



The Role(s) of Stakeholders in the Implementation of Advising Technology

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Introduction

The Advising Success Network (ASN) is a dynamic network of five organizations partnering to engage institutions in holistic advising redesign to advance success for Black, Latinx, Indigenous, Asian, and Pacific Islander students and students from low-income backgrounds.

The network develops services and resources to guide institutions in implementing evidence-based advising practices to advance a more equitable student experience to achieve the vision of a higher education landscape that has eliminated race and income as predictors of student success.¹ The ASN is coordinated by [NASPA - Student Affairs Administrators in Higher Education](#) and includes [Achieving the Dream](#), the [American Association of State Colleges and Universities](#), [EDUCAUSE](#), [NACADA: The Global Community for Academic Advising](#), and the [National Resource Center for the First-Year Experience and Students in Transition](#). In the face of growing concerns around equity and retention in the US higher education system, the promise of advising technologies to support high-quality advising and proactively serve all students has caused such technologies to quickly grow in popularity and importance.² In addition to becoming ubiquitous, advising technologies are often adopted by institutions as a foundation for broader advising and student services reforms, making it especially necessary for the field to understand how they are implemented.³ This report aims to shed light on processes that contribute to institutions' successful implementation of advising technologies and focuses on identifying and describing the roles and responsibilities of key institutional stakeholders—a topic that has been under-researched to date.

This project was not designed to examine the relationship between advising technologies and equity. While advising technologies hold both promise and risks in promoting equitable outcomes for students, such analysis is beyond the scope of this project. Findings in the discussion section pertain to the absence of an explicit equity-focused frame in our sample for selecting and implementing advising technologies for student success.

This project was completed in collaboration with Ithaka S+R. Ithaka S+R provides research and strategic guidance to help the academic and cultural communities serve the public good and navigate economic, demographic, and technological change. Our work also aims to broaden access to higher education by reducing costs and improving student outcomes. Ithaka S+R is part of ITHAKA, a not-for-profit with a mission to improve access to knowledge and education for people around the world.





SELECTION AND IMPLEMENTATION CASE STUDY PROJECT

Based on a series of 12 case studies we conducted in 2020 and 2021, we present a collection of “personas” embodied by key stakeholders and the constituencies they represented during the successful implementation of an advising technology. We organize our research and findings around an implementation framework, described in more detail below, that is grounded in the educational and advising technology implementation literature. For this report, we define advising technology as the digital systems and platforms that allow for the collection, integration, and use of student data (i.e., degree audits, early alerts, and predictive analytics). Stakeholders are the individuals who play a key and active part in shaping or influencing strategy and decision-making at any stage of selection and implementation. We consider the implementation of an advising technology to be successful if those involved in its deployment at the given institution indicate that the deployment is aligned with the expectations and intentions set forth during planning—that is, if the stakeholders believe that it was deployed as intended, irrespective of its use or impact following the implementation.

We draw our findings from advising technology implementation cases in the United States that were self-reported to be successful by the stakeholders at each participating institution; the definition of success is idiosyncratic to the institutions under study, and there was no common metric or benchmark among them. This report focuses on the role of stakeholders in facilitating a successful implementation process and therefore does not consider or assess the broader success of the technology in improving student outcomes. The analyses herein offer a guide for those looking to begin or revisit the implementation of an advising technology within their institution. Specifically, this guide is intended to assist advising and student success professionals when deciding how to situate stakeholders within their particular context to be successful during implementation.

DEFINING SUCCESS

When we asked participants for markers of success they had witnessed since the initial implementation of the advising technology, they described a range of indicators spanning the system’s usefulness for users to student outcomes. Some described seeing students interact with the technology, particularly in response to campaigns made possible by the technology, as definite high points. Others pointed to (1) high rates of faculty participation in midterm check-ins facilitated by the system, and (2) the use of communication tools, such as kudos (a positive flag raised within the Starfish system to make students aware of places they were succeeding), as perceived wins. Institutions were also able to reference increases in student retention as positive signs following the technology’s rollout.

Background and Literature Review

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Importance of Advising Technologies

Implementation

The Role of Stakeholders

Importance of Advising Technologies

An institution's advising structure supports its students in navigating their path to program completion. Inequitable institutional practices, policies, and cultures are failing Black, Latinx, and Indigenous students and students from low-income backgrounds, among other historically excluded groups, creating additional obstacles on their path to acquiring their degree that are not experienced by other students.⁵ Therefore, effective advising structures are integral components in the equitable offering of degree options and pathways for students. Holistic advising in particular—advising that intentionally considers all aspects of the student journey and supports both academic and nonacademic student development—can intervene effectively to support equitable student success.

Holistic advising is a resource-intensive yet beneficial practice that is grounded in the understanding that high-quality advising is sustained, strategic, integrated, proactive, and personalized (often abbreviated as SSIPP). It stands in contrast to the more transactional, inconsistent, or registration-focused approach that often characterizes the college advising experience.⁶ Though evidence suggests that a holistic approach to advising designed using the SSIPP principles is the best way to guide students to degree completion, institutions with limited resources, where students often need the most support, may find it difficult to enact this comprehensive approach.⁷ Advising technologies have the potential to support holistic advising by increasing institutional capacity to proactively, strategically, and efficiently offer students the assistance they need when they need it. The key is allowing stakeholders to systematically communicate, collect, and analyze data and to centralize student information, all while remaining student-oriented.

Advising technologies have several features, functions, and affordances that can support student success through communication and data-driven intervention, and numerous institutions have seen positive effects on student outcomes after integrating advising technologies into their infrastructure.⁸ Integrating advising technology into an institution's infrastructure may have the added benefit of maximizing limited personnel resources.⁹ Note, however, that some advising technologies also involve risks, including the risk of overreach or privacy breach or of replicating historic biases and inequities in new technology systems.¹⁰ Nonetheless, higher education institutions have increasingly made substantial investments in the integration of technology systems into their advising processes. For example, Tyton Partners recently found that 71% of institutions were using advising technology to support at least one of the following major areas: course planning and degree audit, analytics and reporting, or identification of at-risk students.¹¹ In 2017, student success technologies were the most developed of the digital capabilities analyzed by EDUCAUSE across institutions.¹² Certain advising technologies had become mainstream (e.g., degree auditing), while others had been growing in prevalence over time (e.g., credit articulation systems), and still others remained experimental (e.g., predictive analytics).



The exponential and continued growth in the acquisition and use of advising technology in the higher education sector, and the experimental nature of some aspects of it, makes understanding its implementation necessary for improving the evolving higher education landscape. Moreover, the increased use of technology by higher education institutions in response to the COVID-19 pandemic, which is likely to be maintained to some degree beyond the pandemic, makes ensuring the study of advising technologies and their implementation even more important. Despite increased popularity and prospective positive outcomes, the adoption of advising technologies does present a number of challenges, which often crystallize during implementation.¹³

Implementation

Implementing an advising technology is a multi-stage process that, to be successful, requires institutional coordination through its multiple steps. Here, we propose a model of technology selection and implementation based on general and advising-specific technology literature, including an integrated visualization of the selection and implementation process theorized in the literature. We use this framework to structure our research as well as the presentation of our findings, thereby allowing institutions to identify the implementation stage they're in and the stakeholder roles that are key to that stage and those that follow. Our framework starts with the *decision to implement* an advising technology, which is often spurred by a shift in an institution's priorities or goals.¹⁴ Once an institution has decided that an advising technology is a desirable solution, it enters into a technology *selection process* comprising a number of considerations that include not only cost and return but also integration capacity, adaptability, and usability.¹⁶ Similarly, preparing for a technology implementation, or *developing an implementation plan*, is an intricate process that can weave together stakeholders and processes from different corners of the institution, including those not readily associated with the proposed technology.¹⁷ Once a plan is in place, a *pilot of the technology* is often launched to a specific subset of the institution,¹⁶ which provides systematic feedback that should guide the full adoption of the tool.¹⁸ The subsequent *evaluation of the pilot/recalibration* uses feedback from relevant stakeholders and other data provided throughout the pilot to ensure congruence between the tool and the institution.¹⁹ From there, institutions generally move into *full adoption*, or as full an adoption as they had intended, or they may forgo adopting the advising technology altogether.²⁰ A full visualization of this process can be found in Appendix A.

STEPS IN THE IMPLEMENTATION PROCESS

- Decision to implement
 - Developing an implementation plan
 - Pilot of the technology
 - Evaluation of the pilot/recalibration
 - Full adoption
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The Role of Stakeholders

The importance of stakeholders and the roles they play throughout an implementation has been extensively explored.²¹ Investigations into a range of educational technology implementations specifically, including e-learning solutions and learning management systems, have focused on the identification of stakeholders and their needs.²² While meeting stakeholder needs is a necessary condition for a successful implementation, this approach alone does not sufficiently explain the role of stakeholders. Put differently, the decisions made and actions taken by stakeholders at different stages of implementation have more influence on its ultimate success than simply the degree to which their needs are met by the technology. Consequently, the roles stakeholders play during the implementation of advising technologies—and how they are woven throughout the phases of implementation—have yet to be fully researched. This report contributes to our understanding of how to successfully implement advising technologies by focusing on who is involved in a successful implementation, and when, as well as how these stakeholders operate within certain roles.

Despite increased investment in advising technology by colleges and universities, not every institution has been successful in its quest to adopt such a tool. Some of the barriers to this goal appear throughout the various steps that make up the implementation process. Investigating the role of stakeholders in the implementation of advising technologies allows us to understand the human aspects of this process and how to best position stakeholders for success.



Case Study Methodology

IN THIS SECTION

Case Site Selection

Interview Protocol

Data Collection and Analysis

We used a case study approach to create a comprehensive picture of how those involved in the implementation process were organized at various institutions. Throughout 2020 and 2021, we identified a diverse set of 12 colleges and universities that met the project's eligibility requirements (see subsection "Case Site Selection" for more details). Within each of the case sites, we facilitated a series of virtual group and individual semi-structured interviews with at least four participants per institution, ultimately speaking with a total of 70 institutional stakeholders involved in the implementation process at their institutions (see Appendix B for a breakdown of participants across institutions). These stakeholders were mostly primary-role and faculty advisors, IT professionals, and leaders within institutional departments charged with student success and/or retention. Participants were asked about their involvement in the advising process, their role in the implementation process, and the successes and challenges experienced throughout the implementation.

In addition, interviews were held with nine stakeholders across two of the main technology vendors used by participating institutions. The vendor stakeholders were asked to describe the role they usually played in an institution's implementation, as well as what individuals they typically engaged with at an institution during the various phases of an implementation. This perspective added an extra layer of framing for institutions' individual implementations in that vendors play an integral role in shaping this process for the campuses they partner with, and their extensive experiences make them practical experts.

