STEM connector

MWM Million Women Mentors

Workplace Mentoring in STEM

A Guide to Formal Mentoring Programs

Workplace Mentoring in STEM:

A Guide to Developing Formal Mentoring Programs

A note from the CEO

"The following body of work was inspired by the members of Million Women Mentors who have given their time and experience over the last seven years to help facilitate over 2 million mentoring relationships. We are thankful for all they have done and all they continue to do."

Dr. Jo Webber, FRSC CChem

Authors:

Abbey Myers

Leenah Bassouni

Editor:

Cindy Ziker, Ph.D., M.P.H.

Contributor:

Jessica Johnson

STEM connector powered by pod

MWM Million Women Mentors

Table of Contents

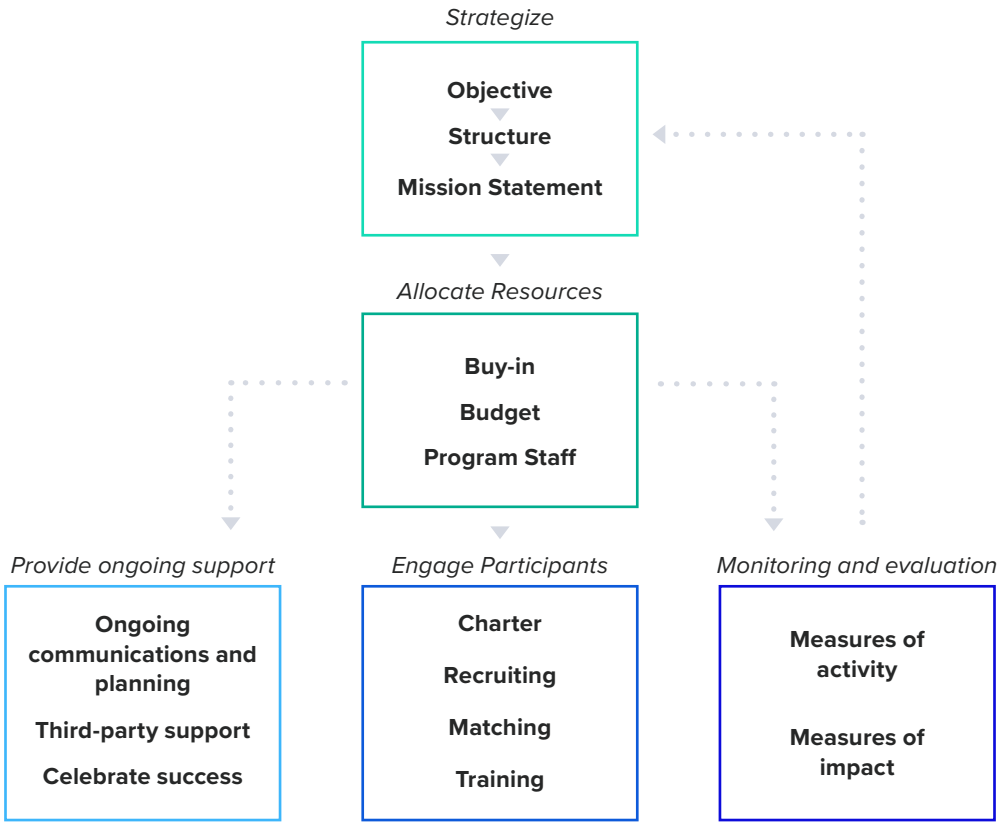
Executive Summary 4
Introduction 5
What exactly do we mean by the term "mentor?" 6
Formal vs Informal Mentoring 9
The Business Case for Workplace Mentoring in STEM 10
Five Stages for Building a Workplace Mentoring Program 13
I: Strategize 14
Determine the Program's Objective 14
Decide on a program structure 15
Create a Mission Statement 17
II: Allocate Resources 21
Buy-In 21
Budget 22
III: Engage Participants 24
Create a Program Charter 24
Recruiting 25
Matching 25
Training 27
IV: Provide Ongoing Support 29
Ongoing Communications & Training 29
Mentoring Advocates (Third-Party Support) 29
Celebrate Success 30
V: Monitoring & Evaluation 31
Conclusion 32
Appendix 33

Executive Summary

Mentoring is an effective strategy for promoting a variety of educational and workplace outcomes, such as employee skill building, leadership development, and retention. Formal workplace mentoring programs, where an employer organization facilitates mentoring relationships between its employees, have been implemented with success in a wide range of domains and workplace settings. When designed strategically and deployed effectively, workplace mentorship programs can offer increased employee support, foster a culture of inclusion, and reduce turnover rates.

To develop this paper, STEMconnector reviewed a wide range of literature and interviewed over thirty industry and education experts, with the aim of examining best practices for successful workplace mentoring programs. Findings were synthesized to provide a guide for instituting new workforce mentoring programs and further developing existing initiatives. As part of this effort, five essential stages for building a formal mentoring program in the workplace were identified. These stages, described below in Figure 1, include: (1) Strategize, (2) Allocate Resources, (3) Engage Participants, (4) Provide Ongoing Support, and (5) Monitoring & Evaluation. Taken together, these stages provide a framework for establishing or improving workplace mentoring programs.

Figure 1: Five Stages of for Building Workplace Mentoring Programs



Introduction

> ***"Mentors represent what you could be; and mentorship is a means of representation – my gender, my ethnicity, or from experiences; it gives a window into what you could become."***
>
> **Ana Manriquez**
> *Software Engineering Manager,*
> Intel Corporation

> ***"There is no better way to learn about yourself than by mentoring someone else. It feeds our hearts and souls, but also helps us understand the world better, including our role and our impact in it."***
>
> **Kate Schrauth**
> *Executive Director,*
> iCouldBe

The concept of mentoring has existed for millennia, dating as far back as the ancient Greeks and exemplified by the relationships between great philosophers, such as Socrates, Plato, and Aristotle.[1] In more recent decades, mentoring has been the subject of numerous research studies and has been integrated into many schools, workplaces, and communities.[2] Countless successful professionals from a variety of fields – Bill Gates, Oprah Winfrey, Mark Zuckerberg, Ansel Adams, Clint Eastwood, Jackson Pollock, and Henry David Thoreau, among many others – credit mentorship as a key part of their success.[3]

The benefits of mentoring have been widely studied over the last 40 years. Research results, including those from multiple meta-analyses, suggest that mentored individuals (mentees) are more likely to have career success than non-mentored individuals, including higher compensation and more promotions. Mentees are also more likely to be satisfied with their careers and believe that they will advance in their careers, compared to non-mentored individuals.[4] Mentors themselves see similar benefits from mentoring. Individuals who served as mentors were more likely to be satisfied with their jobs, see higher performance at work, and perceive themselves as more successful in their careers.[5]

As evidenced by the wealth of scientific studies and personal testimonies, mentoring is an effective solution set for a variety of educational and workplace outcomes. This includes the field of STEM, where mentoring plays an essential role in developing professionals in science, technology, math, engineering, and medicine.[6] For many STEM professionals, their initial interest was sparked by a mentor or role model who inspired them to pursue STEM. Research has found that having a mentor strongly predicts professional success across many STEM disciplines.[7] These factors are particularly important for supporting those from underrepresented and underserved demographic groups including women, racial and ethnic minorities, people with disabilities, and those from low-income backgrounds.[8]

It comes as no surprise that workplace mentoring programs – where an employer organization facilitates mentoring relationships between its employees – have gained in popularity. According to the Wall Street Journal, in 2009, about 70% of Fortune 500 companies had some sort of mentoring program.[9] The use cases range from professional and career development to fostering leadership skills to supporting diversity, equity, and inclusion (DEI) strategies.

