

CABLE Faculty Mentoring Guide

A COLLECTION OF EXPERIENCES AND LESSONS LEARNED ABOUT MENTORING



THE OHIO STATE UNIVERSITY

COLLEGE OF FOOD, AGRICULTURAL,
AND ENVIRONMENTAL SCIENCES



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PREFACE

Faculty Mentors who share their knowledge, skills, and experiences are instrumental in helping their student Mentees achieve their potential. In addition to guiding students to recommended courses and opportunities, faculty have the unique opportunity to serve as Mentors, that is, coaching and advising students in personal growth and leadership habits toward a rewarding professional career.

The purpose of this Faculty Mentoring Guide is to leverage the combined mentoring experience of CABLE University Faculty, and to document CABLE Faculty recommendations for others entering the field in the future.

The Guide reflects the mentoring talents and insights of university professors at more than twenty U.S. campuses who participated in the Consortium of Advanced Bioeconomy Leadership Education (CABLE) project and mentored student delegates with building bioeconomy knowledge and leadership skills. While the CABLE project has focused on the bioeconomy, the mentoring component of the project is broadly applicable.

We recognize that faculty members often facilitate career development through mentoring students. By assembling the collective mentoring experience of CABLE faculty Mentors, we hope to provide a brief yet useful guide to share experiences, resources and strategies with others engaged in mentoring relationships and programs.



CABLE FACULTY MENTORS & CONTRIBUTORS

Wubishet Tadesse, PhD
Professor, Biological and
Environmental Engineering
Alabama A&M

Kimberly Ogden, PhD
Professor, Chemical &
Environmental Engineering
Arizona State University

Sushil Adhikari, PhD
Alumni Professor and Director, Center
for Bioenergy and Bioproducts
Auburn University

Yi Wang, PhD
Assistant Professor,
Biosystems Engineering
Auburn University

Anthony Arment, PhD
Professor, Biology
Natural Sciences
Central State University

Marcus Nagle, PhD
Assistant Professor,
Agricultural Research and
Development Program
Central State University

Kenneth F. Reardon, PhD
Professor, Chemical and
Biological Engineering
Colorado State University

John T. Bushoven, PhD
Professor, Department Chair,
Horticultural Science and Curator,
The Arboretum at Fresno
California State University, Fresno

William Wright, PhD, PE
Professor, Civil Engineering
Civil & Geomatics Engineering,
California State University, Fresno

Mingxin Guo, PhD
Professor, Agriculture and
Natural Resources
Delaware State University

Mark Mba Wright, PhD
Assistant Professor,
Mechanical Engineering
Iowa State University

Giovanna Aita, PhD
Professor, Audubon
Sugar Institute
Louisiana State University

Stephen Kelley, PhD
Professor, Forest Biomaterials
North Carolina State University

Sunkyu Park, PhD
Professor, Forest Biomaterials
North Carolina State University

Omar Holguin, PhD
Assistant Professor, Plant and
Environmental Sciences
New Mexico State University

David Ripplinger, PhD
Assistant Professor, Agribusiness and
Applied Economics, North Dakota State
University

Raymond Huhnke, PhD
Professor, Director, Biobased
Products and Energy Center
Oklahoma State University

Yanqi Wu, PhD
Professor, Plant and Soil Sciences
Oklahoma State University

Serpil Guran, PhD
Director, Rutgers EcoComplex,
Associate Teaching Professor
Rutgers, The State University
Of New Jersey

Tim Volk, PhD
Senior Research Associate,
Forest and Natural
Resources Management
SUNY-ESF

Venugopal Mendu, PhD

Assistant Professor, Plant and Soil
Science; Fiber and Biopolymer
Research Institute (FBRI)
Texas Tech University

Leah McHale, PhD

Assistant Professor,
Horticulture & Crop Science
The Ohio State University

Ajay Shah, PhD

Assistant Professor, Food, Agriculture
and Biological Engineering
The Ohio State University

Rick Gustafson, PhD

Professor, School of
Environment and Forest Sciences
University of Washington

Caixia (Ellen) Wan, PhD

Assistant Professor,
Biological Engineering
University of Missouri

Leon Schumacher, PhD

Professor, Agricultural
Systems Management
University of Missouri

Richard Pratt, PhD

Professor, Plant &
Environmental Sciences
New Mexico State University

Joseph Bozzell, PhD

Professor, Center for
Renewable Carbon
University of Tennessee

David Harper, PhD

Professor, Center for
Renewable Carbon,
University of Tennessee

Jamie Schuler, PhD

Assistant Professor of Silviculture,
Program Coordinator, WVU Forests,
West Virginia University

David DeVallance, PhD

Associate Professor, Forest &
Natural Resources
West Virginia University

Zywia Chadzynska

CABLE Co-I, Faculty Coordinator,
Facilitator for Faculty
Mentor Guide Development
Education Projects & Partners

Corinne J Rutkze, PhD

CABLE Co-I, Publications
Editor and University Liaison
Education Projects & Partners

Casey Needham

CABLE Communications Specialist
The Ohio State University

Dennis Hall

CABLE PI 2017-18
Project Director, OBIC
The Ohio State University

Shannon Hollis

CABLE Program Director, OBIC
The Ohio State University

1. WHAT IS MENTORING?

WHAT IS (AND ISN'T) MENTORING?

