

EDITORIAL

The Art of NOW: Mentoring to Address Hidden Curriculum in Undergraduate Neuroscience Education

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<https://doi.org/10.59390/DKPK6058>

Hidden curriculum, which consists of the implicit norms and values embedded within institutions, impacts how students navigate their experiences in higher education. While the formal curriculum provides structured learning objectives and content, the hidden curriculum shapes students' socialization, sense of belonging, and access to opportunities within academic settings. For diverse students, hidden curriculum often reinforces existing power dynamics and inequities, creating additional barriers to their success. In many cases, the norms and expectations embedded within the hidden curriculum reflect dominant cultural norms, leaving students from marginalized backgrounds feeling alienated or intentionally excluded. Mentors and academic institutions play crucial roles in helping diverse students navigate the hidden curriculum of educational institutions by providing mentorship and

resources to address the challenges of hidden curricula. In this paper, we introduce the importance of "NOW": 1) Nomenclature - What is Hidden Curriculum, 2) Opportunity - Opportunities to Address Hidden Curriculum in Higher Education, and 3) Willingness - Fostering an action plan for success in higher education. This paper will introduce a socioecological model for mentoring to address hidden curriculum at the individual, interpersonal, and institutional levels. At the individual and interpersonal level, we will discuss actions students and their mentors can take to develop their mentoring relationships. At the institutional level, we will identify opportunities to support diverse students and their mentors.

Key words: Mentoring; Diversity; Hidden Curriculum; Socioecological Model; Career Development

THE NOMENCLATURE OF HIDDEN CURRICULUM

"Hidden curriculum" is the unspoken cultural norms and values in academic institutions that are unexpected rules that faculty, staff, and students must follow (Sambell and McDowell, 1998; Margolis, 2001; Hafferty and O'Donnell, 2015; Enders et al., 2021). These implicit rules in higher education often impede the success and ability of the faculty, staff, students, and trainees. It is linked directly to historical patterns where those who do not follow the curriculum become known as rule breakers and unfit for success in the department. In some ways, the hidden curriculum impacts students from environments where they are ill-prepared through a lack of mentoring or a playbook for navigating the unspoken rules that lead to success. For instance, discipline-specific unfamiliar language, the ambiguity of the department's culture, and confusion about the expectations for success beyond the syllabus also affect faculty and staff as they navigate the university system while trying to be present for students. Revealing the hidden curriculum is not always easy, where some may be unfamiliar with the concept or what it entails (Rossouw and Frick, 2023). Unveiling these cultural norms results in a climate that will result in a culture of safety where success is achievable.

The hidden curriculum in undergraduate institutions often relates to student and faculty engagement (Orón Semper and Blasco, 2018). Students may experience frustration when they learn of faculty expectations after the fact. Faculty

may show similar frustrations and are less likely to interact with students unaware of the cultural norms. There is a misperception that all students will have insight on how and where to gain knowledge on the cultural standards beyond the university website and student orientation materials. Some students require different levels of support for success in their major. It is not until they are exposed to the cultural norms that they become aware of how to be successful. Diverse students may have additional needs to overcome, barriers related to hidden curriculum (Laiduc and Covarrubias, 2022) (Koutsouris et al., 2021). This sentiment may also be true for junior faculty and faculty new to the institution who may be starting a mentoring journey with students. Suppose faculty members are unaware of the cultural considerations related to mentoring, resources available for student success, and tools for faculty development. In that case, they cannot support their students successfully.

In higher education, hidden curriculum is often seen on a continuum, relating directly to one's educational career journey from students to trainees, faculty members, and university leadership (Margolis, 2001; Rossouw and Frick, 2023; Orón Semper and Blasco, 2018). The awareness of hidden curriculum is not lost on many, but unlocking these rules is necessary for structural and systematic change in the department. Expanding on the work presented at the 2023 Faculty for Undergraduate Neuroscience meeting here, we will introduce a socioecological framework to

provide actionable constructs to address hidden curriculum at the individual, interpersonal, and institutional levels in the context of mentoring relationships.