Case Site Selection

Due to the upheaval caused by the COVID-19 pandemic, case selection was iterative. The original plan was to identify successful advising technology implementations based on data collected through EDUCAUSE's regular surveying of the field. This plan was dropped when outreach to those institutions during summer 2020 was unsuccessful, likely due to the ways in which preparing for the uncertain fall 2020 term restricted capacity for staff to participate in this research. We then turned to an alternative case site selection by advertising the opportunity to participate through multiple channels. A blog post underscoring the importance of well-implemented and fully adopted advising technology in the COVID-19 era, as well as three mini-cases featuring participating institutions and various aspects of the implementation process, were shared through the ASN and EDUCAUSE networks, along with an invitation to participate. Institutions that self-identified as having a recent successful advising technology implementation were asked to fill out an interest form and await outreach from our team.

Additional participation was cultivated through existing relationships between individuals involved in the project and institutional stakeholders, as well as by recommendations from advising technology vendors. Individuals connected to the project reached out to institutions that had taken part in other initiatives and projects related to the successful implementation of advising technology. After asking vendor participants about what made colleges and universities successful in this particular venture, we asked them to share a list of institutions they worked with recently that fit these criteria. Each of the participating institutions in this study either responded to the open call for self-identifying success cases, had existing



relationships with those facilitating the project, or were suggested by the vendors included in our sample. Student outcome data did not play a role in either of these recruitment avenues. Therefore, measurable student success gains—equity-related or otherwise—associated with the technology’s implementation were not incorporated into the selection process for institutions.

Interview Protocol

Like the case site selection process, the interview protocol developed as the needs of the field evolved throughout the pandemic. The questions asked of participants were broken into three sections: questions about the advising process at their institution and their role in it, questions about their involvement in the advising technology selection and implementation, and questions about how the technology and/or its use has changed in response to the COVID-19 pandemic (see Appendix C for full final Interview Protocol). The block of COVID-19 pandemic-related questions was added after it became apparent that omitting the pandemic from the scope of the project would be ignoring one of the most pressing topics at the time of the project. Additionally, after finding that the original set of questions did not naturally prompt participants to discuss how issues of equity informed the advising technology selection and implementation, we added more explicit questions to the protocol to try to surface such issues.

Data Collection and Analysis

We conducted interviews with 79 stakeholders for this project. Each interview was conducted via a virtual meeting platform that provided a recording of the interview as well as an automatically generated transcript. In addition, researchers took thorough notes during the interviews and debriefed following each interview to discuss initial impressions, identify emerging themes, and adjust the research protocol as needed.

We subsequently applied an open thematic coding scheme to each set of notes to identify patterns of stakeholder involvement across successful institutions, with reference back to interview recordings and transcripts as needed to understand detail and nuance. These themes were then organized into the specific stages of the implementation process outlined previously. After writing up the results, we conducted a member check whereby each participating stakeholder was asked to review the sections of the report that pertained to their institution. A total of 32 participants from all 12 participating institutions and 1 vendor responded to the member check request, with most respondents offering minimal feedback. We then integrated their feedback into the appropriate sections of this report. As appropriate or requested, we refer to institutional stakeholders by title or role instead of name in the presentation of our findings.



Case Sites

IN THIS SECTION

Institutions

Vendors

We sought to include a diverse set of colleges and universities in the institutional sample for this project. Participating institutions ranged in student population size, selectivity, location, IT staff support, and advising structure.²³ The sample consists of 12 institutions and 2 advising technology vendors:

- Nine public and three private institutions
- Four two-year colleges and eight four-year institutions

Although the various contexts represented by these institutions set the stage for the implementation of the chosen advising technology and the role of stakeholders, threads of commonality arose throughout their varied processes that may be instructive to others pursuing this work, regardless of institutional context.

Institutions

ARIZONA STATE UNIVERSITY

Arizona State University (ASU)²⁴ is one of the largest public institutions in the nation, enrolling students in both online and campus-based programs. With its largest campus in Tempe, Arizona, the university offers a range of programs and campus experiences to a diverse student population and has a history of record-setting innovation. A decentralized advising model allows advising to vary by program, but each department is expected to use the same homegrown system provided by the provost and IT. Though there is some faculty advising at the departmental level, many of the more transactional aspects of student success are completed by primary-role advisors, supplemented by success coaches and the university's first-year success center.

Strategic enrollment and retention goals set by the university's president and board of regents, along with the arrival of a new provost, Elizabeth Capaldi, catalyzed advising technology implementation at ASU. After searching for a tool that would help identify students struggling with their major pathway early on and not finding an appropriate one on the market, Capaldi chartered a homegrown platform. The resulting system, eAdviso, began development in 2007 as a tool that helped students map their journey through ASU and stay on course to graduation. The homegrown platform was an institution-wide effort, with those in the provost's office acting as the hub. Stakeholders in the provost's office synthesized the effort and information contributed by each of the institution's academic departments as well as relevant functional departments. Over time, a constellation of different student support tools have been added to the system's core functionality to provide students, as well as advisors, with different options on their path to academic success.



BLACKHAWK TECHNICAL COLLEGE

Blackhawk²⁵ is a public two-year institution with its main campus located in Janesville, Wisconsin. The college is part of the Wisconsin Technical College System, which consists of 16 colleges across the state. It includes four campuses and enrolls a significant part-time student population. Across the campuses, primary-role advisors are responsible for advising students throughout their chosen program, and this guidance is supplemented by informal faculty advising. The primary-role advisors work out of the institution's Student Services department rather than an academic unit. Historically, advising has been separate from academic affairs, and instructors were only peripherally involved in retention efforts, prompting a need for a shared communication platform.

The combined need for a centralized communication tool and an early-alert system that got students the help they needed more quickly drove Blackhawk to purchase the Starfish advising technology package from vendor Hobsons. A team of faculty and staff defined the technology's implementation. The institution's small size ensured that there were not too many people at the table making decisions concerning the what and how of the technology, which in turn maximized the efficiency of the overall implementation. Blackhawk was able to launch Starfish in the fall of 2019.

BLOOMSBURG UNIVERSITY OF PENNSYLVANIA

Bloomsburg University²⁶ is a public four-year university in Bloomsburg, Pennsylvania. The medium-sized university hosts a fairly large first-generation student population. Bloomsburg's advising structure divides the labor among a few individuals: primary-role advisors, faculty members, and student success specialists, who are assigned to particular student subgroups to offer more targeted support. Primary-role advisors support students who have yet to declare a major, and faculty members act as academic advisors once a student has opted in to a certain department. Prior to adoption of a centralized advising technology, the advising structure was poorly served by siloed repositories of student information.

A provost who wanted to increase retention operated as a catalyst for the procurement and implementation of EAB's Starfish platform, which offered a more coordinated approach to advising technology. The interim dean of undergraduate education was tasked with leading the technology's implementation and was offered generous latitude and support from leadership. As a former faculty member and special assistant to the president for retention, the interim dean had the trust of senior leaders and a successful track record of other retention-boosting initiatives. Using her knowledge of a previous attempt to implement EAB on the university's campus as a blueprint for what to avoid, she quickly built a team, including a project manager who would drive the work and operate as the go-to person for questions and concerns pertaining to the system. This strategy ultimately worked, as Bloomsburg was able to roll out Starfish during the spring 2020 term.

JACKSONVILLE UNIVERSITY

Jacksonville University (JU)²⁷ is a small, private four-year university in Jacksonville, Florida. Within JU's hybrid advising structure, first-year and sophomore students are supported by primary-role advisors, while juniors and seniors are supported by faculty advisors. Before Starfish was implemented, the system undergirding the advising process was largely siloed and ad hoc, depending heavily on the student information system (SIS) for registration planning, and on local Google Docs or Microsoft Word for advisors to make notes on student progress or document their concerns. The process was highly reactive rather than proactive, mobilizing only after an obstacle to a student's success had already blocked their progress. In addition, when this system raised issues about students, there was no way to follow up and ensure that they were subsequently resolved.

When the COVID-19 pandemic hit in spring 2020 and students left campus following spring break, there was a sense among those well versed in the institution's SIS that the university would be unable to coordinate student success efforts in a remote environment due to a lack of adequate digital systems in place. At that time, the recently formed Student Success and Retention Committee—a cross-functional group of faculty and administrators largely tasked with addressing retention—was reviewing a number of technology options but had not yet felt an urgency to select a system. The predicted enrollment uncertainty for the fall 2020 term created by the COVID-19 pandemic underscored the need for a more transparent advising process that connected everyone involved in supporting students, including advisors and instructors, in order to better support and retain as many students as possible. This priority exponentially accelerated JU's implementation of a technology platform to facilitate this new integrated approach, allowing the institution to move from procurement to adoption within just a couple of months.²⁸

KANSAS STATE UNIVERSITY

Kansas State University (K-State)²⁹ is a large, four-year public institution with its main campus located in Manhattan, Kansas. Home to the Global Community for Academic Advising (NACADA), K-State uses a decentralized advising model that varies across colleges/departments to serve its predominantly traditional-aged undergraduate population. The institution's online and adult learners are served by Global Campus and departmental advisors. K-State's advising structure was historically facilitated by a homegrown advising tool built into the university's PeopleSoft-based student information system (SIS). While moving from their homegrown system to a vended one, K-State underwent an unsuccessful initial implementation of EAB's Student Success Collaborative Foundation product (SSC-Navigate), which was followed by a successful re-implementation of that same platform down the road.

A wave of senior administration turnover made room for restructuring and accommodated receptivity toward the platform as a tide-changer. Subsequently, a new hire, Vice Provost of Student Success Jeannie Brown Leonard, was asked to lead the re-implementation of EAB's student success modules, including SSC-Navigate, EAB's Student Success Management System, a degree-planning tool, and a mobile app. By leveraging the pandemic and the perspectives of a wide range of stakeholders, Brown Leonard was able to lead a successful

re-implementation. The spring 2020 term, which marked the start of the adoption process, saw lower DFW rates than predicted by the number of alerts input into the system by faculty.³⁰ Since the initial pandemic-inspired progress report efforts, 60% of faculty have submitted reports each term covering 96% of the undergraduate student body.

MONTCLAIR STATE UNIVERSITY

Montclair³¹ is a public four-year institution in Montclair, New Jersey. The university hosts a large, predominantly traditional-age undergraduate population. To support these students, Montclair uses a college-based approach for advising, whereby each college has an advising or student success center that coordinates advising for students in that particular college. Once students select a major, they are assigned a faculty advisor to guide them through the appropriate coursework sequence. Students can also reach out to the advising center, made up of primary-role advisors within their college or school, to receive supplemental guidance. Montclair's first attempt to implement a university-wide advising technology was not a success, peaking at only 100 users.

In January 2019, following a new advising technology selection process that spanned several months, the university signed on with EAB and began the implementation process. The assistant provost for student success spearheaded the charge to roll out Navigate as a centralizing tool for advising. A phased piloting sequence whereby first primary-role advisors and then faculty advisors were brought onboard into the system led to the full launch nine months after Montclair started its relationship with EAB.