In today's academic environment, students and junior scientists often need assistance in acquiring advanced knowledge, gaining professional skills, and completing research projects. They typically seek guidance from their instructors, advisors, or others who are more experienced. They may work on a team and get feedback from other students and faculty. Mentoring goes beyond providing general guidance and teaching students to function effectively in a particular field. Mentoring is a supportive relationship process through which the Mentor shares his/her experience, knowledge, and skills, with the Mentee in order to assist the Mentee's career development and life improvement. Faculty guiding students and other faculty will inevitably play at least three roles: Supervisor, Coach and Mentor.



SUPERVISOR

Mentoring is not supervising. Faculty will lead efforts that necessarily involve supervising students. In the Supervisor role, Faculty or their assistants are engaged in training and coordinating individuals to perform effectively. Supervisors may teach specific skills (such as specific lab skills) that allow the individual and the organization to work in a productive way for the good of the team, or the sustainability of the organization, or the success of a particular project. Here, the focus of the training is not only to teach the student a skill, but a principal purpose behind training the student is to benefit the purposes of the organization or a project, and to teach the student skills that will allow their new skills to benefit future organizations or projects.

A Supervisor might say or ask things such as:

- When will you finish this task?
- What is your task timeline to completion?
- Do you understand the plan?
- What supplies do you need to finish?
- How much will that cost?

- How much will that cost?
- What resources will you need to complete this project?
- You completed it on time and under budget. Great job!

COACH

The act of mentoring often is compared to coaching, whereby an informal and supportive relationship is established. The lines between coaching and Mentoring are somewhat fuzzy and sometimes used interchangeably. Both Coach and Mentor invest effort in encouraging others to be their best. For the purposes of this discussion, the Coach and the Mentor are distinguished by the ultimate principal focus of their effort. The Coach will teach, coordinate and encourage individuals to develop specific skills for their own advancement to serve better the good of the team or the organization. This is not to suggest Coaches (or Supervisors) are only concerned with the team and not the individual, but in their particular role as a Coach (or Supervisor), the principal focus must be the team or project, or organization.

A Coach might say or ask things such as:

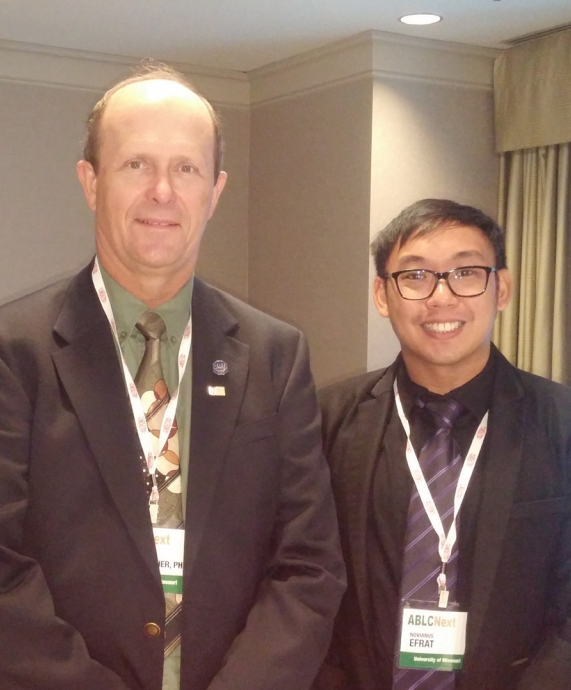
- Have you practiced that skill? Try it this way. See if this works better for you.
- I noticed you struggling with that task/skill. Would additional training help develop that skill we need (and that you will need if you want to play in the big leagues)?
- Here is the plan. Do you understand it/have recommendations?
- What are your ideas on how we can accomplish this task?
- You really did a great job on that task. I am going to trust you with more responsibility on the team/ in the organization.

MENTOR

In the mentoring process, the Mentor acts as a positive role model to the Mentee, provides the Mentee with encouragement and support, discusses the Mentee's career goals and aspirations, and helps the Mentee develop intellectual talents and professional skills. The Mentor undertakes to provide off-line help to the Mentee in understanding job and career challenges and making significant improvements in leadership skills, personal attributes, or overall career development. Mentoring involves teaching, encouraging the individual, identifying barriers to growth, relating personal experience, helping the Mentee identify gaps and coordinate training for the good of the individual's career goals and life goals. In the Mentor role, the principal focus is to benefit the Mentee's career development goals and life goals.

A Mentor might say or ask things such as:

- What are your career goals?
- What specific skills do you need to get from here to there?
- How do you plan to get those skills? Here is how I did it.
- Where do you want to live? Here is how I decided where to live.
- How do your career and life goals support each other?
- Have you ever met or talked with someone who is already in your dream job/dream career path?
- What is important to you? What do you enjoy doing?