Professionals themselves see mentoring as effective, even if they aren't currently in a mentoring relationship. A 2019 study found that while 76% of surveyed professionals said that mentors were important, only 37% reported having a mentor.[10] These findings point to the fact that starting and maintaining a mentoring relationship is not always easy for individuals to do. Many professionals could benefit from formal opportunities to develop these types of relationships, such as through a workplace mentoring program.

When designed strategically and deployed effectively, workplace mentorship programs can capitalize on these benefits, improve employee retention, reduce turnover rates, and provide support for their employees, all at the same time.

What exactly do we mean by the term "mentor?"

> ***"Mentoring is a big word, and many people don't understand it. I think the key is that we need to broaden who can be a mentor and what that entails. The reality is that 85% of the engineering and technology workforce is male. So, we can't just tax underrepresented people with the responsibility of mentoring underrepresented groups. We have to become allies, all of us invested in bringing each other up."***
>
> **Ruthe Farmer**
> *Founder and CEO,*
> Last Mile Education Fund

The word mentor can mean a lot of different things to different people. As we will discuss in later sections, a strong mentorship program requires clear expectations for mentors and mentees. As such, it's necessary for workplace mentoring programs to develop a common understanding of what a mentor is and what role mentors should play in the mentor-mentee relationship.

According to the National Academies of Science, Engineering, and Medicine, mentorship can be defined as:

> *"...a professional, working alliance in which individuals work together over time to support the personal and professional growth, development, and success of the relational partners through the provision of career and psychosocial support."*[11]

As described in this definition, mentorship is characterized by providing two types of support to mentees: (1) career support, and (2) psychosocial support. Career support includes aspects such as helping mentees think critically about career goals, challenging mentees' decisions, aiding in skill development, advocating for the mentee, and helping them realize their professional aspirations. Psychosocial support includes problem solving, encouragement, providing emotional support, acting as a sounding board, and role modeling behavior, values, and attitudes for the mentee.

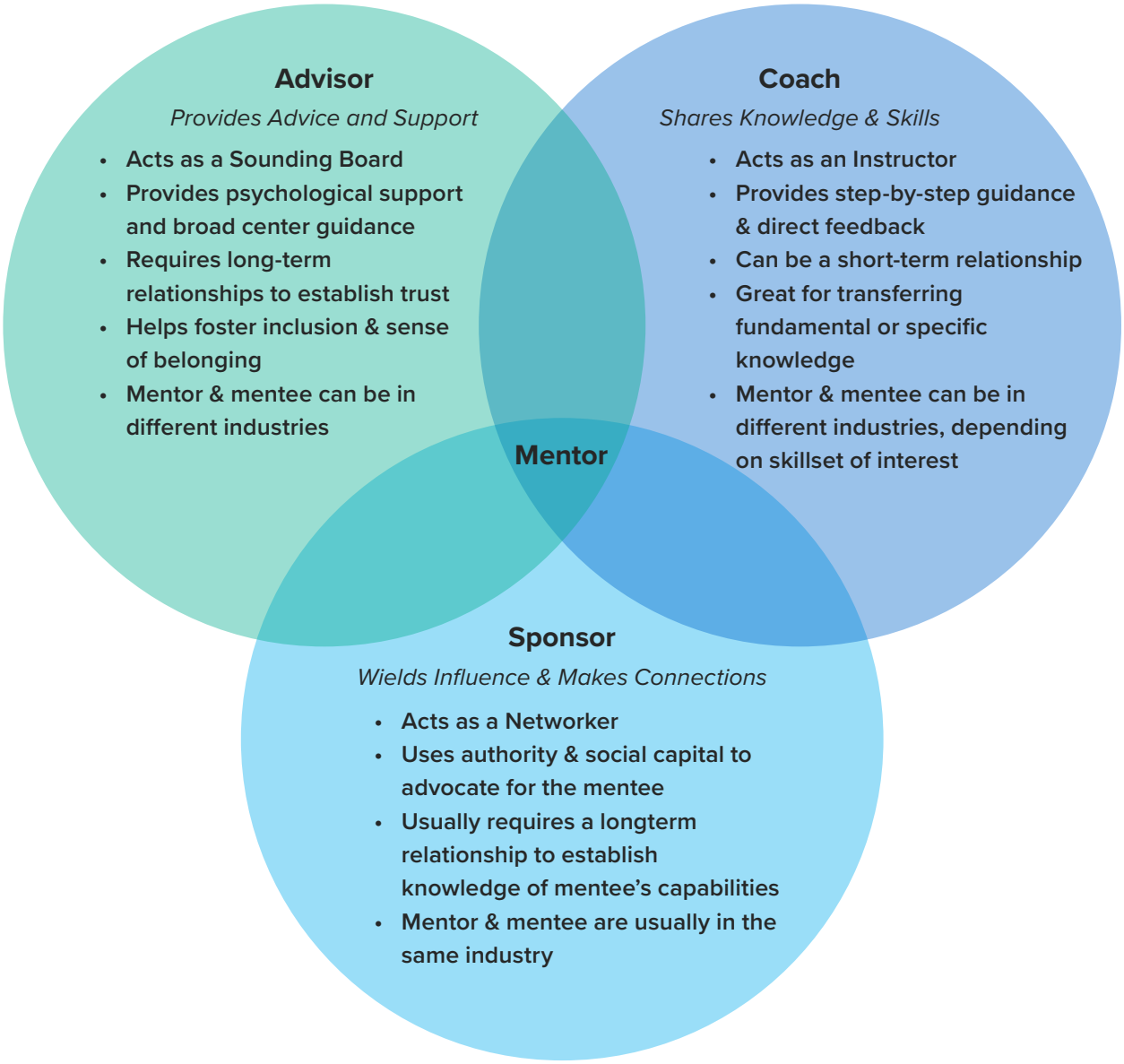
> ***"My last mentor gave me an external viewpoint by reminding me to step back and be grateful and proud of my accomplishments. They guided me through developing my team by helping me determine what my actions and words can mean, how I can add value, and how I can work in different areas to develop and support my colleagues."***
>
> **Heidi Hinrichs**
> *Divisional Vice President,*
> Abbott

In our research interviews for this paper, we heard a wide variety of definitions, some broad, some narrow, and many of them inclusive of the various elements described by the National Academies' definition. We also heard responses that were contradictory to each other. For example, some interviewees felt that a mentor can only be called a mentor if there is a formal agreement between the two individuals. Other interviewees credited people in their lives as mentors, while acknowledging that there was no direct recognition of a mentoring relationship or that those individuals may not see themselves as mentors.

Building off the National Academies' research definition and the findings from our interviews, we identified three distinct roles that a mentor can play in a formal mentoring program: (1) Advisor, (2) Coach, and (3) Sponsor. Depending on the goals and structure of a specific mentoring program, the expectations for mentors may focus on one or two of these roles. For example, if a program is created for the purposes of skill-building between employees, the expectations for mentors would most closely resemble the Coach role. If a program's goal is to improve employee retention and engagement, the expectations for mentors would most closely resemble the Advisor role. And if a program's goal is to increase the number of employees from diverse backgrounds in leadership positions, the expectations for mentors would most closely resemble the Sponsor role. In the majority of cases, the expectations put forth for mentors in any program will include some aspects from all three roles.

