career opportunities</td>
<td>Fall 11</td>
<td>Spring 12</td>
</tr>
<tr>
<td>Graduate programs in engineering</td>
<td>21%</td>
<td>36%</td>
</tr>
<tr>
<td>Strategies for academic improvement</td>
<td>18%</td>
<td>30%</td>
</tr>
<tr>
<td>Resources for academic success</td>
<td>26%</td>
<td>41%</td>
</tr>
<tr>
<td>Scholarships</td>
<td>30%</td>
<td>40%</td>
</tr>
<tr>
<td>Balancing school and work</td>
<td>14%</td>
<td>25%</td>
</tr>
</tbody>
</table>

Table II. Student Responses on Advising Topics Discussed

While some of the increased discussion of “career planning” topics, such as thinking about graduate school (increased from 18% to 30%), could be the result of increased Spring semester student focus on summer internships and graduation, the faculty responses provided earlier do indicate a sense of qualitative shift in the content of their conversations. However, when the data is disaggregated by class level, we saw that a higher percentage of seniors (65%) than juniors (56%) indicated that internships and career planning was “not discussed.” It could be that seniors, feeling that they were well on their way out of the programs, attended advising sessions for the sole purpose of getting their advising holds lifted and did not see the need for additional discussion about future plans. Overall student satisfaction with their advising experience increased from Fall to Spring, and the percent that were dissatisfied dropped from 15% in Fall to 5% in Spring.

In open-ended questions during the Fall survey asking students to indicate what they liked best about the advising, 37% of respondents pointed to the advice they received. “[I received advice on] how to balance the rest of my time at SJSU,” one student commented. “Good advice from professors who know the best route to graduate on time,” another student noted. For 32% of respondents, the best aspect of the advising was the person-to-person interaction and/or the advice. “My advisor actually advised me and cared about my class selection,” one student wrote.

An open-ended question from the Fall survey about what students liked the least about their advising session identified opportunities for improvement. One student noted: “[I did not like] the rushed feeling I got due to the high volume of students trying to get in with the advisor.” Some students did not like their personal interaction with the advisor. “I wasn’t comfortable asking questions. I felt he was judging me because I’m behind and because of my grades,” one student noted. Many students pointed out that they would like more time with
Specific suggestions made by students to improve major advising included: “Have advisors provide information on scholarships and internships, even without students necessarily asking.” It should be noted that one of the most common suggestions students made related to the expansion of the advising agenda to include conversations about internships. This suggestion was made in both Fall 2011 and Spring 2012. In the response category of improving advisors’ approach, knowledge or preparation (7% of responses in fall 2011 and 10% in spring 2012) the most common suggestion made by students in both fall 2011 and in spring 2012 was for advisors to “ask more questions and get to know students better.”

Survey questions about online advising highlighted the importance of face-to-face meetings. Fall and Spring student data shows that a significant majority favor meeting an advisor in person. For example, students responded that “I was able to talk to a human and not a computer,” and “[I like] personal attention and ability to ask specific questions and receive specific answers immediately.” Although many suggestions were made for online improvements, they all pertained to processes and paperwork rather than communication.

**Overall Evaluation of the DFA First Year**

Four main themes were reflected in responses from both faculty and students. From Fall to Spring, there was higher satisfaction with, and efficacy of, advising sessions. Both students and faculty indicated that a broader and more useful range of topics were discussed, which moved the experience of advising from “registration hold removal” to “academic success and career planning.”

The student surveys and faculty logs also highlight another theme: the value many students place on the opportunity to connect in-person with a Major Advisor. The human interaction and sense that somebody is interested and cares about their progress is extremely important to a large group of students. There was an emergence of personal and community transformations as a result of advising sessions. More students indicated they were likely to make a change in either course selection, future career, or study and work habits after their advising session. Faculty indicated a growing sense of community and openness to bringing up topics outside of a narrow script, as well as that they became more likely to identify and pay attention to at-risk students, as a result of the DFA program.

Students’ responses to “most liked” and “least liked” open-ended questions mirrored each other around the theme of caring, knowing and respect. Students liked advising the most when they experienced an advisor caring about them and knowing them, for example as illustrated by having already reviewed their records. Students liked advising the least when they felt disrespected, for example for weak academic performance, or when the advisor was late, or when they had an appointment and had to wait for long times. Advisors showing caring and respect were highly valued, as indicated in these quotes, “My advisor actually advised me and cared about my class selection,” and “It gives me confidence that [the advisor says] I’m headed in the right direction.”
Preliminary results from the Designated Faculty Advisor Program show that a faculty
development advising curriculum with content pertaining to the policies, practices, theory and
mechanics of student advising can result in changing the conversation between advisors and
students. Over the year, advising conversations had less emphasis on discussion
of individual courses (prescriptive advising) and more emphasis on the students’ progress as a
professional (developmental advising). Our students indicate a desire for additional movement
in this direction, which will require an additional adjustment in how advising is positioned and
how advisors are trained, as well as how faculty, both advisors and non-advisors, have
conversations about the whole curriculum and overall learning outcomes pertaining to the
preparation of professionals.

Conclusions and Future Work

The initial elements of a professional development curriculum for faculty advising were created,
and positive changes in faculty-student interactions were measured. When the curriculum is
complete, the following elements will have been created and assessed:

- An advising syllabus with explicit expectations for staff and faculty advisors, peer
  mentors, and students as well as an advising calendar, distributed to freshman and
  new transfer students
- Professional development materials (readings and example presentations) for faculty
  advisors
- An advisor learning community for advising staff and faculty, both online and in
  meeting spaces, which encourages a reflective practice
- Continuously improving, effective and convenient electronic tools to replace rote
  advising tasks, including student-centered mobile apps
- A set of incentives, rewards and recognition for outstanding advising
- A changed advising culture which promotes, demonstrates, and has concretized the
  idea that advising is teaching
- Student incentives and culture encouraging early advising to avoid appointment
  bottlenecks just before registration
- Assessment and evaluation methods for both the advising program and individual
  advisors

The development of a professional syllabus for engineering faculty advisors will continue over
the next several years using lessons learned from the assessment of the first-year program.
Future work is expected to build towards the development of faculty development materials to
provide practice in dialogue. Such an effort would have as its goal to provide faculty with
interaction skills which will be useful in every aspect of faculty life, including student advising,
teaching, research and campus service.

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