"When I was an undergraduate student in a Chinese college one of my course professors gave me an assignment to translate a journal article written in English to Chinese. I was much shocked when I found that many terms in the article even in my major were new to me and I had difficulties to find Chinese translations for some of the terms in dictionaries I could find that time. I immediately learned that my knowledge in my major was so limited and my knowledge in English was so limited as well. What I did was to figure out ways to solve the difficulties, such as reading more books related to my major in English and borrowing a comprehensive dictionary from the university library. My professor encouraged me to be persistent, and then I came out a draft Chinese version that I talked with my professor. With his help and corrections, I finished a good translation. I am so grateful to the professor who gave me a challenge and his encouragement so that I knew how to make progress at my early time of developing my profession."

CABLE Faculty Mentor, 2019

2. IMPACT OF MENTORING ON MENTEES

CABLE Faculty Mentors shared their reflections and perspectives on the powerful, lasting impact of a positive mentoring experience, earlier in their own careers.

"My first graduate school Mentor understood that I had interest and ability, but was not fully ready to commit to an MS, much less a Ph.D. Therefore, he encouraged me to work part-time and only take 1 or 2 classes a semester. This allowed me to gain interest, and money, and to decide if I wanted to dedicate myself to graduate school. However, after 3 semesters he also knew that it was time to 'fish, cut bait or get off the docks', as he loved to say, and he pushed me to go to school full time and really focus on producing high impact research results. He knew enough to see if he had pushed at the start I would have quit, but also he knew that successfully earning a Ph.D. in chemistry was not a part-time job."

CABLE Faculty Mentor 2019

"I realize that the place where I am in today is the result of the investment of a series of key Mentors over the years. People took time to get to know me, share insights and suggestions, invest in my development and growth, and open doors for me that would otherwise have remained closed. This is true for all of us, none of us got to where we are today on our own. We all should remember this and intentionally pass on what has been shared with us. Being able to come alongside others and invest some time and energy in their journey to discover their passions and reach their goals as a Mentor is inspiring, profoundly satisfying, and can also be quite humbling."

CABLE Faculty Mentor, 2019

In such a relationship, a Mentor plays the leader role while a Mentee plays the learner role. Mentors are generally more experienced and knowledgeable, willing to invest their time in supporting others and developing their strengths. Mentors may be older or younger than Mentees, yet they must have greater expertise and more experience than the latter.

3. GOALS OF MENTORING

University professors are generally willing to serve as Mentors to undergraduate and graduate students. The overall goal of mentoring is to help the student or younger colleague develop to their fullest potential as they prepare for a professional career.

The specific goals can be:

- To provide guidance on how to leverage the particular subject offerings at their institution (such as bioenergy technologies, bioeconomy, climate change, or sustainable agriculture) that align with the Mentee's goals;
- To encourage the Mentees go beyond coursework to develop particular expertise and professional skills, such as business skills, laboratory skills, scientific communication skills, leadership skills, problem-solving experience, networking skills;
- To guide Mentees through a special career or life stage, such as reflecting on career goals, helping Mentees identity and clarify their strengths and passions, implementing a project, determining a career goal, preparing for a job interview, or adapting to unexpected life changes.

CABLE Faculty Mentors agree that being a Mentor is not easy, but can be rewarding. Mentoring often occurs at the nexus of helping Mentees define career goals and life-balance goals that fit well with professional strengths and innate personal strengths.



4. BENEFITS OF BEING A MENTOR

Mentoring is beneficial to both the Mentee and the Mentor. Through mentoring, a Mentor can reflect upon one's own career path, refresh one's thinking and attitudes, expand networking opportunities, and gain personal satisfaction. Furthermore, a Mentor can be challenged by exercising one's own talents. For Mentors, the mentoring experience can be:

- A reward through an improved professional perspective;
- A chance to participate in a meaningful way, in another person's career growth;
- A channel to make contributions to society;
- An opportunity to sharpen one's knowledge and skills;
- An effective approach to guiding another person with shared career interests; and
- An efficient method to expand partnership and friendship.

CABLE Faculty Mentor on the benefits of mentoring:

"As faculty member and as Department Chair, I get to meet first generation college students as well as students who come from communities traditionally excluded from higher education. An effective Mentor can make a world of difference for such students while they are in college, enter graduate school or workforce. I strongly believe mentoring is critical at early stage and can have a powerful impact. I have seen the transition from being called first generation student to actually become first generation graduate. As Douglas M. Lawson said, "We exist temporarily through what we take, but we live forever through what we give" (John C. Maxwell, Mentoring 101). I have Mentors who contributed to my professional development and changed the trajectory of my life, and I am in a position to do that for someone else."

CABLE Faculty Mentor, 2019

WHO CAN BE A MENTOR?

"Mentoring requires special skills, but it does not require hierarchical position."

