

UHD Scholars Academy Peer Mentor Groups and Wellbeing for Performance and Growth

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University of Houston-Downtown Scholars Academy, a STEM unit, first implemented peer mentors in 1999. What began as a single group with one peer mentor has evolved into 18 groups of discipline-based peer mentors and faculty mentors over the 25-year period. Peer and faculty mentors form the small learning communities each semester. This organizational infrastructure brings expert peers (faculty mentors), near peers (peer mentors), and peer-to-peer mentoring to the small groups to offer support, and information. The more skilled peer mentor encourages, counsels, and befriends the less skilled or less experienced mentee, thereby promoting increases in professional, personal, and career path development. There is some evidence that peer support/mentoring can offer support to mental wellbeing through friendship, camaraderie, and shared current or past experiences. However, positive mentor-mentee relationships are critical for balance and academic success.

Keywords: STEM, peer mentoring, mentoring, wellbeing

Introduction

University of Houston-Downtown Scholars Academy, a STEM unit, first implemented peer mentors in 1999. What began as a single group with one peer mentor has evolved into 18 groups of discipline-based peer mentors and faculty mentors over the 25-year period. Peer and faculty mentors form the small learning communities each semester. This organizational infrastructure brings expert peers (faculty mentors), near peers (peer mentors), and peer-to-peer mentoring to the small groups to offer support, information, and acceleration of connectedness to the group, the major, and the university community (Pointon-Hass et al., 2024). Common ground is established by the majors comprising the peer mentor group. Additionally, based on majors, peers are led by peer mentors who are upper division undergraduates in the same majors but well ahead of the first time in college student or the new entering transfer student. Further, the faculty mentor is also within the same discipline and offer expert in mentoring in the areas of academic progress questions, mentored research, graduate experiences, and connections to other PhD research within the geographic area. So by the very nature of the small learning community makeup, opportunity for envisioning the future for each student is possible, but also clarifying the vision is inevitable. Examination of a peer mentor discipline-based group and its interactions, trainings will form the basis for context of impact on wellbeing productivity and personal performance. Examination of impact will review and explain retention, growth through co-curricular success, and entrance into post-baccalaureate

graduate schools, professional schools and STEM employment over a recent 15-year period for this program. Anecdotal post-semester responses will be offered as to the nature of the impact on individual graduates. How to promote peer group resilience, discussion, friendliness, and persistence by individuals will comprise one outcome to be discussed. Further, personal and professional growth stemming from peer mentor groups will be outlined and discussed over a 6-year period. An organizational infrastructure will be provided as a template for other programs searching for a mechanism to deliver peer mentoring.

Not all conversations are of the academic nature as this group becomes bonded to each other and trust, comfort, confidence in likeminded individuals offering a caring shoulder, a listening ear, as well as guidance if needed for the new entrants. Mentorship in this schema can offer satisfaction with the choice of university and major, increase the likelihood of success early in the collegiate career. The more skilled peer mentor encourages, counsels, and befriends the less skilled or less experienced mentee, thereby promoting increases in professional, personal, and career path development (Maha, 2021; Nabi et al., 2024). There is some evidence that peer support/mentoring can offer support to mental wellbeing through friendship, camaraderie, and shared current or past experiences (Cooper et al., 2024).

However, positive mentor-mentee relationships are critical for balance and success. Especially when both sides are willing to invest time and energy in the development of their interactions. Trust arises from discussions and confidentiality of what can and cannot be discussed (Sarabipour et al., 2022).

Literature Review

Rising Mental Health Issues

In STEM majors, much like nursing majors, there is level of built-in competitiveness which in turn can create situations of high stress and anxiety due to the complex subject matter as in pre-med majors or as in computer science majors striving for the engineering job and due to the employment climate of the Houston-area where the university and its students find themselves located are often sources of additional stressors (Kachaturoff et al., 2020).

Ample evidence suggests that higher education has been changed by the mental health crisis! It appears that rates of student mental health struggle (as seen in dropping out rates) have increased over the past decade as schools still struggle to meet the demand for services. Many students feel discomfort seeking help and support from staff and faculty within the university setting. Faculty and staff feel tremendously unprepared to offer assistance to students when they do arrive for help as a result of the severity of under preparedness and less than adequate training on the topic (Rhodes, n.d.). Many universities are taking steps to address these issues by expanding their student mentoring programs to address these student issues. Student mentors are seen by classmates as less intimidating, quite approachable, and because they have been there and done that, seen to take on more credibility. This is especially true when peers are more experienced and older than those seeking help. Peer mentors viewed by other peers as able to regulate the challenges that newer students wrestling with and as they speak a similar language are seen as knowledgeable when interventions are offered because they have done these same actions which assisted them Rhodes, n.d.).

