# PEER MENTORSHIP: EXPLORING THE UNMET NEEDS OF CURRENT MENTEES DURING COVID-19

**D. Christensen**[1]
Minnesota State University, Mankato – Department of Integrated Engineering
Virginia, MN, USA
ORCID: 0000-0002-5061-4663

**I. Villanueva Alarcón**
University of Florida – Department of Engineering Education
Gainesville, FL, USA
ORCID: 0000-0002-8767-2576

***Conference Key Areas***: *Mentorship and Tutorship, Student Engagement*
***Keywords***: *Peer mentoring, needs assessment, mentorship, phenomenology*

## ABSTRACT

Peer mentorship is a mutually beneficial relationship that allows two individuals who are at approximately the same experience level to interact with one another with the goal of providing personal, professional, or both types of support. It has been found that peer mentorship within academic settings have generally positive retention, persistence, and student experience outcomes for both mentors and mentees. While peer mentoring research and initiatives are growing, very few instances exist of determining student perceived needs regarding peer mentorship. As such, at a western institution in the United States, students were surveyed to self-report their perceived peer mentorship needs. This survey occurred during Fall 2021, just after the onset of the COVID-19 pandemic.

Out of 223 participants, 79 students indicated that they currently had a peer mentor at the time the survey was administered. Students were given both a definition and examples of peer mentorship before indicating they had a peer mentor. Their mentors may have been formally assigned through an existing program at the college of engineering of interest or informally obtained through their own efforts. These 79 participants were asked what additional support they wish their peer mentor could provide. Through phenomenological analysis of open-ended responses, common avenues for additional support were determined. These findings allowed for development of recommendations for shaping the future implementation of more targeted and beneficial peer mentoring initiatives. The recommendations include providing flexibility in peer mentorship, training on resources and events, and a variety of peer mentoring opportunities early and consistently.

[1] *D. Christensen. Email: darcie.christensen@mnsu.edu*

doi:10.5821/conference-9788412322262.1250

# 1 INTRODUCTION

## 1.1 Defining Mentorship

The National Academies of Sciences, Engineering, and Medicine state, “There is a gap between what we know about effective mentoring and how it is practiced in higher education” [1, p. x]. The variety of definitions of mentorship and lack of needs assessments throughout research serve as evidence of that gap in knowledge. In general, mentorship is accepted as a mutually beneficial relationship in which two or more people work together to support eachother in their personal and/or professional growth [1]. Peer mentorship specifically is when the participants in mentorship are at the same or nearly the same stage of their journey [1], [2], namely in this study, their academic career. This is in contrast to traditional mentorships where the mentor may be more advanced, for example in age or experience, which may cause a power differential to exist when compared to the mentee [2].

Peer mentorships can be advantageous in the sense that participants in the mentorship may feel an increased level of interpersonal comfort when compared to traditional mentorships [1]. It has also been found that peer mentorship can positively increase self-efficacy, satisfaction, retention, success, and support, both for mentors and mentees [1], [3]–[6]. This is especially important in cases with underrepresented students who may traditionally receive less mentoring support [1], [7], [8]. Unfortunately, oftentimes peer mentorship is underutilized as a resource for supporting students, even though peer mentoring may be a more practical method of mentoring when compared to traditional mentoring in academic settings. Administrators, faculty, and staff may have overwhelming responsibilities to manage, which may not include, recognize, or prioritize mentoring with the same level of significance as other duties, such as teaching and research [1]. Peer mentoring allows for a lower cost method of providing support by drawing through a much larger pool of potential mentors who can effectively share similar perspectives, identities, and recent experiences while still providing role modelling in a way traditional hierarchical mentoring may not be able to [3].

## 1.2 Determining Needs

Throughout research in the realm of engineering peer mentorship, there is a lack of consensus on what student needs with regard to peer mentorship are; while the number of engineering peer mentorship initiatives are growing, there are few examples, especially in engineering, of student needs being examined when developing peer mentoring initiatives, as well as a lack of documentation on the continual improvement and success within these initiatives [1], [9]–[12]. As such, Christensen [9] developed a mixed methods assessment of needs for determining students’ perceived needs when it comes to peer mentoring activities. Within this study, responses from a single qualitative question, which was not explored in Christensen’s original study [9], were utilized to focus on students’ perceived gaps in support from their current peer mentors. The approach to this analysis will be discussed in the methodology section.

