Framing Leadership for Sustainable Interdisciplinary Programs

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Interdisciplinary learning is a twenty-first-century imperative. We are continually faced with societal and global challenges that require interdisciplinary thinking to identify suitable solutions, such as finding new energy sources, dealing with the effects of our changing climate, and ensuring populations across the globe have adequate food and healthful living environments. In addition, research in the science, technology, engineering, and mathematics (STEM) disciplines is increasingly crossing traditional disciplinary lines with scientists and engineers collaborating with other disciplines, including the humanities and social sciences, in both basic and applied research projects.

In A New Biology for the 21st Century (National Academies 2009), the interdisciplinary and integrative nature of the biological sciences is described with respect to issues related to global food, health, environment, and energy challenges. Innovation with Impact (American Society for Engineering Education 2012) argues for educational innovations that address the increasingly collaborative, multidisciplinary, entrepreneurial, and global nature of problems, and the need for curricular initiatives that facilitate interdisciplinary breadth, communication, teamwork, critical thinking, ingenuity, creativity, leadership, and an understanding of global economic, environmental, and societal contexts. These reports followed on the heels of the National Academies report (2004) Facilitating Interdisciplinary Research, which outlined specific strategies for making research environments more conducive to collaboration.

This article emerged from work done in the national Keck/Project Kaleidoscope (PKAL) Facilitating Interdisciplinary Learning project, funded by the W. M. Keck Foundation. The primary aim of this project was to identify specific strategies for facilitating interdisciplinary college learning that significantly involved the STEM disciplines. The project involved teams from twenty-eight colleges and universities—representing the diversity of four-year institutions in this country. Teams were chosen based on their vision for and commitment to undergraduate interdisciplinary learning; most teams were at the beginning of a process for creating a new or significantly revised interdisciplinary program. All programs involved STEM disciplines either entirely or in concert with disciplines outside of STEM. Figure 1 shows the distribution of the types of interdisciplinary work in which campuses were involved.

During the course of the project, more than three hundred faculty and campus leaders were engaged, participating in five national meetings, including two roundtables focused on assessment and leadership. Teams submitted annual reports and were surveyed at the beginning and the end of the project regarding institutional structures, barriers, climate, and other issues. Five key recommendations were distilled from the work of campuses in this project; they are summarized in What Works in Facilitating Interdisciplinary Learning in Science and Mathematics Summary Report (AAC&U 2011). While the project had a deliberate focus on interdisciplinary STEM programs, we believe the project findings are applicable to any type of undergraduate interdisciplinary program.

To further assist campus leaders in answering the question, “How can I shepherd a fledgling interdisciplinary curricular initiative to become a mature, stable interdisciplinary program?” we took the five project recommendations and aligned them with a process flow that outlines key issues to address when planning, implementing, and institutionalizing innova-
tive, interdisciplinary programs. Details of this process flow are published in *Leadership for Interdisciplinary Learning: A Practical Guide to Mobilizing, Implementing, and Sustaining Campus Efforts* (AAC&U 2012), as well as on an interactive website developed to assist campus leaders of interdisciplinary initiatives (http://www.aacu.org/pkal/interdisciplinarylearning/guide.cfm). This article focuses on the final stage of the process—creating programs that last—because through this project, we have come to understand that long-term sustainability may be the most critical issue for the establishment of successful interdisciplinary programs.

In particular, we apply the “four frames” model of organizational theory (Bolman and Deal 2008; Bolman and Gallos 2011) to the issue of long-term sustainability. This approach identifies four frames, or lenses, through which organizational issues can be viewed: (1) the human resource frame, (2) the structural frame, (3) the political frame, and (4) the symbolic frame. We found that program leaders often encounter issues that fall within the context of one or more of these four frames and that impede program growth and stability (Kezar and Elrod 2012).

Our rationale in taking the frames approach was to help institutional leaders view these challenges from multiple perspectives in order to identify practical pathways for overcoming them. We believe that attention to the issues identified by this organizational model early in the process of developing interdisciplinary programs will improve the likelihood of long-term success. This approach is likely to be useful for new curricular innovations, whether interdisciplinary or not, if they share the common theme of creating new structures, bringing people together in new ways, requiring creative allocation of resources, and encouraging teamwork across disciplinary or departmental lines.

**THE CHALLENGES TO SUSTAINING INTERDISCIPLINARY PROGRAMS**

New interdisciplinary courses and programs are generally easy to start. They often begin with a spark of interest by colleagues or students based on current research interests or societal issues involving interdisciplinary themes. Designated as experimental courses or special programs with temporary funding, they can be successfully launched. However, finding support beyond this pilot level is often the point when interdisciplinary programs fall apart. When the early adopters run out of steam or bump up against other departmental teaching commitments, or the program exhausts its initial special funding, the program ends. However, if during program planning and implementation stages strategies have been put in place, or can be developed based on the multiple perspectives described in the four frames model, the likelihood that the program can be sustained by the institution is high. Thus, we chose to focus here on leadership strategies that support sustainable interdisciplinary programs.