Following the COVID pandemic, which provided a lengthy period of social isolation, society and university campuses have been made aware of growing mental health concerns among young people, especially college age undergraduates entering the university. The Centers for Disease Control (2024) reported the percentage of young adults 18 and older experience regular feelings of worry, nervousness, and anxiety at a rate of 12%. While many young adults report feelings of depression regularly at 5%. A CDC National Center for Health Statistics report symptoms of anxiety as characterized by symptoms of excessive worry which are difficult to control, restlessness, easily tired, irritability, muscle tension, and some sleep disturbances reported by young adults and adults between the ages of 18-29 (Terlizza & Villarroel, 2019, CDC NCHS Data Brief, 2020). Further, females were reported as more likely than males to experience anxiety symptoms during any two week period. Further, university entrance timeframe clearly coincides with the period of young adults affected by mental health disorders, 18-25 years old (Richard et al., 2022).

Peer Mentoring

Peer mentoring suggests a network of supportive peers who are skilled, experienced, and are able to serve as a role model for other less skilled or new to the university. A good peer mentor has been characterized as a person who demonstrates confidence, generosity of spirit and skills, capable and has a collaborative nature. Much literature supports the true most commonly known about peer mentors, i.e., retention is increased, engagement increases, and content competency rises among like majors (Kachaturoff et al., 2020).

The more skilled peer mentor encourages, counsels, and befriends the less skilled or less experienced mentee, thereby promoting increases in professional, personal, and career path development (Nabi et al., 2024). There is some evidence that peer support/mentoring can offer support to mental wellbeing through friendship, camaraderie, and shared current or past experiences (Cooper et al., 2024)). However, positive mentor-mentee relationships are critical for balance and success.

Peer Support

In an expansive review of studies targeting the impact of mentoring on undergraduate wellbeing found that social support was a critical factor in providing mental wellbeing. Additionally, several studies indicated no significance in the improvement of wellbeing outcomes connected to peer support. Another student found that both mentors and mentees believed peer support was indeed useful (Cooper et al., 2024)). While this student was performed in the United Kingdom, there is still relevance to be gathered from these findings, even while university situations differ throughout the U.S. and world. When university students live away from home, the social support network organized by peers appears to be more important than the support given by family (Bernardon et al., 2011). Peer support is realized when peers advance a level of understanding and care to someone else through the sharing of experiences (emotional or psychological). When these experiences are given and received in a respectful manner, the peer support is assistive to both individuals and can be mutually beneficial (Mead et al., 2001). In some cases undergraduate peers report feeling more support as a result of peer mentors connecting the peers to appropriate student services when highly distressed.

Program Model

Peer Mentoring Realizing Benefits

While mentees in many cases report feelings of confidence and improved capacity to form social relationships, the peer mentors develop leadership skills through the mentoring process. Many of the leadership skills reported by the mentor students included their own enhanced ability to

communicate. Increased confidence in themselves, improved levels of empathy (compassion or feelings of understanding) for others, expanded capabilities in building relationships, as well as favorable insight into their own self-awareness (Glazzard & Rose, 2019).

Determining Impact of Peer Mentoring on a Discipline-based Peer Group

Examination of a peer mentor discipline-based group and its interactions, trainings form the basis for context of impact on wellbeing productivity and personal performance. Examination of impact will review and explain retention, growth through co-curricular success, and entrance into post-baccalaureate graduate schools, professional schools and STEM employment over a recent 15-year period for this program. Anecdotal post-semester student responses will be offered as to the nature of the impact on individual graduates. Biannually, Scholars Academy requests students to complete what is called the post-semester survey. This post-semester survey is a reflective instrument examining student perceptions across a variety of topics such as: individual participation in STEM activities such as seminars, field trips, conferences, research activities, creation/updating of a personal cv and personal statement, career goals refinement, post-graduation plans, impact of faculty mentor, and impact of peer mentor. For example the following questions were asked concerning the peer mentor: 1. Who was your peer mentor? 2. What do you think a peer mentor should be to their students? 3. Describe your experiences with your peer mentor. 4. Describe how/if our peer mentor affected your academic performance. 5. What suggestions would you make for your peer mentor in general?