We recommend that each individual program develop a working definition of mentorship that best applies to the program's goals and structure. Once a definition has been determined, the expectations should be clearly articulated to both participating mentors and mentees at the outset of the program.

Figure 2: Mentor Roles and Expectations



> ***"Sponsorship is advocating for a young person's career even when they are not in the room; it's making sure you have this person's best interest at heart."***
>
> **Sheila Boyington**
>
> *CEO, Learning Blade & National States Chair,*
>
> Million Women Mentors

> ***"When done appropriately, sponsorship can really support workplace equity. It looks like you, as a person of privilege, whatever that privilege may be, are brave enough to ask for a specific resource that you think should be yours, and you feel that same way for everyone else on the team. You make sure that your mentee can get the same access to opportunities and resources that you have."***
>
> **Charline Alexandre-Joseph**
> *Director of Workforce Development,*
> MENTOR

Formal vs Informal Mentoring

Mentoring relationships can fall into two categories: formal and informal. These two types are characterized by how the relationship is formed and defined. Formal relationships, often referred to as "structured" mentoring, are ones that are established within a program. Program organizers typically make mentor and mentee matches, set guidelines for the relationship, and have strategic goals for the outcome of mentoring relationships. In contrast, informal relationships, often referred to as "traditional" mentoring, are created, defined, and maintained by the individual mentor and mentee. By definition, a workplace mentoring program involves formal mentoring relationships. As such, this guide will focus only on formal mentoring.

It is important to note that much of the literature that we examined on mentoring relationships focused on informal, long-term relationships. Our interviewees indicated that though formal mentoring relationships are typically not nearly as impactful as informal mentoring relationships, they can still provide benefits for program participants. These benefits include skill-building, knowledge transfer, increased social capital, widened professional networks, broadened view of the organization, opportunities to develop leadership and employability skills, and opportunities for contributing to a culture of inclusion and belonging in the organization. Ultimately, for some participants, the hope is that the benefits of formal mentoring relationships will outlive the program and develop into informal relationships. Program managers can take certain approaches that will encourage this transition from formal to informal relationships. We will discuss these best practices further in a later section.

Characteristics of Formal vs Informal Mentoring

Formal Mentoring

- Programmatic
- Oriented around the program's goals
- Program facilitates mentor and mentee matches
- Specified timeframe

Informal Mentoring

- Casual, incidental
- Oriented around the individuals' goals
- Mentor and mentee facilitate their own match
- Timeframe can be specified or unspecified

> ***"Mentoring is two-sided. People open doors for you, invest in you, teach you, and then you need to turn around and do the same. I always believed that when someone opened a door for me, I needed to hold it open for someone else."***
>
> **Lisa Bottomley**
> *Senior Specialist,*
> Michigan State University Extension

The Business Case for Workplace Mentoring in STEM

Effective workplace mentoring programs offer a variety of benefits, not just to the individual participants, but to the entire organization.

There are three main organizational benefits of a well-executed workplace mentoring program: (1) improved employee retention and engagement, (2) support for upskilling, professional development, and internal knowledge sharing among employees, and (3) enhancement of the organization's brand and reputation as an Employer of Choice in STEM.

Employee Retention & Engagement

Retention is a key element to the productivity, morale, and overall success of any business. High rates of retention and low rates of turnover are directly tied to costs – for all except the highest paying jobs, the average cost of turnover is equivalent to roughly 20% of the position's annual salary.[12] While turnover is a costly issue for any employer, the cost in STEM professions is particularly high. According to research conducted by the Kapor Center for Social Impact, technology fields alone lose at least $16 billion in employee replacement costs each year.[13] Retention is a major issue across all STEM industries – more than half of STEM degree holders are currently working outside STEM, and rates of STEM diversion is even higher among women and people of color.[14]

Mentoring programs have a positive impact on employee retention, and this effect is highly documented. Studies have found that mentees were more satisfied with their careers, more committed to their careers, and had greater intentions to stay with their current organization compared to non-mentored individuals.[15] Likewise, studies have found that mentors are more likely to be satisfied with their jobs, more committed to their organization, and less likely to turnover compared to individuals who did not serve as mentors.[16] These findings have been demonstrated in business research as well – for example, a 2006 study conducted by Gartner found that retention rates for mentees (72%) and mentors (69%) were much higher than for Sun Microsystem employees who did not participate in the mentorship program (49%).[17] A 2016 Deloitte study found that surveyed millennials who were planning to stay with their current employer for at least five years were twice as likely to have a mentor than not.[18]

Upskilling, Professional Development, & Knowledge Sharing

Depending on the specific goals for the organization, mentoring programs can directly or indirectly support skill building among employees. For programs where skill-building is the primary goal, mentors can act as coaches, giving direct guidance on how mentees can obtain, practice, and develop skills. By pairing mentors, with the appropriate level of skill expertise, to mentees who wish to learn those skills, workplace mentorship programs can facilitate upskilling efforts, knowledge transfer, and the professional growth of their employees.

Even if skill-building is not the primary goal of the mentorship program, formal mentoring relationships can still provide opportunities for both mentees and mentors to practice employability and leadership skills, such as communication, relationship building, active listening, and problem-solving.

Branding & Reputation

Providing employees with opportunities to network and learn from each other can demonstrate an organization's investment in them. It can also contribute to developing a culture of inclusion within the organization. In turn, this can support an organization's DEI goals, including the retention and promotion of diverse talent, building employee networks, strengthening interpersonal relationships, and providing employees with a safe space to ask for personalized, contextualized guidance. Engaged, supported employees are more likely to serve as advocates for the company they work for, while helping to build the company's brand and reputation as a STEM employer of choice.

In Summary: Potential Benefits of Workplace Mentoring Programs

For mentees:

- Opportunities for professional development through shared knowledge and skill-building
- Improvements in career outcomes, career satisfaction, and self-efficacy at work
- Opportunities to learn from another's experiences; expand perspectives and increase diversity of thought
- Increase social capital by broadening professional networks
- Gain broader insight into organizational priorities and culture
- Foster inclusion and sense of belonging within the organization

For mentors:

- Develop leadership skills, such as communication, relationship building, active listening, and problem-solving
- Gain broader insight into the organization through the eyes of the mentee
- Increased job satisfaction and career fulfillment
- Foster inclusion and sense of belonging within the organization

