Working Group Agenda

Expanding Data Nuggets: Development and assessment of an integrative resource to increase quantitative literacy

January 7-9, 2015, The University of Tennessee, Knoxville Campus
The working group will meet at the NIMBioS offices located on the 1st floor of 1122 Volunteer Blvd., Claxton Complex.

Working Group Website – http://www.nimbios.org/workinggroups/WG_datanuggets
Basecamp Website – https://basecamp.com/2198683/projects/7881662

Welcome
Thank you for participating in this working group. The organizers and people attending this NIMBioS working group represent the leading innovators in the fields of science and math education, quantitative literacy, curriculum assessment, and effective teaching strategies. We look forward to two and a half stimulating days of conversations, productive work, and planning for future endeavors.

We envision this working group as a mechanism to bring NIMBioS resources together with leaders in science education research and reform in an effort to develop a national resource focused on integrating mathematics and science, particularly in the fields of ecology and evolutionary biology.

We have three main objectives for the working group meetings:
1. Discuss skills necessary for progression towards quantitative literacy and identify the role of Data Nuggets in acquiring these skills.
2. Formulate assessment strategies to determine the efficacy of Data Nuggets as an educational tool
3. Expand the Data Nuggets resource for use in undergraduate classrooms, aligning it with effective teaching strategies.

The **proposed products** for each objective are outlined below to motivate conversations and organize participants:
1. A document that (a) outlines how Data Nuggets fit into existing quantitative learning progressions, (b) identifies weaknesses and how we can create new Nuggets to fill in these weaknesses, and (c) creates Data Levels so Nuggets can be used to scaffold skills through the learning progression. The document will be used to draft a publication from these discussions. For example, a paper aligning Data Nuggets with quantitative learning progressions, to be published in a science education research journal.

2. A submission to the NSF Improving Undergraduate STEM Education (IUSE) Grant to assess the efficacy of Data Nuggets in improving quantitative reasoning and attitudes about science in undergraduate students. The group will:
   a. Outline methods for collecting preliminary assessment data between working group meetings to strengthen the grant.
   b. Compile a list of existing assessments in quantitative and scientific literacy, and attitudes about science, to facilitate creation of assessment strategies.
   c. Come up with various assessment strategies as categorized by timelines typical of granting institutions. For example, what would a 2 year proposal look like, and how would it differ from a 4-5 year proposal?
3. A publication written for instructors of undergraduate classes, detailing how effective teaching strategies and resources can be implemented and assessed in their classrooms. Data Nuggets could be used as a case study to bring effective teaching strategies in the classroom and assess them. A cross-disciplinary guide to help faculty with limited educational research knowledge conduct teaching experiments and assessments in their classrooms.

Much of your time at this workshop will be spent in smaller break-out groups, where particular issues will be tackled. In each group, one person will be designated as a facilitator, to guide the conversation. We ask that at least one person in each group also volunteer to keep notes to be made available on the working group webpage. Break-out groups are ideally no larger than 5 to 6 people to facilitate conversation. Near the end of each break-out, a representative should be chosen to present findings to the full group. Each group will have approximately five minutes for these reports to the full group.

By the conclusion of the first meeting we will have:
- Gained a clear consensus on the specific objectives for the Working Group.
- Defined the products that will be produced by each of the break-out groups.
- Ensured that each participant clearly understands what his/her contribution will be at the next Working Group meeting.
- Ensured that each break-out group has clearly defined plans for how work will occur remotely between meetings.

8:00 am	Breakfast served at NIMBioS until 9 am
9:00 am	Welcome and Logistics
9:25 am	Lightning Talks – Less than three minutes each:

- Participants briefly introduce yourselves and give your research background and experience as relevant to the group
- Describe what you hope to achieve by the end of the workshop