## 2 METHODOLOGY

### 2.1 Research Instrument & Rationale for Additional Analysis

As mentioned previously, Christensen [9] developed and validated (i.e., quantitative Cronbach's Alpha = .783; qualitative content and face validation in multiple rounds) an exploratory mixed-methods instrument to obtain students needs regarding peer mentorship. The instrument included a total of 33 quantitative Likert-scale questions, 8 qualitative questions, and 8 participant identifier questions [9]. Originally, only two of the eight qualitative questions were analyzed in Christensen's study [9], calling for a deeper dive into additional qualitative insight from other qualitative questions. The full content of the research instrument can be found in Christensen's study [9]

The first block of questions that participants were introduced to in the survey included a definition and question, as follows [9, p. 258]:

> Q2 **Peer mentorship** is a relationship between two or more people at a **similar stage** in their personal, educational, or professional development. They work together to support each other.
>
> In the case of **undergraduate engineering education,** an example of a peer mentor would be **another student** (undergraduate or graduate) that is in the **same semester or ahead of you** in their university education. This person could either be simply someone you **consider** to be a peer mentor or someone who has been **formally** assigned as your peer mentor.
>
> Do you currently have a **peer mentor**?

Participants could choose one of four options for "Yes, I have a peer mentor", which indicated whether their peer mentor was in engineering at this institution or not, or "No, I do not have a peer mentor" [9, p. 258]. Based on their response to this question, participants were given a block of questions, depending on whether they responded with one of the "yes" options or the "no" option. While multiple questions were asked in each of these blocks, the focus of this research paper is on the perspective of those who chose one of the four "yes" options. The qualitative question responses analyzed were in response to the question "What additional support do you wish the peer mentor could provide?" [9, p. 270].

### 2.2 Research Question

The qualitative question of interest stated previously provides an opportunity to explore gaps that exist in current peer mentoring relationships. These relationships may have been self-established through personal networks or they may have been formally assigned by the small, existing program at the institution of interest. As such, the research question for this analysis was, "What common additional support are students who currently have a peer mentor in need of?"

### 2.3 Researcher Positionality

The first author for this publication was a part of the engineering student population of interest studied while completing undergraduate and graduate studies. This allowed her to bring a unique, insider perspective [13] with a variety of personal experiences as a student, leader, and instructor, both in the classroom and in extracurricular activities. As such, she was intentional about keeping her positionality in mind throughout the study to allow for ethical analysis. The second author brought necessary experience in mentorship, teaching, and research to further verify and expound the findings in an impactful way. As a team, the authors acknowledge the gap in peer mentorship and recognize the critical nature of exploring and sharing well-researched recommendations for the future effective implementation of peer mentoring initiatives.

### 2.4 Recruitment

Recruitment and research study procedures were approved by the Utah State University Institutional Review Board (IRB) [9]. Because of the timing of the study, all recruitment and survey participation happened virtually because of the COVID-19 pandemic hybrid learning situation. All survey responses were completely anonomyous. Of the respondents, 199 participants shared their information in a separate form, not tied to their survey response, to enter a gift card randomized drawing. All the participants were undergraduate students in the College of Engineering at a western institution of the United States. Of the 325 survey submissions, 223 responses were kept for further analysis after cleaning the data. Of the 223 complete responses, 79 participants indicated “yes” to the question “Do you currently have a **peer mentor**?” These 79 participant responses are the focus of this study. Of the 79 participants, only 5 (6.3%) left their response blank to the question of interest. The demographic information for all 223 participant responses as well as the 79 participants of interest are shown in Table 1. This population was considered representative within the university of interest as well as United States averages where applicable [9].

### 2.5 Qualitative Analysis Approach & Coding Procedures

The purpose of the qualitative coding was to determine the common experiences among participants when they were asked about additional support needed from their peer mentoring relationships. Thus, similar to Christensen [9], a phenomenological approach was taken. Using phenomenology-like strategies allowed the researchers to summarize the essence of the peer mentoring experience of students at the institution of interest [14]. Recognizing the first author’s positionality as an insider to the college of engineering of interest, a hermeneutic approach was chosen to allow the researcher to interpret in conjunction with her experiences and background, yet always being aware of the influence those experiences may have on the analysis [15].