C.K. Prahalad, Management Writer



5. KEY MENTORING SKILLS

DEDICATION (MENTORING IS HARD)

Mentoring involves skills associated with coaching, counseling, consulting, and teaching. Effective mentoring requires understanding and applying these fundamental yet critical skills to assist the Mentee

in their career and life goals. A CABLE Faculty Mentor wrote,

“Mentoring is hard. Correction—good mentoring is hard. It is easy to allow students to wander along, completing assignments and participating in webinar sessions. Making an appointment to monitor their progress, while important, is not mentoring. Mentoring demands a time commitment to purposefully engage and interact with the Mentee. Do you really know what he/she wants to do? What put them on their current pathway? Remember to listen when they talk—allow them to drive rather than steer them the entire way through the program. The Mentor’s job is to help them navigate the obstacles along the way.”
CABLE Faculty Mentor, 2019

MENTORING SKILL: Dedication to participation in the career development of the Mentee

MENTORING TAKES TIME

Faculty who offer to be Mentors find ways to be accessible, approachable and prepared to offer help as the need arises. It is important to develop discussion around goals and balancing obligations early in the mentoring process. Frequent, regular meetings are helpful, not only in the work/school environment but outside of the formal meeting place, such as a coffee shop, or lunch together. These less formal meetings can provide time to build the relationship and trust between Mentor and Mentee. The investment of time is often a primary challenge to Faculty entering a commitment to mentoring.

“Being an effective Mentor isn’t always easy. Even if you are a natural, it is sometimes difficult to find the time to provide necessary support. What I find valuable is etching out dedicated time to mentoring activities and reflecting on what it means to be a good Mentor and leader. I do strive to make myself available in times when my Mentee needs guidance, mostly I try to give good advice and let her discover things for herself. Otherwise I try to impart good practices through “teaching by example” and being wary of that helps me to become a better teacher and person.”
CABLE Faculty Mentor, 2019

“I approach mentoring students from the perspective of parenting. My goal is to create an independent, successful, and well-rounded researcher, but most importantly, an employed researcher. The Mentee must be shown the ropes, so to speak, at first. Then, they must be given independence, the freedom to investigate, fail, and succeed on their own. I find it important to be open and honest with them. I offer praise when it is deserved, and guidance and counseling as needed. I frankly discuss my failures and successes. I make sure that I understand their goals and work with them to provide the path and tools needed for their success. Most importantly, like a good parent, the most important thing that I can offer them is my time and to be there when they need it most.”
CABLE Faculty Mentor, 2019

MENTORING SKILL: Creativity with time, availability, and ways to meet with the Mentee in environmental settings comfortable to the Mentee.

SELECTING THE RIGHT PERSON TO MENTOR

Given the enormous commitment of time and dedication to the career and professional development of another person, a very important skill of a Mentor is the ability to select the right person to Mentor. Just as some people are not comfortable with being supervised, and some people are not, by nature, comfortable

with being coached, it is also the case that some people may not be open to being mentored at their current stage of life. The Mentor must use skills that allow them to recognize a potential Mentee that is open to considering input from a Mentor, and would actually benefit from the Mentor's investment of time, commitment and dedication. One CABLE Faculty Mentor described some of the characteristics they seek in a good Mentee:

"Hardworking, self-motivation, and passions are some key characteristics of a good Mentee. In addition, good Mentees are willing to listen, take the challenges, and value their Mentors' inputs. With academic training they become more creative, think more critically, and eager to make contribution to scientific community and industry."

CABLE Faculty Mentor, 2019

APPROACHES FOR PRE-SCREENING A POTENTIAL MENTEE

One CABLE Faculty Mentor explained a process that may assist with this type of pre-screening process for selecting students, and this also may be a useful type of screening before selecting and committing to being a Mentor for a potential Mentee.

"My lab works on plant genetics, molecular biology and biochemistry. The students interested in my program come with certain interests and strengths. Before the student begins any project, I explain all the ongoing research projects and ask the student to choose the project that is of great interest for him/her. The student will have three months to read/work on that specific project and frequently interacts with me on the project progress every week during individual meetings (15-20 minutes). During this period, I will identify the strengths and weaknesses of the student in research and education. Then I will ask the student to give a lab presentation. Presentation is the best way to assess the student's ability to understand the research topic, literature collection, organization of the data and combining it with the current understanding. My aim is to identify the student's strengths and address the weaknesses. I will highlight his/her strengths and explain weaknesses for making them outstanding in heavily competitive academic/industrial sectors."

CABLE Faculty Mentor, 2019

MENTOR EXPECTATIONS FROM THE MENTEE

In addition to evaluating the skills, personality and potential benefits the Faculty Mentor's time commitment may provide to a candidate Mentee, the expectations the Mentor has of the Mentee should be made clear early in the Mentee selection process. Faculty have the desire to maximize the value of their expertise, time, and mentoring efforts through cultivating more and better young professionals. Faculty Mentors identify and recruit quality student Mentees via direct observations and credible references.