NORTHEAST WISCONSIN TECHNICAL COLLEGE

Northeast Wisconsin Technical College (NWTC)³² is a public two-year college in Green Bay, Wisconsin. Serving a largely part-time student population, the medium-sized college uses an advising structure that is centralized at each of its three campuses. Students are assigned a primary-role advisor—based on academic program—at the point of admission and continue with their assigned advisor until graduation. Through its involvement with Achieving the Dream (ATD), a national network of community colleges that share practices aimed at improving student outcomes, NWTC became aware of the value of better supporting students and the necessary language for articulating existing issues and their potential solutions.

The college's partnership with Starfish began in 2013, prior to the platform's acquisition by Hobsons. As one of its earliest customers, the institution cultivated and maintained a close relationship with the vendor, which has offered NWTC a lot of room to customize the platform to fit its needs and those of its students. One of the ways that NWTC was able to be so successful in its advising technology implementation was through the intentional involvement of the faculty, going so far as to integrate use of the technology into the faculty evaluation process.³³

SOUTH ORANGE COUNTY COMMUNITY COLLEGE DISTRICT

South Orange County Community College District (SOCCCD)³⁴ consists of two community colleges, one of which is among the largest community colleges in the state, located in the South Orange County area in California. On both campuses, advising is carried out by faculty members who are usually not associated with specific disciplines. Instead, they teach college readiness and career placement courses and are therefore more often generalists than disciplinary in their approach to advising.

In 2007, SOCCCD began implementing a suite of homegrown systems aimed at streamlining the student experience, including the My Academic Planning (MAP) tool. Besides the MAP tool, the team responsible for this workstream built and implemented a class selection tool (SmartSchedule) and a system that guides students to the necessary courses at the appropriate time (Guided Pathways). Unlike most advising technology implementations, these included students throughout the planning and testing processes for each of the different pieces. The system has been so successful that approximately 20% of students do not use their counselors because the degree planning system is so effective.

SYRACUSE UNIVERSITY

Syracuse University³⁵ is a medium-sized, four-year private university in Syracuse, New York, that serves a largely traditional-aged undergraduate population. Syracuse has a decentralized advising structure in which each of its nine colleges chooses its preferred advising structure. Before onboarding Starfish and creating what would become the Orange SUccess initiative, each of these college-based advising structures was supported by various facilitators (faculty advisors, professional advisors, staff advisors, etc.). A new leader's quest to provide an "unsurpassed student experience" underscored the need for a campus-wide enterprise solution rather than a mosaic of advising technologies.

The new chancellor held a "Fast Forward" exercise to gather stakeholder feedback pertaining to what was and was not working; this offered students a medium to provide their input. Advising surfaced as an issue across schools/colleges within the university. It became apparent that each school and college couldn't have its own disparate advising systems. There needed to be a campus-wide initiative implemented with a "One University" perspective. After learning about a group of vendors, including Starfish Retention Solutions, while visiting the White House with Bill & Melinda Gates Foundation funding, Director of Retention Kal Srinivas was inspired to cold-call the vendor with a developing sense of urgency. The regional contact and CEO showed up on campus the next day. Along with other stakeholders, Srinivas opted to move forward with Starfish. The resulting implementation process intentionally incorporated change management theory and practices, which eventually helped the campus embrace a culture of holistic advising and student success. Srinivas and Hopeton Smalling, functional business analyst, began as and continue to be the two central leaders of the shift to Orange SUccess, around which other key stakeholders are engaged as necessary. This approach not only led to more streamlined advising for students but also earned the national 2018 Hobsons Education Advances Award for Student Success and Advising.

TRIDENT TECHNICAL COLLEGE

Trident Technical College (TTC)³⁶ is a medium-sized, public two-year institution spread across seven campuses and sites in South Carolina, with its main campus in North Charleston. These campuses serve a primarily part-time student body, with a sizable full-time population. TTC found that it was losing a significant portion of its student population in the time between initial application and selecting a major—particularly Black males and high school students. After receiving iPASS³⁷ funding aimed at supporting the optimization of both human relationships and technology, TTC moved to implement EAB Navigate and restructure the advising process, both of which would offer students the guidance needed to persist through the early stages of their TTC journey.³⁸

TTC supplemented faculty advisors with primary-role advisors for students before they had selected a major and transitioned fully to a faculty advisor based on their selected degree program. More specifically, upon the submission of their application, potential students are assigned a primary-role advisor—known as a Navigator in the TTC lexicon—who supports them until they reach a certain point in their programmatic journey. Different programs have different protocols for transitioning students from the Navigator to an academic faculty advisor. For instance, faculty advisors may take over advising responsibilities after the student has been onboarded, or only after the student has completed a certain number of credits. Wherever students find themselves along this path, the advising they receive is facilitated by the Navigate platform. TTC was one of the first community colleges to work with EAB; the vendor and the institution worked very closely together to ensure the system would be contextualized and configured in a way that met the college's needs.

WEBSTER UNIVERSITY

Webster University³⁹ is a large, private nonprofit institution with a main campus in Webster Groves, Missouri, as well as campuses across the nation and worldwide. This expansiveness means that processes and procedures not only connect departments and offices to one another on one campus, but they also work as links between multiple campuses and subsections within them. Though Webster hosts a predominantly static traditional undergraduate population on its main campus, its significant graduate military student population is especially likely to move between the university's different campuses and programs due to the mobility required of active duty. The complexity of the institution, and the movement of this student subgroup, prompted Webster to consider implementing a more sophisticated advising technology to better support students wherever in the extended campus network they might find themselves. Starfish would be used to facilitate a hybrid advising structure whereby faculty are primarily responsible for academic advising, and primary-role advisors focus on supporting incoming and undecided students.

Prior to the launch of Starfish, advising at Webster was facilitated in an ad hoc manner through paper files, an internal shared drive, and a legacy student information system (SIS). In this state, students' discontent with Webster's advising process was prevalent. A renewed focus on increasing graduation and retention rates led a variety of administrators to think about the role of advising in achieving these goals. As a result, two taskforce groups (one for graduate students and another for undergraduate students) were formed and entrusted with examining advising and retention technology solutions. After a selection process, Starfish was launched at the institution in October 2017, facilitating communication and note-sharing among faculty advisors and primary-role advisors throughout the institution.

WEST VIRGINIA STATE UNIVERSITY

West Virginia State University (WVSU)⁴⁰ is a public, historically Black university in Institute, West Virginia. The small institution serves a high proportion of Pell-eligible students, as well as a large commuter student population. WVSU maintains an advising process led by the faculty, who are responsible for all academic advising, class selection, and course registration. The faculty advisors are supplemented by student success specialists who support students with more holistic advisement addressing their academic lives and college success. This advising system had historically relied on handwritten notes, other manual processes, and the institution's SIS.

Facing a continuing struggle with persistence and retention rates, WVSU began pursuing a technological solution to support its advising efforts. Unfortunately, two different companies with whom the university began the implementation process went out of business before either product was fully launched. In this context of false starts, a newly hired director of retention and student success was able to oversee the successful implementation of a third advising technology, Starfish, as part of a larger expansion of advising services and personnel in 2019.

Vendors

The institutions that participated in this project and purchased a third-party, vended technology product were all customers of either Campus Labs/Anthology or Starfish/EAB/Hobsons. We involved representatives from each company in this project to better understand the role that technology vendors played in the implementation process as stakeholders. Their inclusion is not intended to imply that a vended product is a prerequisite for a successful implementation, nor is it intended as an endorsement of these particular companies over any others not involved in the implementation processes highlighted in this report.

CAMPUS LABS/ANTHOLOGY

Anthology is the result of a merger between Campus Management Corporation, iModules, and Campus Labs, the last of which began as a technology startup focused on collecting student feedback as a means to improve college campuses. It has grown from a singular survey tool to a number of platforms that can be used to support the advising process and student success. Anthology Insight hosts data analytics and visualizations, which work to assist partner institutions in better supporting students by enabling streamlined data-driven decision-making. The company's early-alert system, Anthology Beacon, uses predictive analytics to identify students who may need extra support and provides a space for advisors and faculty to collaborate for student success. Anthology Student, the SIS offered by the company, acts as a hub for various student-related processes, including financial aid and degree planning. Anthology Reach is the company's CRM platform, which can be used to provide holistic views for student life-cycle support and powers student outreach and communication campaigns.

STARFISH/EAB/HOBSONS

The Starfish platform offers institutions several capacities that aid in advising. Students and those involved in the students' educational experience can raise flags in the Starfish system to point out a need the student may have. This, along with the processes associated with the overall platform, allows students to get the resources they need before something becomes a major obstacle. Faculty members are also able to award kudos to students, offering positive reinforcement after they have done something well. Progress surveys can also be distributed to instructors intermittently throughout a given term, allowing students who may be at risk for poor performance in a course prior to the midpoint of the term to make informed decisions about how to best to continue in the course. It should be noted that Starfish, formerly a subsidiary of Hobsons, was purchased by EAB during the span of this project.



The Role of Stakeholders and Constituencies

Through our research, we identified nine “personas” that embody the various roles that key stakeholders play in the advising technology implementation process. We chose to frame these roles as personas because each may be taken on by different individuals with different titles and places within the administrative or academic hierarchy, making titles or job descriptions ineffective when looking to draw conclusions across institutions. In fact, while the stakeholders themselves varied across institutions and implementations, these personas remained consistent figures in the successful implementation cases we examined.

We also identified three main common constituencies across all cases, which consist of groups of stakeholders who have a shared interest in the implementation process or its outcomes: faculty, students, and advisors. Other constituencies emerged that were more idiosyncratic to the institution, such as different academic units within the larger institution or campuses in different locations. In the following section, we describe each of the nine personas and their common core roles and responsibilities. We include the constituencies they represent (see Appendix D for descriptions of the different constituencies) and the stage of the implementation during which they are most influential or essential (see Table 1 for persona descriptions and Figure 1 for a visualization of when in the implementation process each persona is most important). We then provide illustrative examples from our case studies.