Analyses of Results & Data

The following table describes the raw mentee

responses (Column 1 See Table 1). One can readily see many duplicative or exact responses or similar responses comprised the 106 student inputs. The author enlisted the aid of MS Co-Pilot for further analyses.

Column 2 (See Table 1) demonstrates the output of the same raw mentee responses after MS Co-Pilot was used to bring some interpretation to the lengthy list of raw responses. Column 2 displays the output when Co-Pilot was asked to describe the list of words. As evidenced in Column 2, the response was “It sounds like you’re describing the qualities of a great mentor or guide! A mentor can be a friend, a resource, and a role model who provides guidance, support, and encouragement. They help with academic and career advice, personal challenges, and are always available to communicate and assist.” As a follow up, MS Co-Pilot was asked to categorize the original raw responses next.

Column 3 (See Table 1) provides categorization produced by Co-Pilot. Categories are highlighted and responses falling into each category (per Co-Pilot) follow.

Then, Co-Pilot was asked to rank in order of most important to least important categories. This ranking is seen in Column 4. Co-Pilot offers justification for the ranking by stating: “This ranking prioritizes the core functions of a mentor or guide, such as providing guidance, support, and being available for communication. Personal qualities and relationship building are also crucial, followed by leadership, problem-solving and motivational aspects.” Finally, the last question asked of MS Co-Pilot was “Which of these quality rankings can be trained or taught?”

Answer for this final question is found in Column 5. Co-Pilot offers a precursor statement “Many of these qualities can be developed and enhanced through training an practice.” Still reflecting the categorization view, the output from Co-Pilot indicates provides how each item within any category can be enhanced or trained for improvement.

Table 1.
Responses mined by AI Microsoft Co-Pilot.

1. Raw Mentee Responses	2. Co-Pilot Interpretation	3. CoPilot Categorized
friend, guide, resource guide, communicate, family caring, available, informative active, helping, encouraging, role model, guide, helping hand, assist in your outcomes, helps guidance, contact about subject peer leader, help with questions, informs based on experiences school advice, like student; leader, help me succeed, study with them; support in journey of college, guidance, informative, relatable, role-models, open to questions, give advice willing to help & educate	It sounds like you're describing the qualities of a great mentor or guide! A mentor can be a friend, a resource, and a role model who provides guidance, support, and encouragement. They help with academic and career advice, personal challenges, and are always available to communicate and assist. Is there a specific context or situation where you're looking for guidance or mentorship? I'd love to help!	<u>Mentorship and Guidance</u> Guide Mentor Advisor Peer leader Role model <u>Influencer in career goals</u> <u>Support and Encouragement</u> Supporter Helper Encouragement Motivational Helping hand Assist in your outcomes Support system <u>Communication and Availability</u> Communicative Available Easier access to contact Check up, engaging Outlet for reaching out

The final question asked of Co-Pilot for extended analyses was “Which category is the most difficult to train?”

Co-Pilot Question: Which quality is the most difficult to train?

Answer: The most difficult category to train is likely Personal Qualities. These qualities, such as being caring, friendly, patient, and understanding, are deeply rooted in an individual's personality and emotional intelligence. While training can enhance these traits, they often require a significant amount

of personal development and self-awareness.

For example (Co-Pilot):

Caring and understanding require empathy, which can be challenging to teach if someone doesn't naturally possess it.

Patience involves managing one's emotions and reactions, which can be difficult to cultivate without consistent practice and mindfulness.

Approachability and friendliness are influenced by one's social

skills and comfort in interacting with others, which can vary greatly among individuals.

These qualities are often developed over time through life experiences and personal growth rather than through formal training alone (See Table 2)

Table 2.

