

The Role of E-Mentoring in the African American Higher Education Experience (Work in Progress)

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Abstract

This work in progress paper discusses the utility of electronic mentoring (e-mentoring) as a means of student engagement and development. E-mentoring, also known as virtual mentoring, is mentoring that occurs via electronic mediums such as email, phone, and video and teleconferencing. For years, mentors and mentees have used electronic means to connect with each other and bridge across geographical, social, racial, gender and cultural gaps. A more recent advance in e-mentoring is the use of chatbots as emotional or intelligent agent mentors. A chatbot is an embodied conversational agent (ECA), that is, a computerized agent that simulates human-like voice mannerisms. In computers, chatbots or ECAs may present as avatars that have human-like appearances and mannerisms, and are designed to have a human-like relationship with the user. The challenge and goal of using ECAs is how to effectively deliver mentoring that provides skill building, academic and career development, and psychosocial support. This paper explores the feasibility for the use of e-mentoring mechanisms such as ECAs as a contemporary means of mentoring that may support African American students. This work begins to introduce the need for cultural sensitivity and intelligence in e-mentoring. In this work, we provide a brief overview of e-mentoring and its relationship to African American students' e-mentoring experiences in higher education.

Introduction

Mentoring has long been shown to be a process that can assist minoritized students in science, technology, engineering, and mathematics (STEM) fields (e.g., persons who identify as African American/Black, Hispanic/Latinx, American Indian/Alaska Native) [1, 2]. Yet today, a new form of mentoring, e-mentoring, has emerged as a viable mechanism with the ability to engage mentors and mentees differently than traditional mentoring. Mentoring has been shown to be essential in supporting and empowering people during critical personal and career developmental stages [3]. E-mentoring, which is also known as virtual mentoring, occurs via electronic mediums such as electronic mail (email), phone, and video and teleconferencing. In addition, e-mentoring has the potential to engage more people without the impediment of geography, or time constraints. In minoritized populations, mentoring can help students navigate and obtain access to resources not easily available [4, 5]. The purpose of this paper is to examine the use of e-mentoring mechanisms as presented in research literature and their feasibility for African American students in higher education. In this work in progress paper, we present a brief overview of mentoring and e-mentoring and discuss the various forms, benefits, and disadvantages of both. Then, we provide an overview of literature that discusses African American students' e-mentoring experiences in higher education, and a brief discussion of some potential future research opportunities.

What is Mentoring?

The concept of mentoring has its origins in classic times. In the poet Homer's *Odyssey*, Mentor was charged with guiding, educating and protecting Odysseus's son, Telemachus, while Odysseus went to battle in Troy [6]. In more contemporary times, mentoring has been defined as a relationship between a more experienced person and a less experienced person, a mentee, with

the emphasis of the relationship being placed on personal and/or career development of the mentee [1, 7]. Mentoring is also a process in which mentors can engage their own creativity and possibly experience mid-career revival and re-direction of energy and interests [3, 8]. The mentoring relationship has also been likened to a role-model/observer relationship [5]. Mentoring is traditionally seen as facilitating young people's transition to adulthood, and a career development tool [5, 9].

Mentoring serves several purposes such as providing career functions, psychosocial support and development, and role modeling [8]. Career functions help mentees develop knowledge of an organization or a specific position, and skill development. Mentees may learn how to progress through the ranks of the organization into more senior leadership positions. For example, mentors may help mentees develop networking skills, and teach them different aspects of a job or institution. Psychosocial support involves cultivating intimacy, trust, self-efficacy, counseling, and friendship [8, 10]. Subsequently, mentoring can significantly enhance development into adulthood and career transitions [3]. Specifically, there are several different phases in mentoring development: initiation (i.e., establishing the relationship), cultivation (i.e., developing and nurturing the relationship), separation (i.e., termination of the relationship due to relocation or loss of interest), and redefinition (i.e., developing more of a collegial relationship) [6].

What is E-mentoring?