TABLE 1. PERSONA DESCRIPTIONS

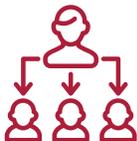
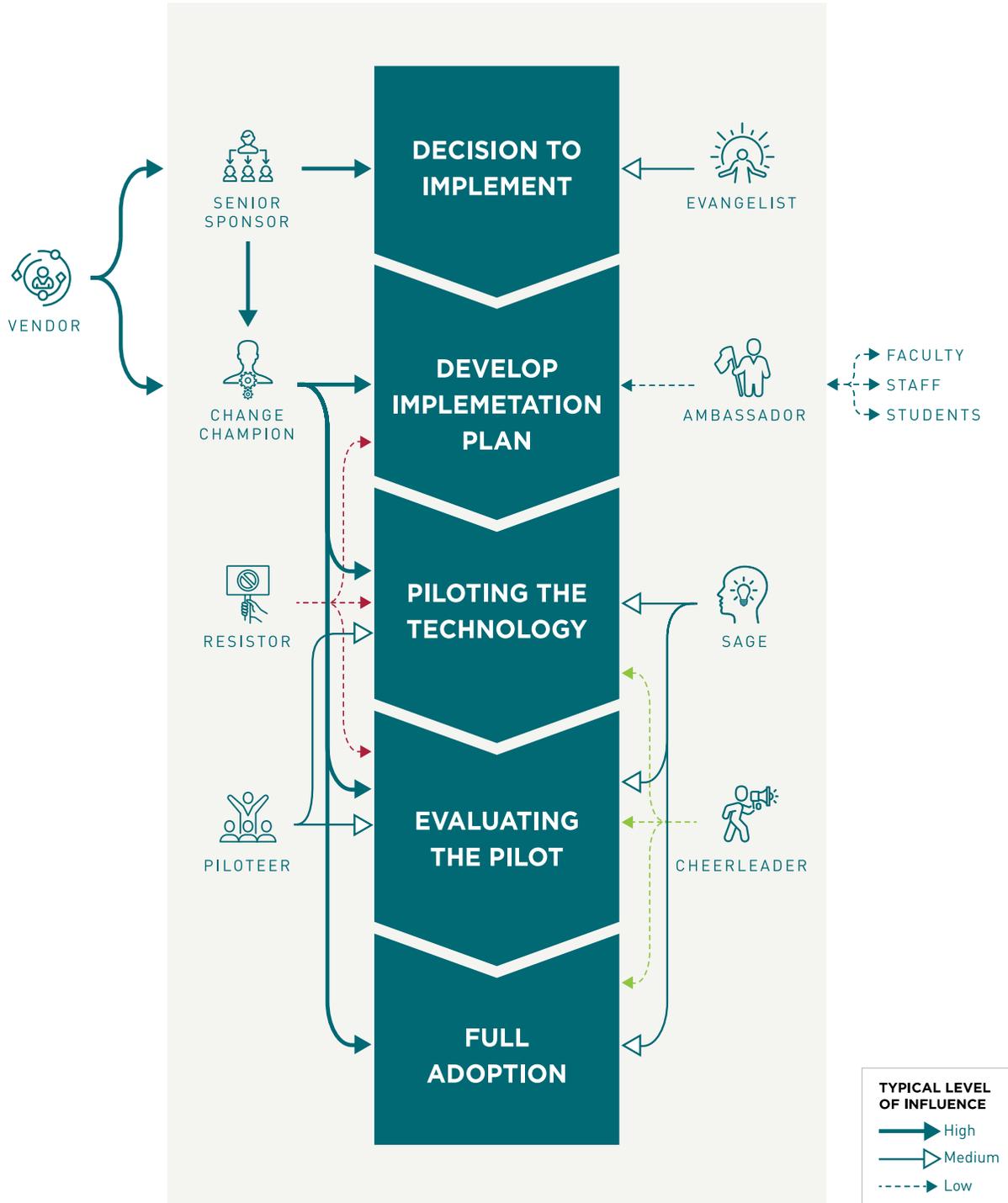
Persona (in order of appearance during implementation)	Description
Evangelist 	Someone who brings knowledge of or experience with advising technology systems into the institution, prompting the meaningful consideration of advising technology for the first time
Senior Sponsor 	A senior institutional leader who supports the advising technology implementation through administrative authority and/or the provision of resources
Change Champion 	Usually the institutional project lead, the person charged with facilitating the cultural, technological, and administrative changes necessary to successfully implement the advising technology
Sage 	Someone with an especially in-depth knowledge of the features and functions of the advising technology system who is looked to as an authority on what is and is not possible with the system
Ambassador 	Someone who represents a specific group or institutional constituency whose main role is to communicate the needs and preferences of that group in the implementation process and/or bring information back to that group

TABLE 1. PERSONA DESCRIPTIONS (CONT'D)

Persona (in order of appearance during implementation)	Description
<p>Resistor</p> 	<p>Someone who, through intentional action or inaction, works against the successful implementation of the advising technology</p>
<p>Cheerleader</p> 	<p>Someone who enthusiastically supports the implementation of the advising technology and actively encourages others to do so as well</p>
<p>Piloteer</p> 	<p>Someone who participates in the piloting phase of the implementation and provides feedback on the experience in order to improve later steps of the implementation</p>
<p>Vendor</p> 	<p>Anyone representing a commercially provided, third-party advising technology system</p>

FIGURE 1. STAKEHOLDERS THROUGHOUT THE PROCESS



The thickness of the lines suggests the typical influence that persona has on the associated process or stakeholder persona. The arrow indicates the primary direction of influence. The colors for the Resistor and Cheerleader personas indicate the places they may cause friction in the implementation or help move the process forward.

Faculty, staff, and students are the three main constituencies from which stakeholders in the Ambassador role will come. Individuals from the three groups will also serve in other roles, but the role of the Ambassador specifically represents the interests and communication with members of their respective constituency.

The Evangelist

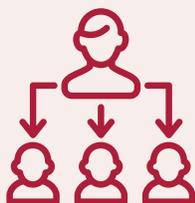


Someone who brings knowledge of or experience with advising technology systems into the institution, prompting the meaningful consideration of advising technology for the first time

Our research revealed that occasionally someone with deep familiarity with advising technologies brings that information to the institutional community in ways that spark or inspire the implementation process. We identified this persona as the *evangelist*. These individuals would bring their knowledge about advising technologies or a given technology to bear when they felt it was a viable solution for an institutional problem. From streamlined student data to more responsive advising, evangelists at different institutions offered up their experiences with an advising technology as a roadmap to providing a better student experience. As the evangelists use their prior knowledge to assist other stakeholders in deciding to use an advising technology and/or which to choose from the market's offerings, the evangelist is most important when deciding to implement and then in technology selection. During or after making their contribution, the evangelist may take on other roles, including senior sponsor and change champion (both are described in greater detail below), representing the needs or interests of a wide range of constituencies, including student success administrators and senior leadership.

At Jacksonville University, Aimee Lewin, a director within Student Affairs, oversaw a “catch-all” office with case management responsibilities for students on academic probation. She brought her experience using technology to support case management in that role after having introduced the potential benefits of adopting an advising technology during her interview for the position. In her first six months, she was able to begin sharing formal proposals with other administrators focused on advising and student success. Her campaigning led senior sponsors to begin the search for a suitable technology in 2018. After pushing for the adoption of an advising technology, Lewin stayed on as a member of the implementation team, while the bulk of the responsibility to move the process forward was held by someone else. Even though the evangelist may bring forward the advising technology, cementing their importance in the earlier stages of implementation, they do not necessarily become solely responsible for moving the implementation forward. They may play a more supportive role during ongoing implementation, as Lewin did, or if they take on the role of senior sponsor (see next section for details on the senior sponsor), they may take on a more passive role once an implementation plan has begun development.

The Senior Sponsor



A senior institutional leader who supports the advising technology implementation through administrative authority and/or the provision of resources

During our conversations with stakeholders, it became apparent that an individual who sets institutional priorities for student success and allocates resources often operates as the catalyst for an advising technology implementation. As arbiters of institutional goals and resources, these individuals were usually representatives of the senior leadership constituency and sustained the workstreams necessary for the implementation process to be successful by leveraging the authority bestowed by their position. We identified this stakeholder at a given institution as the *senior sponsor*.

The senior sponsor is most integral early on in the implementation process, particularly in the pre-selection through selection phases. They formalize the advising technology implementation as an institutional priority and have the administrative authority to approve the funds, personnel, and other resources required for a successful implementation. Often, senior sponsors move through the earlier phases unilaterally, deciding alone or with a small group of other leaders whether a technology is needed and what technology is the best fit. Once stakeholders and resources have been identified to sustain the workstreams created to implement the selected technology, senior sponsors usually take a less active role, being periodically updated on the implementation's progress by those they made responsible for the work. Significantly, support from senior leadership was identified as a major key to success across the board. The authority wielded by senior sponsors meant that other stakeholders were incentivized to fulfill their expectations. Moreover, their position also allowed these individuals to make capacity decisions, ensuring the continued dedication of human resources needed to complete work required for successful technology implementation. Even though senior sponsors often wield much authority on their campuses and can progress through the earlier stages of the implementation rather independently, it is not possible for them to proceed through the entirety of the process without external input.

We provide examples from three institutions that illustrate the integral part played by senior leadership in the early stages of the implementation, including identifying the problem, considering possible solutions, deciding to implement an advising technology, and selecting one. These examples also make clear that the decisions made and actions taken by senior sponsors early in the implementation act as the foundation for essential work to be carried out by other stakeholders, without which the implementation would not have succeeded. For instance, at both Arizona State University and Kansas State University, though the early stages of the implementation were predominantly driven by senior leaders, the integration of additional stakeholders from various levels of the institution markedly bolstered the implementation process and allowed these institutions to succeed. We compare the implementation processes at these universities with a less successful implementation at an institution.

During ASU's implementation of eAdvisor in 2007, Elizabeth Capaldi, a provost at the time, served as the senior sponsor. She single-handedly advanced through the first steps of the implementation by prioritizing a specific institutional need, considering possible solutions, deciding that an advising technology was the best fit, and selecting a homegrown solution in the end. In support of strategic enrollment and retention goals, Capaldi envisioned a digital platform that would systematically guide students to their chosen degrees and help them opt in to majors that would lead to their graduation. Once the provost shared her expectations and put the weight of her office behind the effort, Capaldi's active involvement in the implementation was minimal. Her three staff members kept her abreast of developments and any seemingly insurmountable roadblocks that required her intervention, but they were otherwise predominantly responsible for moving most of the implementation process forward alongside the other relevant stakeholders they engaged, armed with Capaldi's vision and support.

At K-State, large turnover of senior leadership, including the hiring of a new provost with EAB experience, as well as the costs and benefits of revisiting a previous investment versus implementing a technology anew, led to the decision to re-implement the extant tool. This time, Jeannie Brown Leonard, new vice provost of student success, was at the helm, following the delegation of senior sponsor, the K-State provost who secured the human resources needed to sustain implementation and ensured the IT team prioritized the project. She used the authority created by her position and her charge from the provost to gather stakeholders and collaboratively build buy-in. More specifically, she brought together a taskforce to assist in rolling out the platform to the whole campus. These stakeholders included advisors, student services representatives, data specialists, an academic technology expert, a representative from the institutional research office, the university registrar, and a college-level assistant dean. Brown Leonard described "the stakeholder piece" she crafted through this taskforce as critical in K-State's ability to successfully re-implement EAB in 2020. Senior leadership/sponsors operating as a foundation and encouraging others to add on rather than build an infrastructure alone and hope that others will come led to a successful re-implementation of EAB at K-State, illustrating the optimal role of the senior sponsor.