CABLE Faculty Mentors recommend that a quality student Mentee is expected to be:

- Highly motivated
- Able to reflect, focus and discuss their own career and mentoring goals
- Works hard to grow and improve and can commit to regular meetings
- Actively participates in training events and additional mentoring activities
- Challenges oneself to achieve higher levels and explores alternatives
- Is active in their own development
- Has the ability to be their own advocate
- Accepts challenges willingly
- Takes calculated risks in order to progress

- Works on time-management skills and other professional business skills
- Communicates with Mentor openly and often/regularly asks questions
- Able to listen but also overcome a fear of “putting yourself out there.”

One CABLE Faculty Mentor explained the selection of a student Mentee this way:

“I had the sense when I chose him as the student delegate that he would do a good job. I’m seeing someone who meets deadlines, can deal with different individuals diplomatically, keep others on track, organize his CABLE program for this spring, etc. These are all valuable qualities of a future leader, and have been demonstrated while maintaining his research project requirements.”

CABLE Faculty Mentor, 2019

MENTORING SKILL: Ability to tease out and recognize strengths, weaknesses, perspectives and current potential in another person before making the commitment.

BUILDING THE MENTOR-MENTEE RELATIONSHIP

Basic relationship skills are required of the Mentor at this stage. Being a good listener will be important so that you come to understand what is important to the Mentee. At this stage, the Mentor also will use one-on-one discussion and perhaps other tools (such as personal-evaluation surveys/tools) to help the Mentee (and Mentor) get to know the strengths, interests and motivations of the Mentee.

As the relationship grows, the Mentor also will naturally share their own career path experiences, including mistakes, lessons learned, and best advice for a given challenge the Mentee may be facing now.

These types of discussions build trust, respect and friendship between the Mentor and Mentee, and these friendships often last a lifetime. CABLE Faculty Mentors discuss the importance of trust and respect that builds over time in the Mentor-Mentee relationship.

“I believe Mentor-Mentee relationship should be most importantly based on respect and trust. The Mentor should provide sufficient attention and opportunity to a Mentee that a Mentee can feel that he/she is free to express thoughts, ideas and potential approaches to the task that is been discussed. As just being nice and polite is not sufficient, having an opportunity to be heard by the Mentor will give a Mentee confidence of a respected and trusted person.”

CABLE Faculty Mentor, 2019

“My Ph.D. advisor was always very open-minded, and allowed me to explore but also showed great respect and trust for the work I did. He allowed me to explore within the boundaries, and also in times, he treated me like his own colleague, and trusted friend. That had enhanced my motivation to the research I do and helped me to be a better Mentor to my own students.”

CABLE Faculty Mentor, 2019

MENTORING SKILL: Personal relationship-building skills, listening and speaking skills, ability to trust and be trusted.

"Cell To Sell"® Supp

Where do you fit in?

ABLC Next Consortium members are asked to tape a contact card below in the approximate location where you focus as an in my Leadership Education (CABLE) to follow up with you regarding possible mentorship. If you have more than one area, please add a note on the back of your card describing what you

Biomass
Producer

ssor

Product
Manufacturer

MENTORING REQUIRES PATIENCE & FLEXIBILITY

Mentoring requires patience and the ability to change plans. Mentoring another person is a long-term process, which will require both the Mentor and Mentee to define goals, reflect, plan, and then have the ability to adjust goals over time as life-situations change, and begin the process again as goals change.

"As a graduate student Mentor I relate to the "Patience and Freedom to Explore" theme. Graduate students are often a fountain of creative ideas and their faculty advisors would be foolish not to take advantage of this resource. Further, the student's experience and productivity are significantly enhanced if they are pursuing a research project they had some stake in developing. The trick as a Mentor is providing some sideboards and a dose of reality to whatever ideas the student wants to pursue; you don't want the student falling into a series of dead ends and not completing a quality dissertation. I like to lay out the broad objectives of the research project and then work with the student to develop the path to get there. I also try to build a little flexibility in the project schedule such that we can investigate interesting tangents that often appear in a research program. With this approach everyone is excited about the work and it makes the work fun for us all."

CABLE Faculty Mentor, 2019

"Perhaps the best career advice I have ever received was to always remember "...that the path you are on now, may very well not lead directly to your destination. Your success will rely on your ability to keep an open mind, have passion for what you are doing at the moment, and to just be as best prepared for what may lie ahead". I share this often when students inquire "Why do I need to take this course (or take this professional internship, volunteer opportunity, etc.) as it is in no way related to my career goal, and I am not going to be a ____ for a living", and when appropriate share my "path" as an example."

CABLE Faculty Mentor, 2019

MENTORING SKILL: Patience and ability to change trajectory with new circumstances.

"Often times it has felt like my Mentees have seen me as an endless pool of knowledge. Being able to provide insight in everything from how to perform the next experiment to which used car is best. I have felt this has been attributed to being approachable and most importantly being able to listen without judgment or preconceived notions. In many situations, I find myself providing examples of my own success and failures with hopes that I can broaden the perspectives of the Mentee. My hope is that this helps build the Mentee's confidence in their own problem-solving skills."