In our fast-paced digital world, a new type of mentoring has surfaced: *electronic* or *virtual* mentoring. In e-mentoring or virtual mentoring, as the name suggests, the mentor and mentee are not face-to-face. E-mentoring is the process of using computer mediated communication to facilitate interaction between mentors and mentees [11, 12]. Mentors may use e-mentoring to connect with and mentor their mentees in lieu of in-person mentoring. Some forms in which the process of e-mentoring may occur include email, texting, social media, phone call, and video calling platforms (e.g., Zoom, Skype). Within the past two decades, researchers have investigated the use of chatbots or embodied conversational agents (ECAs). A chatbot is an ECA, that is, a computerized agent that simulates voice mannerisms. For example the use of pauses. In particular, ECAs were found to engage and influence users by providing a semblance of human relationship [13]. In the following sections, we discuss formal uses of e-mentoring, and the utility of e-mentoring and ECAs, as well as their potential impact on minoritized populations.

Different Delivery Forms of E-mentoring

There are various forms of e-mentoring delivery. Specifically, e-mentoring or virtual mentoring may occur through various virtual mechanisms via multimedia formats and relational agent elements (i.e., ECAs or chatbots). Some different forms of electronic mentoring are illustrated in Figure 1. In the following paragraphs, we provide a brief overview of e-mentoring mechanisms: multimedia and relational agents.

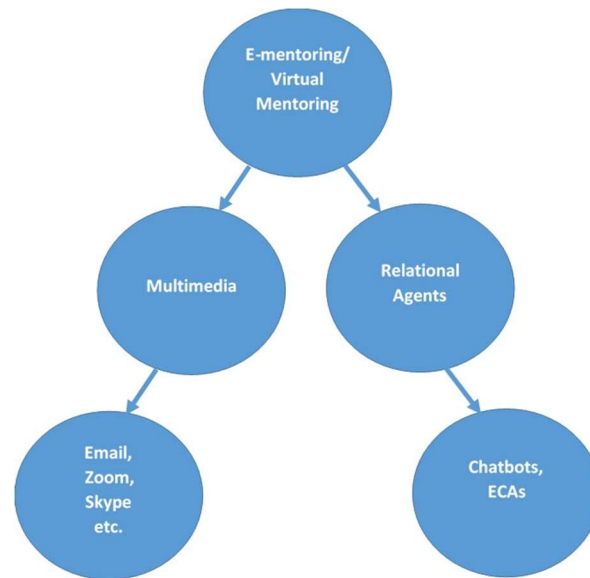


Figure 1. E-mentoring Mechanisms

Multimedia. E-mentoring typically occurs either via virtual mentoring using multimedia or human-like agents. These may range from email, teleconferencing videos, or phone calls to chatbots or embodied conversational agents [13]. Electronic mail was possibly the first type of mechanism that supported e-mentoring. Teleconferencing applications like Skype, Zoom, and Microsoft Teams now enables mentors and mentees to see and talk to each other via video. The mentor can be accessed via text, video or voice on the screen. For example, virtual mentoring may involve a mentor interacting and communicating with their mentee through a multimedia platform like Skype. Alternatively, the “mentor” may be in the form of a computer generated agent with the intent of achieving the same goal as a human mentor. An example of this type of emerging virtual “mentor” are called relational agents.

Relational Agents: Embodied Conversational Agents and Chatbots. Two main types of relational agents used in e-mentoring contexts are embodied conversational agents and chatbots. Embodied conversational agents (ECAs) are “anthropomorphic computer characters that emulate the experience of face-to-face conversation” [13]. More traditional forms of e-mentoring involve digital human-to-human interface [14]. In today’s society, chatbots, a type of ECA, have become commonplace. A chatbot is a computerized agent that simulates human-like voice mannerisms. In computers, chatbots or ECAs may present as avatars that have human-like appearances and mannerisms, and are designed to have a human-like relationship with the user. Specifically, conversational agents (or chatbots), a particular virtual mentor system of interest, are computer programs that use natural language conversations to communicate and advise human users [15]. Chatbots can be rendered to appear more human-like and can serve purposes that are: motivational (inspire to accomplish a task or feel good about oneself), relational (builds trust and maintains ongoing relationship with user), social (uses social cues in communication), affective (responds to users’ affects, like smiles, etc.) [13]. Other names used to describe chatbots are “emotional agents” and “cognitive agents”. These agents have the same attributes of simulating and invoking human-like emotional and thoughtful responses. Ideally, an ECA would encompass all the attributes aforementioned. ECAs are designed to look like humans and

respond with human social cues, like pauses, head tilts, etc. The underlying factor is that ECAs simulate human-to-human interactions in all its complexities and subtleties, beyond just dispensing information [13, 15-18]. Therefore, with ECAs we move beyond a voice or text on the screen or device, to interacting with a chatbot that not only sounds human, but looks human.

