CIRTL INCLUDES Strategic Goal 1:

A Guide to the Mentoring, Advising, and Pedagogy Frameworks

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Table of Contents

Introduction to the Frameworks

Where can you view the Frameworks?

The Research Mentoring Framework, Advising Framework, and Inclusive Pedagogy Frameworks can be viewed at the CIRTL INCLUDES SG1 website.

Undergraduate Research Mentoring Framework:
https://cirtlincludes.net/undergraduate-research-mentoring-framework/

Faculty Advising Framework:
https://cirtlincludes.net/faculty-advising-framework/

Inclusive Pedagogy Framework:
https://cirtlincludes.net/inclusive-pedagogy-framework-2/

Supporting materials for the Advising Framework, including an Advising Case Study List and Advising Resource Lists can be found at https://goo.gl/UtRu2o .

What is the Goal of the Frameworks?

The frameworks were created in order to provide a tool which can be utilized in the preparation of future STEM faculty in evidence-based teaching, mentoring, and advising practices. Undergraduate students seeking advanced degrees in STEM areas has been trending towards increasingly diverse populations, however retention of under-represented groups (URG) in STEM continues to be a greater challenge than enrollment (National Science Board, 2018). Thus, the frameworks were designed to collate evidence-based practices that have been demonstrated to support and reduce barriers to URG STEM undergraduate success.

We have chosen to create frameworks from literature-based best practices around three aspects of undergraduate STEM partnerships with faculty: pedagogy, research mentoring, and advising. Strong faculty-student interactions from research mentoring and faculty advising have been shown to increase persistence of URGs in STEM undergraduate programs (Tsui et al., 2007).

What is the intended use of these Frameworks?

We would like these frameworks and listed references to inform professional development programs on evidence-based undergraduate research mentoring, faculty advising, and inclusive pedagogy skills. We also intend for these frameworks to assist any interested current or future STEM faculty members who have an interest in learning about inclusive practices for the many facets of student instruction. This framework can serve as a living reference document, to be updated as new inclusive strategies for faculty are evaluated.

The Undergraduate Research Mentoring Framework

What is the Undergraduate Research Mentoring Framework?

The Research Mentoring Framework was based initially on feedback from INCLUDES Summit 1, where attendees were asked what professional development is needed to improve faculty undergraduate mentoring. Following the first summit, the Pfund et al. (2016) paper presented core attributes for mentoring, supported by existing literature and theoretical models. The Undergraduate Research Mentoring Framework maps the feedback obtained from the CIRTL INCLUDES Summit I meeting onto the framework published in the Pfund et al. (2016) paper. The vast majority of the listed *Attributes* and *Example Measurable Learning Objectives* were matched with the input obtained from Summit I, indicating that there was a significant alignment between CIRTL Summit I members' opinions about inclusive and effective mentoring and the Pfund et al (2016) paper. For the Summit I input that did not match with a corresponding attribute within the framework, new competency categories were added, namely the *Mentoring Models* and *Institutional Level* competencies.

The Undergraduate Research Mentoring Framework includes several practices that promote an effective relationship, separated between *Mentors* and *Mentees*. Both of these major divisions are then further subdivided in competencies, as described below.

Navigating the Undergraduate Research Mentoring framework

The Research Mentoring Framework is divided into two main sections based on the role of the individual described in the framework: *Mentors* or *Mentees*. Within each major

section, there are broad categories of *Competencies* which organize the related *Attributes* for either the *Mentors* or *Mentees*. These are the same for BOTH *Mentors* and *Mentees*: *Research, Interpersonal Skills, Psychosocial & Career, Culturally responsive/diversity, Sponsorship, Mentoring Models, and Institutional Level.*

Attributes lists skills and attributes which are organized within the relevant *Competencies* listed above. Like the *Competencies*, *Attributes* are matched between *Mentors* and *Mentees*. *Example measurable learning objectives* delineates the specific roles or learning outcomes required **separately** by *Mentors* and *Mentees*. The framework also offers evidence from INCLUDES Summits 1 and 2 and additional resources.

