PROGRESS TOWARD ACHIEVING SYSTEMIC CHANGE:

A FIVE-YEAR STATUS REPORT ON THE AAU UNDERGRADUATE STEM EDUCATION INITIATIVE

Online Appendix

Association of American Universities
Inquiry · Innovation · Impact

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Requests for Feedback on Framework

Dear AAU STEM Initiative Campus Contact:

We are writing to you as the campus contact, selected by your President or Chancellor, for the AAU Undergraduate STEM Education Initiative. As we begin to work to achieve the goals we have outlined for this effort, we hope that you can assist us in soliciting feedback from senior administrators, deans and department chairs, and senior research and STEM faculty members on your campus to help us to achieve the goals we have established for the AAU effort.

The first goal of the AAU initiative is to **develop an effective analytical framework for assessing and improving the quality of STEM teaching and learning,** particularly in the first two years of college.

A well-developed framework should provide a listing of features that a campus can use to assess where it stands in establishing evidence-based practice as the norm for teaching, and provide guidelines for moving forward toward that goal. It should be useful at all levels on campus. Thus it will contain elements that relate directly to faculty activity, departmental decision-making, effective institutional support for excellence in teaching, and the reward and incentive system within which teaching operates in conjunction with the whole spectrum of faculty responsibilities and institutional goals. The framework will be developed to the point at which it can be used as a tool for assessment and for working across campuses on common initiatives. However, we also expect it will be a living document, to be modified as more is learned about how to bring about and implement effective and sustained change.

To create a framework that is to be a useful tool for all AAU member universities, we feel that it is critical that as many institutions as possible be involved in its early development. To begin that process, AAU staff working with our Technical Advisory Committee for the STEM Education initiative, have prepared a draft outline of a framework document for discussion which is attached to this message. The draft introduces the topic and the nature of a framework as a tool, provides a rationale for the approach taken, and then provides a listing of elements we think are likely to appear in a more fully developed version. Although we have made a substantial effort to cover the problem space as we see it, we emphasize that the document is offered in a spirit of moving the conversation forward without everyone having to start at square one. Receiving feedback on the framework outline from AAU campuses is and essential next step.

Requested assistance from you and your campus

We ask that you facilitate a coordinated response from your campus perspective on this draft framework, returning it to us by December 14, 2012. We would recommend that you draw upon senior university administrators, deans and department chairs, and senior research and STEM faculty members in helping to craft an institutional response to the draft framework document and the questions we have outlined below. If your campus is interested in participating in the AAU STEM initiative as one of our future demonstrations sites, we would suggest that your campus might want to consider creating a working group to comment on the framework document in light of your own campus challenges to implementing meaningful changes in STEM teaching practices. We would be happy to assist you in helping to determine who you might want to consult with on your campus to help to respond to this request.

This request is designed to prompt campus discussion of the AAU STEM Education Initiative and guide the framework development. We provide the following guidelines for your response to be used as you find them helpful.

1. The draft framework lists a number of elements. For any of them that seem especially significant to you, please comment on how these play out on your campus. Do you feel there are any major elements that are missing from the document or which deserve increased attention?

2. Do you have significant undergraduate STEM reform initiatives already in process? Do any of these reforms focus on the first two years in the STEM disciplines? Please explain.

3. What are the means for judging teaching excellence on campus and are there significant differences across colleges or schools?

4. How would you describe the challenges your campus encounters in overcoming the barriers to the use of evidence-based teaching as the norm for excellence on your campus?

Please provide your responses to: Lillian Aoki of the AAU Staff at: Lillian.Aoki@aau.edu. You may address any inquiries and/or questions to Lillian, myself or to Dr. Jim Fairweather. Dr. Fairweather is a Professor of Higher, Adult, and Lifelong Education at Michigan State University and is serving as a co-Principal Investigator on this project; he is available at fairwea4@msu.edu.

There will be ample opportunity to continue the dialog as framework development proceeds. We are especially interested in gathering detailed feedback from campuses interested in serving as demonstration sites of the AAU STEM initiative, as those campuses will be the first to implement the resulting framework.

We will be following up this request in the months to come with others focused on the kinds of data the campus can gather and use in assessing campus practices.

Sincerely

Tobin L. Smith
Vice President for Policy
Association of American Universities
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e-mail: toby_smith@aau.edu

To: AAU STEM Initiative Campus Contact

From: Tobin Smith, Vice President for Policy

Date: November 30, 2012

Subject: Deadline Reminder – Comments on AAU Undergraduate STEM Initiative Framework

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This message is to serve as a reminder about the upcoming deadline – **December 14, 2012** – for comments on the framework for assessing and improving the quality of STEM teaching and learning. We wish to extend our thanks to institutions who have submitted feedback. For your reference, the framework outline and the original request for feedback from your campus are attached. Please send your responses to: Lillian Aoki of the AAU Staff at: Lillian.Aoki@aau.edu.

Additionally, I am pleased to announce that Emily Miller has joined AAU as the Project Manager for the AAU Undergraduate STEM Education Initiative. You may address any inquiries and/or questions to Emily or myself. She is available at Emily.Miller@aau.edu or 202.408.7500.

Project Site Application and Selection Documents

MEMORANDUM

ASSOCIATION OF AMERICAN UNIVERSITIES
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www.aau.edu

To: AAU Undergraduate STEM Education Initiative Campus Point of Contact

From: Tobin Smith, Vice President for Policy, AAU

Emily Miller, Project Manager, AAU Undergraduate STEM Education Initiative

Date: February 8, 2013

Subject: Request for Concept Paper: AAU STEM Project Sites

AAU is strongly encouraged by the widespread enthusiasm it has received from our members regarding our Undergraduate STEM Education Initiative. As you know, the first goal of the AAU initiative was to develop an effective framework for systemic change in undergraduate STEM teaching and learning. Based on campus feedback, which we very much appreciate, the framework has been segmented into two parts. The first part is a refined framework (attached) outlining key elements to guide institutional and faculty commitment to using teaching practices proven by research to be effective in STEM education (evidence-based teaching). These practices are well documented by the National Research Council report Discipline-Based Education Research: Understanding and Improving Learning in Undergraduate Science and Engineering1 and the 2012 President's Council of Advisors on Science and Technology (PCAST) report*2*.

The second part of the framework, still under construction, is intended to be a living document that can serve as a tool for faculty members and administrators to facilitate the use of evidence-based teaching practices in STEM fields. Over the coming months, we will develop an expanded set of

1 National Research Council. Discipline-Based Education Research: Understanding and Improving Learning in Undergraduate Science and Engineering. Washington, DC: The National Academies Press, 2012. http://www.nap.edu/catalog.php?record_id=13362

2 2012 President's Council of Advisors on Science and Technology (PCAST) report "Engage to Excel: Producing One Million Additional College Graduates With Degrees In Science, Technology, Engineering, And Mathematics." http://www.whitehouse.gov/sites/default/files/microsites/ostp/pcast-engage-to-excel-final_feb.pdf

examples and map innovative institutional efforts being conducted by universities to implement elements of the framework to serve as a resource of informative practices for other institutions.

The second goal of the AAU initiative is to select AAU STEM Project Sites at a subset of AAU universities to implement the framework. AAU plans to select up to eight AAU institutions to serve as project sites for a three-year period. **This communication is a request for concept papers from campuses that have an interest in serving as an AAU STEM Project Site.**

AAU STEM Project Sites will be laboratories for implementing reforms that address the core elements of the AAU framework – pedagogy, scaffolding/support, and cultural change. Additionally, these project sites will develop and carry out projects that address a specific challenge their campus encounters in undergraduate STEM education. The designation of institutions as AAU STEM Project Sites is not intended to reward or confirm past success in undergraduate STEM education reform. The intent is to support institutions' commitments to build upon prior gains in implementing sustained institutional change in teaching practices. We are seeking concept papers on how your institution would advance the broad-based implementation of evidence-based teaching practices in STEM fields on your campus.

For campuses that are just beginning efforts to reform STEM teaching and learning beyond individual courses, a project might be directed at, for example, launching an effort to reform existing introductory courses to increase the use of evidence-based teaching practices across several departments. For a campus with multiple existing efforts, a project might be to create linkages among established activities or address cultural barriers that limit campus-wide adoption of evidence-based teaching practices or efforts aimed at enhancing professional development for faculty. To be clear, these are just potential examples.

To stimulate sustained institutional change, AAU has established expectations for AAU STEM Project Sites. In addition to the specific project focus, the ability of an institution to meet the expectations listed below will be an essential factor in selecting AAU STEM Project Sites.

The AAU project team will use concept papers to identify potential AAU STEM Project Sites. We will ask institutions identified as potential AAU STEM Project Sites to develop a comprehensive plan of work and submit supporting documents. The AAU project team will announce final selections in late June.

We firmly believe that all AAU institutions should have the opportunity to engage in the Undergraduate STEM Education Initiative if they so choose. We will be seeking ways to ensure that all interested AAU universities have an opportunity to participate. If AAU learns in this process that a large number of institutions are very serious about advancing projects or are interested in partnering with institutions tackling similar challenges on their own campuses, we will explore the creation of collaborative networks that will allow other AAU institutions to participate in the Initiative as partners.

Concept papers are due on **Friday, March 22** and should be a maximum of **10** pages in length. Please provide your responses to: Emily Miller, Project Manager, AAU Undergraduate STEM Education Initiative at emily.miller@aau.edu.