Of the 79 responses, 30 were randomly chosen, organized, and initial coded on a participant-by-participant basis to find significant ideas within the data, remaining

open and preserving student perspectives by using in vivo coding [16]. The initial in vivo codes with conceptual similarity were then focused coded into thematic categories [16]. A codebook was developed to describe the categories. The focused coding results and codebook were provided to two undergraduate researchers external to the institution of interest to perform intercoder agreement to further check and correct for any potential biases [16]. This process resulted in an average agreement of 92% across the 30 responses, which is considered adequate [16]. The commentary for misalignment was considered in order to come to a consensus on the refinement and assignment of focused codes. The refined codes were then used to code the full 79 participant responses by the primary author. Additional codes were added and categories were rearagged as necessary, resulting in a final total of eight coding categories, which will be provided in the results.

*Table 1. Demographic information for all 223 participants (abbreviated "part.") and the 79 participants who indicated that they currently have a peer mentor* [9]. *While more options may have been included in the question statement, only responses that participants chose are shown in the table. All other options can be found in Christensen* [9].

| **Year in Undergraduate Engineering** | | | **Declared Major** | | |
|---|---|---|---|---|---|
| **Category** | **All Part.** | **"Yes" Part.** | **Category** | **All Part.** | **"Yes" Part.** |
| Freshman | 19.7% | 16.5% | Mechanical | 55.6% | 58.2% |
| Sophomore | 13.0% | 13.9% | Civil / Environmental | 18% | 11.4% |
| Junior | 40.4% | 39.2% | Biological | 6.7% | 10.1% |
| Senior | 24.2% | 25.3% | Electrical / Computer | 15.7% | 15.2% |
| Other | 2.7% | 5.1% | Intend to Pursue | 0.9% | 0.0% |
| | | | Other | 3.1% | 5.1% |
| **Self-Identified Gender Identity** | | | **Of Hispanic, Latinx, or Spanish Origin** | | |
| **Category** | **All Part.** | **"Yes" Part.** | **Category** | **All Part.** | **"Yes" Part.** |
| Male | 74.0% | 72.2% | Yes | 3.0% | 5.0% |
| Female | 23.8% | 25.3% | No | 90.0% | 89.0% |
| Prefer not to | 2.2% | 2.5% | Prefer not to answer | 7.0% | 6.0% |
| **First Generational Status** | | | **Race** | | |
| **Category** | **All Part.** | **"Yes" Part.** | **Category** | **All Part.** | **"Yes" Part.** |
| Yes | 7.6% | 6.3% | White | 91.0% | 92.4% |
| No | 91.5% | 92.4% | Person of Color | 3.2% | 2.5% |
| Prefer not to | 0.9% | 1.3% | Prefer not to answer | 5.8% | 5.1% |

## 3 RESULTS & DISCUSSION

This section contains the results and discussion of the qualitative coding analysis. All participant quotations that are communicated in this paper are direct copies of survey responses; thus, any spelling or grammatical errors are included. As previously mentioned, eight final coding categories were established, which are shown in Table 2 with frequency counts and representative quotes. Overall, there were 81 total code occurrences amidst the 74 non-blank participant responses.

When examining the additional needs not met by the participants (Table 2), different types of needs are recognized, alluding to Maslow's Hierarchy of Needs [17], [18]. Students mentioned physiological needs, such as finances and food (Table 2, Participants1 & 59) and others mentioned esteem needs, such as being told they are doing a good job (Table 2, Participant 26).Others had belongingness and love needs that could come through friendship and informal socializing (Table 2, Participants 47 & 60) as well as professional connections (Table 2, Participants 43 & 74). Many students desired more guidance and help in self-actualization, such as determining future paths, classes to take, and how to take advantage of resources in building their future self (Table 2, Participants 53, 63, & 20). Finally, many of the students felt their needs were being met or were unsure how a peer mentor could help (Table 2, "No Suggestion" row). This emphasizes the overall complexity of developing peer mentoring initiatives to meet a variety of students' needs.

### 3.1 Recommendations & Implications

As structured in Garringer et al. [19], there are fundamental best practices in developing mentoring programs. The process of implementing these best practices allow adequate delivery of the perceived additional support reported by students in the aforementioned analysis. The six standards of practice are: (1) recruitment; (2) screening; (3) training; (4) matching and initiating; (5) monitoring and support; and (6) closure [19]. A proposal of how these six standards of practice are connected to each of the coding categories (Table 2) are shown in Fig. 1. While exploratory in nature, this figure gives an idea of the many spaces available within peer mentoring initiatives that students needs can be met through development, planning, monitoring or adjusting.