OPPORTUNITIES TO ADDRESS THE HIDDEN CURRICULUM IN HIGHER EDUCATION

Socioecological frameworks in public health literature explore the interdependence of lived experiences and the environment (Bronfenbrenner, 1977; Dahlberg and Krug, 2006; Bronfenbrenner, 1986; Kilanowski, 2017). Figure 1 depicts the Socioecological Model for Mentoring (SMM). The focus of this model is to promote behavior change and action at the individual and interpersonal levels for students and mentors, as well as at an institutional level.

At the individual level, students are empowered to ask questions about expectations related to coursework, navigating faculty resources, and goals related to graduation. At this level, the students conceptualize existing knowledge. They prepare their individualized development plans using SMART goals with milestones that influence their academic journey toward their career goals (i.e., graduation, professional/graduate school). The mentor should focus on existing skills, knowledge of resources, and storytelling to show a level of empathy and vulnerability to students. It allows the faculty member to be more reflective in determining growth areas in guiding students

The interpersonal level focuses on the relationships and experiences of those around the student and faculty mentor.

The student develops near-peer mentoring relationships with classmates at their grade level or above in the department or other academic programs. The near-peer mentoring relationship fosters a deeper connection for novice students to gain insight into the hidden curriculum from experienced students with similar academic journeys.

The mentee-mentor relationship encourages moving beyond reflection to an iterative reflective process at the individual level. Instead, at the interpersonal level, the student is encouraged to seek bidirectional communication with the mentor on experiences in navigating and addressing bias. The interpersonal level for faculty mentors expands on the bidirectional relationship with the mentee. It speaks to making the student feel safe to ask questions related to their journey while empowering the mentee to seek other mentors beyond their laboratory or office. Mentor-mentor relationships include connections that faculty members must build internally and externally that focus on student success. These mentor-mentor relationships might be department or college-specific.

The last level of the framework is the institutional level. Departments should highly encourage faculty to establish mentoring agreements with their mentees to guide the rules of engagement. Another vital role of institutions is ensuring that faculty have access to resources like mentoring toolkits and professional development trainings to advance their mentoring skillset.