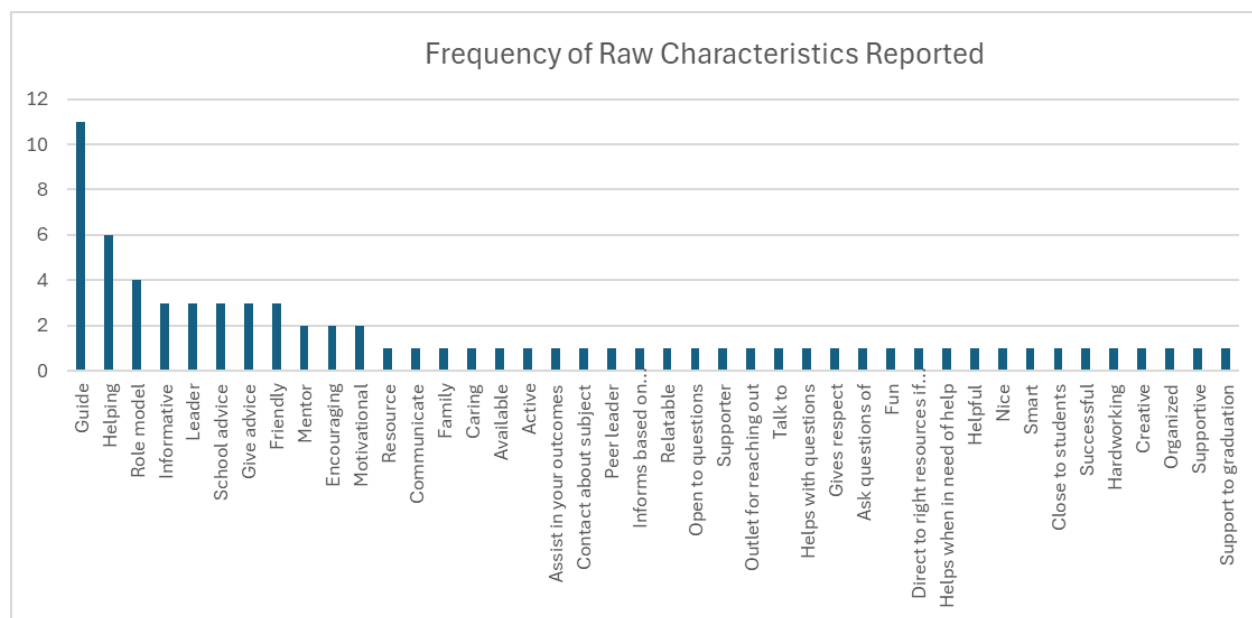
Which Qualities Can be Trained?

<p>5. Which Qualities Can be Trained or Taught?</p> <p>Mentorship and Guidance</p> <p>Guide: Can be trained through mentorship programs and leadership training.</p> <p>Mentor: Can be developed through experience and training in mentorship skills.</p> <p>Advisor: Can be trained through professional development and advisory roles.</p> <p>Peer leader: Can be developed through leadership training and peer mentoring programs.</p> <p>Role model: Can be cultivated through personal development and setting positive examples.</p> <p>Influencer in career goals: Can be trained through career coaching and guidance training.</p> <p>Support and Encouragement</p> <p>Supporter: Can be developed through training in empathy and support skills.</p> <p>Helper: Can be trained through volunteer work and support roles.</p> <p>Encouragement: Can be enhanced through training in motivational techniques.</p> <p>Motivational: Can be developed through public speaking and motivational training.</p> <p>Helping hand: Can be cultivated through community service and support training.</p> <p>Assist in your outcomes: Can be trained through goal-setting and achievement coaching.</p> <p>Support system: Can be developed through building networks and support groups.</p>

So, what is learned from the raw student responses and from the reiterative mining using Co-Pilot one might ask. So much initial data brought into a more structured meaning through the use of questions (important to the author) provides a strong supportive case for peer mentoring from one university's group of STEM majors, but also provides a strong suggestive case for upper division undergraduates being selected for peer mentorship positions. Why? Initially, because

of age associated with upper division students. Secondly because of more collegiate and life experiences to move toward the critically needed personal qualities associated with peer mentorship. A quick frequency analysis of all original raw student responses provides a graphical view of the nature of the personal qualities labeled in the survey. The characteristics at the lower ends of the scale account for the number of possibilities comprising Personal Qualities (See

Figure 1. Frequency of raw characteristics reported.



