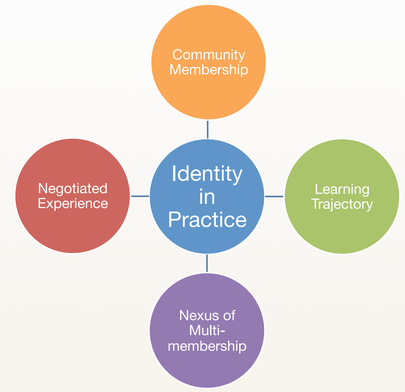
Learning Assistant Development of Physics (Teacher) Identity

Eleanor W. Close, Jessica Conn, Hunter G. Close

Department of Physics, Texas State University–San Marcos



How does participation in the Learning Assistant program affect LAs' identities?
What elements of the program support identity development, in what ways?

Theory 1: Identity in Practice

Membership in a community of practice requires negotiation with other members of how to engage together in the shared practice →

- how to relate to others
- how to understand the meaning of events and interactions in the context of the community

Identity is a process of continuous re-negotiation.

Wenger [1] identifies five characterizations of identity, four of which we find particularly relevant to our current study:

Identity as

- Negotiated experience
- Community membership
- Learning trajectory
- Nexus of multimembership

Theory 2: Physics Identity

Hazari and Lock and colleagues [2,3] describe a theoretical framework for physics identity composed of three dimensions:

- Personal interest
- Competence/Performance (originally separate)
- Recognition by others

In this research, all dimensions are measured via self-report

Relating Theories 1 & 2

We draw the following connections between Identity in Practice and Physics Identity:

- Recognition *is a component of* Negotiated experience
- Competence *is a component of* Community Membership
- Personal Interest *is a component of* Learning Trajectory

Negotiated Experience and *Recognition*

We define who we are by the ways we experience our selves through participation as well as by the ways we and others reify our selves.

These statements describe experiences of recognizing the effects of interactions with others, both on the others and on the self. The phrases "found a real passion for teaching" and "realized how comfortable I feel teaching/ talking" indicate shifts in these LAs' perceptions of self:

> *"I've also found a real passion for teaching through this program. Previously, I may not have considered teaching after I obtain my degree but my experiences in the Learning Assistant program have made me realize how rewarding it is to help students grasp ideas that were once out of their reach."* – Leah

In some cases, LAs refer explicitly to the impact of recognition received from peers or near-peers:

> *"He [a student] came up to me after the test and said he received a score of 105, and credited this score exclusively to my discussion with him on the day preceding the test. That was probably about the proudest I have ever felt in my life."* – Mike

(Spring 2013 Returning LA Application)

Community Membership and *Competence*

We define who we are by the familiar and the unfamiliar.

Community membership shapes identity through the forms of competence developed and valued by participants in the community. Brooke identifies a new sense of comfort in interactions with the community:

> *"Being an LA has greatly increased my ability to interact with my professors. … Joining the LA program has definitely made me feel like a part of the department, not just a student."* – Brooke

Leah demonstrates that she is both familiar and comfortable with elements of the instructional community's shared repertoire:

> *"In the past two semesters of being an LA, I've learned how to communicate more effectively to people… If someone doesn't understand a concept when I explain it verbally, I can draw them a picture or a diagram instead. If they can't verbalize what they're thinking themselves, sometimes handing over a marker so they can draw something out for me will help me understand where they're at in their understanding of the material."* – Leah

Through her increasingly competent participation in the community, Leah's sense of self changed:

> *"Being an LA has made me a more competent person all around."*

Learning Trajectory and *Personal Interest*

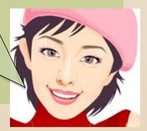
We define who we are by where we have been and where we are going.

Identity is constantly re-negotiated; changes in identity over time build a sense of *trajectory.* Participation in a community impacts an individual's identity only to the extent that the practice of the community incorporates that person's past and fits into a valued future.

Leah experiences a significant shift in what she perceives as a possible future. On initial application, Leah listed her major as electrical engineering and expressed interest in a biomedical engineering career; a few months later, she switched her major to physics, and she is now considering a career in K-12 teaching:

> *"After having experience teaching this semester, I am considering working as a K-12 teacher after college because I've enjoyed how rewarding teaching has been this past semester."*

(Spring 2013 Returning LA Application)



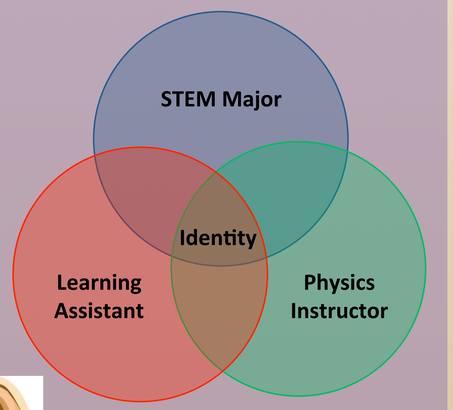
Nexus of Multimembership and Physics (Teacher) Identity

We define nexus of multimembership by the work of reconciling forms of membership in different communities.

In previous analysis [4], we describe the LA program as creating an overlap between the community of STEM majors and that of physics instructors, such that LAs are members of both communities and the shared practices improve the functioning of each one. Here we extend this analysis to include the impact of multimembership on LAs' construction of identity:

> *"As a physics major, when I was just a student, I was too self-conscious to approach a professor to ask questions. But as part of a community, that includes my professors, I can approach them with questions, no problem. Also, building a community of student peers has also increased my academic performance."* – Brooke

(Spring 2013 Written Programmatic Feedback)



Main Idea: Collaboration with *faculty* ***and*** *peers* around physics *learning* ***and*** *instruction* facilitates LA development of integrated physics / physics teacher identity.

Key Program Elements

The increased feeling of comfort in interactions with peers, near-peers, and faculty seems to be an important component of identity development and multimembership reconciliation.

This appears to be facilitated particularly well by informal interactions in weekly preparation sessions and in the Physics Help Center. This may be facilitated by the location of the Help Center, in an open area adjacent to faculty offices (and between most faculty offices and the restrooms).

References

1. Wenger (1998). Cambridge: Cambridge University Press.
2. Hazari et al. (2010). J. Res. Sci. Teach. **47** (8), 978-1003.
3. Lock, Hazari, & Potvin (2013). *AIP Conf. Proceedings (PERC 2012),* 262-265.
4. Close, Close, Donnelly (2013). *AIP Conf. Proceedings (PERC 2012),* 106-109.

TEXAS STATE®