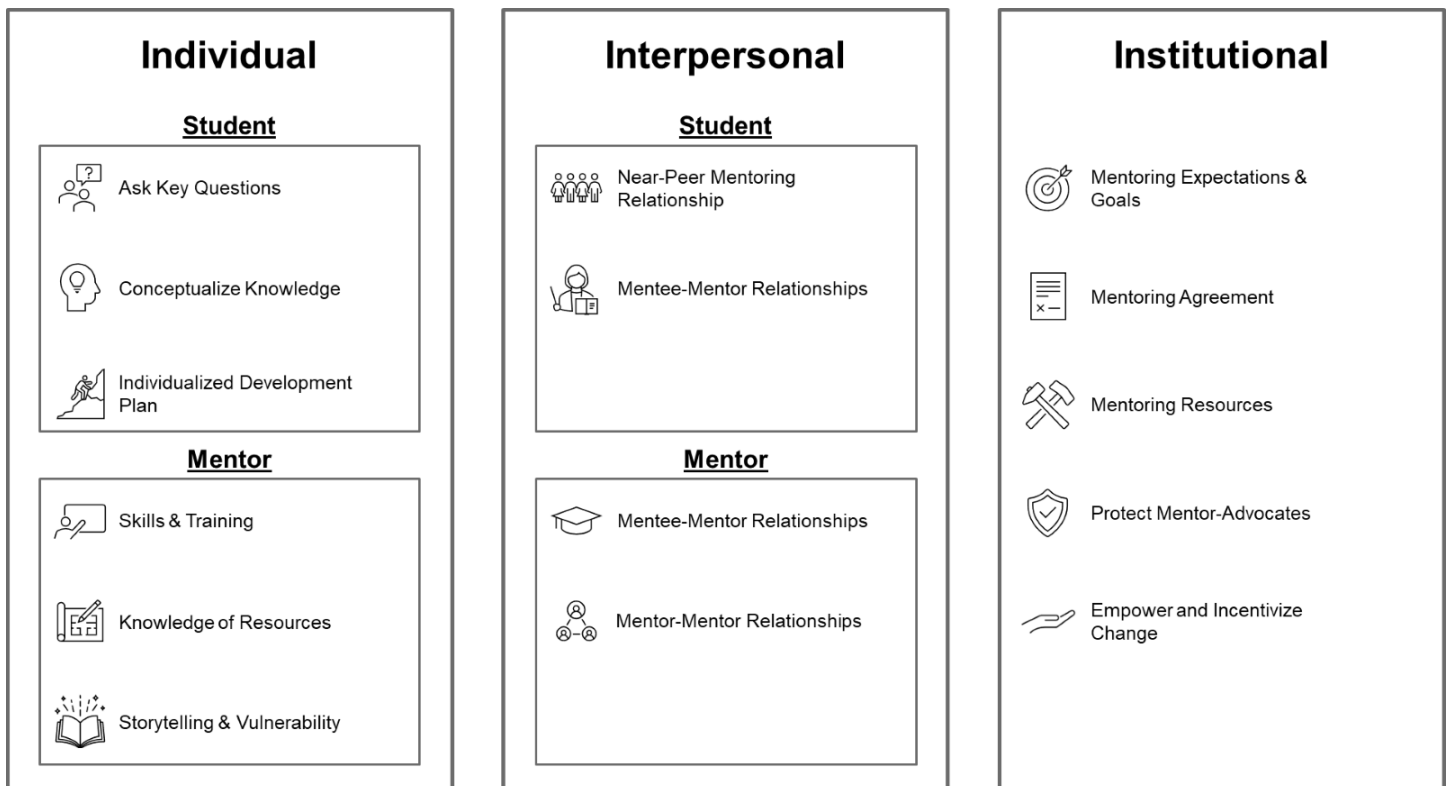


Figure 1. Socioecological Model for Mentoring.

Undergraduate Students			Faculty Research Mentors	
Hidden Curriculum Topic	Reflect On	Ask Your Mentor	Reflect On	Discuss With Your Student
Knowing How Things Work	<ol style="list-style-type: none"> 1. How can I develop relationships with other lab members? 2. Who can I trust with essential questions? 3. Do I know what the explicit expectations are for my role? 4. How do I build relationships with other faculty members? Which faculty members would you suggest as appropriate to be on a mentoring team? 	<ol style="list-style-type: none"> 1. What are normal research activities? 2. What are the responsibilities of each individual in the lab? 3. What are my responsibilities for this project or within the lab? 	<ol style="list-style-type: none"> 1. How did I navigate a new academic environment when I first started? 2. What are expectations I have that I have not made explicit? 3. How do students demonstrate that they are in charge when needed? 4. How does your behavior change depending on who is present? 	<ol style="list-style-type: none"> 1. Personal experiences with implicit cultural norms within the academy. 2. Mistakes you have made or obstacles you've overcome that are avoidable. 3. Academic Code-Switching: whether to adjust the way you talk or behave when transitioning into an academic setting 4. Best practices for interactions with lab and departmental support staff.

Table 1. Reflection and discussion topics about "Knowing How Things Work" for undergraduate students and faculty research mentors.

WILLINGNESS - FOSTERING AN ACTION PLAN FOR SUCCESS IN THE ACADEMIA

Faculty mentors are essential to student success in undergraduate neuroscience programs. Focusing on the concepts related directly to neuroscience increases students' knowledge of the competencies in their degree areas. It is equally essential for faculty willing to mentor to have an action plan that leads to success. Tables 1 to 5 describe the areas of focus for the action plan. Biomedical science graduate students selected these focus areas as the topics with most need for diverse trainees which are transferrable for undergraduate neuroscience students.

Knowing How Things Work

Knowing how things work can be defined as understanding the institutional norms and learning about the nuts and bolts of research (Enders et al., 2021). Table 1 includes suggestions for personal reflection and topics for discussion between students and their faculty mentors. While it is crucial that students feel empowered to ask these questions, mentors must create an environment in which students feel psychologically safe to do. Students from underrepresented backgrounds may require additional time and effort to feel comfortable in a lab environment, especially if this is their first exposure to academic research.