In contrast to the previous examples, the implementation of an advising technology product faced a number of challenges at one institution. It was driven predominantly by a senior academic leader who brought the platform to the institution with an "If I build it, they will come" mindset. The institution piloted the tool with only a small subset of academic units, hoping to find a single, quick solution to the institution's challenges. Though armed with a worthy cause and in possession of many strengths, this leader did not lay the groundwork for the technology implementation collaboratively, which the institution later came to recognize as critical to success. Very few other stakeholders were involved in the pre-selection and procurement process for the product or in the implementation planning process that followed. As a result, the attempt at adopting a novel advising technology was marred by lack of buy-in and subsequently a lack of use. Although this leader's position at the institution allowed for progress through the different implementation stages practically independently, the exclusion of other key stakeholders from the process, along with their needs, perspectives, insights, and support, stood in the way of a successful technology adoption. These stakeholders were needed to embody the different personas we describe below, to help shape the tool to the everyday needs of the institution, and serve as advocates to garner buy-in and persuade other stakeholders to give the tool a fair chance.

The Change Champion



Usually the institutional project lead, the person charged with facilitating the cultural, technological, and administrative changes necessary to successfully implement the advising technology

Successful advising technology implementations at the case sites in our study all had at least one stakeholder who was responsible for continuously and actively “moving the ball forward,” once momentum for the implementation process had been achieved by the senior sponsor and/or evangelist. The *change champion* leads the cultural, technical, and procedural transitions required for a successful technology implementation. They are given the capacity by the senior sponsor to prioritize the advising technology implementation based on a set of skills or resources they possess, which make them particularly qualified to lead a change management process centered around technology. These skills may include technological aptitude, a disposition for relationship building with key stakeholders, advising expertise, and experience with similar or specific technology platforms. Repeatedly, our interviewees noted the presence of a change champion who was responsible for driving the implementation to make it a pillar of implementation success.

At Bloomsburg University, for example, Jessica Heid, institutional compliance program coordinator, was tapped by the senior sponsor (the interim dean of undergraduate education) to play the role of change champion for the rollout of the recently selected technology Starfish, otherwise known as HuskySuccess on campus. In this role, Heid led a small implementation team in making decisions about how the platform would be brought to the campus. The team included a representative from IT, three student success specialists, and a vendor representative, along with a few additional stakeholders. Heid also engaged in technical work within the system to customize it to the institution’s needs and was available to answer questions and address feedback from end users. The latter responsibility was especially important for the change champion role; in fact, a previous attempt to implement EAB on Bloomsburg’s campus appears to have failed due to the absence of a designated person to field questions from other stakeholders. Heid’s master’s degree in instructional technology and a shared vision with the senior sponsor for the implementation made her especially well suited to carry the torch lit by the interim dean of undergraduate education. Her technical perspective and strong project management skills enabled her to be actively involved in the minutia of the implementation process, including building marketing tools and training staff, as well as helping IT check relevant code. The senior sponsor underscored the necessity of assigning a point person like Heid for an advising technology implementation process; she continues to serve in that role for the system following its full adoption. Heid’s success as a change champion highlights the importance of having a designated person tasked with ensuring the progress of the implementation and of selecting this stakeholder based on their particular skill set.

The Sage



Someone with an especially in-depth knowledge of the features and functions of the advising technology system who is looked to as an authority on what is and is not possible with the system

Another individual who has previous experience or skills that can prove valuable during the implementation is the *sage*. Individuals who embody the sage persona possess expertise about the technology platform being implemented and experience in previous implementations. With this expertise, they can help stakeholders make decisions concerning the use and configuration of the technology. They achieve this by communicating with less knowledgeable stakeholders and making them aware of what the system can and cannot do. Their experience with other implementation processes can also inform the change management process. In other words, they can assist other members of the implementation team in sidestepping obstacles they have previously witnessed during similar institutional shifts. Their role becomes significant once a technology has been selected, as this marks the beginning of decision-making surrounding the tool itself and how it can work on a specific campus, and continues through mature integration. Though these individuals are often software-provider staff members, they can be institutional stakeholders who, like the evangelist, have experience with the technology and/or similar implementations.

Trident Technical College was one of the first community colleges to sign on with EAB, which led to a particularly symbiotic relationship between the institution and the advising technology vendor. Such a relationship would have been impossible if the EAB representatives assigned to the college were not able to explain what the platform could do while expanding its capacity in partnership with TTC. As a two-year institution, TTC has a number of processes and procedures that are not reflected on a four-year campus (e.g., organization of terms, degree options, and course sequencing). TTC's implementation team worked with two customer service representatives from EAB to update the purchased system for the institution's needs. An early leader on the TTC implementation team, Deborah Fabian, compared these individuals from EAB to the institution's Navigators. Navigators are primary-role advisors framed as a one-stop shop tasked with helping students navigate TTC from the time of application onward. Like Navigators, the EAB representatives were able to offer the appropriate support when it was needed while introducing the institution to the technology. Within the "centralized and flexible" relationship between the EAB representatives and the TTC implementation team, the sages were always ready to answer questions or communicate information in support of the large cultural shift being taken by the institution's implementation team. They were also able to predict when the implementation would hit roadblocks and help the TTC team negotiate these obstacles efficiently, despite an often unique context. Even though the EAB representatives were in a novel context, bringing together the contextual knowledge offered by the institution's implementation team with the sages' expertise in the product and organizational change allowed TTC to get what it needed from the platform for its students.

Due to her experience with the system, the director of retention and student success appointed an academic support specialist as the functional lead for the advising technology implementation at West Virginia State University (WVSU). As such, the support specialist became primarily responsible for the configuration of the system, led the implementation team in making decisions about how the technology should be set up, and communicated with and conducted training for end users. Her broad range of responsibilities and detailed knowledge of the system configuration enabled her to serve in the sage role. Having witnessed Starfish's rollout on another campus, she was more familiar with its inner workings than others who were new to the system, and she was therefore able to help preemptively identify potential hurdles to address. Along with vendor representatives and her manager, she decided to launch a targeted, phased pilot, rather than a universal one, to allow her to fix any issues within the system without losing too much buy-in. She explained that this decision was key in ensuring the success of the eventual full rollout. Finally, her continued expertise in the system due to the active role she played in its configuration made her the optimal choice for fielding stakeholder feedback and guiding training for others. Her extensive knowledge means she is able to explain what is and is not possible in the system to those with suggestions, and she can adequately support those recently onboarded with the system. The academic support specialist's continued expertise has not only allowed her to take on a leadership role within the implementation but has also helped equip other stakeholders as decision-makers and end users. Moreover, the academic support specialist was able to help WVSU avoid the frustrations and challenges faced during the implementation at her previous institution.

The Ambassador



Someone who represents a specific group or institutional constituency whose main role is to communicate the needs and preferences of that group in the implementation process and/or bring information back to that group

Once the torch has been passed to the change champion, they often enlist representatives, or *ambassadors*, from departments and offices across the institution to offer guidance on how to effectively engage essential constituencies in the implementation (e.g., faculty, students, other student affairs offices). The nature of this role means that ambassadors speak on behalf of a variety of constituencies, the most common being faculty. Ambassadors provide critical feedback during the pilot and early iterations of the development and execution of the implementation plan. Throughout the process, ambassadors surface the needs and concerns of their peers and colleagues to ensure that the technology and the messaging around it are both well suited to enlist buy-in from different constituencies. As members of the implementation team, ambassadors also gain a sizable amount of information pertaining to the selected technology; so they, in turn, take this information back to their counterparts to inform their opinions of the tool.

After a small group of institutional leaders opted to acquire Starfish, John Grant, dean of student development at Northeast Wisconsin Technical College, gathered an implementation team made up of 20 stakeholders. All were ambassadors, each representing a different constituency, including advisors (academic support services), faculty, IT, and learning and student services leadership (student success administrators); a stakeholder from admissions helped Grant lead the team. The ambassadors on the implementation team helped customize the platform to NWTC's processes and vernacular. For instance, the representation of faculty and learning leadership on the implementation team, through the ambassadors, allowed them to have ownership over the language of the alerts generated by the advising technology and ensure that they struck the right tone with the end users. Grant also noted that garnering participation from different stakeholder groups allowed them to implement the technology more quickly, as they were able to nurture buy-in more efficiently and therefore faced fewer roadblocks during the implementation.

The Resistor



Someone who, through intentional action or inaction, works against the successful implementation of the advising technology

Another key stakeholder that came through in our research was the *resistor*. As the title of the persona suggests, resisters oppose the implementation of the advising technology and the changes the implementation represents, doing so either actively or passively. In our discussions with stakeholders, interviewees described individuals who created resistance to the advising technology implementation through inaction or by opting not to participate in assigned tasks, being fairly vocal about their lack of buy-in. Though resisters can emerge at any point during the implementation, it is important to preemptively address their concerns and mitigate subsequent resistance at the start of the implementation plan development as well as throughout the remainder of the process. If not mollified early, resisters can create a serious obstacle to full adoption and maturation. Welcoming individual resisters into the heart of the process or through ambassadors representing larger pockets of resistance within a constituency group can lessen the friction when trying to integrate the new technology into the advising structure. Resisters can come from any constituency group, but faculty consistently came up as the most common and significant resisters.

When we asked the senior sponsor of Montclair State University's EAB implementation, the associate provost of undergraduate education and dean of University College, how different perspectives were incorporated into the implementation of EAB, he explained that the implementation team invited and welcomed dissenting opinions into the process. He also intimated that faculty members specifically had a number of reasons to resist the technology, including not being proponents of just-in-time feedback, not understanding how the loop would be closed in the system, being unaware of the platform's functionalities, and feeling general mistrust. In response to this, faculty members have been offered different entry points into the implementation process at Montclair, including participation on the original implementation team. In addition, the project manager, Danielle Insalaco-Egan, met with the university senate to gather feedback and continued to meet with a small group of faculty members invested in student success. Through these avenues, the implementation team was able to address the hesitations held by faculty resisters by more explicitly sharing the purpose and features of the platform and the positive impact on student outcomes already gained during the piloting phase. This effort saw almost 900 midterm alert submissions by faculty members into the system, Navigate, compared with no more than a few dozen submissions in the previous system.

PREREQUISITE SUPPORT

It should also be noted that if certain key stakeholders or constituencies (e.g., IT, senior leadership) are resisters, the whole implementation process would likely be derailed. The support of these groups is a functional prerequisite for a successful implementation. Because we looked only at successful cases, we did not encounter a case where support from these essential quarters was lacking.