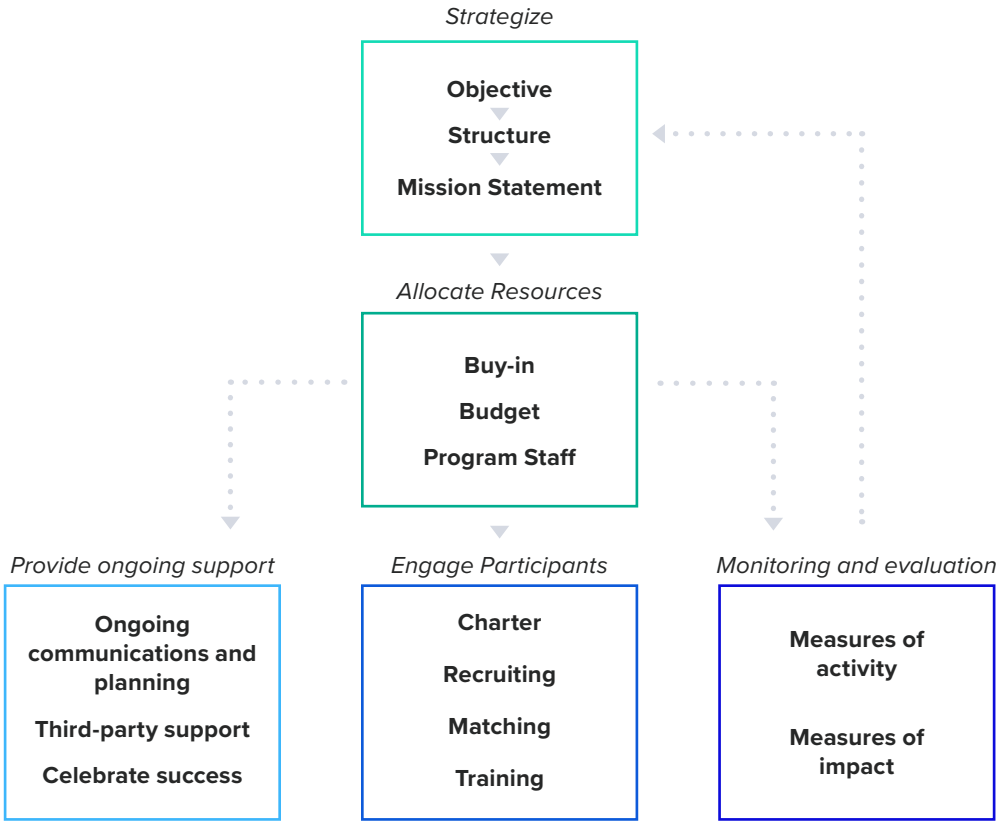
For organizations:

- Improve employee retention and engagement
- Support upskilling, professional development, and internal knowledge sharing among employees
- Build brand and reputation as an employer of choice

Five Stages for Building a Workplace Mentoring Program

Developing an inclusive, effective, workplace mentoring program from the ground up requires collaboration, commitment, and strategy. Informed by the literature and interviews with experts and practitioners, we have outlined the following five stages for designing and implementing a formal mentoring initiative: (1) Strategize, (2) Allocate Resources, (3) Engage Participants, (4) Provide Ongoing Support, and (5) Monitoring & Evaluation.

Figure 1: Five Stages for Building Workplace Mentoring Programs



Stage I: Strategize

The first stage in establishing (or revamping) any workplace mentoring program is to develop a comprehensive program strategy. This stage can be further broken down into three steps: (1) determine the program's objective, (2) decide on a program structure, and (3) create a program charter.

Step 1: Determine the Program's Objective

A consistent finding from both the literature review and experts who were interviewed for this guide, was that successful workplace mentorship programs are structured around a particular objective. Having a specific goal in mind at the outset of the program is key to all subsequent steps. The program objective will inform which structure is most appropriate, what expectations should be set for participants, how resources should be distributed, what metrics should be tracked, and how to determine if the program is ultimately successful. Ideally, the mentoring program objective should align with business objectives as well, such as employee retention or supporting DEI initiatives. Once a program objective has been set, it should be reflected in the mentorship curriculum, training, and resources.

Some example objectives include:

- **Supporting the integration of new hires**
- **Upskill employees with a hard-to-find skill set**
- **Increase promotion rates of women in technology roles**
- **Increase number of racial & ethnic minorities in management positions**
- **Increase retention rates among early-career employees**

> ***Be intentional about what you want to accomplish with the program. Just throwing mentors and mentees together and saying "go mentor" doesn't work. First ask: is there a gap you're trying to close - a retention gap, a skills gap, a gap in business acumen, or are you trying to elevate a group that is underrepresented?"***
>
> **Bekah Alexander**
> *Director, IT Strategy and Portfolio Management,*
> PepsiCo

Step 2: Decide on a program structure

Once a clear program objective has been specified, the next step is to determine the program's structure. Several factors can influence the selection of a program structure, including the type of mentoring to be deployed, the program's target audience, the length of the program, and the expected time commitment for participants to spend in the program.

There are three common types of mentoring structures: (1) One-to-one, (2) Group, and (3) Network. One-to-one mentoring, perhaps the most common type, is structured around relationships between one mentor and one mentee. In contrast, group mentoring is structured around one mentor and multiple mentees. Finally, network mentoring involves creating relationships between multiple mentors, mentees, and mentoring resources.

One-to-one mentoring may be the best choice when the objective of the program is centered around individuals' skill or career development. Group mentoring may be appropriate if the program's objective involves building community or fostering social capital amongst employees. Network mentoring is ideal when the goal is to increase visibility of diverse employees or create more opportunities for sponsorship. Alignment between the type of mentoring structure and the objectives of the program is important to the overall strategy for program implementation.

Depending on the objective, workplace mentorship programs should be inclusive and accessible to all employees, regardless of position, rank, or tenure. However, initially, it may be more practical to launch a mentoring program with a small number of participants from the most appropriate audience, based on the program's objective, and scale over time.

One effective approach is to start a mentoring program by leveraging existing communities within the organization. Many of the workplace mentoring programs that we reviewed were organized through a specific Employee Resource Group (ERG) or Affinity Group. This approach has the added benefits of offering existing channels for communication and recruitment, as well as capitalizing on already established relationships and trust between program participants.

The affordances of technology have been widely used to support workplace mentoring in recent months. Due to safety issues, virtual mentoring programs may provide greater accessibility to participants than in-person mentoring programs. It is important to note that the considerations involved in deciding to implement in-person, hybrid, or virtual mentoring programs have become more complex following the COVID-19 pandemic.

Below are some examples of mentoring program objectives, types of mentoring programs, program durations, and meeting frequencies:

- Objective: Supporting the integration of new hires
- Type: One-to-one
- Audience: New hires
- Program Length: 1 year
- Meeting Frequency: Monthly

- Objective: Upskill employees with a hard-to-find skill set
- Type: One-to-one
- Audience: All employees in a specific department
- Program Length: 6 months
- Meeting Frequency: Bi-weekly

- Objective: Increase promotion rates of women in technology roles
- Type: Group
- Audience: Women in technology roles
- Program Length: 1 year
- Meeting Frequency: Monthly

- Objective: Increase number of racial & ethnic minorities in management positions
- Type: Network
- Audience: Latinx Employee Resource Group
- Program Length: 3 years
- Meeting Frequency: Quarterly

- Objective: Increase retention rates among early-career employees
- Type: One-to-one
- Audience: All entry-level and mid-tier employees
- Program Length: 2 years
- Meeting Frequency: Monthly

Step 3: Create a Mission Statement

A mission statement lays out the program's structure and anchors the program to its core objectives. It should include the program's intentions and priorities. For example, Northwestern Mutual's Women in Tech mentoring program built a three-point mission statement that includes: (1) supporting professional development, (2) retaining, advancing, and attracting top female talent, and (3) cultivating an environment for women in technology to feel seen, heard, and supported. The mission statement is also critical in Stage III when expectations are set and the program charter is developed.