CABLE Faculty Mentor, 2019

MENTORING REQUIRES ENCOURAGEMENT, RECOGNITION, & CORRECTION

Mentors often walk the balance of being encouraging, reminding the student to persevere through current circumstances, and at the same time will come across situations where the Mentee needs correction. Personal interaction skills are needed in the Mentor so that corrections can be presented as a challenge for growth, without being detrimental to the Mentee's sense of self. Recognizing a Mentee's accomplishments along the way is a good way to set the tone of the relationship as one of growth, and also balances the intermittent need for correction.

"Recognition should be included in the respect and trust category [of the Mentor-Mentee relationship.] A Mentee should feel that his/her findings will be appreciated and worthy in the eyes of a Mentor. In many research teams it is known that the research leader is the face of the research topic and represents the findings on behalf of the team. The Mentees, should be recognized so that they can be encouraged to continue the work. However, trust and respect is a two-way avenue. Mentees also should recognize that given freedom on the research should also be discussed and potentially mutually agreed with their Mentors. So, keeping the healthy balance of respect and trust is the job of both Mentor and a Mentee. However, Mentors have a stronger responsibility and they should recognize the accomplishments of the Mentee openly."

CABLE Faculty Mentor, 2019

"My Mentors provided advice and guidance, while leaving decisions to me. In many cases the advice I received has been very good, although not always followed. But my Mentors were never judgmental, knowing that independence is not developed by being overbearing and that there is much to be gained from experience. The ability to properly advise your Mentees, giving them the freedom to make their own decisions, and to provide continual positive support, regardless of short-term setbacks, is critical to the development of leaders and risk-takers."

CABLE Faculty Mentor, 2019

MENTORING SKILL: Ability to encourage, recognize accomplishments, and provide correction in a productive way for the Mentee.

MENTORING INVOLVES PROVIDING CHALLENGES FOR THE MENTEE

Mentors guide Mentees to think things through on their own without giving direct answers. In addition to building critical thinking skills this way, Mentors provide specific challenges that will allow the Mentee to try out a leadership position. At first, this responsibility of leadership is done with guidance and feedback from the Mentor, after the Mentee reflects on the experience. Using their strong understanding of the Mentee's strengths and weaknesses, Mentors can craft specific challenges to target growth areas for the Mentee.

For example, a CABLE Faculty Mentor explains,

"One such successful story is with a graduate student in my lab. The student has excellent skills in formulating hypotheses, lab experiments and oral presentations; however, he was not good at writing the manuscripts. I have asked him to write the first draft and then took him through the entire draft on how to communicate the data through written documentation. The student is now becoming totally an independent scientist. My mentoring principle is to highlight the strengths and address the weaknesses to make them independent scientists to achieve their intended goals."

CABLE Faculty Mentor, 2019

“As a professor and Mentor, I always encourage my students to never give up. Life is full of challenges so focus, dedication and perseverance towards one’s goals are key to success”

CABLE Faculty Mentor, 2019

MENTORING SKILL: Creating or providing real-world challenges for the Mentee to work toward mastery in problem solving and in basic skills for their industry of choice.

MENTORING ADVICE FROM CABLE MENTEES' PERSPECTIVES

CABLE Student delegates view “Great” Mentors as being knowledgeable, taking the time to meet and listen, helping with setting goals, with time management, and with planning challenges. Student delegates further want their Mentors to know when and how to push Mentees in the right direction, and how to challenge Mentees. CABLE 2018-19 Mentees described their expectations of abilities and qualities they seek in a great Mentor. Their comments are distilled into the list and word cloud below.

- Be available, approachable, accessible and maintain regular contact with a Mentee;
- Show enthusiasm, empathy, interest, care, sincerity, willingness to help, trust and avoid being judgmental;
- Actively listen, inspire, understand, and encourage;
- Be clear about expectations and boundaries;
- Understand that students don't expect Mentors to have all the answers;
- Respect Mentees' confidentiality;
- Provide more than just references when the student doesn't know what to do next.
- Provide challenging opportunities to Mentees as well as corrective feedback;
- Be patient yet firm and genuine;
- Set a positive example your students will follow;
- Confront unprofessional behavior;
- Be your Mentee's advocate.