The Cheerleader



Someone who enthusiastically supports the implementation of the advising technology and actively encourages others to do so as well

Unlike resisters, who create roadblocks to implementation, *cheerleaders* are enthusiastic stakeholders who work to persuade members of a specific constituency, of which they are also members, to embrace the change brought about by the advising technology. Like their resistant counterparts, cheerleaders can come from a number of constituencies. For example, they can organically arise as stakeholders who are excited about the technology or as ambassadors who eventually become supporters through their formal experience with the implementation process. Though their enthusiasm is similar to that of the evangelist persona, the excitement portrayed by cheerleaders plays an integral role after the decision has been made to implement a particular technology. The eagerness with which these stakeholders espouse the new technology being adopted and encourage their fellow constituents puts them in position to counterbalance the opposition created by resisters. Subsequently, their utility, like that of resisters, is maximized during the development of the implementation plan, during which they can calm the concerns of resisters and persuade them to buy in to the new technology. The advocacy of cheerleaders plays an important role in ensuring buy-in from that point through the mature integration of the advising technology.

At Webster University, Victoria Meyer was asked to join the implementation of Starfish as a faculty ambassador just after the technology was purchased. In that role, she became one of the first stakeholders to fully understand the benefits offered to faculty by the system, such as access to more student information and more streamlined processes. On the other hand, she also learned through her interactions with other faculty members that they were postponing their use of the system, which they viewed as tracking faculty, and were waiting to observe others' experiences using it. Meyer, who believed in the technology, was consequently able to assuage these concerns by communicating with faculty members in her department about the platform and how it could be used. Her contagious enthusiasm encouraged others in her department, including faculty who were on the fence or completely resistant before her advocacy, to buy in to the system and begin using it. Meyer's ability to take on the cheerleader role in this context came from a combination of the knowledge she gained about the platform as part of the implementation team, her understanding of other faculty members' perceptions and experiences, and the trust afforded to her as an established member of this constituency group.

Cheerleaders can also play a significant role in the later phases of implementation, for example in assisting with the adoption and mature integration of the tool. Upon Blackhawk Technical College's rollout of Starfish, Erica Fenton, one of five faculty users, was excited about the tool because it aligned well with her responsibility leading underprepared students to success. Fenton's enthusiastic use of the tool and vocal support led the implementation's change champion, Melissa Lantta, to ask Fenton to join the Starfish team as a faculty co-administrator. In this position, Fenton's role as a cheerleader became formalized. She is a conduit for faculty professional development, promotes Starfish among faculty members, and is involved in pilots for new functionalities. She is also assisting with building inventories and assessments within the system. Formalized capacity along with access to the decision-making process has allowed Blackhawk to channel the support Fenton showed early in the platform's rollout into not only more faculty support but also continuous improvement to the platform as well.

The Piloteer



Someone who participates in the piloting phase of the implementation and provides feedback on the experience in order to improve later steps of the implementation

Once the preliminary decisions around the platform's rollout within the institutional context are made, the system and the messaging that will accompany it are usually tested. *Piloteers* are engaged to assist in piloting the platform and then offer feedback to move it toward full adoption. As their name implies, piloteers are integral during the piloting and recalibration phases of implementation. They are pulled from the constituency groups that will be the platform's end users. Their greatest contribution to the implementation process is their willingness to try the new technology and provide constructive feedback. After trying the platform, piloteers who had a positive firsthand experience may transition to cheerleaders for the technology. As such, a successful piloteer can lead to increased buy-in from those who are part of the process and those influenced by the advocacy taken on by pleased piloteers.

At Syracuse University, students were given early access to Starfish (Orange SUESS) as part of a soft launch that served as a pilot. Student piloteers' role was integral in the implementation's success, and not only for technical reasons. Representatives from Starfish who supported Syracuse University during its implementation of Starfish explained that student piloteers helped the implementation overcome resistance from other stakeholders who were still hesitant about adopting the technology. After their positive pilot experience, the student piloteers asked that the product be adopted more widely on Syracuse's campus. With students as the heart of the institution, their advocacy for the platform helped garner more buy-in from other stakeholders who had otherwise not yet identified or embraced the benefits of early alerts for students; thus resistance to the platform decreased. A commitment to student success not only led faculty and administrators to be key members of the guiding coalition moving this process forward, but it also prompted these stakeholders to dedicate additional time to providing early alerts and subsequently enhancing advising engagement.

The Vendor



Anyone representing a commercially provided, third-party advising technology system

Often overlooked because they are not members of the institutional community in the traditional sense, *vendors* play an essential role in the implementation process of any institution purchasing a third-party platform instead of developing something internally. In addition to the obvious role in making the technology available, vendors also provide substantial guidance to the senior sponsor, the change champion, and the entire implementation process. While their knowledge of the platform is an important part of their contribution, their collective experience in implementation is the most valuable contribution to the process. Both of the vendors involved in this research effort provided explicit guidance to the institutions with which they worked on both technical and change management processes. This guidance may have had a homogenizing effect on the implementation processes highlighted in this report. Similarly, vendors explained that successful institutions, in their experience, shared a set of certain characteristics, including strong leadership, cross-functional cooperation, and actionable goals. Successful implementations will likely share many features in common, while unsuccessful ones will be different in myriad ways.

Implementing Advising Technologies

IN THIS SECTION

Discussion and Recommendations

Limitations

Conclusions

Discussion and Recommendations

One of the challenges in understanding institutional change processes such as advising technology implementations is that every institution is unique in the way it titles various roles, distributes responsibilities and accountabilities among community members, and facilitates relationships among all of those involved. Describing the personas of stakeholders involved in the implementation, rather than referring to job titles, enables these archetypal roles to be identified at any institution, even though the specific individuals involved, their job titles, or positions in the institutional hierarchy may differ across institutions. For example, institutional technology professionals and leaders were consistently named an integral part of the implementation process, as they are responsible for moving existing data into the new system. However, in the cases we reviewed, these professionals did not play a key role in the implementation strategy and decision-making. Instead, they were involved in a parallel process that focused on technology integration and communication between multiple data systems but that was agnostic to the policies and practices of advising.

When considering a new implementation process, or re-invigorating one that has stalled, it may be helpful to identify who will or could play particular stakeholder roles. For instance, it is necessary, but insufficient, for the change champion to have the support of the senior leadership. That individual should have, or quickly work to establish, relationships with all of the constituencies involved in the process. Doing so can facilitate the communication and cooperation required throughout implementation. Likewise, identifying potential resisters and working to direct them into more productive roles, as well as identifying potential reasons for resistance and preemptively circumventing these obstacles, can lessen the cultural friction created by the changes the implementation process represents. Depending on the specifics of individuals involved, it may be possible to invite potential resisters into the implementation process more productively as ambassadors or pilots. Or identifying pockets of resisters can help in planning pilot initiatives or other implementation activities strategically to build goodwill and buy-in around those parts of the institution least likely to be supportive. Similarly, recognizing an emergent cheerleader allows those in charge to better position that individual to gather momentum and buy-in.

Missing from the implementation process at almost every institution involved in this project were students, arguably the largest constituency group and the group for which the advising technology is being implemented. Rather than an intentional exclusion from planning for advising technology, students were not invited to participate in the process because they are routinely not invited to participate in the planning processes for most other technological or administrative changes. The only case site in our sample that involved students in the implementation process had an existing mature technology development process in place that systematically includes a student design team as a core stakeholder group. Nonetheless, although the implementations reviewed for this project were successful despite the lack of student involvement, it's not known what opportunities or pitfalls including students might have presented. It is likely, however, that students could act as valuable ambassadors and pilots, even for technologies that are not student facing, raising important considerations surrounding their advising needs as well as the use and privacy of their data. Involving students from historically excluded groups in particular as key stakeholders can help center equity early in the implementation process.

Although this project and its methodology were not designed to examine the relationship between advising technology and equitable outcomes, equity is a perennial concern for research in higher education settings. We asked institutional stakeholders about the student groups they considered or prioritized during the selection and implementation of the given advising technology and about the inclusion of historically excluded groups in the decision-making processes of the implementation. Their responses to these questions and the follow-up probes clearly indicated that, overall, student measures of persistence and retention were central in the institutional motivations and planning for advising technology, not racial and socioeconomic equity. Individual stakeholders said they were cognizant of the particular needs of first-generation and low-income students, or they referred very broadly to the potential role of advising technologies in helping address inequitable outcomes; however, the implementation efforts targeted the needs of functional student subgroups such as first-year and transfer students. Similarly, involvement in the planning process was based more on academic or administrative unit affiliation than on representing racially or socioeconomically diverse perspectives. The limited role that equity played in these implementations suggests that future research and advocacy should examine the role of equity in institutional decision-making and how it may affect many policies and practices, including advising technology implementation, and how that role may impact outcomes for Black, Latinx, and Indigenous students, as well as students experiencing poverty.

INCLUDING STUDENTS BY DESIGN

SOCCCD stands apart from the other case sites in the way that students were involved in the development and implementation process of the custom-built advising system. The IT unit at SOCCCD has a mature software development process that includes a student design team (SDT) for any student-facing technology. In the development of the SmartSchedule class selection system, the SDT looked at the systems used by other community colleges and several highly prestigious institutions, but were unsatisfied with the available options. That feedback from the SDT led directly to the decision to build a scheduling system internally that could be built around the student experience. The SDT remained engaged with the process throughout the system's design and implementation.

Limitations

Although the institutions involved in this project exemplify the diversity of institutional settings throughout higher education, they all had *successful* advising technology implementations, as judged solely by the stakeholders involved in those same implementation processes. We did not use external criteria of success, and the definition of success any specific institution used may not be shared by others. It was beyond the scope of this project to fully explore unsuccessful implementations and the role that stakeholders played in those circumstances or how the absence of particular stakeholders impacted results. It is possible that additional stakeholder roles might emerge from such an investigation to serve as early alerts to a failing implementation and thereby provide an opportunity to change the process to one that might be more successful.

Most of the implementations studied for this project were relatively recent, occurring largely within the past two to three years. While that time frame meant that stakeholders were readily available and memories were fresh, the long-term impacts of these implementations have yet to be revealed. The measures of success that most participants cited were related to the participation rates of faculty in the system or the number of flags resolved in the first term of use. Student-centered metrics, such as increased retention and graduation rates, were not yet available despite the optimism of advising technology supporters.

Conclusion

This report summarizes the experiences of multiple, diverse institutions in implementing advising technology to better support student success. Despite the disparate institutional contexts, the varied implementation processes shared many features, including the essential role of stakeholders. More than merely representing various institutional interest groups, these stakeholders played specific roles, from introducing the idea of advising technology, to making decisions—large and small—throughout the process, to encouraging their peers and colleagues to integrate the technology into their day-to-day practice. Ultimately, these stakeholder roles were essential to the success of their respective technology implementations. Others pursuing advising technology implementations at their own institutions would benefit from looking for individuals playing similar roles and strategically involving them in the process.