**THE FOUR FRAMES APPROACH**

If you study any program that has been successfully introduced and sustained at an institution, you will see that the program has the necessary people (positions and specific individuals), supportive structures (policies and incentive structures), and alignment with mission and governance of the institution (political structures). In addition, the achievements of a sustainable program are recognized and celebrated regularly (symbolic indications of a successful program). The human resources, structures, politics, and symbolic elements represent four key factors that are required for a program to be sustainable and represent four frames through which a leader at any level can view a fledgling initiative to determine what strategies could be applied to move the initiative toward sustainability. This four frames model was developed by Bolman and Deal (2008) as an approach for evaluating issues, developing a more complete picture of what is happening, and making.

![Figure 1: The Distribution of the Types of Interdisciplinary Work in Which Campuses Were Involved, Based on Post-Program Survey Data.](image)
decisions about what to do next. Bolman and Gallos (2011) took the initial four frames model and demonstrated its usefulness in the academic environment.

In our work with leaders at all levels, we have found that when leaders truly take on the questions posed by all four frames, they often arrive at powerful insights regarding issues that threaten the sustainability of their initiatives. Leaders may also identify new approaches they have never before considered when looking at the issue from these multiple organizational perspectives.

In the sections below, questions are posed reflecting each of the four frames as they apply to interdisciplinary initiatives. Each question is followed by a list of the most common or impactful campus strategies that have been synthesized from the project and from workshops and conversations with a variety of academic leaders around the country.

Human Resources Frame: Do you have (and can you keep) the right people?
For an interdisciplinary initiative to be successful, the campus environment must attract talented individuals and find ways to channel their talents and support their work in the program. To sustain an interdisciplinary initiative, programs need (1) people with appropriate interdisciplinary and programmatic expertise, (2) appropriate incentives to encourage participation of faculty and students, and (3) faculty development opportunities that support teaching and assessment strategies appropriate to interdisciplinary learning. Strategies in this frame include those that relate to hiring, cultivating, and rewarding faculty and staff with appropriate expertise, such as the following:

- Create a clearinghouse list of faculty within the institution whose training, teaching, or research expertise overlaps with interdisciplinary program focus areas.
- Institute hiring procedures that permit the hiring of faculty who are not affiliated with a single department but are instead affiliated with multiple departments and/or an interdisciplinary program.
- Consider using the Council of Environmental Deans and Directors recommendations on hiring, promotion, and tenure (RPT) policies that are supportive of interdisciplinary teaching and learning.

Structural Frame: Do you have enabling structures?
The structural frame refers to the rules, policies, procedures, and reporting structures that programs and individuals must navigate in order to accomplish their missions and goals. Leaders need to pay attention to these issues; according to Bolman and Gallos, “[a]cademic leaders succeed when they create an appropriate set of campus arrangements and reporting relationships that offer clarity to key constituents and facilitate the work of faculty, students, staff, and volunteers” (2011, 11). Therefore, to have a sustainable interdisciplinary initiative, a program will need strategies for (1) creating workload policies that support interdisciplinary course offerings; (2) developing review, promotion, and tenure (RPT) policies that are appropriate for interdisciplinary teaching and learning; (3) establishing appropriate formal and informal spaces for interdisciplinary programs and projects; (4) funding interdisciplinary programs and projects; and (5) communicating to stakeholder communities both internal and external to the institution. In this framework, strategies pertain to policies, facilities, funding models, and communication processes that will enable the innovations to last beyond experimental pilot testing, such as the following:

- Develop co-teaching models appropriate to campus resources; use these
models as temporary mechanisms in the initial phases of program piloting to develop a cadre of experienced interdisciplinary instructors.

- Create mechanisms that allow linked courses to be scheduled at the same time, enabling the classes to meet together periodically to have cross-disciplinary discussions.
- Review RPT policies for mechanisms that support interdisciplinary course or program involvement.
- Consider mechanisms for ensuring that interdisciplinary program leaders have input in tenure and promotion decisions as they relate to interdisciplinary program needs.
- Use memoranda of understanding to clarify roles and responsibilities of interdisciplinary faculty and how RPT decisions will be made (committee membership, departments involved in the review and their role in the review process).
- Integrate efforts to find space for new interdisciplinary learning with the decision-making process concerning institutional priorities and budgets.
- Repurpose existing spaces to creatively address needs for interdisciplinary learning in ways that aren’t new or additive, but that ensure more complete integration of the interdisciplinary program into the institutional culture.
- Create/renovate spaces and facilities to promote and facilitate interdisciplinary learning.
- Align budgetary structures, allocation, and reallocation procedures to support interdisciplinary programs, faculty, students, and spaces.
- Align institutional fundraising initiatives, including the search for funding from federal agencies and private organizations, with support for programmatic and institutional goals regarding interdisciplinary learning.