To address questions about the request for concept papers for AAU STEM Project Sites, **AAU will hold a conference call on Wednesday, February 13 at 4PM EST.** The dial-in number is 1.800.768.2983 and passcode is 627-8668.

You may address any inquiries and/or questions to either of the co-Principal Investigators on this project, Tobin Smith at toby_smith@aau.edu or Dr. Jim Fairweather at fairwea4@msu.edu, or to Emily Miller.

AAU STEM Project Site Expectations

1. **Presidents/Chancellors and other universities leaders need to make a public commitment to serving as an AAU STEM Project Site.**

    - Presidents/Chancellors will publicly endorse the project objectives and commit the appropriate institutional resources to support the project.

    - University leadership will designate co-leaders for the project as well as recruit a team of faculty members inclusive of distinguished faculty members and early career faculty members and administrators from the participating departments to actively engage in project planning and implementation.

    - Distinguished research scientists on campus will publicly endorse the project.

2. **The following elements are necessary to be considered as an AAU STEM Project Site:**

    - Institutions will identify a project objective, establish benchmarks, timeline, and measures for achieving their goals, and be responsible for reporting this information to AAU.

    - Projects should include multiple departments or other academic units with a curricular relationship or clear reason for collaborating. Faculty members (tenured, tenure-track, and contingent, as appropriate) from those departments or academic units should be directly engaged in the development of the project.

    - Projects should manifest a commitment to an evidence-based model of undergraduate education. Examples include developing and measuring learning goals/outcomes and monitoring the teaching practices used in STEM courses. Baseline data should be collected before beginning project-based interventions. Data should be used to review progress and inform policy decisions.

    - Institutions will be prepared to provide training – or access to training – to faculty (tenured, tenure-track, and contingent), Graduate Assistants, and Teaching Assistants on how to implement proven evidence-based practices in their teaching.

    - Institutions will develop plausible plans to modify and implement a reward system that recognizes quality evidence-based teaching. Fidelity to chosen teaching practices, independent measures of learning, and student success should be part of the evaluation and reward system for both individual faculty members (tenured, tenure-track, and contingent) and departments.

    - Institutions will identify mechanisms to evaluate and assess projects.

3. **Institutions contribute substantial resources to the project and commit to sustaining effective activities developed or used in the project.** AAU will provide stimulative funds (Approximate Funding: Year 1 - $250K, Year 2 - $125K, and Year 3 – $124K).

4. **Institutions identified as potential AAU STEM Project Sites will be asked to develop a comprehensive plan of work that includes means to sustain the project, and should be positioned to launch the project in fall 2013.**

Concept Paper: AAU STEM Project Sites

Concept papers must address the following questions and should be a maximum of **10** pages in length. A brief but clear and concise paper will assist AAU in evaluation. Please provide your responses by **Friday, March 22** to: Emily Miller, Project Manager, AAU Undergraduate STEM Education Initiative at emily.miller@aau.edu

Project Objective

- What specific project would your institution wish to propose to advance the broad-based implementation of evidence-based teaching practices in undergraduate STEM education?

Department Engagement

- Which departments would participate in the project?

Faculty and Administration Participation

- Which faculty members and administrators will be engaged in the project?
- What will be their respective roles in the project?
- What strategies and approaches will the project use to engage contingent faculty, graduate assistants, and teaching assistants?

Project alignment to AAU Framework

- How would this type of project manifest commitments to alter teaching practices, to support faculty needs, and to modify reward systems?

Implementation

- How is the institution organized at the university, college, and departmental level to implement such a project?

Resources

- What type and level of institutional support will your campus contribute to this project above and beyond the relatively modest level of seed funding that will be provided by AAU?

Evaluation

- What benchmarks and measures will the institution use to evaluate the project?

Sustainability Plan

- What commitment (including adequate resources) will your campus make to advance and sustain the project beyond the duration of the AAU STEM Initiative so that the impact is long-lasting?

Project Leadership

- Please provide a statement of commitment by your President or Chancellor.
- Who will be the co-leaders for the AAU STEM Project Site?

AAU STEM Initiative Campus Point of Contact:

Following our discussion on AAU's request for concept papers for Project Sites, we are writing to clarify a few points about proposed projects.

AAU has an interest in projects that will focus on addressing a specific challenge encountered by campuses in the broad-based use of evidence-based teaching practices in undergraduate STEM education. For systemic change, AAU is convinced that efforts dedicated to faculty support and incentives/rewards as elaborated in the framework are necessary to successfully enact and institutionalize the use of evidence-based teaching techniques. For this effort, a proposed project must explain how it takes into account the core elements of the framework. However, it is sufficient for a proposal to show that it addresses the framework by combining new project activities with ongoing efforts at an institution.

For institutions to advance creative projects that engage a range of faculty members, we understand that institutions will need time to fully develop teams and further refine plans of work. AAU wishes to make clear that institutions selected to prepare plans of work documents can build in a developmental phase as part of the scope of work. We are also supportive of the use of intermediate outcomes that the institution can identify as means to document steps on the way to achieving larger reform efforts to the use of evidence-based teaching.

In the spirit of cooperation and desire to support linkages among AAU institutions tackling similar challenges on their own campuses, we wish to invite campus points of contact to share their contact details. Please email Emily Miller, Project Manager, AAU Undergraduate STEM Education Initiative at emily.miller@aau.edu by **Thursday, February 21** if you wish to have your contact details distributed to other AAU STEM Initiative Campus Points of Contact.

As you work to develop concept papers, please address any inquires and/or questions to Emily Miller or to either of the co-Principal Investigators on this project, Tobin Smith at toby_smith@aau.edu or Dr. Jim Fairweather at fairwea4@msu.edu.

Thank you.

MEMORANDUM

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To: NAME of Point of Contact

Institution

From: Tobin Smith, Vice President for Policy, AAU

Emily Miller, Project Manager, AAU Undergraduate STEM Education Initiative

Date:

Subject: Request for Plan of Work: AAU STEM Project Sites

AAU is strongly encouraged by the widespread enthusiasm it has received from our members regarding our Undergraduate STEM Education Initiative. As you know, the second goal of the AAU initiative is to select AAU STEM project sites at a subset of AAU universities to implement the framework. Half of our total membership – or 31 institutions – submitted concept papers to be considered as a project site.

The six member AAU STEM Initiative project team reviewed concept papers based on overall project objectives, degree of department and faculty engagement, commitment of institutional effort and resources, feasibility of project design, likelihood to facilitate sustained organizational change, plan of sustainability, and commitment to evaluation and assessment.

We are pleased to share that XXX's concept paper was one of eleven identified as a potential project site. **This communication is a request for a plan of work and indicates your campus is moving forward in the selection process.** AAU plans to select up to eight AAU institutions to serve as project sites for a three-year period. Final selections will be announced in late June.

The responses to the supplemental questions, and the plan of work, are due on **Wednesday, June 5, 2013.** To address questions about this request, please contact: Emily Miller, Project Manager, AAU Undergraduate STEM Education Initiative at emily.miller@aau.edu.

AAU STEM PROJECT SITES

Please provide your responses by **Wednesday, June 5, 2013** to: Emily Miller, Project Manager, AAU Undergraduate STEM Education Initiative at emily.miller@aau.edu

SUPPLEMENTAL QUESTIONS

To assist the AAU STEM Initiative project team in final selection, please provide a clear and concise response in 500 words or less to the following questions.

Change Model

Please delineate the proposed project model/theory of change. How will your proposed project lead to sustained institutional change envisioned by the AAU STEM Initiative?

Faculty Rewards

The AAU STEM Initiative project team was disappointed at how weakly the reward system was addressed in almost all the concept papers. Many concept papers indicated various individual awards that your campus provides to acknowledge teaching. Please provide more detail on how the campus will move toward fully aligning the reward system with a commitment to evidence-based teaching practice, and addressing the present disincentives to devoting time to the improvement of teaching.

Sustainability

How will the institution provide resources to sustain project after three years so that the impact is long-lasting? (e.g. when positions are added will they become permanent?)

[Questions specific to concept paper/institution]

PLAN OF WORK

Abstract

Please provide a 250 word abstract that indicates the focus of your project and how your project intends to sustained change in undergraduate STEM teaching and learning.

Project Leadership

Please provide the name, title, email and phone number for each co-leader of the project.

Statement of activities and timeline

Please detail the proposed projects planned activities and corresponding timeline (Year 1: Summer 2013, AY 2013-2014; Year 2: Summer 2014, AY 2014-2015; Year 3: Summer 2015, AY 2015-2016). In the instance this material was provided in the concept paper, we welcome you to modify as necessary and restate in support of this component of the plan of work.

Benchmarks and Evaluation

Please provide annual benchmarks for your proposed project and corresponding evaluation measures. AAU will seek annual reports from AAU Project Sites to document your progress toward implementing the core elements of the AAU Framework for Systemic Change in Undergraduate STEM Teaching and Learning. In the instance this material was provided in the concept paper, we welcome you to modify as necessary and restate in support of this component of the plan of work.

Budget and Budget Justification

Please provide a detailed budget for the proposed project inclusive of line items, explanation, and a break down between AAU seed funds and institutional funds.