Discussion

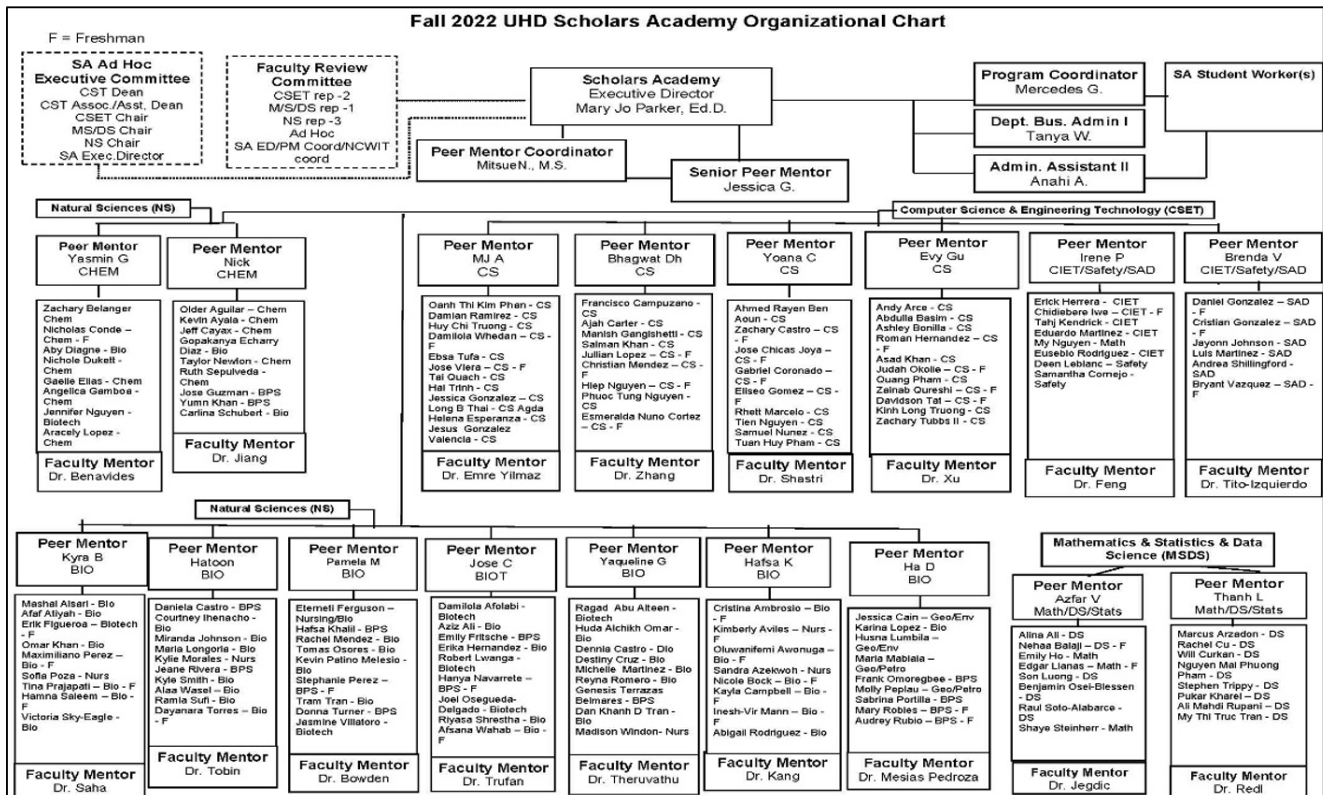
How to promote peer group resilience, discussion, friendliness, and persistence by individuals will comprise one outcome to be discussed. Our peer mentors train off-campus for 3 days in a wilderness setting utilizing high and low challenges, as well as team-building games and recreation together. During the academic year, our peer mentors train one day per month for a full hour. Outside of training, our peer mentors meet formally each month during any semester. These meetings involve a full day orientation each semester with peer mentors and faculty mentors

sitting with, meeting each other, and discussing the major meeting objectives for the group. One of the outcomes is a networking meeting with ice breakers and a defined agenda to fully inform new and returning members of the responsibilities and requirements needed to remain members. The final meeting involves a team service project related to their majors performed through an external entity. Personal and professional growth supported by a peer mentor system can be evidenced in Table 3. An organizational infrastructure will be provided as a template for other programs searching for a mechanism to deliver peer mentoring (See Figure 2).

Table 3.
Career Outcomes associated with Peer Mentoring.

Post-Baccalaureate Occupation	Number
Biology, employed	3
Chemist, employed	4
Computer science, employed	14
Data science, employed	1
DDS	1
Geoscience, employed	1
Geoscience, MS	1
Mathematics, employed	4
Medical school	5
PA School	1
PhD program	6
RN	2
Safety Engineer, employed	2
Still not graduated	28
Structural Engineer, employed	2
Number completing survey	75

Figure 2.
Example of organizational structure promoting wellbeing.



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