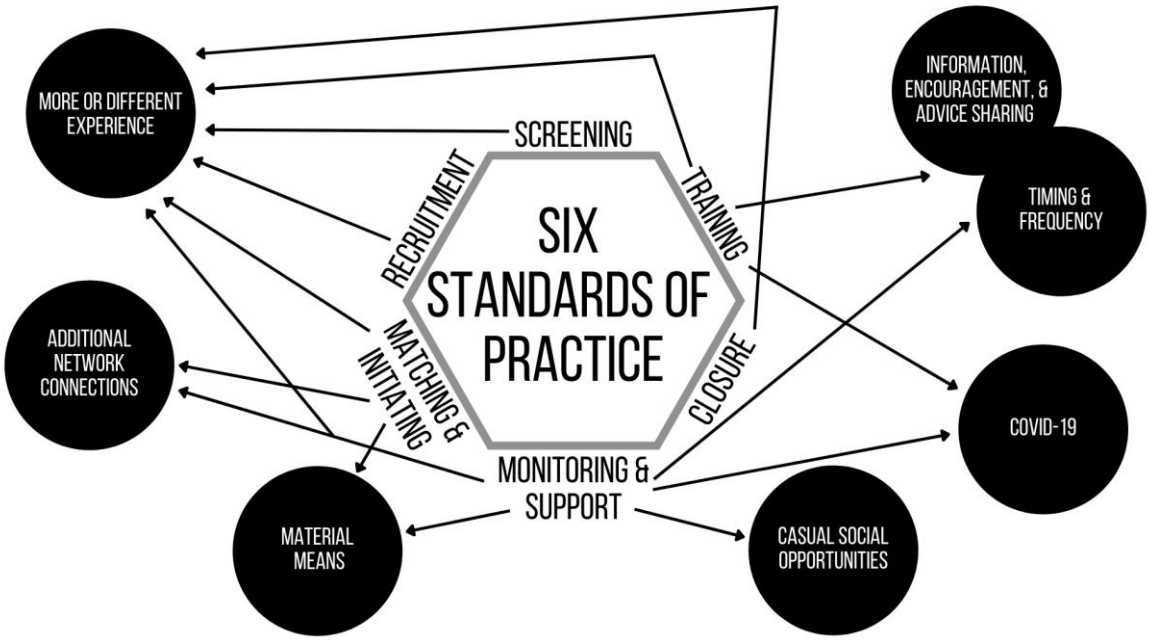


*Fig. 1. Connections between the six standards of practice for developing and sustaining peer mentoring initiatives (sides of hexagon) and coding categories (circles). Coding categories that are touching have the same associated practices.*

*Table 2. Coding categories with frequencies, definitions, and representative quotes included*