AAU STEM Project Site Expectations

5. **Presidents/Chancellors and other universities leaders need to make a public commitment to serving as an AAU STEM Project Site.**

    - Presidents/Chancellors will publicly endorse the project objectives and commit the appropriate institutional resources to support the project.

    - University leadership will designate co-leaders for the project as well as recruit a team of faculty members inclusive of distinguished faculty members and early career faculty members and administrators from the participating departments to actively engage in project planning and implementation.

    - Distinguished research scientists on campus will publicly endorse the project.

6. **The following elements are necessary to be considered as an AAU STEM Project Site:**

    - Institutions will identify a project objective, establish benchmarks, timeline, and measures for achieving their goals, and be responsible for reporting this information to AAU.

    - Projects should include multiple departments or other academic units with a curricular relationship or clear reason for collaborating. Faculty members (tenured, tenure-track, and contingent, as appropriate) from those departments or academic units should be directly engaged in the development of the project.

    - Projects should manifest a commitment to an evidence-based model of undergraduate education. Examples include developing and measuring learning goals/outcomes and monitoring the teaching practices used in STEM courses. Baseline data should be collected before beginning project-based interventions. Data should be used to review progress and inform policy decisions.

    - Institutions will be prepared to provide training – or access to training – to faculty (tenured, tenure-track, and contingent), Graduate Assistants, and Teaching Assistants on how to implement proven evidence-based practices in their teaching.

    - Institutions will develop plausible plans to modify and implement a reward system that recognizes quality evidence-based teaching. Fidelity to chosen teaching practices, independent measures of learning, and student success should be part of the evaluation and reward system for both individual faculty members (tenured, tenure-track, and contingent) and departments.

    - Institutions will identify mechanisms to evaluate and assess projects.

7. **Institutions contribute substantial resources to the project and commit to sustaining effective activities developed or used in the project.** AAU will provide stimulative funds (Approximate Funding: Year 1 - $250K, Year 2 - $125K, and Year 3 – $124K).

8. **Institutions identified as potential AAU STEM Project Sites will be asked to develop a comprehensive plan of work that includes means to sustain the project, and should be positioned to launch the project in fall 2013.**

End of Document

MEMORANDUM

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To: **Name**
Institution

From: Tobin Smith, Vice President for Policy, AAU
Emily Miller, Project Manager, AAU Undergraduate STEM Education Initiative

Date:

Subject: Notification Regarding Selection of AAU STEM Project Sites

AAU is strongly encouraged by the widespread enthusiasm of our members for AAU's Undergraduate STEM Education Initiative. As you know, the second goal of the AAU initiative is to select AAU STEM project sites at a subset of AAU universities to implement the framework. Half of our total membership – or 31 institutions – submitted concept papers to be considered as project sites.

The six-member AAU STEM Initiative project team has completed its initial review of the concept papers based on overall project objectives, degree of department and faculty engagement, commitment of institutional effort and resources, feasibility of project design, likelihood to facilitate sustained organizational change, plan for sustainability, and commitment to evaluation and assessment. All of the projects were fully evaluated for how they met these objectives. The project team also sought to identify a diverse set of projects that would address a wide range of the elements outlined in the AAU STEM Framework.

The concept papers we received contained many very strong and exciting approaches to improving STEM teaching and learning presenting the project team with very difficult decisions. During the review of the **XXX**'s concept paper, _____. Despite the strengths of your proposal, **XXX** has not been selected to move forward as a potential project site.

We greatly appreciate and want to thank you and the others that were involved from your campus for your efforts. While your campus was not selected as one of our eight project sites, AAU is eager to continue to engage **XXX** in our STEM Initiative. To this end, we would encourage your campus to continue to pursue the work described in your concept paper. To help facilitate continued improvement in STEM teaching and learning across AAU member institutions, we will host all STEM campus points of contact for an AAU STEM Initiative Workshop to be held in Washington, DC on July 24-26, 2013. The focus of the workshop will be to engage all member institutions in our recently

awarded NSF WIDER grant and in the development of an AAU STEM Network. These avenues will enable all AAU member institutions to continue their engagement with the AAU STEM Initiative. It is clear from the concept papers that a large number of our institutions are serious about advancing efforts to reform STEM teaching and learning, and we wish to maintain this momentum.

Please address any questions to Emily Miller, Project Manager, AAU Undergraduate STEM Education Initiative at emily.miller@aau.edu.

AAU STEM PROJECT SITE CONCEPT PAPERS **UNIVERSITY NAME:** Click here to enter text.		
CATEGORY	**COMMENTS** Use the comments section to provide general thoughts about your ratings for a particular category.	**SCALE** 1=Low 2=Medium 3=High
CATEGORY I: OVERALL PROGRAM OBJECTIVE/GOALS *The goals for the proposed project (whether new or preexisting) are clearly defined to advance the core elements of the framework.*		
CATEGORY II: TOP DOWN/BOTTOM UP INVOLVEMENT *The proposed project identifies (whether by name or title) administrators, faculty, staff, or student groups that have made commitments to participate in the execution of the project and their designated role.*		
CATEGORY III: DEGREE OF FACULTY ENGAGEMENT *The proposed project includes a high degree of faculty involvement (which may include strategies to engage contingent faculty, graduate assistants, and teaching assistants)*		

CATEGORY IV: INSTITUTIONAL EFFORT/RESOURCES *The institution will commit some degree of resources (e.g. funding, facilities, faculty/staff time) above and beyond AAU seed funding.*		
CATEGORY V: SUSTAINABILITY *The proposal clearly articulates a plan to sustain their proposed project beyond the term of the AAU STEM Initiative.*		
CATEGORY VI: LIKELIHOOD TO FACILITATE ORGANIZATIONAL CHANGE *Elements of the proposed project indicate (e.g. rewards, incentives, policies) that meaningful change is likely.*		
CATEGORY VII: FEASIBILITY *The project is designed in a manner that is feasible to execute within the bounded timeframe, with seed support from AAU, and with the institution's committed resources.*		

CATEGORY VIII: EVALUATION & ASSESSEMENT *The institution is committed to developing benchmarks and measures to evaluate the project and share this data with AAU.*		
ADDITIONAL COMMENTS/QUESTIONS:		
OVERALL RATING (Scale: 1 = Low; 2 = Medium, 3 = High):		

AAU Undergraduate STEM Education Initiative

AAU STEM Project Sites

Flex Travel Grant Application

To foster inter-campus communication we are making available a Flex Travel Grant. These small grants—up to $1000—can be used to help cover the costs of sending one or more team members to other campuses (project site or non-project site) or to host an expert or leader at the home your campus. We will accept one proposal per project site on a rolling basis. Expenses are subject to AAU's travel reimbursement policy. Recipients of the Flex Travel Grants will be required to submit a one- or two-page narrative describing the impact of the grant on the project. This paper is due one month after visiting another campus or hosting an individual on your campus.

Please give a brief description of the activity for which you seek support.

How does the proposed activity contribute to the advancement of the AAU STEM Project?

Budget

Project Site Annual Report Requests

INTERIM REPORT

Due Date: June 30, 2014
Reporting Period: August 1, 2013 – May 31, 2014

Year 1 Activities and Benchmarks

Please respond to the following questions in relationship to the information provided in the plan of work.

1. **Activities to Date:** Please provide a review of the project site activities during the preceding subaward period. (750 words or less)

2. **Annual Benchmarks:** Please provide a description of progress toward annual benchmarks as well as an assessment of progress made on larger, ongoing outcomes of the project. (750 words or less)

3. **Challenges and Strategies:** Please share challenges encountered in launching the project and strategies used to address these challenges. (750 words or less)

4. **Evaluation:** Please indicate your plans to assess: 1) faculty teaching attitudes and practices, 2) institutional culture with respect to evidence-based teaching, and 3) student outcomes data (learning, persistence, retention in STEM fields, etc). If you have collected data to measure the impact of actions in any of these areas, please provide a summary of key findings. (750 words or less, attachments accepted for data analysis)

5. **Institutional Commitment:** Consistent with AAU's expectations for project sites, how are you meeting the institutional commitment (not strictly in dollars)? We are interested in knowing if fundraising for teaching and learning is part of your campuses capitol campaign or other fundraising efforts? (750 words or less)

6. **Changes to Plans of Work:** Please provide an explanation of any major changes to the plan of work. (750 words or less)

Reflection

AAU is interested in understanding the motivation to reform undergraduate STEM education on your campus. Please reflect back to when AAU announced the Undergraduate STEM Education Initiative and sent a request for project site concept papers, what activity did that prompt on your campus? How is that connected to your current project? (1500 words or less)

Budget

Report encumbrances for AAU subaward dollars for the subaward period.

INTERIM REPORT

Due Date: June 30, 2015
Reporting Period: June 1, 2014 – May 31, 2015

Year 2 Activities and Benchmarks

Please respond to the following questions in relationship to the information provided in the plan of work and modifications reported in the Year 1 interim report.

1. **Activities to Date:** Please provide a review of the project site activities during this reporting period. (750 words or less)

2. **Annual Benchmarks:** Please provide a description of progress toward annual benchmarks as well as an assessment of progress made on larger, ongoing outcomes of the project. (750 words or less)

3. **Challenges and Strategies:** Please share your predictions as to whether your institution will achieve the project goals, as well as a rationale for why or why not. (750 words or less)

4. **Evaluation:**

    a. If you have collected information beyond the AAU baseline data request to assess: 1) faculty teaching attitudes and practices, 2) institutional culture with respect to evidence-based teaching, and/or 3) student outcomes data (learning, persistence, retention in STEM fields, etc.), please provide a summary of key findings. (750 words or less, attachments accepted for supplemental reports or analysis)
    b. The Helmsley Charitable Trust is interested in understanding the number of courses, faculty members, and students influenced by projects. Please complete the enclosed chart to provide this information.

