

NEBRASKA

STEM Education Conference

DAY 1: THURSDAY, JULY 23

[WIFI PASSWORD: GradMeetings ... TWEET #NebSTEMConf]

- 8:00 - 8:15 a.m. **Welcome from the organizers**
Presenters: Tessa Durham Brooks (Doane) & Tomas Helikar (UNL)
- 8:15 - 8:30 a.m. **Information Swap, Round 1:** Give a 2-minute introduction to the people at your table: your name, institution, position, what you like most about what you do, and something about you that most people don't know.
Facilitator: Tessa Durham Brooks (Doane)
- 8:45 - 9:45 a.m. **Experiences with Vision and Change in Undergraduate Life Sciences:** Vision and Change initiative overview and how it impacted undergraduate biology education. *Presenter: Heather Seitz (JCCC)*
- 9:45 - 10:45 a.m. **NGSS and the 3D Atlas:** Overview of NGSS practices and how the 3D atlas can be used to frame them
Presenter: Ted Willard (Discovery Education)
- 10:45 - 11:00 a.m. **BREAK**
- 11:00 a.m. - Noon **Hear science with the LISTIN tool!** Enjoy an overview of LISTIN and group practice with listening to student talk to guide the learning process. *Presenter: Kerri Wingert (CSU)*
- Noon - 1:00 p.m. **LUNCH** (downstairs in the Graduate Hotel's Scarlet Ballroom) & poster set-up
- 1:00 - 1:15 p.m. **Information Swap, Round 2:** 2-minute self-introductions at your table
- 1:15 - 2:00 p.m. **Panel Presentations** Each panelist shares for 10 minutes, plus 5 minutes of questions
* Scott King (ESU 16): Making and using a model in a food science storyline unit
* Jodi Bahr (ESU 9): Understanding states of matter via particle movement using physical models and simulation
* Joe Dauer (UNL): Allowing undergraduates to explore system dynamics in computational modeling activities
- 2:00 - 2:30 p.m. **Table discussion and note taking**
- 2:30 - 3:00 p.m. **BREAK**
- 3:00 - 4:00 p.m. **Panel Presentations:** Each panelist shares for 15 minutes, plus 5 min for questions
* Daniel Shaben (ESU 11): Data Analysis in the application of autonomous robotics from a high-school robotics project
* Dena Harshbarger (UNK) and Erin Ingram (UNL): Exploring BBC Micro:bits as a Tool for Integrating STEM into Elementary Pre-Service Teacher Development
* Mark Meyenburg (Doane): Using simple image processing in the natural sciences
- 4:00 - 4:30 p.m. **Table discussion and note taking** followed by posting and **Gallery walk**
- 4:30 - 5:00 p.m. **Jigsaw - What have you heard?** Disciplinary discussions and theme identification. In disciplinary and grade-level groups, discuss themes that you heard and how you see them applying to your level/field. Post for gallery walk.
- 5:00 - 5:30 p.m. **BREAK** poster set-up
- 5:30 - 7:00 p.m. **Networking Session**
- 5:30 - 6:00 p.m. **Information Swap, Round 3:** 2-minute self-introductions at your table
- 6:00 - 7:00 p.m. **Reverse poster session** Post questions or topics you'd like to discuss on one of the poster boards around the room. Wait for others with similar interests to join. *Facilitator: Mary Keithly (CSC)*
- 6:00 - 7:00 p.m. **Poster presentations**
* Marc Libault (UNL) - "Research Experiences in Plant Biotechnology for Nebraska High School Students"
* Anya Covarrubias (GIPS)
* Dirk Charlson & Aaron Thiessen (CCC) - "Estimating Tree Height Using Unmanned-Aerial Systems"
* Amy Christensen (GCU) - Live Lessons and Professional Development
* Eric Tom (NE EPSCoR) - Demo of Nebraska EPSCoR's Young Nebraska Scientists Mobile Labs

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*FUNDED BY NATIONAL SCIENCE FOUNDATION AWARD #1557417

NEBRASKA

STEM Education Conference

DAY 2: FRIDAY, JULY 23

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| 8:00 - 8:15 a.m. | Recap and overview
Recap of the previous day and an overview of today's activities
<i>Presenter: Tessa Durham Brooks (Doane)</i> |
| 8:15 - 8:30 a.m. | Nebraska EPSCoR STEM Education Opportunities
Overview of the EPSCoR program and ways that the program supports K-12 education in the state.
<i>Presenter: Matt Andrews (NE EPSCoR)</i> |
| 8:30 - 9:15 a.m. | Funding opportunities at the National Science Foundation
Overview of NSF opportunities.
<i>Presenter: Bob Russell (Program Director - Education and Human Resources, National Science Foundation)</i> |
| 9:15 - 9:30 a.m. | BREAK |
| 9:30 a.m. - Noon | Cell Collective Workshop
Cell Collective is web-based software that enables life sciences students/teachers to learn/teach about biological processes and diseases in a way that is not possible through traditional didactic and memorization-driven methods. Instead, students learn in an experiential fashion 'by doing', by creating, simulating, and analyzing computer models of various biological systems. By design, the technology is accessible to students and teachers with a wide range of technical skills. This low learning curve also means that educators can incorporate the technology in any curriculum. Our simulation-driven active learning approach has been designed to provide students with cutting edge skills needed for today's jobs in health and life sciences – understanding biological processes and diseases as dynamic systems, designing / modeling / simulating / interpreting different experiments and scenarios, etc. The simulation lessons are turn-key, self-contained, and adoptable by any instructor without the need to modify their syllabus. <i>Presenters: Ehren Whigham and Tomas Helikar (UNL / Cell Collective)</i> |
| Noon - 1 p.m. | LUNCH (downstairs in the Graduate Hotel's Scarlet Ballroom) |
| 1:00 - 3:30 p.m. | Brome Inquiry Workshop
In this workshop, participants will learn about and gain experience with using smooth brome as a model system for inquiry-based learning. We will work in teams to ask questions and create experimental designs. We will discuss how the measurements we plan to make tie into the questions being asked. In the second part of the workshop, we will use this system to introduce the concept of images as data and how computers could make data collection faster. We'll explore the types of data that can be acquired from images and will use Google Colab to execute code to make relevant measurements. At the end of the workshop, we will discuss directions our introductory activities could go and will map our activities onto the 3D atlas. |
| 3:30 - 3:45 p.m. | BREAK & meeting survey distribution |
| 3:45 - 4:15 p.m. | Meeting Wrap-up — please complete conference survey, sign up for follow-up groups, and pick up travel compensation paperwork. |

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