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Undergraduate Research: Encouraging Collaboration and Mentoring

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Undergraduate Research at UT Tyler

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Agenda

- UR at UT Tyler
- Challenges of Mentoring
- Benefits of UR to students
- Benefits of UR to Mentor
- Effective Mentoring
- UR in practice
- Mentoring Exercises

UR at UT Tyler Survey

- Sent to faculty in Fall 2016
- 76 responses from all colleges and all but 3 departments
- 57% (43/76) of respondents have mentored an UR project

Survey: How many hours per week do you typically spend mentoring UR?

Time spent mentoring UR
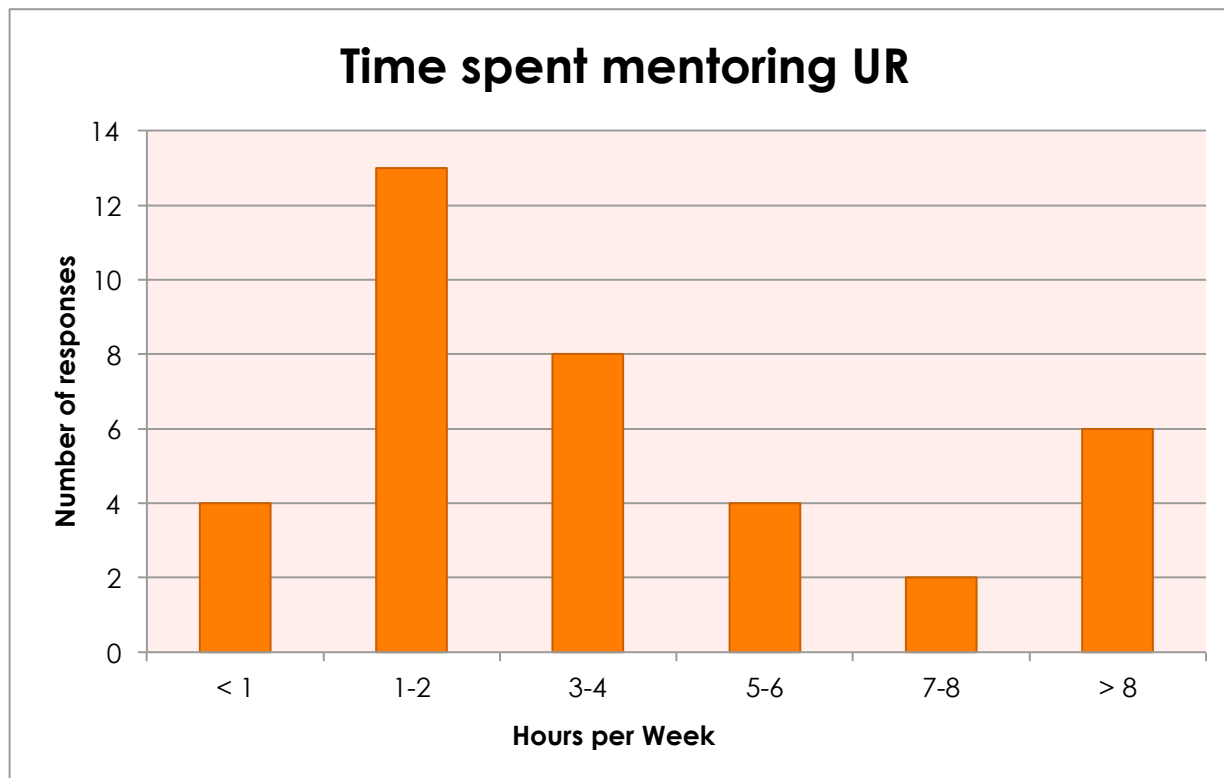
Survey: When do you typically mentor UR projects?