5. **Institutional Commitment:** Consistent with AAU's expectations for project sites, what evidence indicates institutional commitment to your efforts? Among the issues you may address are changes in the role of teaching in annual review/contract renewal/promotion and tenure processes as well as resources. How is the AAU STEM project influencing these efforts, if at all? (1500 words or less)

6. **Changes to Plans of Work:**

    a. Please indicate whether or not your university will request a no cost extension for the project. Extensions will be granted up to December 31, 2016.
    b. Please indicate any modifications to the plan of work as well as an explanation for it. (750 words or less)

Institutionalization

AAU is interested in understanding the spill-over effects beyond the AAU STEM Initiative seed-

funded project. How has the AAU STEM project leveraged other institutional work that is complementary? How does the AAU STEM project fit with other projects (existing or new)? (1500 words or less)

Budget

Report encumbrances for AAU subaward dollars for this reporting period.

INTERIM REPORT

Due Date: July 29, 2016
Reporting Period: June 1, 2015 – May 31, 2016

Year 3 Activities and Benchmarks

Please respond to the following questions in relationship to the information provided in the plan of work and modifications reported in the Year 1 interim report.

1. **Activities to Date:** Please provide a review of the project site activities during this reporting period. (750 words or less)

2. **Annual Benchmarks:** Please provide a description of progress toward annual benchmarks as well as an assessment of progress made on larger, ongoing outcomes of the project. (750 words or less)

3. **Evaluation:**
    a. If you have collected information beyond the AAU baseline data request to assess: 1) faculty teaching attitudes and practices, 2) institutional culture with respect to evidence-based teaching, and/or 3) student outcomes data (learning, persistence, retention in STEM fields, etc.), please provide a summary of key findings. (750 words or less, attachments accepted for supplemental reports or analysis)
    b. We are interested in understanding the number of courses, sections, faculty members, and students influenced by projects. Please complete the enclosed chart to provide this information.

4. **Institutional Commitment:**
    a. Consistent with AAU's expectations for project sites, what evidence indicates institutional commitment to continue your initial efforts? (750 words or less)
        i. Continue with your effort beyond the original time frame
        ii. Evidence that what you have done to date is now or is becoming instutionalized
    b. Describe changes in the role of teaching in annual review/contract renewal/promotion and tenure processes. (750 words or less)

5. **Systemic Change:** AAU is interested in understanding the spill-over effects beyond the initial AAU STEM Initiative seed-funded project. (2000 words or less)

    a. Identify additional evidence of institutional commitment for long-lasting change such as resource allocations or support for new positions/units.
    b. Evidence of dissemination of reform beyond the original project scope of work in the following areas:
        i. Additional courses or sections within target courses
        ii. Additional programs and departments and colleges/schools beyond those initially involved in the project
        iii. Additional instructional staff beyond those originally involved

c. How has the AAU STEM project leveraged other institutional work that is complementary?
d. How does the AAU STEM project fit with other projects (existing or new)?

6. **Budget:** Report encumbrances for AAU sub-award dollars for this reporting period.

FINAL TECHNICAL REPORT

Due Date: March 31, 2017
Reporting Period: August 1, 2013 – December 30, 2016

Reflections and Outcomes

As AAU works to continue to understand the aggregate impact of the AAU STEM Project Sites and prepare a summative report that profiles the strategies used by the Project Sites to reform undergraduate STEM teaching and learning as well as the related outcomes, please respond to the following questions. AAU askes for responses to reflect on the specific project with consideration of the larger university context this project was advanced.

1. **Student Learning:**
   a. What information have you collected to assess student outcomes data, such as student learning, persistence, retention in STEM fields, etc.? Based on this information, what had an impact on student learning on your campus? Please provide a summary of key findings and indicate any recent publications that are specific to student learning outcomes. (1000 words or less, attachments accepted for citations, supplemental reports or analysis)

2. **Institutional Commitment:**
   a. Now that the project is coming to a close, what evidence exists of institutional commitment to continue your efforts going forward? How was institutional commitment exhibited during the project? Is the institution more integrated in its thinking about improving STEM education as compared to before? Also, what is your perception of AAU helping to foster institutional commitment? (750 words or less)
   b. Describe changes in the role of teaching in annual review/contract renewal/promotion and tenure processes. (750 words or less)

3. **Systemic Change:** AAU is interested in understanding the spill-over effects beyond the initial AAU STEM Initiative seed-funded project. (2000 words or less)

   a. Identify additional evidence of institutional commitment for long-lasting change such as resource allocations or support for new positions/units.
   b. Evidence of dissemination of reform beyond the original project scope of work in the following areas:
      i. Additional courses or sections within target courses
      ii. Additional programs and departments and colleges/schools beyond those initially involved in the project
      iii. Additional instructional staff beyond those originally involved
   c. How has the AAU STEM project leveraged other institutional work that is complementary? How does the AAU STEM project fit with other projects (existing or new)?

Department Course Level Summary

Department:

Who to contact if AAU has questions:

Contact Email:

Contact Telephone Number:

Use enrollment at census date, often called "10-day," for the term.

Course Name	Course Number	Term Offered	Teachers						Enrollment				
			Faculty			Instructors	Graduate Assistants	UG Assistants	First year	Sophomore	Junior	Senior	Graduate
			Tenured	Tenure Track	Not Tenure Track								
			N	N	N	N	N	N	N	N	N	N	N
Individuals not teaching Spring 2014, Fall 2013, or Summer 2013	N/A	N/A							N/A	N/A	N/A	N/A	N/A

(please continue the table as needed to completely list all courses offered by the department)

Project Site Data Requests and Data Collection Instruments

QUESTIONS AROUND WHICH TO DETERMINE BASELINE DATA MEASURES

Pedagogy—*Pedagogy refers to the method and practice of teaching. Much, but certainly not all, of pedagogy occurs in the classroom, and the main actors in changing pedagogical practices are faculty and students.*

- What level of instructional staff and faculty teach STEM courses, and at which level? How large are those courses?
- What instructional practices are the faculty members who teach STEM courses using in the classroom? And how many students are exposed to these practices?
- What are faculty attitudes toward using evidence-based instructional practices?

Scaffolding—*The notion of scaffolding refers to the supports, including a sense of community, necessary to first incubate and then sustain evidence-based teaching.*

- What opportunities for professional development related to instruction are open to faculty, and to what extent are they taking advantage of these opportunities?
- What departmental and campus resources exist to support faculty in efforts to improve their instruction, and to what extent are faculty utilizing these resources?
- What are administrators' (department chairs, Deans, senior administrators) attitudes towards use of evidence-based instructional practices and the importance of teaching?

Cultural Change—*Sustainable change requires cultural change, and faculty members live in at least two cultures: an institutional culture and a disciplinary culture.*

- What role does teaching play in promotion and tenure decisions in the relevant departments or schools at the university? What are perceptions of this?
- What is the status of teaching and learning infrastructure (e.g., facilities, technology) in terms of facilitating the use of evidence-based teaching practices?

Student Outcomes—*While not a section of the Framework, we are interested in the effects of projects on student outcomes like learning, progress, and retention. While changes in student outcomes can be attributed to multiple factors, it is important to consider, to the extent possible, the role of faculty teaching practices. AAU considers these data specific to individual project sites and important to local evaluation of the reform efforts.*

- How are students doing in STEM courses in terms of progression/retention/completion?
- How are students doing in STEM courses in terms of learning?
- What are student attitudes toward the use of evidence-based instructional practices?

MEMORANDUM

ASSOCIATION OF AMERICAN UNIVERSITIES
1200 NEW YORK AVENUE NW, SUITE 550, WASHINGTON, D.C. 20005
Phone: 202-408-7500 Fax: 202-408-8184
www.aau.edu

To: Metrics and Evaluation Working Group - AAU STEM Initiative

From: Tobin Smith, Vice President for Policy, AAU

Emily Miller, Project Manager, AAU Undergraduate STEM Education Initiative

Date: September 18, 2013

Subject: Request for Feedback on Baseline Measures and Metrics

Background

Metrics and evaluation are key components of the AAU Undergraduate STEM Education Initiative. AAU has obtained an NSF grant to work on metrics broadly; additionally, we are interested in helping the eight project sites track the progress of their reform efforts as well as evaluating the overall impact of the AAU initiative. Over the coming year, and with your help, AAU will:

1. Develop a set of baseline measures that project sites, and other institutions, may use to better understand the current status of teaching and learning and to begin documenting progress. These measures will align with the Framework for Systemic Change in Undergraduate STEM Teaching and Learning, which was earlier produced by AAU in close consultation with its STEM advisory committee and with campuses. Integrated with the development and collection of these baseline measures, AAU will conduct site visits at each of the eight project sites to allow a more qualitative evaluation of the campus climate and set a baseline for progress. These initial visits are intended to inform local evaluation and to aid in an overall assessment of the AAU Initiative.