> ***"For example, in Northwestern Mutual's Women in Tech Squad (WIT Squad), we needed to find a way to clearly articulate the purpose, value, and success criteria of our program to not only the WIT Squad participants but also Technology Leaders. In response, we developed a charter which not only helped to keep us grounded in our 'why', but also gave us momentum to solidify the structure, goals, and funding needed for our program to prove its immense value."***
>
> **Jamie Larson**
> *Lead Program Manager,*
> Northwestern Mutual

Program Highlight: PepsiCo

Objective: Support Women in STEM

Structure: One-to-one

Timeframe: 12 months

Meeting Frequency: Monthly

Matching: Automated; mentees are able to choose from a list of matches

Training Provided? Yes, accessible anytime via app

PepsiCo is no stranger to mentorship - since joining Million Women Mentors in 2014, PepsiCo employees have pledged more than 23,000 mentoring hours across 10 chapters globally. Their internal mentoring program began by targeting sectors within PepsiCo where there were high volumes of women in STEM and has since expanded to be available to all employees. Beginning in 2020, PepsiCo leveraged their digital capabilities to launch an in-house app to facilitate their internal mentoring program.

PepsiCo's app was designed to automate a variety of program functions and enhance personalization for program participants. Getting started is simple. After registering from a QR Code, participants create a profile, input their language and other preferences, and select topics of interest. An algorithm matches mentees and mentors based on their selections, requiring a minimum of three mutual topics. Mentees are then presented with a list of their top 10 mentor matches from which they can view profiles and ultimately choose a mentor for the length of the 12-month program. The app has a variety of training and resource materials available on-demand throughout the program and allows participants to schedule their meetings and leave feedback after each session. This feedback is monitored by a team of volunteer "ambassadors" who provide program support and advocate for the participants.

Launching their digital platform in the midst of the COVID-19 pandemic was tough, but it also provided new opportunities. All mentoring sessions can take place virtually and, because the app is standardized across global chapters, it allows for participants to match with other PepsiCo employees outside their immediate sector or location. "One of the powers of the app is that people have been able to connect with others that wouldn't normally be accessible to them," says Jill Townsend, Supply Chain Global Business Services Lead for the UK and MWM chapter lead, "so if you're in supply chain and want to learn about sales, you can match with someone in sales. Or if you were thinking about relocating to another country, you could match with someone there and learn more about it. We wanted to engage people from all over the globe." To date, PepsiCo has successfully enrolled 2,000 employees across 100 countries in the app and are currently gearing up to expand to the US.

Program Highlight: Northwestern Mutual

Objectives: (1) Support professional development; (2) Retain, advance, and attract top female talent; and (3) cultivate an environment for women in technology to feel seen, heard, and supported.

Matching: Manual; built with a focus on diversity. While cultural and racial diversity is at the forefront, workforce diversity is also considered to ensure groups (Squads) have members with varying seniority and workforce experiences.

Structure: Squads with one leader and 5 members, all women. Leaders are internal to Northwestern Mutual, while members are both internal and external to Northwestern Mutual.

Meeting Frequency: Bi-monthly (one full group, one in-Squad session)

Training Provided? Yes, via monthly curriculum

Women in Technology Squad (WIT Squad) is a forward-thinking group mentorship program centered on supporting and retaining top female technologists. WIT Squad, now composed of over 120 internal and external participants, is structured around "squads" consisting of one leader and 5 members ranging in workforce experience from entry level to senior leader. This diversity allows all members of a squad to have the opportunity to lead and learn from each other throughout the program.

The WIT Squad program was designed intentionally to empower women to recognize their potential as leaders and influencers in technology to: grow professionally, cultivate a sense of community, and nurture and retain top talent. These principles are built into WIT Squad's charter and curriculum. Each month, a new curriculum topic is curated and led by industry experts at the "full Squad" session. These topics are then further explored through a deep dive by each small Squad cohort during their structured "in-Squad" sessions.

The WIT Squad program tracks several metrics including its members' performance review data, promotions, career transitions, and retention data. In addition, at the beginning and end of the program, a survey is conducted to measure if the participants see themselves as a female technologist and feel a sense of belonging. The WIT Squad program is an innovative structure that encourages professional development among women through quality curriculum, community building, and leadership opportunities.

Program Highlight: MEMIC

Objective: to sponsor and grow professional opportunities for women in insurance through networking

Structure: Network

MEMIC's Women in Insurance Network houses a supportive group of women in a largely male dominated space to mentor, sponsor, and encourage professional development. The network advocates for their members by implementing reference-making, offering leadership roles, and introducing members to wider networks. As Catherine Lamson articulates, "Some women have not had access to an insurance women's network to help them develop the relationships they need to create in order to explore new opportunities or find a way forward. We look to find women in our network that are excited to make those connections and support women in the next steps in their career development.""

Stage II: Allocate Resources

Before launching a workplace mentorship program, it's important to identify the resources that the program will require, the sources of available capital that can be utilized, and the appropriate level of support that will be necessary to effectively launch, maintain, and grow your program.

Securing Buy-In

Possibly the most important resource necessary for launching a successful workplace mentorship program is political capital. This includes buy-in from both the company's leadership and from the program's intended audience. Securing executive buy-in and sponsorship ensures that other necessary support and resources will be allocated towards the program. Executive champions can also be very effective at encouraging employees to participate in the program, especially those that could be recruited as mentors.

Securing executive buy-in is critical to the sustainability of workplace mentoring programs. Our expert interviewees indicated that it is essential to present leadership with data, metrics, and a clear strategy that justifies the program. In addition to presenting executives with evidence for the effectiveness of mentoring (see The Business Case for Mentoring section on page 10), it is also helpful to present data that is directly relevant to the organization. This could include employee retention rates, measures of engagement, evidence of a skill gap or demographic gap in the workforce, or employee survey results. As discussed earlier, securing buy-in is easier when program objectives and the mentoring program structure align with the organization's strategic goals.

> ***"TCS senior executives are already purpose-driven, but to create buy-in of specific initiatives like TCS' Pitch for Purpose competition, I have to bring strong data and compelling stories to capture the real impact of mentoring, like when one of our executives mentored our Pitch for Purpose 2020 winner Ahva Sadeghi, Co-founder and CEO of Symba. Once there's ownership and employee participation in our programs, the bottom-line is tangible."***
>
> **Lina Keblanov**
> *Head of Corporate Social Responsibility for North America,*
> Tata Consultancy Services

> ***"To get leadership buy-in, you have to make the case for change and convince people it's worth doing. That requires telling a good story with two sides to it. The first side is the soft side, the stories of individuals and the benefits they saw from mentoring. The other side needs to be fact-based and local. If you're looking to start a program in the US, you should have data on US retention and diversity in STEM. If the program is in Brazil, your story should have data from Brazil. Tell that story and make it relevant."***
>
> **Cliona Murphy**
> *Vice President, Quality Assurance,*
> PepsiCo

Funding & Staffing the Program

Funding is frequently an overlooked step in building mentoring programs. Locating funding is critical to acquiring other necessary resources, such as training programs, curriculum, support staff, or digital management tools. When creating the program budget, it is constructive to anticipate the following: What human resource support, software, and other assets does the program need to be successful? Is there sufficient staff and technology to manage the program effectively? Are the necessary resources available for matching mentors and mentees, providing training and curriculum, communicating with participants, and conducting program evaluation?

A common strategy for limiting the costs of mentorship programs is to utilize employee volunteers as program staff. This approach can be effective, especially when the time and effort required is closely tracked and monitored. Allocating a budget for volunteers, whether it's monetary or a certain number of work hours, allows for these hours to be incentivized and rewarded as a part of employees' performance evaluations and in bonuses. Recognition for participation in mentoring programs is helpful in building sustainability.