10:00 am	Coffee Break
10:30 am	Discussions/Plenary: Introduce Data Nuggets resource. What are the next steps? What do we need to accomplish by the end of the working group? Organizers communicate the objectives for the day to the group.
11:00 am	**Break-out Session I:** What are the challenges for your topic (quantitative literacy, assessment, undergraduate education), and how can Data Nuggets address these challenges? Begin to discuss the goals and proposed products of your group and how they address these challenges. Are new/different products necessary?
11:50 am	Summarize discussion points and post notes on Basecamp. Prepare to discuss after lunch.
12:00 pm	Lunch served at NIMBioS
1:00 pm	Break-out groups report to all
1:30 pm	Robert Mayes – Quantitative learning progressions
1:50 pm	Discussion
2:00 pm	Molly Stuhlsatz – Assessment methodology and resources
2:20 pm	Discussion
2:30 pm	Julie Morris – Teaching strategies for undergraduate classrooms
2:50 pm	Discussion
3:00 pm	Coffee Break
3:15 pm	**Break-out Session II:** Write an outline detailing goals, objectives, and audiences for the products produced by this working group. What projects can be accomplished during the group and between meetings?
4:15 pm	**Reflection I:** Take 15 minutes to reflect on the following questions. Post your reflection as a comment on the Basecamp website. 1) What do you see as the most exciting aspect of this work? 2) Why do you think your group's goal is important?
4:30 pm	Break-out groups report to all. Group discussion of 1) What are the next steps for each break-out group? 2) What do we want to accomplish by the end of tomorrow?
5:30 pm	Reception
6:30 pm	Dinner (on own or organize with other participants)
9:00 pm	End of day 1. Complete survey sent out at night.

8:00 am	Breakfast served at NIMBioS until 9 am
9:00 am	Welcome and Logistics
9:15 am	Organizers restate yesterday's accomplishments and communicate today's objectives to the group
9:30 am	**Break-out Session III:** Break-out groups meet and begin to work on products outlined on first day.
10:30 am	Coffee Break
10:45 am	**Jigsaw:** form groups with one "expert" from each break-out group. "Cross pollinate" and discuss how your group's ideas can influence work being done in another group. Discuss potential collaborations between groups.
11:30 am	Return to original break-out groups and share findings from jigsaw. Create a short report/list of at least 3 potential ways that the other groups can inform the products of your break-out group.
12:00 pm	Lunch served at NIMBioS
1:00 pm	**Break-out Session IV:** Break-out groups meet and continue to work on products.
3:00 pm	Group Picture, Coffee Break
3:30 pm	**Break-out Session V:** Break-out groups meet and continue to work on products. Identify and make a list of tasks necessary to achieve products/task for your group. Start to think about which product/task you would most want to be responsible for.
4:30 pm	Report back to group: Update everyone on what you accomplished today and what needs to be accomplished by the end of the working group. Discuss whether you foresee needing input from other groups for your group's tasks/products. Are there overlapping goals between groups? Groups can discuss working together to eliminate doing repetitive work.
5:00 pm	**Reflection II:** Take 15 minutes to reflect on the following questions. Post your reflection as a comment on the Basecamp website. 1) Which product/task are you most excited about working on between working group meetings? 2) Consider the next 6 months following the working group – what will you be able to contribute to the products/tasks that you are involved in? Which tasks/projects would you want to be involved with in the future?
5:15 pm	End of day 2.

8:00 am	Breakfast served at NIMBioS
9:00 am	Welcome and Logistics
9:15 am	Organizers communicate the objectives for the day to the group
9:30 am	**Break-out Session VI:** Discuss what products we hope to work on between now and next working group. Create timeline for product/task completion and have a group member volunteer to take the lead on each. Have a group discussion of a) authorship on all products, b) the opportunity for cross-group authorship and contribution between working group meetings.
10:30 am	Coffee served to groups.
10:45 am	**Break-out Session VII:** Make sure your group is organized on Basecamp so you can continue to work on products remotely – create a discussion for each product/task and add events from your timeline onto calendar.
11:30 am	Report back to group: Share the tasks/products and timeline. Use projector to project your groups' Basecamp files to show what you'll be working on between meetings.
12:00 pm	Lunch served at NIMBioS.
1:00 pm	End of working group.

Remember: Keep checking the basecamp website after the conclusion of this meeting for summary notes and relevant materials. Please post all notes, presentations, and resources up on basecamp and keep in contact with your break-out group to maintain progress. Thank you!