2. Develop a more comprehensive set of measures and metrics, also mapped to the framework that will be disseminated to AAU campuses and beyond. This set of measures and metrics, possibly in the form of a matrix, will provide a comprehensive and customizable way to measure progress along the specific elements identified in the framework.

We view this working group as essential to helping us achieve these two important goals this year.

Request

We have developed both a draft list of baseline questions for campuses (**Appendix A**) and a document to structure our initial campus site visits (**Appendix B**). Your feedback on each of these documents is requested, and will aid us moving the thinking in these documents forward to actionable plans.

For Appendix A: For each question, we've bulleted some ideas for how the information might be collected*3* and who would collect it, but many issues remain unresolved. We would like to know your impressions of the questions themselves (are they the right ones, likely to be useful both to campuses and to AAU? are we missing anything? which are most/least important?) as well as the feasibility of collecting the information (are the proposed tools/instruments the best way to answer each question? are there other instruments you'd suggest or alternative ways of asking for the data?).

One concern of ours is uniformity across campuses, and we would like your opinions on this as well. How important is it for the same information on each question to be collected from different institutions? What is the sample for each of the measures/metrics? (e.g., for surveys of faculty instructional practices, is the sample: a) only faculty directly participating in the project, b) all faculty in departments participating in the project, c) all STEM faculty at the institution, or d) something else?) Is it OK if the sample varies between institutions? Ideally, we would like to be able to aggregate responses to at least some of the questions. Do some seem more feasible than others for this purpose?

For Appendix B: We are soliciting general feedback, thoughts, and comments on Appendix B.

Please provide your comments to Emily Miller, Project Manager, AAU Undergraduate STEM Education Initiative at emily.miller@aau.edu by **Wednesday, October 2, 2013.** Once we have incorporated your feedback and refined these documents, we will share them with project sites and begin to discuss collection.

3 We reference a number of national surveys as well as some instruments not yet widely available, including the PULSE Vision & Change rubrics (http://bit.ly/188ILRu), the Teaching Practices Survey designed by Carl Weiman and Sarah Gilbert (http://www.cwsei.ubc.ca/Files/CWSEI_TeachingPracticesSurvey.pdf), the Bayview Alliance Survey (http://fluidsurveys.usask.ca/s/BVAsurvey_version1/), and surveys under development such as Henderson et al (http://www.nsf.gov/awardsearch/showAward?AWD_ID=1256505&HistoricalAwards=false).

APPENDIX A

Questions For Baseline Data Collection by Framework Component

Pedagogy—*Pedagogy refers to the method and practice of teaching. Much, but certainly not all, of pedagogy occurs in the classroom, and the main actors in changing pedagogical practices are faculty and students.*

1) What level of instructional staff and faculty teach STEM courses, and at which level? How large are those courses?
   - Whoever does scheduling in a school or department could collect and report this.
   - The question is how to delimit the courses we are interested in (all STEM courses? Gateway courses? Certain majors? Only those in departments participating in the project site?) We recommend restricting to departments participating in the project (for this question and throughout to the extent it makes sense).
   - Are we interested in faculty/instructor demographics?

2) What instructional practices are the faculty members who teach STEM courses using in the classroom? And how many students are exposed to these practices?
   - Could be collected by
     - Individual faculty/instructors through the Wieman and Gilbert or BVA Surveys (but the number of students exposed would have to be an auxiliary collection)
     - The HERI Faculty survey has started to ask about instructional practices, but it is highly doubtful it could be used for purposes here.
     - Department chairs based on their own knowledge (both of these first two options are self-reported)
     - Site visit observation (not feasible for overall numbers and percentages, but could be useful for fidelity to instructional practice)
   - Once again, the question is what is the universe of courses for which these data should be collected, and need it be the same across institutions?

3) What are faculty attitudes toward using evidence-based instructional practices?
   - Could be collected by
     - PULSE rubric might be useful here (self-report or external score)
     - Teaching climate and faculty teaching practices instruments by Henderson et al.
     - Create own survey to ask wide group of faculty
     - Ask in faculty focus groups with those highly committed to instruction and those not so
     - Wieman and Gilbert does NOT ask about attitudes
     - BVA asks some questions about attitudes but summary information only, not qualitative enough

Scaffolding—*The notion of scaffolding refers to the supports, including a sense of community, necessary to first incubate and then sustain evidence-based teaching.*

4) What opportunities for professional development related to instruction are open to faculty, and to what extent are they taking advantage of these opportunities?

- Opportunities could be collected by
    - Website review or documentation by site visit team
    - Self-reporting by institution
    - PULSE rubric might be useful here
- Extent of use is more problematic: get lists from project sites when they have activities, or any on campus lists, self-reported by faculty.
- Should these professional development activities explicitly relate to evidence-based instruction, or should the categorization be more open?

5) What departmental and campus resources exist to support faculty in efforts to improve their instruction, and to what extent are faculty utilizing these resources?
    - Could be collected by
        - Website review or documentation by site visit team
        - Self-reporting by institution
        - PULSE rubric might be useful here
    - Extent of use is more problematic – get lists from project sites when they have them, or any on campus lists, self-reported by faculty

6) What are administrators' (department chairs, Deans, senior administrators) attitudes towards use of evidence-based instructional practices and the importance of teaching?
    - It's not clear that an existing survey addresses this question
    - The PULSE rubric has sections on administrative and institutional vision, attitude, and action, which might be useful but probably shouldn't be scored internally
    - Project team or site visit team review will probably be necessary

Cultural Change—*Sustainable change requires cultural change, and faculty members live in at least two cultures: an institutional culture and a disciplinary culture.*

7) What role does teaching play in promotion and tenure decisions in the relevant departments or schools at the university? What are perceptions of this?
    - Could be collected by
        - Website review or documentation by site visit team
        - Self-reporting by institution
        - PULSE rubric might be useful here
    - BVA has some very general questions on faculty perceptions of these issues. Perceptions could also be collected via site visit focus groups.

8) What is the status of teaching and learning infrastructure (e.g., facilities, technology) in terms of facilitating the use of evidence-based teaching practices?
    - Could be collected by
        - PULSE rubric has sections focused on infrastructure by use in self-reporting or by site visit team
        - Project team or site visit team review will probably be necessary

Student Outcomes—*While not a section of the Framework, we are interested in the effects of projects on student outcomes like learning, progress, and retention. While changes in student outcomes can be attributed to multiple factors, it is important to consider, to the extent possible, the role of faculty teaching practices. AAU considers these data specific to individual project sites and important to local evaluation of the reform efforts. We will encourage project sites to pursue some form of student outcomes assessment.*

9) How are students doing in STEM courses in terms of progression/retention/completion?
   - Project sites collect this if it makes sense to the substance of the individual projects, especially if the project focuses on a course progression
   - How much of this information can be collected overall?
   - Is it important that the same measures be collected by each site?
   - The CUSTEMS survey may be worth considering.

10) How are students doing in STEM courses in terms of learning?
   - While this question is important, the tie-in between learning outcomes and evidence-based instruction have been well documented and form the basis for this project. However, if project sites or AAU institutions are collecting student learning outcomes in STEM courses, we welcome knowing the relationship to type of instructional staff or faculty teaching those courses and instructional practices used in those courses.

11) What are student attitudes toward the use of evidence-based instructional practices?
   - The NSSE survey gets to some this somewhat, but some AAU institutions do not administer it at all, and others only do it every few years
   - The HERI freshman and senior surveys may be worth a look on this, but it seems unlikely they get at it.
   - The SERU survey may get to some of this. 20 AAU institutions (19 of them are public) participate.
   - Collection could be through focus groups on site visits; however, it seems unnecessary to collect this for the purposes of this project.

APPENDIX B

Campus Site Visits

Purpose: To gather baseline information about the readiness of the Project Site to implement the proposed reform program, which includes the campus climate for change in undergraduate STEM teaching and learning, support by campus and unit leadership, and the project team's plan for implementation.

Site Visit Agenda: (1) Interviews with project team leadership and (2) Interviews with relevant department chairs, deans, and senior administrators (e.g. Provost).

Key Questions:

- What is the current campus climate for change in undergraduate STEM teaching and learning? (See, PULSE Vision and Change rubric, section on climate for change; Teaching climate instrument by Henderson et al)
- What activities, types of support, and the like is the institution, college, and department providing to help the project succeed?
- What is the current state of readiness for the AAU project on the campus?
- What individuals should we also interview for a perspective on project readiness?

Project Team Leadership

- Proposed Project
    - What is the plan for implementation?
    - What is the current progress toward implementing the project?
    - With the launch, have they confronted unanticipated challenges or opportunities? Have changes occurred to the plan / scope of work? Why? How are they adapting?

Relevant Department Chairs and Deans

- What is their buy-in/commitment to their campus project?
- What is their sense of broad-based faculty support within the departments for the project?
- How do they perceive faculty attitudes toward using evidence-based instructional practices?
- What is their personal belief about the importance of reforms in undergraduate STEM educational reform?
- What is the status of teaching and learning infrastructure (e.g., facilities, technology) in terms of facilitating the use of evidence-based teaching practices?

Provosts

- Considering departments are the locus for change, what are institutional efforts to support changes to teaching within the STEM departments?