Developing a Career

Developing a career is defined as building toward a career intentionally, including knowing about opportunities, what they require, and how to network (Enders et al., 2021). Successful careers after college often start with learning how to navigate new environments while learning the job's expectations. An opportunity exists to determine the goals and expectations that the students have for their career. This relates directly to social cognitive career theory (SCCT). This theory considers personal inputs like their beliefs, background, learning experiences, self-efficacy, outcome value, and outcome expectations in the context of the influences on the student's interests and goals in

determining career goals (Carpi et al., 2017). SCCT applies to neuroscience undergraduate programs as many undergraduate programs are centered on careers in STEM. The focus of many undergraduate programs, especially STEM programs, often centers on evaluating undergraduate research experience programs, which are often transformative in helping students determine their career interests in the context of working closely with a dedicated mentor beyond just observing the operational structure of the lab. For instance, literature has observed that it is vitally important for students to have more hands-on experience to increase their self-efficacy; which has been correlated to increased interest in graduate school with a particular focus on doctoral-level training (Carpi et al., 2017). Table 2 lists points of reflections and discussion items for undergraduate students and their faculty research mentors. These items link directly to the SCCT, emphasizing building self-efficacy and considering the outcome expectations as they relate to developing a career after college.

Assertive Communication

Assertive communication, not aggressive, is essential for the student and faculty research mentor. Assertive communication is linked directly to assertive self-expression (Alberti and Emmons, 1970). This type of interpersonal communication has three main components: knowing when to say "no" to requests that do not relate directly to your goals or expectations of the role, the ability to express emotions that are positive and negative, and the ability to start, maintain, or end a conversation (Lazarus and Folkman, 1984; Wilkins et al., 2015). While the foundation of assertive communication is historical, many of the tenets hold true today for students and faculty mentors [Table 3]. For instance, students must reflect on how they are communicating, when they are communicating, and if their communication style is clear and appropriate. When speaking with a mentor, students are encouraged to ask for feedback on their needs and how to improve their understanding of their role, along with a schedule and

Undergraduate Students			Faculty Research Mentors	
Hidden Curriculum Topic	Reflect On	Ask Your Mentor	Reflect On	Discuss With Your Student
Developing a Career	<ol style="list-style-type: none"> 1. What do I value in a mentoring relationship? 2. What kind of feedback/guidance do I need to grow professionally? Personally? 3. What kind of career do I envision for myself? What experiences or skills do I need to help me achieve this goal? 	<ol style="list-style-type: none"> 1. How do you build a network of mentors and collaborators? 2. Do you know people who can help gain experience? 3. Are there conferences I can attend to build my network? How do I network effectively at conferences? 4. Who are some people within the department I should get to know? 	<ol style="list-style-type: none"> 1. Can I suggest activities or projects to my trainee to increase their visibility? 2. Do I have the means and opportunity to take a student to conference with me? 	<ol style="list-style-type: none"> 1. Demystify career growth - discuss how you accessed or were awarded opportunities that propelled your career. 2. Best practices for networking at conferences. 3. Importance of mentoring teams and how to establish one.

Table 2. Developing a Career.

Undergraduate Students			Faculty Research Mentors	
Hidden Curriculum Topic	Reflect On	Ask Your Mentor	Reflect On	Discuss With Your Student
Assertive Communication	<ol style="list-style-type: none"> 1. Am I communicating my needs? 2. Am I asking for clarity when I am confused? 3. Is my body language confident? 4. How do I like receiving feedback? 5. When I feel provoked, am I taking time to process these feelings before I respond? 	<ol style="list-style-type: none"> 1. Would you be open to receiving feedback on _____? 2. I have a class on _____, so I prefer to work on these days instead. 3. What kind of email or communication etiquette would you recommend abiding by, especially if I need a more immediate response? 	<ol style="list-style-type: none"> 1. Have I established an emotionally safe environment that allows for my trainee to provide feedback? 2. Am I setting an excellent example in my lab regarding providing constructive feedback? 3. What does being assertive in professional settings sound like without sounding aggressive? 4. Am I asking questions to help clarify the student's needs? 5. Am I fully vested in the time that I give to mentoring during each student encounter? 6. How am I asking my student mentees what they need from the mentoring relationship? 	<ol style="list-style-type: none"> 1. Feeling safe and their need for a safe environment 2. Ask the students to clarify areas of need to have an agenda/plan for the meeting 3. Be clear about expectations related to boundaries and time for meetings 4. Guide ways to respond and ask questions for clarity 5. Be clear on the time you have to mentor (dates and availability)

Table 3. Assertive Communication.

etiquette on how and when to respond to their mentor. Simultaneously, to improve mentoring relationships and mentees' academic experiences, faculty members are encouraged to 1) reflect on their lab's psychological safety (i.e. if students and lab members feel comfortable asking questions), 2) set an example of how to work in the lab, and 3) have clear insight into what the student needs to move forward in their career path.