When considering virtual mentoring in the context of a non-human mentor, there are some terms that need to be defined. In today's society, relational agents are becoming commonplace. Relational agents are defined as "computational artifacts designed to build and maintain long-term, social-emotional relationships with their users" [13]. They have human characteristics, and are featured on most smartphones (e.g., Siri on I-phones). These agents, also called social presence robots, speak using human intonation and give a semblance of personality. Social presence robots have enabled humans to be present to users while being remote [19]. This occurs in a similar fashion to a person calling their friend while at a gathering, and talking on a video call. This enables the person on the phone to engage with the participants at the gathering in an interactive way. A social presence robot acts in a similar fashion by using a robot, not a human, to carry the person's image and facilitates real-time interaction with others.

E-mentoring may also occur using relational agents which are sometimes used interchangeably. These agents respond via recorded human voice, and simulate human emotions like happiness and sadness [20]. The user sees an avatar responding to them with human mannerisms. The immediate issue is how to facilitate ongoing satisfactory communication between the mentee and the virtual mentor as one would with a human mentor. Human-like characteristics are imperative. Bickmore reported on the development of relational agents which can build long-term social-emotional relationships with users [13]. Virtual mentors also have to embody cultural and gender characteristics, and be aware of cultural norms in order to impact the target audience [21]. Berry et. al initiated the use of a relational agent in an advice giving task, while Mumm et. al reported on the importance of praise and feedback when incorporating these agents for user interaction [22]. There are multiple uses for ECAs in tutoring as well as college advising [23, 24]. The overarching question is how can these ECAs consistently operate in a human-like, socioemotional, reliable, knowledgeable manner as well as in a culturally sensitive way, in order to positively impact and influence users?

The effectiveness of ECAs has also been examined. De Carrollis et. al [24] used an ECA to function in an advisory role to students at a virtual university (100% online school). Participant survey responses revealed that, though the advisor was liked, the trust and reliability score was low. It was speculated that more time engaging with the ECA, and human-like characteristics would improve the users' perception. Berry et. al [25] confirmed that users' perceptions were markedly different (positively) between just a human voice as compared to an ECA. This indicates the necessity for face-to-face interactions with humans. ECAs can also be effective at influencing human behavior, when factors of age, attractiveness, race, etc., are manipulated [13]. In relation to mentoring, in order for ECAs to be effective, they have to be both reliable and relatable to increase users' comfort and confidence.

Benefits and Disadvantages of E-mentoring

E-mentoring can be beneficial in that it increases accessibility to mentors by allowing mentors and mentees to engage in the mentoring process through various mediums [15]. There is also the

possibility for instant feedback, versus waiting for the next meeting. E-mentoring has also been shown to be more appealing to shy and introverted people [26]. In addition, e-mentoring allows mentees to engage with mentors despite hectic schedules and the barrier of geographic distance [14]. Another benefit of e-mentoring is that it reduces any implicit bias related to factors like race, gender, age, etc. [10]. Therefore, the mentor might be able to deliver mentoring without any prejudice, of which the mentor may or may not be aware. This may increase mentor effectiveness. Likewise, e-mentoring provides the ability to engage multiple mentors, thus establishing a social network for the mentee. This network can be formally established through a social media platform or informally through the mentors and mentees, for example through a weekly Zoom lunch and learn [14, 27]. E-mentoring thus makes mentoring more accessible for both mentors and mentees [14]. It has also been shown to be beneficial in the example of mentoring underrepresented minority (URM) students [28]. E-mentoring is viable, and sometimes necessary given time constraints and a lack of available mentors. Studies have shown that users respond positively to e-mentoring [10].

In contrast, there are several disadvantages to e-mentoring. One key aspect of mentoring is that of the role-model/observer [5]. de Janasz [10] found that unless there is a pre-existing relationship, students were not fully able to access this feature of the interaction. Another aspect is the necessity for the mentor to be able to relate and engage mentees who may have different cultural values and norms [29]. There is also the issue, in some cases, of being in different time zones. Another issue may be a lack of credibility in terms of mentors and mentees. In addition, there is also the ever present threat to confidentiality when using electronic media meaning that if interactions are recorded, then there is the possibility for there to be a breach in the mentor's privacy. There needs to be mutually agreed upon practices between mentor and mentee. For example, in the e-mentoring process, mentors and mentees need to decide which medium to use, will the sessions be recorded, and other details about the engagement process [29]. The biggest challenge is assessing how mentees gain psychosocial support from a virtual mentor like one would from a human mentor [20]. Human mentors should know when to be empathetic, when to challenge, when to pull-back, or when to just listen.