CABLE STUDENT DELEGATES: HOW MY MENTOR IMPACTED MY SUCCESS THIS YEAR

CABLE student delegates described how their Faculty Mentors had an impact on their success this year:

- *"They have a career and family life that I admire. Seeing their success has propelled me to reevaluate my career path options."*
- *"[My Mentor showed a] willingness to answer all my questions. 'I've never left his office without feeling that I better understand a topic that I came to discuss with him.'"*
- *"...always able to answer my questions, and I never felt unworthy because of my lack of technical knowledge or experience."*
- *"... helped me to develop time management skills that help me to be individually motivated, efficient in my work, and able to set and keep personal deadlines."*
- *"... improved my knowledge, maintained my mindset to be successful, kept me oriented even when I wanted to dip, and pushed me when I needed pushing (and even sometimes when I didn't, but I didn't mind)."*
- *"...encouraged and challenged me. Gave positive feedback and helped grow my confidence."*
- *"...diagnosed my knowledge gaps and pushed me to work harder."*
- *"... reminds me of what matters most. His advice taught me that if I want to be recognized for producing good work I need to put forth the necessary effort."*
- *"... gave me time to learn and grow and enough support when I did not work well or made some mistakes."*
- *"...huge influence on my social, personal and professional values and on my commitment to work..."*
- *"...helped me in my struggle to balance CABLE and school."*
- *"...how my relationship with my Mentor has grown...having a good relationship with him, has improved considerably all the aspects of working with the group. My research seems more interesting; I'm comfortable talking at meetings and enjoy it."*
- *"...how to adapt to effectively work in an extremely diverse group...."*

6. POTENTIAL PITFALLS OF MENTORING

Effective mentoring can be achieved only when both the Mentor and Mentee are dedicated to the relationship. The Mentor needs to be well prepared in willingness, time, and communication, while the Mentee needs to possess the aptitude, have the fundamental training, and be highly motivated to grow in the target area. Any of the following is a pitfall to attaining desired outcomes:

- Mentee has difficulties prioritizing work with school and other obligations
- Mentee is not comfortable asking for help, even when prompted
- Mentee lacks motivation and is not fully engaged
- Mentee is worried that his/her English language skills are bothersome to the Mentor.
- Mentee is not accessible during the semester and busy class schedule
- Mentor does not encourage Mentee on timely decision making
- Mentor is not well prepared
- Mentor is not sufficiently accessible
- Mentor does not show adequate care or sensitivity
- Mentor is not responsive
- Mentor does not give opportunity/freedom to Mentee to take responsibility

Insights from students on their perspective on mentoring in this regard:

“On occasion, I did wish my Mentor checked in with me periodically to ensure I was on track to reaching my goals ... Giving me set deadlines to keep me accountable may have helped avoid this issue for me...”



STUDENT PERSPECTIVE ON MENTORING

“Don’t ever think that the [Mentee] is not interested or not willing to talk; perhaps he/she just doesn’t know how to approach or ask for things, is embarrassed or shy, or thinks you are too busy. Instead, plan meetings with him/her, send emails or give a call, share your own experiences and stories. The more comfortable the [Mentee] feels with the Mentor, the better he/she will enjoy the program and your help.”

7. THE MENTORING PROCESS

Experts and authors in mentoring have identified patterns and development stages to make recommendations about the process of mentoring. There are many models and concepts given about the process of mentoring. Some describe a three-stage process, and four or five-stage processes also are described in the literature. Perhaps just knowing it is a process is enough!

SAMPLE FIVE STAGE MENTORING PROCESS

1. Contemplation
2. Initiation
3. Growth & Maintenance
4. Dissolution/Closure
5. Redefinition

(4H, Michigan State University)

SAMPLE FOUR-STAGE MENTORING PROCESS

1. Preparation
2. Negotiation
3. Enabling Growth
4. Closure

(*The Mentor's Guide*, 2nd ed. 2012
by John Wiley & Sons, Inc.)

SAMPLE THREE-STAGE MENTORING PROCESS

1. Investigate
2. Identify
3. Plan

(*Entrepreneur.com Magazine*)

Three samples of different concepts of the mentoring process and stages from a few different organizations and authors are given above. CABLE Faculty Mentors read John Maxwell's Mentoring 101, which includes a stage of developing Mentees to become future Mentors.

Maxwell describes the five stages of mentoring as:

1. Getting Ready to Mentor Others
2. Identifying Suitable Mentees
3. Engaging in the Mentoring Process
4. Setting Goals
5. Developing Mentees to Become Mentors

Below, several CABLE Faculty Mentors share about their own processes that work well for their particular students and institutional settings:

"To me, mentoring is an effort of mixed guidance, instruction, and supervision. A Mentor needs to direct Mentees to the right path of a down-to-earth goal, optimize the execution plan for Mentees to achieve the goal and provide technical assistance, and monitor Mentees' progress through regular meetings. Effective mentoring is established on qualifications of both the Mentor and the Mentee. A proficient Mentor has the inward desire to cultivate Mentees, is willing to commit time and care, and possesses the essential expertise. A competent Mentee, on the other side, has determined a self-based goal, is willing to learn and improve, and know how to effectively manage time. A Mentor should always show care and patience to Mentees, get to know them by examining their background, develop a practical growth plan together with the individuals, and supervise them closely with the plan implementation. To respond, a Mentee should invest sufficient time and proactive efforts in executing the growth plan and regularly discuss the performance with the Mentor. Mentors can be greatly encouraged by Mentees with seeing their progress and improvement. Unfortunately, quality Mentees can be encountered but cannot be recruited. Quite often Mentees are covered by the actual interest in a stipend or a resume experience instead of in the study goal. In this case the mentoring efficacy will be significantly compromised due to the low motivation from the Mentee. Overall, mentoring is an effortful yet rewarding process."