Confidence

Historically underrepresented students in higher STEM education may seek areas to build their self-efficacy. It is essential that students can relate to their mentors on a human level, that access is given to them in the lab, and that

students are encouraged (Heron and Williams, 2022). In Table 4, students are encouraged to determine their strengths and weaknesses, plus ask their mentors how to modify their behaviors to improve their skills. Faculty members are encouraged to reflect similarly but teach their student how to "fail forward", which focuses on learning from and moving past mistakes to achieve success, and provide clear examples of such experiences.

Coping with and Responding to Bias

Individuals may observe and experience bias in academic settings. Table 5 shares topics for consideration and strategies for students and their mentors to discuss how best to cope with and address bias. Faculty members must

Undergraduate Students			Faculty Research Mentors	
Hidden Curriculum Topic	Reflect On	Ask Your Mentor	Reflect On	Discuss With Your Student
Confidence	1. What are my strengths? What am I good at? 2. What are things I need to improve on?	1. Are there any behaviors I exhibit that need to be changed or altered? 2. How can I improve this skill set? Are there opportunities to get better?	1. What are my strengths as a mentor? Do my student mentees know these as a strength? 2. What are my weaknesses as a mentor? 3. Am I affirming my student in their strengths? 4. Am I providing my student with opportunities to practice their skills?	1. Discuss with your student the areas of expertise 2. Provide opportunities for students to have open dialogs about areas of weakness to work on ways to build skills by creating a plan 3. Provide clear examples of how you navigated as a student and now as a faculty member to increase your skills 4. Give space for students to fail forward and learn how to succeed

Table 4. Confidence.

Undergraduate Students			Faculty Research Mentors	
Hidden Curriculum Topic	Reflect On	Ask Your Mentor	Reflect On	Discuss With Your Student
Coping With and Responding to Bias like Microaggressions and Actual Aggression	1. Are there times when it is better not to respond directly? 2. What makes a good ally? How do I develop allies among my peers, faculty, and departmental support staff?	1. Are there some quick and straightforward responses to microaggressions? 2. How do I express my feelings when I am hurt in a way that is not reactionary?	1. Are there any implicit biases or behaviors I must unlearn? 2. Do students and staff feel safe in my lab? 3. Am I handling conversations appropriately and respectfully? 4. Are my experiences with bias impacting how I mentor? 5. Can I access resources to address times I am coping with bias? 6. Have I shared resources with students on coping with bias?	1. Coping strategies to navigate and respond to bias and techniques to manage minority stress. 2. Foster communities and sponsor student-initiated affinity-based groups so that peers with similar concerns have a safe space to build and develop a sense of belonging. 3. Connect students with resources and support services, including counseling services, diversity offices, or academic support programs.

Table 5. Coping with and responding to bias.

understand students' challenges may be unique and may not mimic their own experiences. The bias a student experiences may be either implicit or overt, where each type of bias needs to be addressed differently to gain an effective response or outcome. Faculty mentors should be able to guide students on nuances between the two, connect students with helpful resources, and provide strategies for how to best navigate each type of bias either individually or with the help of an ombudsperson.

CONCLUSION

The hidden curriculum is still largely "hidden." Our goal is to uncover these unspoken cultural norms and values within academic institutions. We must find and incorporate a socioecological framework to understand how diverse trainees interact with peers, faculty, and educational

institutions. We provide five critical areas of hidden curriculum and topics selected by biomedical science graduate students as additional needs for hidden curriculum training. With "NOW," we can facilitate bi-directional communication between diverse students and faculty research mentors to facilitate a successful academic path, overcoming barriers due to hidden curriculum. Neuroscience is the perfect place to implement the suggested model. It allows for reflection for the student and faculty on addressing the complexity of the hidden curriculum with motivation, assertive communication, and actionable plans.

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Received March 4, 2024; revised June 4, 2024; accepted June 6, 2024.

Special thank you to the faculty and students who attended the 2023 Faculty for Undergraduate Neuroscience.

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