When Faculty Mentor UR
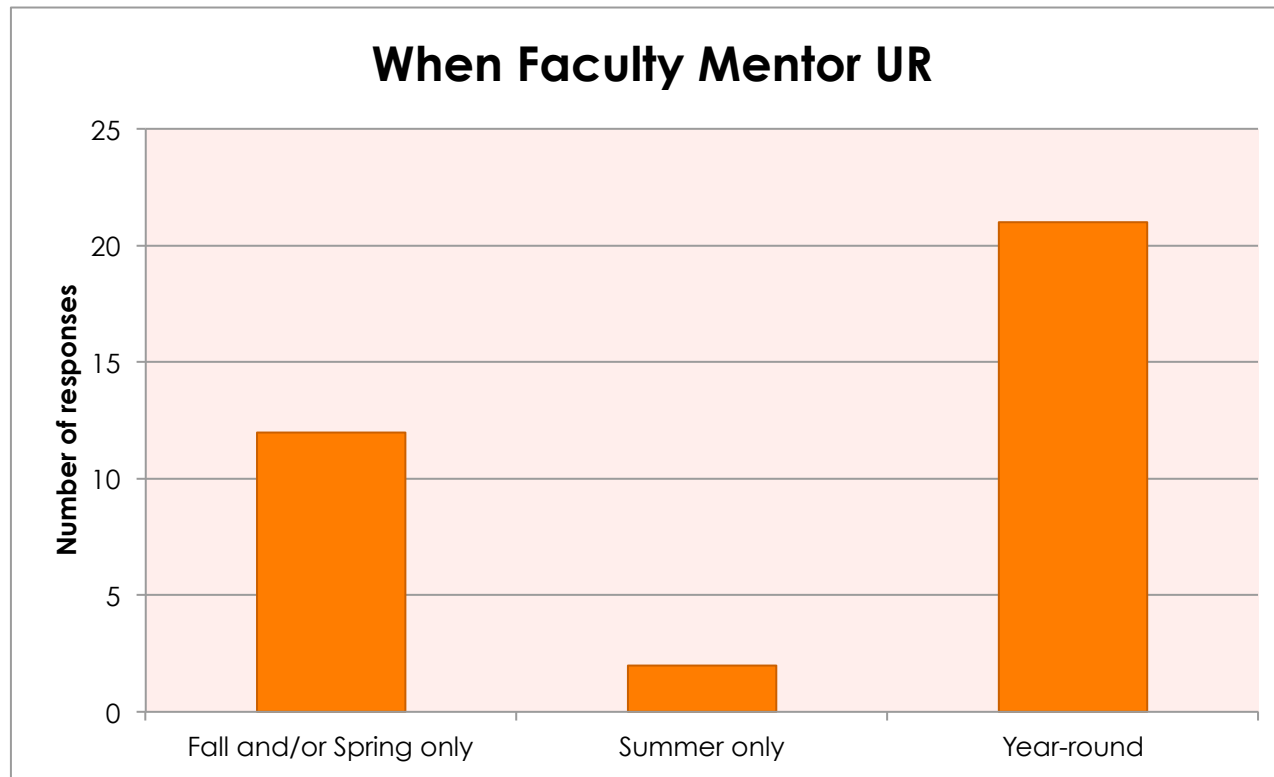
Survey: How many undergraduates have you mentored on UR projects?

Number of Students Faculty Mentor on UR

Main obstacles from faculty who have mentored UR	Reasons why faculty have not mentored UR
1. Not adequate faculty recognition	1. Just started my career
2. Not adequate monetary support	**2. Not adequate faculty recognition**
3. Not enough time	3. Not enough time
4. Students can't commit time	4. Students can't commit time
5. Just started my career	**5. Not adequate monetary support**
6. Students aren't prepared academically	6. Students aren't prepared academically
7. Area of research doesn't allow UR	7. Area of research doesn't allow UR

Obstacles from faculty who have mentored UR - Other	Reasons why faculty have not mentored UR - Other
I have only been approached by 1-2 undergrads about research	My position does not require research
Nursing students are directed more to EPP than actual research	Nursing students are directed more to EBP than actual research
Satellite campus	Satellite campus
Too high of teaching load	
Students receive no course credit	

Challenges: Lack of Support from Administration

...the university administration strongly supports research...

NOT REALLY

Fortunately there was an interpreter for those who understood sign language.

Challenges: Faculty Recognition

- Recognize yourself! Put UR in your portfolio under
    - Teaching
    - Scholarship
    - Service
- Consider the benefits to yourself
- Consider the benefits to your students

Faculty Benefits: Professional

- Can help you get grants
- Can help you get tenure
- Enhances your teaching

Faculty Benefits: Personal

- Allows you pass along knowledge, skills, attitudes, and values
- Helps you experience renewed enthusiasm
- Forces you to re-evaluate the meaning of your work

Survey: Rank the results of mentoring UR to you as faculty

1. Understanding the learning needs of undergraduate students

   (57% ranked in top 2)

2. Understanding the importance of undergraduate research as an integral component of the student's education

   (54% ranked in top 2)

- 23% ranked "Enhances my scholarship record" in top 2.