The Faculty Advising Framework

What is the Faculty Advising Framework?

The Faculty Advising Framework is an organized array of advising core competencies and best practices synthesized from existing guidelines from The National Academic Advising Association (NACADA), University of California, Berkeley (UCB), the University of Wisconsin-Madison (UW-M) and academic literature on advising undergraduate students. The framework includes knowledge, roles, and skills which have been deemed necessary for effective advising. Our literature search to date efforts indicate that the lack of focus on faculty advising seems to be stark in comparison to abundant theoretical, conceptual and empirical body work on academic advising in general. Therefore, while our framework draws heavily on academic advising, we have attempted to ensure that the competencies and skills most relevant to faculty advisors remain in focus.

Navigating the framework

The Faculty Advising Framework is first divided into *Advisor* and *Advisee*, similar to the division of *Mentor* and *Mentee* within the Undergraduate Research Mentor Framework. Also like the Undergraduate Research Mentor Framework, the *Advisor* and *Advisee* sections are then further divided into increasingly more specific practices which can strengthen the advisor and advisee relationship.

Both the *Advisor* and *Advisee* sections are further divided into the same five *Competencies*, which describe broad areas in which specific knowledge, roles, and skills are needed to be an effective advisor or prepared advisee. Within each *Competencies* heading, the framework divides these broad areas into more specific *Skills*, which have some but not complete overlap between the *Advisor* and *Advisee* parts of the framework.

Each of the *Skills* headings represent a multitude of *Concepts, Knowledge, and Practices*. Within this section, the framework lists more specific ideas, erudition, and applications for each of the *Skills*. The right-most section of the Faculty Advising Framework are specific examples of best practices directly linked to primary literature, case studies, and higher education advising resources. However, not every category has a listed *Examples of Advisor/Advisee Success*, since this framework is still in progress. References to primary literature and academic literature on advising undergraduate students are referenced to indicate overlaps in content from more than one source. Additionally, extra resources in advising have been collected in order to provide case study examples. These resources can be accessed at: https://goo.gl/UtRu2o .

The Inclusive Pedagogy Framework

What is the Inclusive Pedagogy Framework?

The construction of the inclusive pedagogy framework began by amalgamating the findings from two resources: a) a peer-reviewed synthesis article on inclusive practices in higher education (Salazar et al., 2010) and b) a practical checklist from the Universal Design of Instruction (UID checklist) based on the work of Chickering and Gamson (Does Your Curriculum Provide an Inclusive Environment? Is it IUD Friendly). After reviewing many papers on inclusive pedagogy, we found the Salazar et al. (2010) article to be the most comprehensive account of existing literature on inclusive teaching in higher education to date. The Inclusive Pedagogy Framework includes several practices that promote inclusive teaching. This framework focuses on 3 main aspects of Inclusive Pedagogy: Inclusive Communication, Inclusive Instructional Practices, and Designing Inclusive Curriculum.

Navigating the Research Mentoring framework

We wanted the framework to have a structure similar to the previously developed faculty advising and mentoring frameworks. The first step in developing the framework involved a comparison in the core competencies across both sources. Salazar et al. (2010) identifies 5 categories/competencies, and the UID checklist identifies 7 categories, some of which overlapped the categories from Salazar. Missing from the UID checklist was a focus on intrapersonal awareness on behalf of the instructor, which was covered by Salazar et al. (2010). Due to the overlap in the skill sets for the Core Competencies from the two papers, we organized the Inclusive Pedagogy Framework into 3 *Core Competencies.*

In both papers, each major category included a list of many general skills, strategies, and specific practices. The lists from both references were compared and reduced to account for overlaps in the content. These recommended practices were not further organized based specificity of general skills or specific practices. We compiled the lists of distinct general skills, strategies, and practices from both references, and then organized these inclusive practices from general skills to specific practices.

