MENTOR
THE NATIONAL MENTORING PARTNERSHIP

STEM Supplement to the *Elements of Effective Practice for Mentoring*™ Checklist

This Supplement is intended to provide additional research-informed recommendations for youth mentoring programs with a science, technology, engineering, or mathematics focus. These programs often have different approaches and outcomes than traditional mentoring programs, and this guide is intended to provide additional guidance. Please note that STEM mentoring programs should still strive to adhere to all of the practices recommended in the full *Elements*, with special consideration for the recommendations noted here. To access the full STEM Supplement on MENTOR's website, click here.

1. RECRUITMENT

Mentor Recruitment
Program recruits mentors whose skills, motivations, and backgrounds best match the goals and structure of the program. (B.1.3)

- ☐ **STEM Recommendation:** Recruit volunteers with scientific backgrounds or current employment in a STEM field to serve as mentors, particularly if mentors will be teaching STEM content, leading complicated STEM activities, or serving as role models to mentees who are members of a group (e.g., African Americans, women) that is underrepresented among students majoring in a STEM field or among employees in a STEM job.
- ☐ **STEM Recommendation:** Recruit mentors who express interest in developing a supportive, caring relationship and friendship with their mentee(s), and not just promoting their mentees' interest in, or commitment to, a STEM career.

Mentee and Parent or Guardian Recruitment
Program recruits mentees whose needs best match the services offered by the program. (B.1.7)

- ☐ **STEM Recommendation:** Program engages in recruitment strategies directed at potential mentees that show people who are working in STEM careers as part of a collaborative community of talented, interesting people.
- ☐ **STEM Recommendation:** Program engages in recruitment strategies showing people working in STEM who are concerned with helping people or applying their work to improving the world.

2. SCREENING

Mentor Screening
Program has established criteria for accepting mentors into the program as well as criteria for disqualifying mentor applicants. (B.2.1)

- ☐ **STEM Recommendation:** Emphasize screening for mentors who:
  - o Exhibit strong social skills (in addition to strong subject matter expertise).
  - o Are willing to talk about their personal experiences in the STEM field, especially in programs designed to help youth overcome systemic or personal challenges to a STEM education or career.

STEM Supplement to the *Elements of Effective Practice for Mentoring*™ Checklist

2. SCREENING (cont.)

- ☐ **STEM Recommendation:** When appropriate, and to the degree possible, STEM mentoring programs should screen mentors on the demographic or background characteristics that match the youth who will be served by the program, particularly if the program is designed to interest underrepresented youth in STEM fields.

Prospective mentors agree in writing to a one-year (calendar or school) minimum commitment for the mentoring relationship, or a minimum time commitment that is required by the mentoring program. (B.2.6)

And, Prospective mentors agree in writing to participate in face-to-face meetings with their mentees that average a minimum of once a week and a total of four or more hours per month over the course of the relationship, or at a minimum frequency and amount of hours that are required by their mentoring program. (B.2.7)

- ☐ **STEM Recommendation:** STEM mentoring programs should assess during the screening process whether prospective mentors may have scheduling challenges or conflicts that would hinder their full participation in the program, screening out those who may be unable to meet with mentees consistently (e.g., potentially challenging groups may include college students, employees at local STEM companies, and faculty in higher education)

Mentee Screening

Program has established criteria for accepting youth into the program as well as criteria that would disqualify a potential youth participant. (B.2.8)

- ☐ **STEM Recommendation:** STEM mentoring programs, when appropriate and particularly in programs with capped enrollment, may want to prioritize accepting youth of color, girls and young women, youth with disabilities, first generation college students, and other groups that may be underrepresented in STEM fields and careers.

- ☐ **STEM Recommendation:** STEM mentoring programs may want to set eligibility criteria around STEM experience or skills, accepting mentees who can participate fully in the STEM content of the program (while offering supplemental instruction and other supports to those screened out of participation in the program).