> ***"Funding is often not considered enough when setting up mentoring. If it's going to scale at all, then you need funding. Where do you see the program in 5-8 years? How much money, staff are you going to need?"***
>
> **Jason Leppin**
> *Executive Director,*
> The Actuarial Foundation

Where Can I Go for Help?

One of the easiest ways to lighten the load for mentorship program managers and staff is to allocate budgets towards partnering with external organizations and platforms. Below are some suggestions for partners that can help develop, manage, and deploy mentorship programs.

- MENTOR
  THE NATIONAL MENTORING PARTNERSHIP

  MENTOR: The National Mentoring Partnership (MENTOR) is a non-profit organization that aims to close the mentoring gap and drive equity through quality mentoring relationships. Their cornerstone publication, *Elements of Effective Practice for Mentoring™*, is a detailed research-informed and practitioner-approved resource for creating and sustaining youth mentoring programs. Building off decades of expertise and leadership in youth mentoring, MENTOR is excited to embark on a new initiative providing training, strategy, and more to help corporations and other hiring entities support healthy adult relationships in the workplace. For more information, visit mentoring.org

- NRMN

  National Research Mentoring Network (NRMN): NRMN's mission is to provide researchers across all career stages in the biomedical, behavioral, clinical, and social sciences with evidence-based mentorship and professional development programming that emphasizes the benefits and challenges of diversity, inclusivity and culture. They offer a networking platform and a host of resources to connect STEM employees to support and grow their careers. For more information, visit nrmnet.net

Stage III: Engage Participants

Developing a Program Charter

Successfully engaging participants in mentoring programs requires that the objectives, mission, and expectations are clearly articulated. Developing a program charter that outlines the program is an important part of communicating with potential participants and includes the mission statement, an overview of the program, a description of the mentor and mentee roles and responsibilities, a mentoring plan and timeline, and the qualifications for participating in the mentoring relationship.

Charter Checklist

- **Mission Statement**
  - What are the principles and objectives?
- **Program Overview**
  - Who is the program offered to?
  - How will the mentors and mentees be matched?
  - What is the duration of the mentoring relationship?
- **Roles and Responsibilities**
  - What are the expectations for the mentors and mentees, based on your program's operational definition of mentorship?
  - How often will the mentor and mentee meet?
  - What are the expectations for communication throughout the program?
- **Support for Participants**
  - What are the benefits of participation for mentors and mentees?
  - What training will be offered?
  - What other support will participants have available to them?
  - How will progress be tracked?

> ***"Start your mentoring relationships by asking what you want to accomplish. No matter what your objective is, the mentoring relationship is about supporting growth."***
>
> **Katie Stinson**
> *Virtual Engagement Strategist,*
> National Research Mentoring Network

Recruiting

Recruiting mentors and mentees requires focusing on the audience for whom the program will serve that was identified in Stage I. Our research indicates that tapping into existing communities and networks within an organization can help to gain the interest of potential recruits. Opportunities for recruitment include introducing the program at a new-hire orientation, networking event, or employee resource group meeting. Human Resources departments can act as a connector between employees and mentoring program managers, if they are provided with information about how to get involved. They can promote the program and direct new hires and employees seeking professional development towards the mentoring program.

After the initial introduction of the program, it helps to follow up with an email that highlights instructions for registering for the program, participating in an orientation, and scheduling important dates. Partnering with established groups that allow access to their communication networks (i.e., email listservs) can make information about the mentoring program easily accessible.

As discussed in Stage II, getting the support of executive champions may encourage the recruitment of mentees who are seeking to expand their networks to include organizational leadership. Mentoring programs can become a way for employees at all levels to learn from one another, network, and exploit their professional opportunities.

Matching

Our interviewees and literature review emphasized that good matches are key to successful mentoring relationships. We found that matching and the development of successful relationships depends on building a foundation of trust. Establishing this foundation requires strong alignment between the needs of the mentee and the type of guidance that the mentor can offer.

Research on formal mentoring programs has shown that matching randomly is not very effective in comparison to matching based on a specific criteria. For example, in skills-based programs or career development programs, matching based on skill sets or career paths are likely to be most effective. For programs where building community and providing psychosocial support is the main goal, matching based on common interests or experiences may be better.

Our interviewees also emphasized seniority level as a key variable in determining successful matches. For example, when matching new hires, linking mentees with mentors who are closer in rank was considered helpful. Cultivating a mentoring relationship between peers can help new hires feel more comfortable becoming acclimated in the company culture. However, if the objective of the mentee is to open new doors to new leadership positions, matching them with a senior level mentor will help them better achieve their goals.

Allowing mentees to have some choice in their match is an important piece of the matching process. If possible, allowing mentees to have the ability to choose their mentor, even if it's from a list of potential matches, will more closely mirror how informal mentoring relationships are formed, and make it more likely that the match will be a successful one.

When issues arise, mentees need to have an appropriate outlet for raising any concerns and the support of the program to mediate the situation or change their match. Therefore, it is important to have a method for collecting feedback to indicate when a match is not successful. This can be accomplished by designating a point of contact to whom participants can communicate any concerns, or it can be integrated into program monitoring and evaluation.

Some mentoring programs have mentees match with a new mentor after a certain period of time (e.g., 6 months or a year). This allows them to continue to increase their networks and broaden diversity of thought. If the match has been particularly successful, some programs encourage mentors and mentees to continue the relationship informally after the program has been completed.

> ***"The challenge between mentors and mentees is to find that shared common interest to make sure there's enough stickiness there to form a stronger bond over time; ultimately, finding that balance between what is needed and what is provided. But if it's not there, then it's about being ok with moving on."***
>
> **Dr. Gabriela A. Gonzalez**
> *Deputy Director,*
> Intel Foundation

> ***"Trust is so essential to mentoring relationships; you want to be careful to not lessen trust by emphasizing differences in power or position between mentors and mentees. Because similarity breeds trusts. One strategy for creating trust is to begin with multiple opportunities to surface mutual interests and objectives that mentors and mentees share."***
>
> **Julia Freeland Fisher**
> *Director of Education,*
> Christensen Institute

Training

It's important to remember that not all mentoring relationships have positive outcomes. However, research indicates that training mentors and mentees is one of the strongest indicators of positive relationship outcomes. Research on STEM mentorship specifically has found that training is one of the most important indicators of successful mentorship.[19]

Investing in mentorship training is essential to the successful launch of a workplace mentoring program. The cost of training is far less than the cost of employee turnover.

Training helps ensure that all participants have the basic tools to begin the mentoring process, establishes the expectations for the mentors and mentees, and builds understanding of the appropriate use of communication strategies.

There are two primary categories of mentorship training: the first involves the building blocks of a mentoring relationship; the training should highlight communication, networking, and relationship strategies. This type of training provides the necessary skills to create healthy expectations and boundaries and different approaches to goal setting and conflict resolution. Because mentees may not always agree with their mentors, it's important to provide the tools for conflict resolution when there is disagreement, and create a space for difficult discussions.

The second category of mentorship training, cultural awareness training (CAT), encourages participants to become aware of how their backgrounds and experiences impact our daily lives, access to resources, and journey to success. CAT relates directly to diversity, equity, and inclusion (DEI) initiatives. Because issues of DEI are frequently the cause of low retention and professional growth opportunities within STEM, it is vital that mentoring is built consciously around bolstering DEI, encouraging intercultural relationships, and providing the necessary support to ensure marginalized communities are not put in harm's way.