The general process for organization and assignment of content to the different levels of the framework categories was managed by reaching item-by-item agreement between framework developers. In some cases, categories obtained from the Salazar et. al. (2010) and UID Checklist were further divided to clarify their intent. Most of the *Skills* were obtained from Salazar et al. (2010) and includes some overlapping topics with the advising framework, e.g. interpersonal skills, intrapersonal awareness. In addition to the 3 *Core Competencies*, inclusive pedagogy practices are divided into the increasingly more specific areas of *Skills*, *Strategies*, and *Specific Practices.*

Research literature and other sources from Teaching and Learning Centers that support items in the pedagogy framework have been referenced at the end of every corresponding entry. Entries that indicate several sources highlight the overlaps between different sources. We also included a notation in the references for those *Strategies* and *Specific Practices* which corresponded to the information obtained at the INCLUDES Summit I meeting.

Areas for Further Development

Across all three frameworks there is an additional need for further synthesis, to find common areas and skills across all frameworks/practices. These overlapping ideas and basic skills would represent a rich source of knowledge, by identifying common elements in the multiple responsibilities of faculty members. Professional development programming could then be streamlined by a unified theoretical understanding of inclusive practices in higher education, to focus on those skills and attributes which will maximally benefit the enrichment of student-faculty interactions on many levels.

Additionally, our partnership with the CIRTL INCLUDES SG2, revealed that these frameworks would benefit from further additions to the challenges of mentoring, advising, and teaching students who transferred from a community college. The proportion of students who begin their undergraduate education in community or 2-year colleges is around 18% and typically have a higher proportion of diverse students than traditional baccalaureate-granting institutions (National Science Board, 2018). Current and future faculty members need to be guided towards resources which can better prepare and enrich their interactions with students who are transferring from community or 2-year colleges. Thus, these frameworks would benefit from augmentation with research-based best practices for undergraduate research mentoring, faculty advising, and inclusive pedagogy practices of transfer students from community colleges.

Undergraduate Research Mentoring Framework

Though there have been a significant number of studies that address undergraduate research mentoring at 4 year institutions, there have not been many that specifically focus on creating partnerships between community colleges (CCs) and 4 year baccalaureate granting institutions for undergraduate research mentoring. According to a 2015 AAC&U *Peer Review* publication (Hensel and Cejda, 2015), several community colleges have begun offering undergraduate research opportunities. At the time of compiling these frameworks, it was not apparent if such community college / baccalaureate partnerships for the purpose of undergraduate research regularly exist between regional institutions. One of the strategic goals for the CIRTL INCLUDES project was to develop alliances between regional community colleges and 4-year baccalaureate institutions. Therefore, an *Institutional Level* section was added to the framework to include this specific attribute that was contributed by the Summit I collective input. As additional elements that contribute to

enhanced diversity in STEM undergraduate research are recognized, the framework may be further adapted and revised to better represent the findings of the most current literature.

Advising Framework

The lack of theoretical and empirical literature specific to *faculty advising* certainly highlights the need for further study and development. Since the current framework draws heavily on the academic advising literature, further efforts to refine the framework to correspond to faculty needs and roles would be essential. This can be achieved by incorporating emerging research into the current framework and through feedback from faculty who attend professional development programmes to improve their advising skills.

Additionally, while compiling the framework, it was evident that most of the existing core guidelines did not emphasize student health and well-being (with the exception of UCB). Owing to the increasing urgency to bring focus to mental and physical health issues faced by students at higher education institutions, Health and Well-being has been incorporated as a *Competencies*. As more research develops around the benefits and impact of mental and physical health in undergraduate success, best practices in faculty advising regarding this very important facet of student life should be updated and expanded.

Inclusive Pedagogy Framework

There is no central set of skills/ideals agreed upon as "inclusive" even though there are many models around inclusive pedagogy. The Inclusive Pedagogy Framework presented here is very heavily influenced by Universal Design of Instruction. There are many ways in which an instructor can be inclusive in their instruction. Several theories and approaches of instruction, such as Students as Partners, Constructivist Theory, Sociocultural Theory, Service Learning etc., should be considered as also having a place in inclusive pedagogy. The Inclusive Pedagogy Framework presented includes many useful practices designed to utilize and accommodate a diverse student population, but is not a complete list of how an instructor can engender inclusivity within an undergraduate classroom setting.

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