CABLE Faculty Mentor, 2019

"As a Mentor, I first encourage my Mentee to identify their interests and career goals. Next, I work with them to help them establish their roadmap to achieve their career goals, and identify their strengths and weaknesses. Then, I work with them to overcome their weaknesses so that they could meet their career goals. Overall, I serve as a guide with goal to make them more independent, resilient and confident to overcome their potential obstacles in the course of their career."

CABLE Faculty Mentor, 2019

“One of the biggest challenges in a Ph.D. program is becoming an independent researcher. Until beginning their Ph.D. research, most students have only been in classroom learning environments, which provide a lot of structure and clear direction on what tasks should be done. Even students who have had undergraduate research experiences have generally been guided closely. In contrast, independent research means being comfortable with unknowns and uncertainty, even with experience and good research skills. When a new Ph.D. student starts in my group, I talk with them about this path to becoming independent, and I tell them that I will be pushing them along that path, perhaps faster than they might prefer. In the first year or so, they are on “training wheels” — I help them develop their creativity in thinking about their research while also helping them develop their skills in formulating research questions, hypotheses, experimental designs, and research plans. After that, I expect them to have the skills and comfort level to initiate these things on their own, with me checking them and giving feedback. By the time they are writing their dissertation, each student is confident about their research and their research skills, and is ready to take a position in which they can function as an independent researcher.”
CABLE Faculty Mentor, 2019

“There is no single approach to mentoring that works for all people because each relationship includes unique individuals with different sets of strengths and personalities. As a result the way these relationships grow and develop varies from person to person. While others may see mentoring relationships as a one way flow from Mentor to Mentee, I find that these are rich relationships that enhance my own personal growth, provide deep satisfaction, and allow me to explore topics and ideas that are often well outside my expertise.”
CABLE Faculty Mentor, 2019

8. MENTORING STUDENTS FOR AN EMERGING INDUSTRY: THE BIOECONOMY

CABLE Faculty Mentors are in a unique position of mentoring their students for an industry that did not exist during their early career years. What are the unique challenges of mentoring students planning to enter the newly emerging Bioeconomy? The Bioeconomy is a rapidly growing industry, but still in its early development. Today's students considering careers in the Bioeconomy may have the opportunity for leadership roles early in their career paths.

How is mentoring for Leadership in the Bioeconomy different or similar to mentoring for any other career path?

1. The industry is highly multi-disciplinary. It is important to communicate across disciplinary lines. Workplace teams are very diverse from a disciplinary perspective.
2. Most companies in the bioeconomy are small to medium in size, and those working environments (especially the small companies) are very different than life in a huge multi-national corporation.
3. The bioeconomy is highly influenced by policy issues, and it is important to understand those drivers (especially in small companies)
4. The bioeconomy is changing rapidly because of developments in technology, economics, and policies. Leaders in the bioeconomy must always be aware of the trends (networking in particular is helpful for this) and be flexible and responsive to changes.



REFERENCES & RESOURCES

Abderrahman, B. 2018. Paying it Forward as a Mentor. *Science* 361(6401):522. doi: 10.1126/science.361.6401.522

Bottomley, L. Five Stages of Mentoring Relationship Development. Michigan State University Extension. 2015.

Cotrufo, Francesca M. Effective Mentoring. *CSA News*, February 2019. doi:10.2134/csa2019.64.0220

Maxwell, John C. 2008. *Mentoring 101*. Nelson Books: Nashville, TN.

Rath, T. and B. Conchie. 2008. *Strengths Based Leadership: Great Leaders, Teams, and Why People Follow*. Gallup Press: Washington, D.C.

Sills, J. 2018. Quality Mentoring. *Science* 362 (6410):762. doi: 10.1126/science.361.6404.762-b

Singaram, M. What are the Different Types of Mentoring? *Entrepreneur.com*. October 2017.

The Mentor's Guide, 2nd ed. 2012 by John Wiley & Sons, Inc.

Faculty Mentor survey Cohort 1 (2017-2018) Qualtrics

Faculty Mentor survey Cohort 2 (2018-2019) Qualtrics

Student survey Cohort 2 (2018-2019) Qualtrics

CABLE Faculty Mentoring Guide

A COLLECTION OF EXPERIENCES AND LESSONS LEARNED ABOUT MENTORING



**THE OHIO STATE
UNIVERSITY**

COLLEGE OF FOOD, AGRICULTURAL,
AND ENVIRONMENTAL SCIENCES

The Consortium for Advanced Bioeconomy Leadership Education (CABLE) is a nationwide organization of 20 universities led by The Ohio State University and supported by the United States Department of Agriculture, National Institute of Food and Agriculture (USDA-NIFA).

Visit u.osu.edu/cable for more information