University Benefits

- Increases retention
- Increases enrollment in graduate education and provides effective career preparation
- Promotes an innovation-oriented culture

(Council on Undergraduate Research– 2016)

Student Benefits: Educational

Cartoon by Mark Cullum

Student Benefits: Professional

- Explore different fields
- Prepare for future careers
- Enhance credentials for employment and entry into graduate school
- Develop marketable skills
- Enhance professional communication skills
- Work effectively as part of a team

(Oregon State URSA – 2014, University of Missouri UR – 2014)

Student Benefits: Personal

- Grow as a critical, analytical, and independent thinker
- Meet challenges
- Discover personal interests
- Develop internal standards of excellence

(Oregon State URSA – 2014)

Survey: Rank the benefits for the student participating in UR

1. Students experience research first-hand.

   (84% ranked in top 3)

2. Students develop important skills.

   (76% ranked in top 3)

3. Students expand their knowledge of the subject matter.

   (54% ranked in top 3)

Main obstacles from faculty who have mentored UR	Reasons why faculty have not mentored UR
1. Not adequate faculty recognition	1. Just started my career
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3. Not enough time	3. Not enough time
4. Students can't commit time	4. Students can't commit time
5. Just started my career	**5. Not adequate monetary support**
6. Students aren't prepared academically	6. Students aren't prepared academically
7. Area of research doesn't allow UR	7. Area of research doesn't allow UR

Survey: Have you or your students received funding for participating in UR?
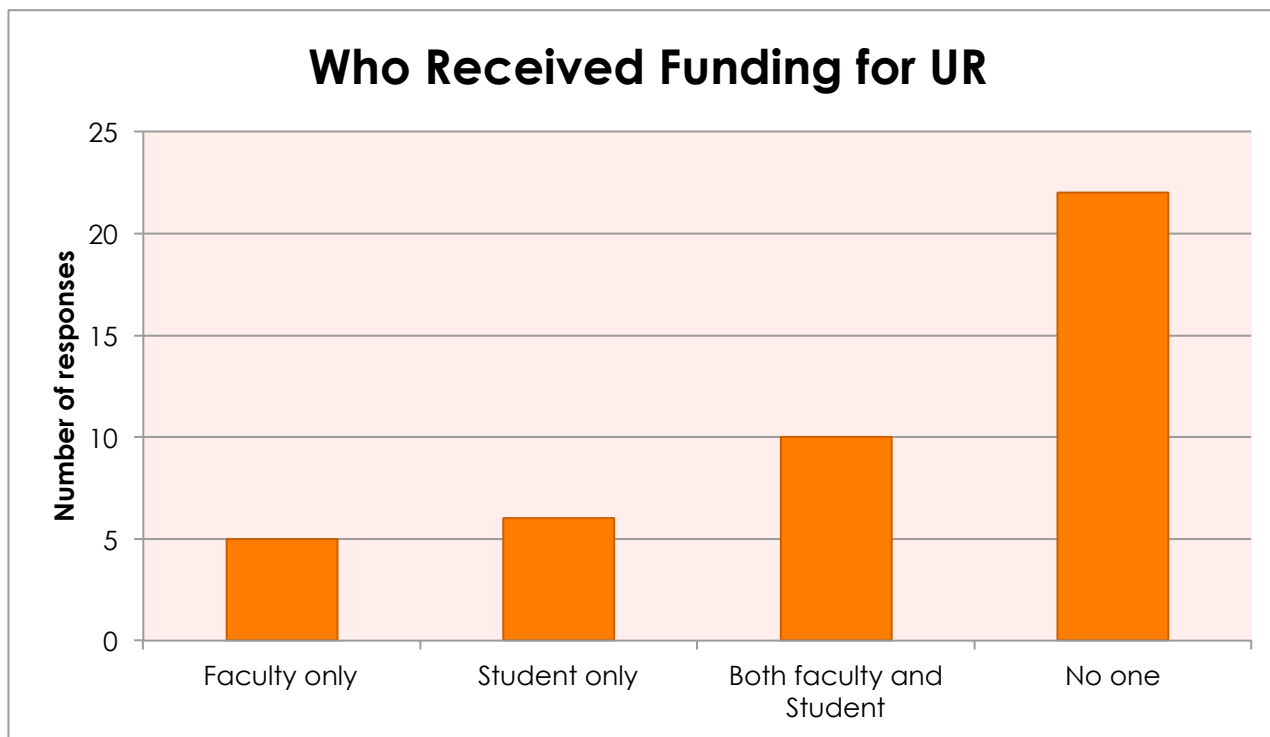
Survey: If you or your students received funding, who provided the funding?