- Include development staff in planning meetings, or meet with them separately, to ensure interdisciplinary learning and program goals are on the fundraising agenda.
- Seek external funding for projects that will help the campus develop and launch new interdisciplinary courses or programs.
- Develop websites for interdisciplinary programs to serve both internal and external audiences.
- Leverage campus conferences, such as student research conferences, to ensure interdisciplinary program-related presentations are included.
- Use relevant student organizations to publicize interdisciplinary program outcomes, events, and accomplishments.

Political Frame: Have you created alignment with campus politics and shared governance?

One of the greatest perceived barriers to sustaining interdisciplinary programs is the seeming competition between departmental needs and interdisciplinary program needs—particularly conflicts that are associated with competition for scarce resources (money, students, faculty time, and space). Most institutions are organized in a departmental or college structure that can create islands (or silos) where it may be difficult to build the bridges necessary to support interdisciplinary initiatives. This is particularly true where budget models or curriculum approval processes favor traditional departmental line reporting or college structures. According to Bolman and Gallos, "Skilled academic administrators are compassionate politicians who respect differences, manage them productively, and respond ethically and responsibly to the needs of multiple constituencies without losing sight of institutional goals and priorities" (2011, 12). However, departmental boundaries and complicated political terrain don’t have to be barriers. To sustain an interdisciplinary initiative, programs need strategies for (1) engaging departments in the conversation, (2) including interdisciplinary faculty in decision-making processes, and (3) establishing curricular review and approval procedures that are inclusive of interdisciplinary programs/projects. Strategies to achieve this goal include the following:
- Include department leadership in early conversations regarding new interdisciplinary programs to identify concerns that need to be addressed or opportunities to leverage department resources or program offerings.
- Identify disciplinary or general education requirements that might be met by new interdisciplinary initiatives or existing courses that may help new interdisciplinary programs reach their goals.
- Establish formal administrative structures and leadership positions in support of interdisciplinary programs (e.g., Center for Interdisciplinary Studies, dean of Interdisciplinary Studies, Center for Materials Science).
- Work to ensure interdisciplinary programs have the same rights and responsibilities as disciplinary programs in governance decisions (representation on senate committees, curriculum committees, etc.)
- Ensure campus curricular approval and review processes enable the development of interdisciplinary learning courses and programs.
- Check that the curriculum processes allow courses and programs to be identified as interdisciplinary, and provide space for various department-level approvals and comments.

Symbolic Frame: Do you celebrate faculty and student achievements with respect to the interdisciplinary initiative? Stories, symbols, and celebrations shape and convey the meaning and goals of an interdisciplinary initiative to a wide range of constituencies and can make the initiative visible and a part of the institution’s culture. Particularly important is the need to recognize and celebrate the achievements of the individuals—students, faculty, and staff—in the program. As Bolman and Gallos point out, “Good theater fuels the moral imagination, and successful campus leaders infuse everyday efforts with energy and soul” (2011, 12). To sustain an interdisciplinary initiative, programs need strategies for celebrating student and faculty work in interdisciplinary areas. Strategies to achieve this goal include the following:
- Celebrate achievement of key interdisciplinary milestones and successes, including student achievements and alumni news, as well as program events and faculty research accomplishments.
- Host and publicize speaker series on topics related to the goals of interdisciplinary programs.
- Disseminate key programmatic achievements via campus websites and news outlets and through alumni news, as well as external venues such as conferences.

CONCLUSION
There is a growing demand for interdisciplinary programs and learning. The bellwether reports published by the American Society for Engineering Education and the National Academies provide key indicators of where undergraduate programs should be focused—on creating more interdisciplinary experiences where students can gain the knowledge and skills they need to address the complex challenges facing our society. However, it is a leadership challenge to plan, implement, and sustain these types of programs over the long haul. This article focuses on an approach that we hope will help campus leaders “reframe” the challenges, clarify their thinking, and test assumptions in order to create sustainable programs. While the Keck/PKAL project engaged campus teams around programs in undergraduate STEM learning, we believe that leaders working on any type of interdisciplinary or innovative program will benefit from this approach. The four frames provide lenses through which key issues challenging sustainable program can be viewed and help leaders develop creative solutions to those overcoming the barriers.

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REFERENCES