PROPOSED AAU BASELINE DATA COLLECTION

RATIONALE AND OBJECTIVES

Dear AAU Project Site Leaders,

Below is AAU's proposed plan for collecting baseline data from each project site. AAU will use these data to describe the individual and aggregate impacts of the projects to our funders, as well as to policymakers and education leaders. Beyond facilitating these objectives, AAU intends baseline data collection, and subsequent updates of these elements, to be useful for project sites. We aim to complement project-specific data collection and evaluation efforts, as well as to provide an opportunity for project sites to benchmark themselves against others as appropriate.

We wish to avoid imposing excessive burden on project sites. In the proposal below, we have tried to minimize collection efforts, and have borrowed from existing instruments and tools, including the Bayview Alliance Survey and PULSE Vision & Change Rubric, to the extent practical.

We hope to collect some common elements from all project sites. However, as spelled out below, we do not believe it makes sense to collect the same information in all cases. Our proposed sample, except when specified otherwise, is *all departments participating in the project*.

To ensure our proposal is clear, we describe it below in two ways:

1. In terms of the questions AAU seeks to answer, and the information we propose collecting for each; and
2. In terms of data reporting responsibilities for specific people on campus (i.e., project site leaders, chairs of participating departments, instructors in participating departments).

Finally, since much of what we hope to collect comes directly from a survey of instructors, we have included the draft survey instrument.

We look forward to discussing this proposal with you on our conference call on Thursday, November 7 from 1:00 to 2:30 ET.

BASELINE DATA REQUIREMENTS BY QUESTION

Pedagogy—*Pedagogy refers to the method and practice of teaching. Much, but certainly not all, of pedagogy occurs in the classroom, and the main actors in changing pedagogical practices are faculty and students.*

1) What level of instructional staff and faculty teach STEM courses, and at which level? How large are those courses?

Who Responds	What Information Is Needed

Chairs of each department participating in the project.	Departments provide a list of each course offered during the previous calendar year (i.e. Spring, Summer, and Fall 2013 or equivalent). For each course the following elements are provided:
	• Semester (or equivalent) course was offered
	• Course enrollment by student level (freshman, sophomore, junior, senior, graduate)
	• Number of TAs
	• Instructor demographics
	  ○ Title
	  ○ Rank (tenured, tenure-track, not on tenure-track)
	  ○ Gender
	  ○ Race and ethnicity
	
	Departments also provide a list of others classified as faculty in their department who did not teach during the past year, along with the demographic information specified above.
	
	A template will be provided that chairs can fill out.

2) What instructional practices are the faculty members who teach STEM courses using in the classroom? And how many students are exposed to these practices?

Who Responds	What Information Is Needed
All individual instructors in each department participating in the project.	Basic information about each respondent, including: • Institution • Department • Course (and specify whether it's part of the project) • Course enrollment • Demographics (from question 1: gender and race will be optional answers) Modified from BVA Survey questions 3 – 11.[4]

3) What are faculty attitudes toward using evidence-based instructional practices?

Who Responds	What Information Is Needed

4 http://fluidsurveys.usask.ca/s/BVAsurvey_version1/

All individual instructors in each department participating in the project.	Modified from BVA Survey questions 1 – 2.

Scaffolding—*The notion of scaffolding refers to the supports, including a sense of community, necessary to first incubate and then sustain evidence-based teaching.*

4) What opportunities for professional development related to instruction are open to faculty, and to what extent are they taking advantage of these opportunities?

5) What departmental and campus resources exist to support faculty in efforts to improve their instruction, and to what extent are faculty utilizing these resources?

Who Responds	What Information Is Needed
All individual instructors in each department participating in the project.	See proposed survey device.

6) What are administrators' (department chairs, Deans, senior administrators) attitudes towards use of evidence-based instructional practices and the importance of teaching?

Who Responds	What Information Is Needed
All individual instructors in each department participating in the project.	One agree/disagree question modified from PULSE Vision & Change Rubric, p. 13, Section B, Question 1 (see proposed survey device, question 12).[5] AAU will obtain additional information on this question directly from administrators through site visits.

Cultural Change—*Sustainable change requires cultural change, and faculty members live in at least two cultures: an institutional culture and a disciplinary culture.*

7) What role does teaching play in promotion and tenure decisions in the relevant departments or schools at the university? What are perceptions of this?

Who Responds	What Information Is Needed
All individual instructors in each department participating in the project.	Two yes/no/don't know questions (see survey device).
Chairs of each department participating in the project.	Provide a short (one page max) written description of the role of teaching in annual review, contract renewal, promotion and tenure processes in the department, addressing policy, practice, and perception, as well as any recent or ongoing activity.
Campus project leads.	Provide a short written description of the role of teaching in annual review, contract renewal, promotion and tenure processes on campus, addressing policy, practice, and perception, as well as any recent or ongoing activity. Also

5 http://bit.ly/188ILRu

	provide written policies on tenure and promotion as relevant. AAU will obtain additional information on this question through site visits.

8) What is the status of teaching and learning infrastructure (e.g., facilities, technology) in terms of facilitating the use of evidence-based teaching practices?

Who Responds	**What Information Is Needed**
Campus project leads.	Project leads fill out pages 11 and 12 of PULSE Vision & Change Rubric (Infrastructure Section).

Student Outcomes—*While not a section of the Framework, we are interested in the effects of projects on student outcomes like learning, progress, and retention. While changes in student outcomes can be attributed to multiple factors, it is important to consider, to the extent possible, the role of faculty teaching practices.*

9) How are students doing in STEM courses in terms of progression/retention/completion?

10) How are students doing in STEM courses in terms of learning?

11) What are student attitudes toward the use of evidence-based instructional practices?

Who Responds	**What Information Is Needed**
Campus project leads.	AAU considers these data specific to individual project sites and important to local evaluation of the reform efforts. Project sites should provide some form of information that addresses these questions. This information should focus on the intervention courses but may use other courses, older data, or students not enrolled in these courses as a control group as appropriate.

BASELINE DATA REQUIREMENTS BY CAMPUS ROLE

Who Responds	**What Information Is Needed**
All individual instructors in each department participating in the project.	1. Fill out survey device.
Chairs of each department participating in the project.	1. Encourage all instructors in the department to fill out the survey. 2. Provide information on courses, enrollments, instructors and faculty as outlined under question 1. 3. Provide a short (one page max) written description of the role of teaching in annual review, contract renewal, promotion and tenure processes in the department, as outlined under question 7. 4. Participate in site visits.
Campus project leads.	1. Coordinate overall campus response. 2. Encourage department chairs and individual instructors to complete their parts.

	3. Provide a short written description of the role of teaching in annual review, contract renewal, promotion and tenure processes on campus, as outlined under question 7. 4. Fill out infrastructure section of PULSE Vision & Change rubric, as outlined under question 8. 5. Oversee campus responses to questions 9 – 11. 6. Participate in site visits.

SURVEY DEVICE FOR INSTRUCTORS

1. **Basic and demographic information**

- Institution (short text field)
- Department (short text field)
- Course name and number: if you taught more than one course, please choose the most foundational course (short text field: BVA question 3)
- Is the course an intervention course (yes/no/don't know)
- Total course enrollment (short text field: BVA question 4)
- Are you: (tenured/on the tenure track/not on the tenure track)
- Your title: (short text field)
- (optional) Your gender: (dropdown: Male/Female/Prefer not to answer)
- (optional) Race and ethnicity (dropdown: American Indian or Alaska Native, Asian, Black or African American, Hispanic, Native Hawaiian or Other Pacific Islander, White, Two or more races, Nonresident alien, Prefer not to answer)

2. **Please rate the following statements related to undergraduate teaching by their level of importance**:

- Understanding how students learn a particular subject
- Promoting interest in the subject matter
- Understanding what motivates students to learn the course material
- Conveying enthusiasm for the subject
- Providing relevant, real life examples of the concept you are teaching

[BVA Question 1. Instructors rate on a 0 (not at all important) to 100 (very important) sliding scale.]

3. **The following are some statements about your attitudes, beliefs and approaches towards undergraduate teaching. Please rate your level of agreement with each of the statements based on your own attitudes and opinions.**

- To teach effectively requires knowing how students learn a subject and not just knowing the subject
- Learning is a social activity
- Learning can be facilitated through the use of social interaction among students
- It is important for instructors to explicitly address any preconceptions of students (cultural biases, past learning experiences, etc.) in their learning
- An instructor is responsible for engaging students in a subject
- An instructor is responsible for motivating students
- Interactive learning techniques are very helpful in teaching effectively
- Traditional lecturing is a very effective teaching method

- I regularly involve students in the learning process
- I encourage interaction/interactive learning during my class time
- I regularly review and change, as needed, my teaching techniques to match the needs of the students
- My students' success is my success
- Even without more resources, I believe it is possible to improve the effectiveness of my teaching An instructor is responsible for preparing students for their future career
- Problem-based learning is a very effective way to teach a student
- An instructor has been successful if students retain the important concepts of the class for the long-term
- An instructor is responsible for providing students with useful feedback
- I regularly interact with my students outside of the class/lecture

[BVA Question 2: For each one, rate as: don't know/strongly disagree/disagree/neutral/agree/ strongly agree]

4. **The format of the course you identified above includes (check all that occurred in a typical week):**
- Face-to-face classroom or lab setting
- Face-to-face classroom or lab setting with instructor-facilitated technology use (computer modules, etc.)
- Hybrid learning experience: face-to-face combined with online learning experiences
- Completely online learning experience with synchronous learning activities
- Completely online learning experience using only asynchronous learning activities

5. **Pedagogical techniques used in the course you identified above include (check all that occur in a typical week):**
- Lecture
- Lab /studio
- Tutorial/seminar/reading group/synchronous discussion posts – instructor facilitated
- Field-based (field work)
- Small group discussion of students working together (including asynchronous small groups of students working together)
- Group collaboration sessions (in-person or online)
- Real-time interactions to determine whether students are understanding the topic (such as clickers, two-minute memos)
- Other techniques not listed here (please specify)

[BVA Question 5: checkboxes]

6. **Think about a recent typical week in your identified course, please drag the marker to indicate the approximate percentage of scheduled class-time spent on the following:**
- Lecture
- Ask for and respond to student questions, whole class discussion, or small group discussion
- Informational video or demonstrations to illustrate concepts related to subject matter
- Video, demonstrations, or simulations to prompt discussion or analysis
- Writing

- Students reading each other's work and providing evaluative feedback
- Student presentations
- Assessment (e.g. test or quiz)
- Peer-Led Team Learning (including peer-supported supplemental instruction or peer-coordinated study groups)
- Problem solving activities or hands-on work (e.g. lab experiments, practice, studio time, field work, etc.)
- Other (e.g. guest speaker, role-playing, etc.)