With the growing need for accessible mentoring combined with the onset of the COVID-19 pandemic, e-mentoring may continue to play a prominent role in connecting mentors and mentees. Mentoring requires that mentors provide support. Subsequently, e-mentoring may be used to support individuals in quarantine, or students who are learning remotely. E-mentoring can break down the walls of access. A mentee could be in New York, and the mentor could theoretically be in Australia. Interactions can be synchronous (in-real time) or asynchronous (accessed at one's convenience).

E-mentoring and African American Students

There is a minimal amount of studies involving e-mentoring and African Americans. E-mentoring may allow African American students to potentially access African American mentors who might not be geographically accessible. Likewise, through e-mentoring, non-minoritized mentors may also engage with URM mentees who might not be geographically accessible. Subsequently, mentors may learn more about minoritized mentees' lived experiences. In these relationships, mentors may increase their cultural intelligence which can help them to more effectively mentor URM students [30].

There have been a few studies about e-mentoring with promising results [30, 31]. Valentin-Welch reported a successful e-mentoring program initiated by the Midwives of Color Committee (MOCC) of the American College of Nurse-Midwives (ACNM) which supported midwives of color, half of which were African American [32]. Davis et al [33] reported the use of e-mentoring to connect STEM undergraduates with STEM professionals facilitated at a historically Black university. Likewise e-mentoring was useful in STEM mentor training at two different historically Black colleges and universities [34]. In another e-mentoring example, URM women faculty found participating in a mentoring experience via Zoom helped with feelings of isolation [35]. Medical students at the University of Michigan participated in a Near-Mentor initiative with a predominantly African American high school in Detroit [28]. This program served to facilitate diversity in the medical profession. Both mentors and mentees reported value for both in-person and electronic contact.

It is also essential for mentors to be culturally sensitive to the needs and cultural backgrounds of their mentees as a form of empathetic mentoring. Mentors who develop understanding and empathy towards the lived experiences of URM students encourage mentees to be more engaged in the relationship [36]. An additional benefit of empathetic mentoring is the mutual learning that can result from the cross-cultural relationship. Both mentors and mentees can benefit from each other, which can have far-reaching implications towards cultural/racial harmony [26]. Some aspects of e-mentoring include the development and use of relational agents that employ empathetic and culturally relevant mentoring practices. For example, Gosha et. al [37] are developing an ECA-driven virtual mentor for African American doctoral students. This ECA will possibly engage more students. There are specific designs involving using an ECA with African American features [15, 38]. In sum, research indicates that in e-mentoring, users are influenced by the appearance of the ECA [13]. Thus, African American students may feel more comfortable with an ECA that has an African American semblance.

Future Research

There are several opportunities for future researchers to examine the e-mentoring experiences of African Americans to better understand how e-mentoring might support this population. Researchers might examine how mentors become culturally informed, when mentoring African Americans. As stated earlier, a disadvantage of e-mentoring may be the lack of physical accessibility of the mentor and mentee. This means that the mentee might have experiences that the mentor neither sees nor can relate to. This level of detachment can hamper the richness of a mentoring relationship. As mentioned above mentoring involves psychosocial support, and specialized support to address the needs of minoritized groups. In order for e-mentoring to be effective, the mentor has to be aware of the lived experience of the mentee [29, 36]. With the plethora of platforms available, e-mentoring can range from providing assistance with coursework, career advice, information about social justice and community resources, and spiritual, mental and emotional support. Lastly, e-mentoring can be impactful as early as elementary school, where students begin to form their sense of self, and begin to see themselves relative to the world around them [39, 40]. In summary, e-mentoring serves as a viable tool for engagement. Given the current pandemic and increasingly busy schedules and demands, traditional in-person mentoring is not always a viable option. The use of ECAs represents the

next generation of mentoring, where the mentor can be accessible at any time and any place from potentially any smart device.

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