| **Code Category** *(Frequency)* | **Definition** | **Representative Quote(s)** |
|---|---|---|
| **No Suggestion** *(37)* | Unsure of additional support that could be provided or they were satisfied with the support their current mentor(s) were providing | • "None. I feel like they cover all my needs" (Q16, Participant 2)<br>• "I'm not sure." (Q16, Participant 41)<br>• "I literally don't know how he could have been better. He help me accelerate my career for almost three years." (Q76, Participant 76) |
| **Information, Encouragement, & Advice** Sharing *(24)* | Desired sharing of general information about events and best practices, tutoring, providing advice on classes, guiding in future opportunities and decisions, and providing encouragement | • "I just need to be told I'm doing a good job and I am on the right track even if I mess up." (Q16, Participant 26)<br>• "I wish they could help me secure internships and help me in the professional side of Engineering." (Q16, Participant 31)<br>• "Networking or finding temporary jobs or long term jobs that prepare me for my future as an engineer." (Q16, Participant 43)<br>• "Advice in figuring out what specialty/subfield to pursue" (Q16, Participant 63)<br>• "Give me some advice about classes" (Q16, Participant 53)<br>• "Remember all the information from the classes they took so they could help me more" (Q16, Participant 34)<br>• "More clarity as to how to use clubs and the career service center." (Q16, Participant 20) |
| **More or Different Experience** *(6)* | Desired a mentor who had more experience, was farther ahead of them in school, or was in the same field as them. | • "It would be nice to have someone from my same major, so they can help me with things specific to biological engineering" (Q16, Participant 10)<br>• "Ahead of me in the program by a semester or a year" (Q16, Participant 48)<br>• "Be better at some subjects than me. So it won't be as one sided." (Q16, Participant 69) |
| **Timing or Frequency** *(5)* | Desired having a peer mentor earlier or having more frequent contact with the peer mentor. | • "Earlier in my engineering career. Since we have become peer mentors it has been great but I wish it could have happened earlier" (Q16, Participant 28)<br>• "I wish she contacted me more often, she usually only reaches out to me about once month unless I contact her first." (Q16, Participant 40) |
| **Casual Social Opportunities** *(3)* | Desire time outside of formal opportunities to interact & socialize | • "More contact outside of school classes." (Q16, Participant 47)<br>• "Time outside of work or homework to interact as people" (Q16, Participant 60) |
| **Additional Network Connections** *(3)* | Desired additional support in connecting to potential network members | • "Having more connections outside of education." (Q16, Participant 74)<br>• "If I were getting more help from my peer mentor it would probably be networking" (Q16, Participant 43) |
| **Material Means** *(2)* | Desired additional material means were as support | • "Financial, but we both know that won't happen." (Q16, Participant 1)<br>• "Food?" (Q16, Participant 59) |
| **COVID-19** *(1)* | Desired implications of COVID-19 to change | • "The major thing I wish could change is COVID, as social distancing made it hard to make those peer mentor relationships." (Q16, Participant 14) |

To summarize based upon the connections shown in Fig. 1, the following three recommendations are provided to support the future development, monitoring, and implementation of peer mentoring initiatives:

- **Provide Flexibility in Peer Mentorship:** Especially when formally assigning peer mentors, allow students adequate space and opportunity to match with different or additional peer mentors.
- **Provide Training on Resources and Events:** At the beginning but also continually as new resources or events arise, provide training to peer mentors on how to use take advantage of the resources or events as well as how to adequately share them with their peer mentee.
- **Provide a Variety of Peer Mentoring Opportunities Early and Consistently:** Students need peer mentorship consistently, regardless of what stage they are in, and desire both formal (e.g., professional support, tutoring, etc.) and informal support (e.g., socializing, student life events, etc.) through a variety of ways (e.g., texting, email, face-to-face, etc.)

As these recommendations are taken into consideration, a range of student needs from Maslow's Hierarchy [17], [18] can be met by allowing for consistent, flexible, and well supported peer mentorship.

### 3.2 Limitations & Future Work

The primary limitation of this study is that the survey was given under COVID-19 pandemic circumstances, which may have influenced student responses since students were in an emergency hybrid learning situation. This unique perspective may also have brought to light potential impactful practices that would have not otherwise been recognized. The short-answer, anonymous qualitative question format may have provided some limitation as well since students self-reported their answer and no follow-up for elaboration or clarification was possible. This leaves room in the future to pursue more in-depth methods, such as interviewing, in exploring student perceived needs.

This analysis did not take into consideration any participant demographic information or descriptions of who their peer mentors were. Future work will examine these aspects as well as participant explanations of what their peer mentor does effectively to complement the gaps identified in this study.

## 4 CONCLUSION

The three recommendations provided in this study, while not comprehensive, provide a foundation for designing, monitoring, and adjusting initiatives to address potential gaps in peer mentoring relationships. By providing flexibility, training on resources and events, and a variety of opportunities early and consistently, more students can receive the support they need. Whether that is by finding different or more mentors, receiving help in both formal and informal spaces, or simply finding support earlier, the benefits associated with peer mentorship (e.g., interpersonal comfort, retention, self-efficacy, satisfaction, etc.; [1], [3]–[6]) will be expanded.

## 5 ACKNOWLEDGMENTS

This material is based upon work supported by the National Science Foundation Graduate Research Fellowship Program under Grant No. 120214. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

The authors would like to acknowledge student researchers Maria Sabina Vitola Paredes and John (JT) Garcia for their support in performing intercoder agreement.

## REFERENCES

[1] National Academies of Sciences Engineering and Medicine, *The science of effective mentorship in STEMM*. Washington, DC: The National Academies Press, 2019. doi: 10.17226/25568.