> ***"Training should help mentors reflect on their own identities, such as race, gender and sexual orientation, to prepare them to fully listen to their mentees and create space for both parties to show up as their whole selves. When mentoring across differences, especially with young people from marginalized backgrounds, the mentee may disclose details about life challenges, including trauma, that the mentor cannot relate to. Ongoing training and support set the pair up for the sometimes difficult conversations that characterize an authentic relationship."***
>
> **Mike Swigert**
> *Senior Program Manager,*
> Aspen Institute Forum for Community Solutions

> ***It is critical that mentoring relationships must make space for the other person's perspective."***
>
> **Deepa Shankar**
> *Senior Education Partnership Manager,*
> Underwriters Laboratories Inc.

Mentoring training can be delivered through several mediums, such as on demand, virtual, in person, or hybrid. Our research indicates that providing both live workshops and access to a resource library for mentoring training can support positive results. Workshops allow for community building and learning check-ins with participants. A resource library allows mentoring participants to acquire the necessary knowledge needed to grow as a mentor or a mentee.

Several well-established organizations have developed thorough mentoring training from the building blocks to cultural awareness. Organizations like MENTOR, Dreami, Leader Factor, and Cultural Wizard offer cohesive training, along with the research to back up their methods.

Stage IV: Provide Ongoing Support

After determining the parameters of the initial training program, establishing a mentoring program's ongoing support will embolden mentoring relationships. In this section we discuss the importance of continued training, resource libraries, and mentoring advocates.

Ongoing Communications & Training

As we discussed in the last section, initial training primes mentors and mentees to begin their relationship with clear expectations and objectives. Throughout the duration of the program, mentoring relationships can be further enhanced through training opportunities via virtual or in person workshops that continue engaging participants. Ongoing workshops can focus on a wide range of topics, from building a personal brand to persuasive storytelling. These workshops can be an opportunity to grow networking opportunities by inviting employees from all sides of the organization to share their expertise on a wide range of topics.

In addition to workshops, ongoing support can also take the form of webinars and newsletters. Webinars, for example, can highlight different participants and their stories, as well as celebrate their success or a particular component of their mentoring relationship. Newsletters are a great way to capture and publicize the stories of mentors and mentees.

Many ongoing training programs can also benefit from the structure of a curriculum. Curriculum can provide a guided approach based on the objectives determined in Stage I. This can be particularly useful for programs centered on upskilling efforts, with clear learning standards and mentoring goals. Curriculum can also support evaluation efforts by describing smaller objectives that can help define measures for success.

Mentoring Advocates (Third-Party Support)

Beyond training, our research highlighted the importance of providing third-party support for mentors and mentees. Third party support, or mentoring advocates, assist mentoring relationships by ensuring that mentors and mentees are achieving their goals, meeting consistently, and working through any conflicts. In the event that a problem arises, mentoring advocates can offer a space for conflict resolution, or rematching if needed. Third-party support can be developed through program volunteers or the leadership team of an ERG. Advocates should be well-versed in the program and should have established check-ins with mentors and mentees to monitor the progress of each relationship. In the next section (Stage V), we will discuss how mentoring advocates play a role in monitoring and evaluation.

Celebrate Success

A key component of keeping participants engaged is celebrating their success. It is important to encourage participants to share their success stories with mentoring advocates and program managers. Gathering and sharing these stories in webinars, newsletters, and at networking events can promote recognition and positive reinforcement for participating in the program. Highlighting success stories and individual relationships can help recruit new members, support leadership buy-in, and motivate current participants. Showing appreciation to all participants for engaging in the program can build a sense of community and inclusion.

Stage V: Monitoring & Evaluation

One of the most neglected components of establishing a successful mentoring program is monitoring and evaluation. Our research emphasized that sustaining and growing mentoring programs requires gathering metrics to identify what is and isn't working. Evidence, such as retention data, participation data, and data on the number of hours employees engaged in mentoring, can encourage continued buy-in from leadership. Other indicators of success may include the number of promotions, level of increased skill acquisition, and changes in job satisfaction. Evaluation methods, such as feedback forms, surveys, focus groups and interviews can identify areas in need of improvement, and allow for program managers to strategically grow and re-evaluate the program. The data collected should provide information on the degree to which the program is meeting the objective and the impact of the program. Findings from the analyses of these data can provide insights for informing program refinements.

Determining metrics of success is an essential component of program evaluation. The objectives and charter developed in Stage I, should be used to determine what metrics will be used. For example, if the program is designed to bolster the professional growth of women of color in an organization then the measurements should reflect the level of participation by women of color and their satisfaction with the program and with the company as a whole.

The data from program evaluation metrics can then be compared against company-wide data gathered within Human Resources. Many organizations already collect data on retention, promotions, and horizontal movements. Enlisting the expertise of an independent evaluator to synthesize data and generate annual reports allows for an objective approach that supports the integrity of your program. Monitoring and evaluating the activities and impact of mentoring programs will help with continuous improvement and support refinements of the program objectives, charter, structure, and overall strategy.

Example Metrics

Measures of Activities

- Number of mentoring hours logged
- Frequency of mentoring meetings
- Number of participant referrals
- Retention rates of participants
- Demographics of mentoring program compared to demographics of company as a whole
- Number of participants from underrepresented backgrounds
- Number of new skills acquired

Measures of Impact

- How satisfied are you with your mentoring relationship?
- How trustworthy do you find your mentor?
- How likely are you to refer your co-workers to the program?
- How likely are you to continue your mentoring relationship after the program?
- Do I feel like my mentors talk to me in a culturally respectful manner?
- Can I go to my mentor with a problem?
- Do I feel like I can disagree with my mentor's advice?

This data provides important information about the impact of a mentoring program because it can be compared to data on other employees who are not part of the mentoring program. For example, data on mentees who have completed the program can be used to demonstrate how the mentoring program is impacting company-wide retention, professional growth demonstrated in vertical and horizontal movements, and employee satisfaction.

Conclusion

The five stages of mentoring described in this guide provide a framework for designing, implementing, and evaluating the success of a workplace mentoring program. Mentoring is a proven solution set for supporting and retaining STEM professionals that offers a wide range of benefits for mentors, mentees, and the workplace itself. When effectively implemented, workplace mentoring provides opportunities for employees to learn from one another and build connections that can have long-lasting effects. By investing in thoughtful, inclusive mentoring programs, organizations can improve employee retention and engagement, contribute to skill-building and knowledge sharing, and foster a culture of inclusion and belonging, all of which can help to build a brand as a STEM employer of choice.

Appendix: Methodology

To develop this paper, STEMconnector reviewed a range of literature across mentoring, workforce development, psychology, sociology, talent management, and other disciplines. In addition, we gathered the perspectives of over 30 field experts through individual and group interviews. These individuals represent mentors, mentees, researchers, program managers, human resources professionals, corporate social responsibility leaders, and senior leadership from international corporations, postsecondary education institutions, non-profits, and leading think tanks. They are listed alphabetically by organization and then by last name in the Interview List.