[BVA Question 7: sliding scale from 0% to 100% for each one.]

7. **Further detail on in-class activities (check all that occurred in a typical week):**

- Illustration (use of real-world examples)
- Case study (more extended version of illustration)
- Discussion about why material is useful and/or interesting from students' perspective
- Short writing at end of class period (students answering questions, reflecting on lecture and/or learning, etc.)
- Collected responses from all students with or without technology (e.g. raising hands, clickers) Other in-class activities (please specify)

[BVA Question 8: checkboxes]

8. **Supporting materials and sources provided for students for the purposes of the course identified above (check all that occurred in a typical week):**

- Goals or learning objectives articulated to students
- Readings from texts written for college students and college courses
- Articles or chapters from scholarly literature
- Readings from popular press or journalist accounts
- Lecture notes
- Worked examples or other sample assignments/papers/exams given as models
- Animations or simulations; film, video, or audio materials; websites or internet sources
- Student wikis, discussion boards, blogs, or journals with little or no contribution from you
- Student wikis, discussion boards, blogs, or journals WITH significant contribution from you or your TA
- Other supporting materials (please specify)

[BVA Question 6: checkboxes]

9. **Please check all learning activities and assignments that occurred outside of class-time in a typical week:**

- Students read material and complete assignments that are reviewed by you or a TA shortly before class or at beginning
- Short writing after a class session (students answering questions, reflecting on lecture and/or lecturing, etc.)
- Students reading each other's work and providing evaluative feedback
- On-line feedback from students and/or questions about class sent to instructor’s e-mail
- Problem solving activities or hands-on work (e.g. laboratory experiments, field work, etc.)

- Student-designed experiment, project, etc.
- Problem sets/homework that contributed to course grade
- Suggested problem sets/homework that did NOT contribute to course grade
- Research paper or project
- Worked collaboratively on group assignment
- Worked collaboratively on an assignment with individual student products
- Other learning activities or assignments (please explain)

[BVA Question 9: checkboxes]

10. **Feedback to students; including grading policies (Check all that occurred in a typical week)**
- Students saw assignments with feedback before grading or with opportunity to redo to improve mark
- Students saw marked assignments or exams
- Students saw answer key or rubric for scoring open-ended answers
- Students explicitly encouraged to meet individually with you
- Other feedback to students (please explain)

[BVA Question 10: checkboxes]

11. **Other (Check all that occurred either in-class or outside of class-time, in a typical week):**
- Assessment given at beginning of class to assess background knowledge
- Pre-Post assessment instrument (i.e. knowledge measure before and after class)
- Opportunities for students' self-evaluation of learning
- Students provided with opportunities to have some control over their learning, such as choice of topics for course, paper, projects, assessment methods, etc.
- Instructor-TA meetings to get feedback on student learning and provide guidance for instruction

[BVA Question 11: checkboxes]

12. **On campus, including institutional and departmental, professional development opportunities: please indicate in your response each item's existence and your level of participation.**
- Teaching development events (i.e. talks, workshops) specifically for instructors
- Teaching development opportunities and resources for new instructors
- Peer evaluations of teaching
- A mentor or other person to go to for advice about teaching
- A center or unit focused on teaching and learning
- Resources exist for instructors to improve their teaching methods
- Other (please specify)

[Choices for each are: Yes, and I use regularly/Yes, and I use occasionally/Yes, and I have not used/No, but I would use if available/No, and I would not use/Don't Know]

13. **Off campus, including from professional societies and national associations, professional development opportunities: please indicate in your response each item's existence and your level of participation.**

- Teaching development events (i.e. talks, workshops) specifically for instructors
- Teaching development opportunities and resources for new instructors
- Peer evaluations of teaching
- A mentor or other person to go to for advice about teaching
- A center or unit focused on teaching and learning
- Resources exist for instructors to improve their teaching methods
- Other (please specify)

[Choices for each are: Yes, and I use regularly/Yes, and I use occasionally/Yes, and I have not used/No, but I would use if available/No, and I would not use/Don't Know]

14. **The departmental administration recognizes the importance of teaching and are supportive of faculty improving and changing teaching practices.** (agree/disagree)

[Modified from PULSE Vision & Change, Climate for Change, B.1.]

15. **The campus administration recognizes the importance of teaching and are supportive of faculty improving and changing teaching practices.** (agree/disagree)

[Modified from PULSE Vision & Change, Climate for Change, B.1.]

16. **Instructors in my department believe that teaching improvement is part of their job.** (yes/no/don't know)

17. **Evidence of effective teaching is an important part of the reward process (e.g., annual review, salary increases, promotion, tenure).** (yes/no/don't know)

PROPOSED AAU BASELINE DATA COLLECTION

Dear AAU Project Site Leaders,

Thank you all for your feedback on the earlier iteration of proposed baseline data collection. You will see that, in this revised request, we have significantly modified what we are asking for, including shortening and simplifying the survey for instructors, as well as much more explicitly linking the questions we ask to the AAU *Framework for Systemic Change in Undergraduate STEM Teaching and Learning*, which your campuses helped to develop. That being said, we believe that a survey of faculty practices and attitudes among all course instructors in participating departments is essential to achieving our objectives.

After our phone call last month, we took a step back and thought long and hard about why we are collecting these data. We feel it is important to articulate to you what we are and are not attempting to achieve through this data collection:

First, we will use these data to provide requested information to our funder (The Helmsley Trust). They are interested in the progress made on individual campuses, but they are also interested in being able to understand the progress made across the project sites. With eight different institutions and projects focusing on a variety of departments, courses, and emphases, you can understand that this is challenging. But it is part of what motivates us to collect some common data across project sites.

Second, AAU spends a great deal of time in discussions with federal policymakers and leaders of other national associations, and it is essential we be able to articulate the results of the initiative in terms that fit into those discussions. This includes aggregate results that are appropriate given the context of those national conversations.

We recognize the shortcomings of faculty self-reporting (and indeed, we hope the survey can be used by institutions along with classroom observations to assess the fidelity of such self-reporting) but those shortcomings do not negate the usefulness of such information for our stated purposes.

It's also important for us to tell you what we are not planning to do with the data. We are not planning to benchmark or compare institutions directly to one another to assess progress or for any other reason. We encourage individual institutions to use these data for those purposes to the extent they deem appropriate and are willing to share information with one another, but that is not a role AAU will play.

Finally, we are not, and we hope you will make clear to your course instructors that you are not, planning to use survey results in job performance evaluations. Being clear about this will encourage candid responses.

The revised survey instrument maps closely to our Framework, and borrows from existing instruments, most notably the Teaching Practices Instrument devised by scholars at Western Michigan University.[6]

6 Teaching Practices Instrument; Beach, A.L., Henderson, C., Walter, E. M., & Williams, C. Western Michigan University, with support from NSF WIDER: EAGER #1256505

To address the questions AAU seeks to answer, we intend to collect some common elements from all project sites. Beyond this baseline data request, AAU will ask project sites to provide additional information in their annual reports. Integrated with the collection of these baseline measures and annual reports, AAU will visit each of the eight project sites to allow a more qualitative evaluation of project implementation and progress, as well as the effects of the reform effort. AAU project team members have already visited three of the eight project sites.

BASELINE DATA REQUIREMENTS BY CAMPUS ROLE

Who Responds	What Information Is Needed
All individual instructors in each department participating in the AAU STEM Initiative project.	1. Fill out survey instrument.
Chairs of each department participating in the AAU STEM Initiative project.	1. Encourage all instructors in the department to fill out the survey. 2. Provide information on courses, enrollments, instructors and faculty (See attached template). 3. Provide a short (one page max) written description of the role of teaching in annual review, contract renewal, promotion and tenure processes in the department, addressing policy, practice, and perception, as well as any recent or ongoing activity. 4. Participate in site visits.
Campus project leads.	1. Coordinate overall campus response. 2. Encourage department chairs and individual instructors to complete their parts. 3. Fill out infrastructure section of PULSE Vision & Change rubric (See, attached rubric section, pp. 11-12). 4. Submit annual report to AAU. 5. Coordinate and participate in site visits.