Appendices

IN THIS SECTION

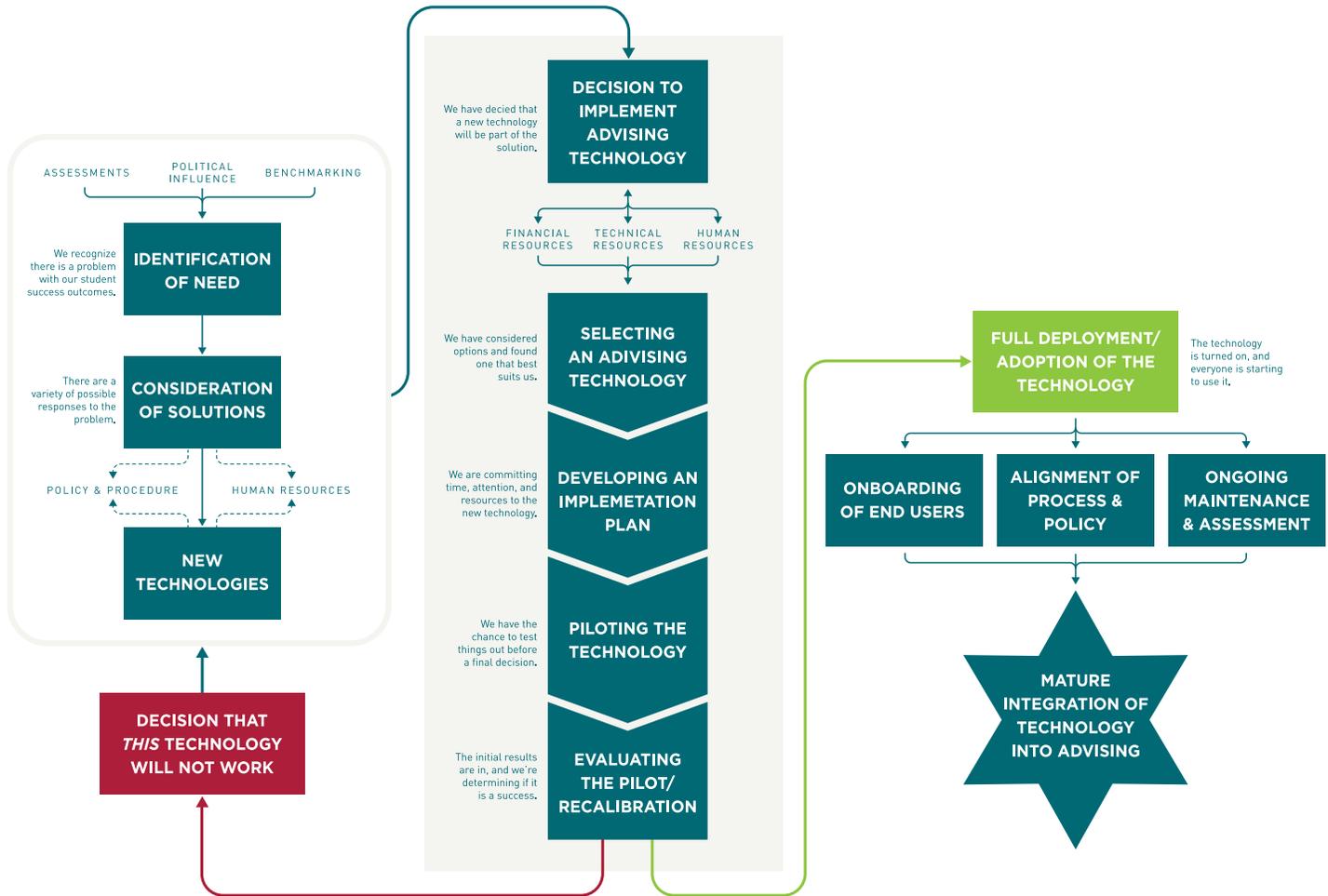
Appendix A: Technology Implementation Framework

Appendix B: Interview Breakdown, by Institution

Appendix C: Semi-Structured Interview Protocol

Appendix D: Constituency Group Descriptions

Appendix A: Technology Implementation Framework



This framework adapted from:

- Abigail D. Coffin, “[Implementing Academic Analytics and the Impact to Academic Advising](#),” [dissertation] Kansas University, 2018
- Charles R. Graham, Wendy Woodfield, and J. Buckley Harrison, “[A Framework for Institutional Adoption and Implementation of Blended Learning in Higher Education](#),” *Internet and Higher Education* 18 (July 2013): 4–14.
- Diane L. Morehouse and Stacey H. Stockdill, “[A Technology Adoption Model](#),” *Educational Technology* 32, no. 2 (February 1992): 57–58.
- Laura Pasquini, “Emerging Digital Resources: Easy and Accessible Online Tools,” in J. Voller, M.A. Miller, and S.L. Nest (eds.), *Comprehensive Advisor Training and Development: Practices That Deliver*, 2nd ed. (Manhattan, KS: NACADA Publishing, 2010): 123–129.
- The Ada Center, “[Advising Technology Procurement & Planning: A Practical Playbook for Higher Education Leaders](#),” Bill & Melinda Gates Foundation, 2020.

Appendix B: Interview Breakdown, by Institution

Institution	Number of Interviewees
Arizona State University (ASU)	4
Blackhawk Technical College	5
Bloomsburg University	6
CampusLabs/Anthology (vendor)	6
Hobsons/Starfish (vendor)	3
Jacksonville University (JU)	4 (1 additional stakeholder from Hobsons who was involved with JU's implementation of Starfish)
Kansas State University (K-State)	4
Montclair State University	9
Northeastern Wisconsin Technical College (NWTC)	5
Southern Orange County Community College District (SOCCCD)	5
Syracuse University	5 (plus 4 additional stakeholders from Hobsons who were involved with Syracuse's implementation of Starfish)
Trident Technical College (TTC)	8
Webster University	6
West Virginia State University (WVSU)	4

Appendix C: Semi-Structured Interview Protocol

Common intro/contextual questions for most respondents (institutional leaders, student data infrastructure professionals, enterprise system trainers, staff and faculty advisors, [students and other institutional stakeholders in the implementation process])

1. Please describe your role at the institution and your general job responsibilities.
2. Please describe what [main area of work/advising] is like at your institution, as well as your role within it.
3. At the time of the technology implementation, what were the advising or student success priorities for the institution?
 - a. What student groups or specific populations, if any, was the institution most concerned with in terms of student success?
4. Shifting the focus to the technology systems involved in the advising process, please describe your role in the implementation of (SYSTEM).
 - a. When did you become involved in the selection and/or implementation process? [May share implementation framework or its 7 core stages]
 - b. How did you become involved in the selection and/or implementation effort?
 - c. In what ways was space made in your daily work and professional expectations to allow you to become involved in the implementation process?

COMMON QUESTIONS / GENERAL INTERVIEW QUESTION BANK

1. With which individuals or departments did you work with most closely during the selection and implementation process of the (SYSTEM)?
2. The implementation process often involves a lot of people from a variety of offices and units.
 - a. Looking back, were any individuals or departments missing from the implementation process that should have been included? At what decision/inflection points?
 - b. What about having too many individuals or units involved? Were there moments when there were “too many cooks in the kitchen”? If so, what was going on at that time?
3. In what ways were different perspectives invited into the implementation process?
 - a. What efforts were made to include voices that are not normally involved in these institutional decisions?
 - b. If students were involved in the process, in what ways were the students involved representative of the full student body?
4. How did your institution come to select the (SYSTEM) from among the other available options?
 - a. Who was involved in the selection process and when?
 - b. What other solutions were considered?
 - c. What criteria did you use in deciding among the possible options when selecting the solution?

5. The selection and implementation process involves a number of key decisions. What was one particularly important decision that you were involved in as part of the implementation process?
 - a. What information went into that decision?
 - b. Who else was involved in that decision?
 - c. What was the ultimate impact of that decision on the implementation?
6. Any implementation process is likely to face challenges and successes along the way. What was one particularly significant challenge you faced during the implementation process?
 - a. What made this such a significant challenge?
 - b. How did you overcome that challenge?
 - c. What resources or information were important in overcoming the challenge?
 - d. Who else was involved in overcoming the challenge?
7. What was one particularly important success you achieved during the implementation process?
 - a. Why was this specific milestone so important?
 - b. Who else was involved in making it a success?
 - c. What resources contributed to the success?
8. Now that the implementation process is complete, how do you feel that the implementation process went overall?
 - a. What specific indicators are you using to evaluate the success of the implementation?
 - b. Are there any ways in which you feel the implementation could have gone better? Looking back, what would you do differently?
9. Most institutions struggle when it comes to implementing advising technologies. When thinking about the overall successful implementation of (SYSTEM) at your institution, what would you say are the top three key ingredients for that success?

COVID-19 QUESTIONS

10. How have the institution's student success priorities changed since the start of the pandemic?
11. How was the system deployed in new or different ways in response to the COVID-19 pandemic? [prompt for links between aspects of the prior implementation and the uses, or lack thereof, of (SYSTEM) to that end]
12. Currently, are there any changes planned for (SYSTEM) or advising technology more broadly at the institution as a result of the pandemic?

CLOSING QUESTIONS

13. We are also hoping to speak with several of your colleagues who were involved in the process. Is there anyone you would suggest we contact?
 - a. Why should we speak with that/those person(s) specifically?
14. Lastly, what else is important that we have not already discussed that is key to understanding the implementation process for (SYSTEM)?

Appendix D: Constituency Group Descriptions

Constituency	Description
The Faculty	Faculty members are those who are responsible for the teaching and learning process at an institution. While faculty members often participate in informal advising, some institutions assign members of the faculty to more formal roles in the advising process, serving as advisors and mentors who need to respond to information stored in or generated by the advising technology system. In the course of their instructional responsibilities, faculty members also provide much of the data about student achievement or register concerns about students that the advising technologies use in all of their processes. Some of that data results in the normal course of teaching and learning, such as grades, and some of that data is purposefully created for the advising system, such as concern flags.
Senior Institutional Leaders	Senior institutional leaders are those in administrative roles with the authority to set institutional priorities and organize personnel and resources around these priorities. Depending on the size and structure of the institution, this group may include presidents and provosts, academic deans, and/or other high-level administrators responsible for advising, retention, and student success.
Information Technology	IT professionals are individuals who are responsible for constructing and troubleshooting the technological tools that govern the student experience (including homegrown student success technologies), and they have extensive knowledge of these systems. Whether such systems are homegrown or purchased from a third-party vendor, it is the IT professionals who integrate various data systems and make the appropriate views of the advising system available online to the various end users, including advisors, students, faculty members, and administrators.
Academic Support Services	Academic support services are those faculty or staff members who provide direct services to students to assist them in achieving optimal levels of academic success during their undergraduate experience. These services often involve peer or professional tutoring, writing support, or general study-skills training for students.
Students	Students throughout this report are defined as those who are enrolled in undergraduate programs at their given institutions. One participant described students as “the least knowledgeable, most numerous participants in the process” of advising. As their learning and ultimate academic success is the primary purpose of advising, students are a particularly important constituency.