Interview List

Clay Cohorn, *Director, Clinical Research,* Abbott

Heidi Hinrichs, *Divisional Vice President,* Abbott

Nicole Joison, *Supply Chain Analyst,* Abbott

Sean Thomas-Thandupurakal, *Senior Quality Engineer,* Abbott

Jason Leppin, *Executive Director,* The Actuarial Foundation

Mike Swigert, *Senior Program Manager,* Aspen Institute Institute for Community Solutions

Umran Beba, *Co-Founder,* Beba Innovation and Entrepreneurship Foundation

Julia Freeland Fisher, *Director of Education,* Christensen Institute

Kate Schrauth, *Executive Director,* iCouldBe

Dr. Gabriela A. Gonzalez, *Deputy Director,* Intel Foundation

Vikki Mueller Espinosa, *Career Strategist and People Program Director,* Intel Corporation

Ana Manriquez, *Software Engineering Manager,* Intel Corporation

Luz Osuna, *Strategic Capacity Industrial Engineer,* Intel Corporation

Eshé Pickett, *Software Architect,* Intel Corporation

Dr. Anna Prakash, Ph.D, *Supply Chain Research and Development Engineer,* Intel Corporation

Ruthe Farmer, *Founder & CEO,* Last Mile Education Fund

Sheila Boyington, *CEO, Learning Blade & National States Chair,* Million Women Mentors

Catherine Lamson, *Senior Vice President and Chief Administrative Officer,* The MEMIC Group

Charline Alexandre-Joseph, *Director of Workforce Development,* MENTOR

Mike Garringer, *Director of Research and Evaluation,* MENTOR

Dr. Elizabeth Santiago, *Senior Advisor,* MENTOR

Lisa Bottomley, *Senior Specialist,* Michigan State University Extension

Ayomide Balogun, *Senior Program Manager,* National Grid

Lisa Willey, *Lead Analyst,* National Grid

Katie Stinson, *Virtual Engagement Strategist,* National Research Mentoring Network

Jamie Larson, *Lead Program Manager,* Northwestern Mutual

Stacy Zaja, *Assistant Director, STEM Outreach,* Northwestern Mutual

Lina Keblanov, *Head of Corporate Social Responsibility for North America,* Tata Consultancy Services

Bekah Alexander, *Director, IT Strategy and Portfolio Management,* PepsiCo

Cliona Murphy, *Vice President,* Quality Assurance, PepsiCo

Jill Townsend, *Director- Supply Chain Europe Global Business Services,* PepsiCo

Ahva Sadeghi, *Co-Founder and CEO,* Symba

Dr. Katherine Bihr, *Vice President, Programs and Education,* TGR Foundation

Melek Pulatkonak, *Founder,* TurkishWIN

Deepa Shankar, *Senior Education Partnership Manager,* Underwriters Laboratories Inc.

Endnotes

[1] Chao, G. T., Walz, P. M., & Gardner, P. D. (1992). Formal and informal mentorships: A comparison on mentoring functions and contrast with nonmentored counterparts. Personnel Psychology, 45, 619-636. https://doi.org/10.1111/j.1744-6570.1992.tb00863.x

[2] Eby, L. T., Allen, T. D., Evans, S. C., Ng, T., & DuBois, D. (2008). Does mentoring matter? A multidisciplinary meta-analysis comparing mentored and non-mentored individuals. Journal of Vocational Behavior, 72(2), 254-267. Retrieved from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2352144/

[3] Merrill, J. (2015). Top 25 Mentoring Relationships in History. The Chronicle of Evidence-Based Mentoring. Retrieved from: https://www.evidencebasedmentoring.org/top-25-mentoring-relationships-in-history/

[4] Allen, T. D., Eby, L. T., Poteet, M. L., Lentz, E., & Lima, L. (2004). Career benefits associated with mentoring for proteges: A meta-analysis. Journal of Applied Psychology, 89(1), 127-136. DOI:10.1037/0021-9010.89.1.127

[5] Gosh, R. & Reio Jr., T. G. (2013). Career benefits associated with mentoring for mentors: A meta-analysis. Journal of Vocational Behavior, 83, 106-116. http://dx.doi.org/10.1016/j.jvb.2013.03.011

[6] National Academies of Sciences, Engineering, and Medicine. (2019). The Science of Effective Mentorship in STEMM. The National Academies Press. https://doi.org/10.17226/25568

[7] Ma, Y., Mukherjee, S., & Uzzi, B. (2020). Mentorship and protégé success in STEM fields

[8] Smith, D. & George, Y. S. (2018). STEM Mentoring: Emerging Strategies for Inclusion. American Association for the Advancement of Sciences. Retrieved from: aaas.org/stemmentoring

[9] Gutner, T. (2009). Finding Anchors in the Storm: Mentors. The Wall Street Journal. Retrieved from: https://www.wsj.com/articles/SB123301451869117603

[10] Olivet Nazarene University. (2019). Study explores professional mentor-mentee relationships in 2019. Retrieved from: https://online.olivet.edu/research-statistics-on-professional-mentors

[11] National Academies of Sciences, Engineering, and Medicine. (2019). The Science of Effective Mentorship in STEMM. The National Academies Press. https://doi.org/10.17226/25568

[12] Boushey, H. & Glynn, S. J. (2012). There Are Significant Business Costs to Replacing Employees. Center for American Progress. Retrieved from: https://www.americanprogress.org/wp-content/uploads/2012/11/CostofTurnover.pdf

[13] Scott, A., Klein, F. K., & Onovakpuri, U. (2017). Tech Leavers Study: A first-of-its-kind analysis of why people voluntarily left jobs in tech. Kapor Center for Social Impact. Retrieved from https://mk0kaporcenter5ld71a.kinstacdn.com/wp-content/uploads/2018/02/KC18001_report_v6-1.pdf

[14] STEMconnector analysis of National Survey of College Graduates: 2017 Data; Table 9-5. Retrieved from: https://www.nsf.gov/statistics/2020/nsf20300/#chp2

[15] Allen, T. D., Eby, L. T., Poteet, M. L., Lentz, E., & Lima, L. (2004). Career benefits associated with mentoring for proteges: a meta-analysis. Journal of Applied Psychology, 89(1), 127-136. DOI: 10.1037/0021-9010.89.1.127

[16] Gosh, R. & Reio Jr., T. G. (2013). Career benefits associated with mentoring for mentors: A meta-analysis. Journal of Vocational Behavior, 83, 106-116. http://dx.doi.org/10.1016/j.jvb.2013.03.011

[17] Wharton School of the University of Pennsylvania. (2007). Workplace Loyalties Change, but the Value of Mentoring Doesn't. Knowledge @ Wharton. Retrieved from: https://knowledge.wharton.upenn.edu/article/workplace-loyalties-change-but-the-value-of-mentoring-doesnt/

[18] Deloitte. (2016). The 2016 Deloitte Millennial Survey: Winning over the next generation of leaders. Retrieved from: https://www2.deloitte.com/content/dam/Deloitte/global/Documents/About-Deloitte/gx-millenial-survey-2016-exec-summary.pdf

[19] Stelter, R.L., Kupersmidt, J.B., & Stump, K.N. (2021) Establishing effective STEM mentoring relationships through mentor training. Annals of the New York Academy of Sciences, 1483, 224-244. doi: 10.1111/nyas.14470

[20] Womack, V.Y., Wood, House, S.C., Quinn, S.C., Thomas, S.B. McGee, & R, Byars-Winston, A. (2020) Culturally aware mentorship: Lasting impacts of a novel intervention on academic administrators and faculty. PLoS ONE, 15(8), doi.org/10.1371/journal.pone.0236983

STEM connector
powered by pod

MWM
Million Women
Mentors