Source of Funding for UR
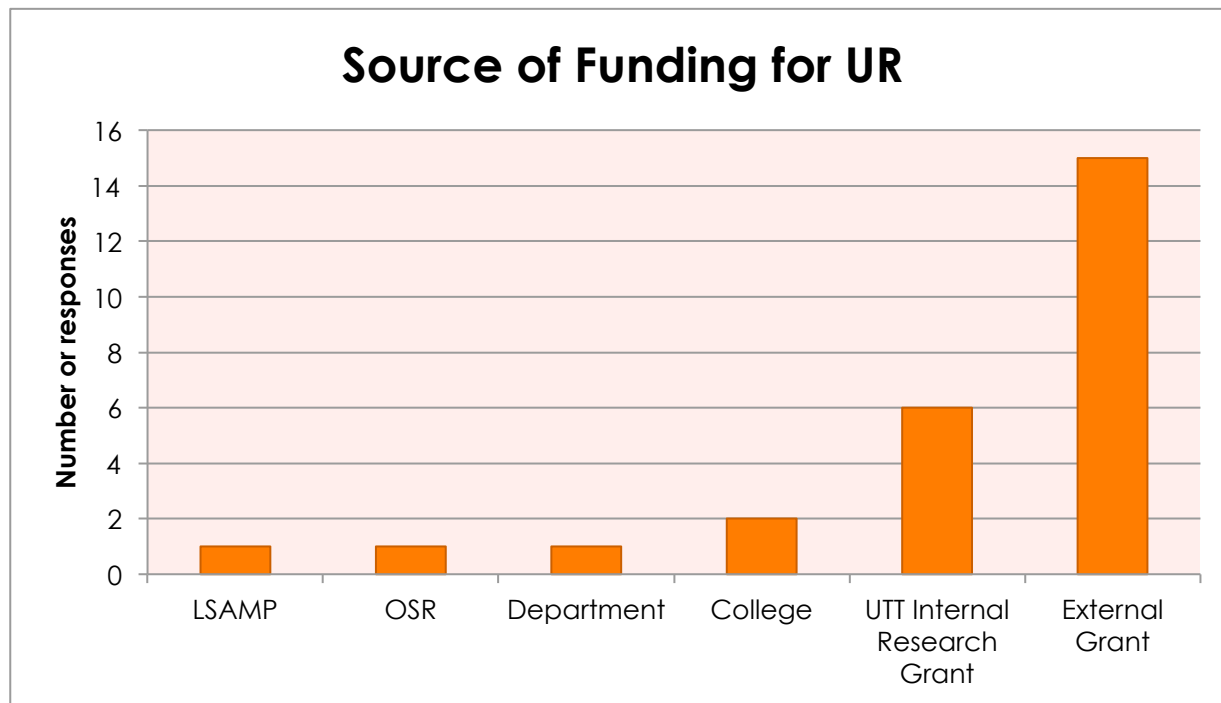
Challenges: Funding

- Can the student get funding?
- Can the student get college credit?
- Can you get funding?
- Can you get a course release?

So, you've decided to mentor an UR project…

…Now what?

UR in Practice: Prior to Working with Student

- Pick a good research project
- Select a student
- Look into funding

UR in Practice: Working with Student

- Set clear expectations
- Schedule fixed meeting times with student
- Get to know your student on an informal basis
- Talk about graduate school and career choices

UR in Practice: After Working with Student

- Offer to write letters of recommendation (hopefully!)
- Let your student know you are available for advice in the future

Research Exercises

- Mathematical Autobiographies
- Literature Search
- Textbook Exercise
- Mini Research Paper and Poster
- Peer Review of other students' papers

Other Research Exercises

- Critically reading a research paper
- Identifying related literature using an online scavenger hunt
- Creating a bibliography
- Giving a good elevator talk
- Writing an abstract
- Reading/debugging someone else's code

Courtesy of CRA-W

http://archive.cra-w.org/Portals/0/Pdfs/CRAWUndergradResearchMentoringExercises.pdf

References

- Ishiyama, J. (2007). Expectations and perceptions of undergraduate research mentoring: Comparing first generation, low income white/Caucasian and African American students. *College Student Journal, 41*, 540-549.
- Watkins, P. (2005). The principal's role in attracting, retaining, and developing new teacher. *The Clearing House, 79(2)*, 83-87.
- Wenderholm, E., (2014). Challenges and the Elements of Success in Undergraduate Research, *Inroads - The SIGCSE Bulletin 30 (4).*
- Oregon State URSA, 2014
- University of Missouri UR