Parent(s)/guardian(s) and mentees agree in writing to a one-year (calendar or school) minimum commitment for the mentoring relationship, or the minimum time commitment that is required by the mentoring program. (B.2.11)

And, Parents(s)/guardian(s) and mentees agree in writing that mentees participate in face-to-face meetings with their mentors that average a minimum of once a week and a total of four or more hours per month over the course of the relationship, or at a minimum frequency and number of hours that are required by the mentoring program. (B.2.12)

MENTOR

THE NATIONAL MENTORING PARTNERSHIP

STEM Supplement to the *Elements of Effective Practice for Mentoring*™ Checklist

2. SCREENING (cont.)

- ☐ **STEM Recommendation:** As with mentors, STEM mentoring programs may want to utilize screening tools to assess whether or not applicants to be mentees can: 1) meet logistical expectations regarding the timing, frequency, and length of match meetings; and 2) commit to full participation in all required program activities, especially in programs focused on matches completing longer-term research projects.

3. TRAINING

Mentor Training

Program provides a minimum of two hours of pre-match, in-person, mentor training. (B.3.1)

- ☐ **STEM Recommendation:** STEM mentoring programs that involve mentors and mentees conducting STEM activities together should require training not only in how to develop an effective, close mentoring relationship with one or more mentees, but also training on other topics. Because of the increased training demands on STEM mentors, pre-match mentor training will need to last more than a minimum of two hours.

Program provides pre-match training for mentors on the following topics. [See main *Elements* for full listing of original topics.] (B.3.2)

- ☐ **STEM Recommendation:** STEM mentoring programs often focus their training on the role of being a positive role model to mentees with the goal of building mentees' sense of belonging in a STEM field and establishing their scientific identity. Two additional key roles need to be incorporated into mentor training content.
  - o Mentors need to be trained to be a connector or advocate for their mentees to connect them to other people, places, experiences, or opportunities related to STEM.
  - o Traditional mentor training should be included in STEM mentor training with a focus on the importance of being a trusted, adult friend to mentees in order to establish a caring, supportive mentoring relationship.

- ☐ **STEM Recommendation:** Because communal goals may be highly valued by female, first-generation, and racial and ethnic minority students, mentor training needs to include strategies to highlight communal opportunities in STEM for programs targeting these populations.

- ☐ **STEM Recommendation:** Because female and minority students frequently encounter negative stereotypes and lower expectations of their intellect and abilities, additional topics for pre- (or post) match training for mentors in a STEM mentoring program are needed to help mentees overcome barriers to success in STEM coursework or common challenges experienced when exploring or entering STEM careers.

STEM Supplement to the *Elements of Effective Practice for Mentoring*™ Checklist

3. TRAINING (cont.)

These topics include:

- Cultural awareness training on negative stereotypes and lower expectations, unconscious biases, and diversity and inclusion
- Strategies for supporting feelings of self-efficacy and belonging
- Communicating admiration and respect for mentees
- Talking with their mentees about traditional barriers to STEM education and STEM careers including race, gender, socioeconomic status, and disability
- Teaching and providing feedback on workplace norms and behaviors in ways that are culturally responsive and empowering for youth
- Fostering a growth mindset in youth

☐ **STEM Recommendation:** Mentors can be trained to help build sustained career interests in STEM by communicating a meaningful passion for their work, as well as a strong sense of purpose participating in a deeply fulfilling, positive, and meaningful career.

☐ **STEM Recommendation:** Because STEM mentoring programs are often group-based and conducted at program sites, mentor training should address how to establish a caring, supportive, and individual mentoring relationship with each member of the group.

Program provides pre-match training for the mentor on the following risk management policies that are matched to the program model, setting, and population served. [See main *Elements* for full listing of original topics.] (B.3.3)

☐ **STEM Recommendation:** STEM mentoring programs that include conducting scientific experiments or going on field trips may need to develop risk management policies and mentor training on these policies to protect the safety of mentees and mentors.

Program uses training practices and materials that are informed by empirical research or are themselves empirically evaluated. (B.3.4)

☐ **STEM Recommendation:** STEM mentoring programs may consider adopting or adapting general or STEM-specific mentor training materials that have been informed by empirical research or are themselves empirically evaluated.