Constituency	Description
Student Success Administrators	These are the leaders within the institution who are specifically responsible for student retention, persistence, and graduation. These responsibilities often lie with an individual or office charged with coordinating institutional retention efforts, but sometimes student success may be part of a portfolio of responsibilities for a high-level administrator.
The Software Provider	Third-party vendors sell institutions student success technologies, either as individual modules or comprehensive systems. Once procurement has taken place, vendors help colleges and universities adapt the tool to the needs of their given context and adopt the tool by following a set of predetermined steps.

1. Other resources developed through this initiative include an [“Advising Technology Procurement and Planning Playbook”](#) created by [the Ada Center](#) on best practices for institutions to use when procuring an advising technology, a best practices for advising technology implementation logic model designed by EDUCAUSE, and a developing point of view statement about advising technology and its role in the advising process from the Advising Success Network and [“Success Factors for Advising Technology Implementation”](#) created by EDUCAUSE.
2. Throughout this report, we define equity in line with the definition set forth by the ASN: “A concept grounded in the principles of justice and ‘do no harm,’ equity calls for both the acknowledgment of and commitment to rectifying historical injustices toward minoritized populations. In higher education, pursuing equity begins with institutions acknowledging that Whiteness is the norm and foundational to how the institution of higher education was created. Institutions pursuing equity articulate both their commitment to and actions in identifying, dismantling, and rebuilding the structures, systems, and cultures that uphold oppression and challenge minoritized students’ access to postsecondary opportunities and success.”
3. Hoori Santikian Kalamkarian, Melissa Boynton, and Andrea G. Lopez, [“Redesigning Advising with the Help of Technology: Early Experiences of Three Institutions,”](#) Community College Research Center at Teachers College, Columbia University, July 2018.
4. These technology functions were taken from the Student Success Technologies Maturity module of the 2019 Core Data Services survey facilitated by EDUCAUSE. See [“Core Data Service Survey Instruments 2011–Present”](#) for more information.
5. See, for example, Andrew K. Koch, [“Many Thousands Failed: A Wakeup Call to History Educators,”](#) Perspectives on History, May 1, 2017.
6. Melinda Mechur Karp and Georgia West Stacey, [“What We Know About Nonacademic Student Supports,”](#) Community College Research Center at Teachers College, Columbia University, 2013; Kalamkarian, Boynton, and Lopez, “Redesigning Advising.”
7. Ibid.
8. Tatiana Velasco, Katherine L. Hughes, and Elisabeth A. Barnett, [“Trends in Key Performance Indicators Among Colleges Participating in a Technology-Mediated Advising Reform Initiative,”](#) Community College Research Center at Teachers College, Columbia University, January 2020.
9. Allison Bailey, Nithya Vaduganathan, Tyce Henry, Renee Laverdiere, and Molly Jacobson, [“Turning More Tassels: How Colleges and Universities are Improving Student and Institutional Performance with Better Advising,”](#) Boston Consulting Group with NASPA, January 2019.
10. Jill Barshay and Sasha Aslanian, [“Colleges Are Using Big Data to Track Students in an Effort to Boost Graduation Rates, But It Comes at a Cost,”](#) The Hechinger Report, August 2019.
11. G. Bryant, A. Callahan, J. Seamon, and J. Hornstein, [“Driving Toward a Degree: Establishing a Baseline on Integrated Approaches to Planning and Advising,”](#) Tyton Partners, 2021.
12. Mark McCormack, [“Digital Capabilities in Higher Education, 2017,”](#) research report (Louisville, CO: ECAR, July 2019).
13. Rayane Alamuddin, Daniel Rossman, and Martin Kurzweil, [“Interim Findings Report: MAAPS Advising Experiment,”](#) Ithaka S+R, June 27, 2019.

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14. Abigail D. Coffin, "[Implementing Academic Analytics and the Impact to Academic Advising](#)," [dissertation] Kansas University, 2018
 15. D. Christopher Brooks, "[IPAS Implementation Handbook](#)," ECAR, October 13, 2014.
 16. Diane L. Morehouse and Stacey H. Stockdill, "[A Technology Adoption Model](#)," *Educational Technology* 32, no. 2 (February 1992): 57–58.
 17. For more information about advising technology implementation pilot initiatives, please see Michael Fried and Christy McDaniel, "[Different Approaches to Piloting Advising Technology: Comparing Webster University and West Virginia State University](#)," Ithaka S+R, May 26, 2021.
 18. Adopted from Pasquini, L. A., *Emerging Digital Resources: Easy and Accessible Online Tools*. In J. Voller, M.A. Miller, and S.L. Nest (eds.), *Comprehensive Advisor Training and Development: Practices That Deliver*, 2nd ed. (Manhattan, KS: NACADA Publishing, 2010): 123–129.
 19. Morehouse and Stockdill, 1992.
 20. Ibid; Charles R. Graham, Wendy Woodfield, and J. Buckley Harrison, "[A Framework for Institutional Adoption and Implementation of Blended Learning in Higher Education](#)," *Internet and Higher Education* 18 (July 2013): 4–14.
 21. See, for example, Jay M. Siegelau, "[Managing Stakeholders to Achieve True Implementation Success](#)," paper presented at PMI Global Congress 2005—North America, Toronto, Ontario, Canada. Newtown Square, PA: Project Management Institute; Lynda Bourne, "[Stakeholder Relationship Management: A Maturity Model for Organizational Implementation](#)," Farnham: Gower, 2009; Nicole Wagner, Khaled Hassanein, and Milena Head, "[Who Is Responsible for E-Learning Success in Higher Education? A Stakeholders' Analysis](#)," *Journal of Educational Technology & Society* 11, no. 3 (2008): 26–36.
 22. Wagner, Hassanein, and Head, "Who Is Responsible for E-Learning Success in Higher Education?"; Ajayi Ekuase-Anwansedo, Susannah F. Craig, and Jose Noguera, "[How to Survive a Learning Management System \(LMS\) Implementation? A Stakeholder Analysis Approach](#)," SIGUCCS [paper session], October 2018.
 23. The institutional data reported for each case site in the following footnotes uses language used by the institution to present this data.
 24. During the fall 2020 term, ASU had a total undergraduate population of 63,124 students, with 46.6% White, 33.1% Pell recipient, 31.9% first generation, 26.2% Hispanic/Latino, 8.9% part-time, 8% Asian, 6.6% international, 4.9% two or more races, 4.3% Black/African American, 1.2% American Indian/Alaska Native, 0.2% Native Hawaiian/Pacific Islander.
 25. Based on data from the US DOE, Blackhawk has a total undergraduate population of approximately 2,157 students, with 72% White, 67% part-time, 55% Pell recipients, 15% Hispanic, 7% Black, 3% two or more races, 1% Asian, 1% American Indian/Alaska Native.
 26. During the spring 2021 term, Bloomsburg had a total undergraduate population of 7,060 students, with 77.4% White, 7.6% Hispanic, 6.1% Black or African American, 2.1% two or more races, 1.3% Asian, 0.3% American Indian or Alaska Native, 0.1% Native Hawaiian or Other Pacific Islander.
 27. In fall 2019, JU had a total of 2,928 undergraduate students, with 53.8% White, 19% Black/African American, 10.9% Hispanic, 2.7% Asian, 3.1% two or more races, 0.5% American Indian/Native Alaskan, 0.4% Native Hawaiian or Other Pacific Islander.

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28. For more detailed information about the implementation process for Jacksonville University, please see Michael Fried and Christy McDaniel, "[Accelerating Advising Technology Implementation in Response to COVID-19: A Case Study of Jacksonville University](#)," Ithaka S+R, December 14, 2020.
 29. In 2020, K-State had a total undergraduate population of 16,257 students, with 79.30% White, 10.83% part-time students, 7.60% Hispanic, 3.91% multiracial, 2.93% Black, 1.75% Asian, 0.44% American Indian, 0.09% Hawaiian/ Pacific Islander.
 30. The DFW rate is the measurement of the proportion of students who receive a D, receive an F, or withdraw.
 31. Montclair has a total undergraduate population of 16,374 students, with 40% White, 29% Hispanic/Latino, 13% Black/African American, 11% part-time, 6% Asian, 3% two or more races.
 32. In December 2020, NWTC had an undergraduate population that was 84% part-time, 33.2% Pell-eligible, 52.6% first-generation, 54.7% employed full time, 81.1% White, 6.5% Hispanic/Latino, 4.3% Black/African American, 3.7% Asian, 3.5% American Indian, 0.1% Native Hawaiian/Other Pacific Islander.
 33. For more detailed information about the advising technology implementation at Northeast Wisconsin Technical College, please see Michael Fried and Christy McDaniel, "[The Many Facets of Faculty Involvement in the Implementation Process: A Case Study of Northeast Wisconsin Technical College](#)," Ithaka S+R, March 26, 2021.
 34. SOCCCD is made up of two colleges, Saddleback College and Irvine Valley College. Together, the two schools have a total population of 67,250 students, with 22% full-time, 57% part-time, and 16% noncredit students. Irvine Valley College has a total of 23,423 students, with 36% Asian, 33% White, 20% Hispanic, 2% African American, and 9% all other races/ethnicities. Saddleback College has a total of 43,827 students, with 51% White, 24% Hispanic, 14% Asian, 2% African American, 9% all other races/ethnicities.
 35. Syracuse University has an undergraduate population of 14,479 students, with 16.1% Pell eligible, 54.6% White, 10.2% Hispanic or Latino, 6.8% Black or African American, 6.5% Asian, 3.8% two or more races, 0.6% American Indian or Alaska Native.
 36. In fall 2020, TTC had a total of 1,428 students enrolled, with 54.62% White, 24.93% Black or African American, 9.80% Hispanic/Latino, 6.72% two or more races, 1.75% Asian, 0.42% Native Hawaiian or Other Pacific Islander, 0.28% American Indian or Alaska Native.
 37. iPASS stands for Integrated Planning and Advising for Student Success. Facilitated by EDUCAUSE and funded by the Bill & Melinda Gates Foundation and the Leona M. and Harry B. Helmsley Charitable Trust, the grant initiative aimed to promote new approaches to advising and degree planning services using technology. More information is available at [iPASS Grant Challenge](#).
 38. Achieving the Dream, a nonprofit organization dedicated to student success reform in higher education, has offered strategic support to 26 colleges and universities. This support was put in place to assist these institutions in using technology and human relationships to transform their advising and planning processes to optimize student retention and success.
 39. During the 2019–20 academic year, Webster University had a total domestic undergraduate population of 3,206 students, with 44.6% White, 38.4% Black or African American, 9.3% Hispanic, 4.4% Asian, 2.7% two or more races, 0.3% Native Hawaiian or Other Pacific Islander, 0.3% American Indian or Alaska Native.
 40. In fall 2018, WVSU had a student population that was 74.2% Caucasian, 8.1% African American, 4.9% Multiracial, 3.1% Asian, Hawaiian/Pacific Islander, Hispanic or American Indian.