[2] K. E. Kram and L. A. Isabella, “Mentoring alternatives: the role of peer relationships in career development,” *The Academy of Management Journal*, vol. 28, no. 1, pp. 110–132, 1985, doi: 10.2307/256064.

[3] P. J. Collier, “Why peer mentoring is an effective approach for promoting college student success,” *Metropolitan Universities*, vol. 28, no. 3, 2017, doi: 10.18060/21539.

[4] J. W. Colvin and M. Ashman, “Roles, risks, and benefits of peer mentoring relationships in higher education,” *Mentoring and Tutoring: Partnership in Learning*, vol. 18, no. 2, pp. 121–134, May 2010, doi: 10.1080/13611261003678879.

[5] R. Ghosh and T. G. Reio, “Career benefits associated with mentoring for mentors: A meta-analysis,” *Journal of Vocational Behavior*, vol. 83, pp. 106–116, 2013, doi: 10.1016/j.jvb.2013.03.011.

[6] J. marquez Kiyama and S. G. Luca, “Structured opportunities: Exploring the social and academic benefits for peer mentors in retention programs,” *Journal of College Student Retention: Research, Theory, & Practice*, vol. 15, pp. 489–514, 2014.

[7] T. C. Dennehy and N. Dasgupta, “Female peer mentors early in college increase women’s positive academic experiences and retention in engineering,” *Proc Natl Acad Sci U S A*, vol. 114, no. 23, pp. 5964–5969, 2017, doi: 10.1073/pnas.1613117114.

[8] L. T. de T. Eby *et al.*, “An interdisciplinary meta-analysis of the potential antecedents, correlates, and consequences of protégé perceptions of mentoring,” *Psychological Bulletin*, vol. 139, no. 2, pp. 441–476, 2013, doi: 10.1037/a0029279.

[9] D. Christensen, “A Mixed-Methods Approach to Explore Student Perceived Needs for Peer Mentorship in a College of Engineering,” *All Graduate Theses and Dissertations*, 2021, doi: 10.26076/ee04-a10e.

[10] G. Crisp and I. Cruz, “Mentoring college students: A critical review of the literature between 1990 and 2007,” *Research in Higher Education*, vol. 50, no. 6, pp. 525–545, 2009, doi: 10.1007/s11162-009-9130-2.

[11] S. Gershenfeld, “A review of undergraduate mentoring programs,” *Review of Educational Research*, vol. 84, no. 3, pp. 365–391, 2014, doi: 10.3102/0034654313520512.

[12] M. Jacobi, “Mentoring and undergraduate academic success : A Literature review,” *Review of Educational Research*, vol. 61, no. 4, pp. 505–532, 1991, [Online]. Available: http://www.jstor.org/stable/1170575?seq=1&cid=pdf-reference#references_tab_contents

[13] K. Herr and G. L. Anderson, *The action research dissertation: A guide for students and faculty*, 2nd ed. Thousand Oaks, CA: Sage Publications, Inc., 2015.

[14] H. Starks and S. B. Trinidad, “Choose your method: A comparison of phenomenology, discourse analysis, and grounded theory,” *Qualitative Health Research*, vol. 17, no. 10, pp. 1372–1380, 2007, doi: 10.1177/1049732307307031.

[15] B. E. Neubauer, C. T. Witkop, and L. Varpio, “How phenomenology can help us learn from the experiences of others,” *Perspectives on Medical Education*, vol. 8, pp. 90–97, 2019, doi: 10.1007/s40037-019-0509-2.

[16] J. Saldaña, *The Coding Manual for Qualitative Researchers*, Second. Thousand Oaks: SAGE Publications Inc., 2013. [Online]. Available: www.sagepublications.com

[17] S. Mcleod, “Maslow’s Hierarchy of Needs,” 2018. Accessed: Apr. 25, 2022. [Online]. Available: https://www.simplypsychology.org/maslow.html

[18] A. H. Maslow, *Motivation and Personality*. 1970.

[19] M. Garringer, J. Kupersmidt, J. Rhodes, R. Stelter, and T. Tai, *Elements of effective practice for mentoring*, 4th ed. MENTOR: The National Mentoring Partnership, 2015. [Online]. Available: http://www.mentoring.org/downloads/mentoring_1222.pdf