Program provides additional pre- and post-match mentor training opportunities beyond the two-hour, in-person minimum for a total of six hours or more. (E.3.1)

☐ **STEM Recommendation:** When STEM mentoring programs have matches conduct STEM activities or experiments together, ongoing mentor training is likely needed in the following topics:

- Facilitating STEM activities. Training could be conducted in advance of the meeting or just-in-time, and virtually (e.g., online videos, video or web conferences) or at an in-person, instructor-led workshop

STEM Supplement to the *Elements of Effective Practice for Mentoring*™ Checklist

3. TRAINING (cont.)

- How to conduct the program's STEM activities in a safe and successful way
- Being cautious about using an overly technical vocabulary with mentees without providing them with definitions or explanations
- The importance of simplifying explanations and instructions so that they are developmentally appropriate for the target audience of mentees
- The scientific method, critical thinking, and continuing problem solving

Mentee And Parent/Guardian Training

Program provides training for the mentee on the following topics. [See main *Elements* for full listing of original topics.] (E.3.4):

- ☐ **STEM Recommendation:** Because many STEM mentoring programs involve having mentees work in authentic STEM settings or with STEM professionals serving as mentors, some additional mentee training topics should be addressed that may support a positive mentoring relationship, but are not necessarily central to being a mentee.
  - Bioethics in research with human subjects
  - Professional ethics (licensing, plagiarism, authorship credit)
  - Coursework prerequisites
  - Scientific research methods
  - Career opportunities
  - Networking skills

Program provides training for the mentee on the following risk management policies that are matched to the program model, setting, and population served. [See main *Elements* for full listing of original topics.] (E.3.5)

- ☐ **STEM Recommendation:** STEM mentoring programs that include conducting scientific experiments or going on field trips may need to develop risk management policies and mentee training on these policies to protect the safety of mentees and their mentors.

Program provides training for the parent(s) or guardian(s) (when appropriate) on the following topics [See main *Elements* for full listing of original topics]. (E.3.6)

- ☐ **STEM Recommendation:** STEM mentoring programs provide parents or guardians with training on how they can support and encourage the mission, goals, and activities of the STEM mentoring program, as well as provide support to the STEM mentoring relationship.

Program provides training for the parent(s) or guardian(s) on the following risk management policies that are matched to the program model, setting, and population served. [See main *Elements* for full listing of original topics.] (E.3.7)

- ☐ **STEM Recommendation:** STEM mentoring programs that include conducting scientific experiments or going on field trips may need to develop risk management policies and parent or guardian training on these policies to protect the safety of mentees and their mentors.

MENTOR
THE NATIONAL MENTORING PARTNERSHIP

STEM Supplement to the *Elements of Effective Practice for Mentoring*™ Checklist

4. MATCHING AND INITIATION

Program considers the characteristics of the mentor(s) and mentee(s) (e.g., interests, proximity; availability; age; gender; race; ethnicity; personality; expressed preferences of mentor, mentee, and parent or guardian; goals; strengths; previous experiences) when making matches. (B.4.1)

- ☐ **STEM Recommendation:** Based upon the goals and target population of the mentoring program, the STEM-specific interests, STEM knowledge, and STEM backgrounds of both mentors and mentees should be taken into consideration when making matches.
- ☐ **STEM Recommendation:** Mentoring programs that involve matches working together on long-term or technical projects should prioritize the expressed preferences of the mentor or mentee when making matches.

Mentoring programs that create mentoring relationships involving one or more mentors and multiple mentees should take into consideration the group dynamics when making matches. (B.4.5 STEM)

Mentoring programs that create mentoring relationships involving one or more mentors and multiple mentees should consider having a trial period for all group matches that allows for the opportunity to make changes to the group membership, as needed. (E.4.7 STEM)

5. MONITORING AND SUPPORT

At each mentor monitoring contact, program staff should ask mentors about mentoring activities, mentee outcomes, child safety issues, the quality of the mentoring relationship, and the impact of mentoring on the mentor and mentee using a standardized procedure. (B.5.2)

- ☐ **STEM Recommendation:** When the mentoring program includes structured STEM activities, program staff should ask about the mentor's experience in completing the activities with his or her mentee(s) during the mentor monitoring contact.
- ☐ **STEM Recommendation:** When the mentoring program has goals that include influencing mentees' attitudes, beliefs, skills, and plans regarding STEM, mentoring program staff should ask mentors about these outcomes during the mentor monitoring contact.

At each mentee monitoring contact, program staff should ask mentees about mentoring activities, mentee outcomes, child safety issues, the quality of the mentoring relationship, and the impact of mentoring on the mentor and mentee using a standardized procedure. (B.5.3)

- ☐ **STEM Recommendation:** When the mentoring program includes structured STEM activities, program staff should ask about the mentee's experience in completing the activities with his or her mentor(s) during the mentee monitoring contact.

MENTOR

THE NATIONAL MENTORING PARTNERSHIP

STEM Supplement to the *Elements of Effective Practice for Mentoring*™ Checklist

5. MONITORING AND SUPPORT (cont.)

- ☐ **STEM Recommendation:** When the mentoring program has goals that include influencing mentees' attitudes, beliefs, skills, and plans regarding STEM, mentoring program staff should ask mentees about these outcomes during the mentee monitoring contact.

At each monitoring contact with a responsible adult in the mentee's life, program asks about mentoring activities, mentee outcomes, child safety issues, the quality of the mentoring relationship, and the impact of mentoring on the mentor and mentee using a standardized procedure. (B.5.6)

- ☐ **STEM Recommendation:** When the mentoring program has goals that include influencing mentees' attitudes, beliefs, skills, and plans regarding STEM, mentoring program staff should ask the responsible adult about these outcomes during the monitoring contact.

Program provides mentors with access to relevant resources (e.g., expert advice from program staff or others, publications, Web-based resources, experienced mentors) to help mentors address challenges in their mentoring relationships as they arise. (B.5.9)

- ☐ **STEM Recommendation:** When the program includes structured STEM activities, mentors should be given access to resources that will help them complete these activities with their mentee(s) and deepen their knowledge about these activities.
- ☐ **STEM Recommendation:** Mentors should be given access to resources to help foster mentees' identity as a STEM student or employee, and sense of belonging in a STEM field.

Program provides mentees and parents or guardians with access or referrals to relevant resources (e.g., expert advice from program staff or others, publications, Web-based resources, available social service referrals) to help families address needs and challenges as they arise. (B.5.10)

- ☐ **STEM Recommendation:** Programs should provide access to STEM-related resources and referrals for needs and challenges of mentees and families that are beyond the scope and services of the mentoring program.

Program provides one or more opportunities per year for post-match mentor training. (B.5.11)

- ☐ **STEM Recommendation:** Mentors should receive training on how to help foster mentees' STEM-related self-efficacy, identity, and belonging.
- ☐ **STEM Recommendation:** Mentors should receive ongoing training on how to help mentees prepare for marginalizing experiences they may face in pursuing STEM education and careers.

When mentoring activities take place in the presence of mentoring program staff, program staff should provide real-time monitoring and support of mentoring activities and group dynamics to help support mentors and mentees in completing STEM activities and help mentors manage the dynamics of their mentoring relationship(s). (B.5.13 STEM)

MENTOR

THE NATIONAL MENTORING PARTNERSHIP

STEM Supplement to the *Elements of Effective Practice for Mentoring*™ Checklist

6. CLOSURE

At the conclusion of the agreed upon time period of the mentoring relationship, program explores the opportunity with mentors, mentees, and (when relevant) parents or guardians to continue the match for an additional period of time. (E.6.1)

- ☐ **STEM Recommendation:** Based upon mentees' ages, parent permission, program goals, and company rules (for workplace or work-sponsored mentoring programs), mentoring relationships may continue after the conclusion of the program.

Program hosts a final celebration meeting or event for mentors and mentees, when relevant, to mark progress and transition or acknowledge change in the mentoring relationship. (E.6.2)

- ☐ **STEM Recommendation:** STEM mentoring programs that include completing long-term projects such as scientific experiments could host a final celebration that provides a forum for mentees to showcase their work or findings. This final event could mirror a scientific conference or presentation that provides mentees with an authentic mastery experience that is directly related to being in a STEM career.

Program staff members provide training and support to mentees and mentors, as well as, when relevant, to parents or guardians, about how mentees can identify and connect with natural mentors in their lives. (E.6.3)

- ☐ **STEM Recommendation:** If one of the program goals is to help mentees build a network of STEM professionals, the program and mentor may introduce or connect (either in person or virtually) mentees to other potential helpers and mentors who are STEM professionals.

- ☐ **STEM Recommendation:** Time-limited STEM mentoring programs may consider networking with other mentoring programs, so that when the program ends, mentees will be able to continue to receive additional mentoring services. In addition, prior to relationship closure, STEM mentoring programs should consider training mentees in the lifelong skills of being able to locate, identify, initiate, and maintain new mentoring relationships with caring adults in their lives to address the ongoing needs for support as youth enter a STEM education or STEM career.