SURVEY INSTRUMENT FOR INSTRUCTORS

For all questions, please answer for the lowest level, highest enrollment course you have taught within the past year.

1. Personal information.

a. Institution:
b. Department:
c. Course Enrollment:
d. Course Name and Number:
e. Is the course an AAU intervention course? ___ Yes ___ No
f. How are most decisions about teaching practices in the course made?
   __ I make most decisions
   __ I'm part of a team that makes most decisions
   __ Somebody else makes most decisions
g. Are you:
   __ Faculty-Tenured
   __ Faculty-On Tenure Track
   __ Faculty-Not On Tenure Track
   __ TA/Graduate Student
   __ Other Non-Faculty

2. Please rate the following statements related to undergraduate teaching by their level of importance:

- Develop learning goals and make learning goals explicit to students.
- Understand how students learn a particular subject.
- Connect assignments to learning goals throughout the course.
- Engage students as active participants in learning.
- Promote interest in the subject matter.
- Understand what motivates students to learn the course material.
- Convey enthusiasm for the subject.
- Develop and utilize tools to assess student learning.
- Use data on student learning to refine teaching practice.
- Provide relevant, real life examples of the concept you are teaching.
- Ensure that STEM courses are inclusive of all students.
- Implement practices known to enhance students' self-efficacy in learning the subject matter.

[Rate on a 5 point scale – not at all important, slightly important, neutral, important, very important]

3. The following are some statements about attitudes and beliefs towards undergraduate teaching. Please rate your personal level of agreement with each of these statements based on your own attitudes and opinions.

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Don't Know
To teach effectively requires knowing how students learn a subject and not just knowing the subject.						
To teach effectively requires establishing and articulating learning objectives.						
Learning can be facilitated through the use of social interaction among students.						
It is important for instructors to explicitly address any preconceptions of students (cultural biases, past learning experiences, etc.) in their learning.						
An instructor is responsible for engaging students in a subject.						
Interactive learning techniques are helpful in teaching effectively.						
Traditional lecturing is an effective teaching method.						
Even without more resources, I believe it is possible to improve the effectiveness of my teaching.						
Problem-based learning is an effective way to teach a student.						
An instructor has been successful if students retain the important concepts of the class for the long-term.						
An instructor is responsible for providing students with useful feedback.						

4. Please indicate the degree to which the following statements are descriptive of your teaching.

	Not at all descriptive of my teaching	Minimally descriptive of my teaching	Somewhat descriptive of my teaching	Mostly descriptive of my teaching	Very descriptive of my teaching	I don't know
I guide students through major course topics as they listen and take notes.						
I design activities that connect course content to my students' lives and future work.						
I connect class activities to course learning goals.						
I provide students with immediate feedback on their work during class (e.g., student response systems, short quizzes, etc.).						
I use student assessment results to guide the direction of my instruction during the semester.						
I frequently ask students to respond to questions during class time.						
I use student questions and comments to determine the focus and direction of class discussion.						
I structure class so that students explore or discuss their understanding of new concepts before formal instruction.						
I structure class so that students regularly talk with one another about course concepts.						
I require students to work together in small groups.						
I structure problems so that students consider multiple approaches to finding a solution.						
I provide time for students to reflect about the processes they use to solve problems.						
I require students to make connections between related ideas or concepts when completing assignments.						

5. Please indicate the availability of, and your participation in, <u>on campus</u> (including institutional and departmental) professional development activities.

	Yes, and I use regularly	Yes, and I use occasionally	Yes, and I have not used	No, but I would use if available	No, and I would not use	Don't Know
Teaching development events (i.e. talks, workshops) specifically for instructors.						
Teaching development opportunities and resources for new instructors.						
Peer evaluations of teaching.						
A mentor or other person to go to for advice about teaching.						
A center or unit focused on teaching and learning within your college or school.						
A university-wide center or unit focused on teaching and learning.						
University resources exist for instructors to improve their teaching methods						
Other (please specify and indicate your level of participation)						

6. Please indicate the availability of, and your participation in, <u>off campus</u> (including professional society and national association) professional development activities.

	Yes, and I use regularly	Yes, and I use occasionally	Yes, and I have not used	No, but I would use if available	No, and I would not use	Don't Know
Teaching development events (i.e. talks, workshops) specifically for instructors.						
Teaching development opportunities and resources for **<u>new</u>** instructors.						
A mentor or other person to go to for advice about teaching.						
A cohort of scholars focused on teaching and learning.						
Resources exist for instructors to improve their teaching methods.						
Other (please specify and indicate your level of participation)						

7. My departmental administration recognizes the importance of teaching and is supportive of faculty improving and changing teaching practices.

__ Strongly Agree
__ Agree
__ Disagree
__ Strongly Disagree

8. Campus administration at my university recognizes the importance of teaching and is supportive of faculty improving and changing teaching practices.

__ Strongly Agree
__ Agree
__ Disagree
__ Strongly Disagree

9. Instructors in my department believe that teaching improvement is part of their job.

__ Strongly Agree
__ Agree
__ Disagree
__ Strongly Disagree

10. In my opinion, effective teaching plays a meaningful role in the annual review and salary processes in my college.

__ Strongly Agree
__ Agree
__ Disagree
__ Strongly Disagree

11. In my opinion, effective teaching plays a meaningful role in the promotion and tenure processes at my institution.

__ Strongly Agree
__ Agree
__ Disagree
__ Strongly Disagree

12. In your opinion, what is the quality of the evidence for effective teaching used by my college in the annual review and salary process?

__ Low Quality
__ Medium Quality
__ High Quality
__ Don't Know

13. In your opinion, what is the quality of the evidence for effective teaching used by my institution in the promotion and tenure process?

__ Low Quality
__ Medium Quality
__ High Quality
__ Don't Know

FINAL AAU BASELINE DATA COLLECTION

February 5, 2014

Dear AAU Project Site Leaders:

This document, along with attachments, contains the final request for baseline data from the eight AAU campus project sites. We thank you for your feedback. The request looks similar to the last iteration. We made some adjustments to the instructor survey in response to comments received, however, you should know that many of the suggestions we received were inconsistent across project sites (e.g., the survey questions are both too technical and not technical enough), indicating we have reached a good balancing point. We are planning to collect this information this year, and then once again in the final year of the AAU project (early 2016).

We would like to reiterate some information about how we will and will not use data collected.

- AAU will use these data to provide requested information to our funder (The Helmsley Trust). The Trust is interested in progress made on individual campuses, but also in understanding progress across the project sites. With eight different institutions and projects focusing on a variety of departments, courses, and emphases, this is a challenging endeavor, but it is part of what motivates us to collect some common data across project sites.

- AAU will use these data in aggregated form to help inform national conversations that we participate in, including with federal policymakers and leaders of other national associations.

- AAU will ***not*** use these data to benchmark or compare institutions directly to one another to assess progress or for other reasons (related to the AAU STEM Initiative or other issues). We encourage individual institutions to use these data for those purposes to the extent they deem appropriate and are willing to share information with one another, but that is not a role AAU will play.

- AAU cannot and will not use instructor survey results in evaluating instructors' job performance and we hope you will make it abundantly clear to instructors that neither will individual institutions.

We thank you for your patience during the iterative process to arrive at this final request and look forward to working with you on it. Please feel free to contact Emily Miller (emily.miller@aau.edu; 202-408-7500) with any questions.

BASELINE DATA REQUIREMENTS BY CAMPUS ROLE/CHECKLIST

Who Responds	What Information Is Needed	Deadline
All individual instructors in each department participating in the AAU STEM Initiative project.	1. Fill out survey instrument.	May 5, 2014
Chairs of each department participating in the AAU STEM Initiative project.	1. Provide information on courses, enrollments, instructors and faculty (*See attached template*). 2. Provide a short (one page max) written description of the role of teaching in annual review, contract renewal, promotion and tenure processes in the department, addressing policy, practice, and perception, as well as any recent or ongoing activity. 3. Encourage all instructors in the department to fill out the survey. 4. Participate in site visits.	Deadline for Items 1 and 2: March 17, 2014
Campus project leads.	1. Fill out infrastructure section of PULSE Vision & Change rubric (See, attached rubric section, pp. 11-12). 2. Coordinate overall campus response. 3. Encourage department chairs and individual instructors to complete their parts. 4. Submit annual report to AAU (as required by funding agreement). 5. Coordinate and participate in site visits.	Deadline for Item 1: March 17, 2014

Survey for Instructors (all instructors in departments participating in the AAU Initiative)

Who Should Receive the Survey?

Please invite all faculty and instructors including graduate students in the departments which have courses being adapted in your institution's AAU STEM Initiative. All faculty and instructors in these departments should receive the survey whether they are actively involved in the AAU STEM Initiative or not.

Content of the Survey

The survey contains 13 questions consisting of 58 items, all of which are closed-ended (i.e., they give respondents a set of answers from which to select a response). Respondents should be able to quickly advance through the survey by ticking off answers; the survey should take 20 minutes or less to complete. The survey assesses teaching practices and attitudes. The survey can be added or appended to institutional or other surveys with the limitations described below.

Survey Validation

Many of the survey questions are adapted from:

> Teaching Practices Instrument; Beach, A.L., Henderson, C., Walter, E. M., & Williams, C. Western Michigan University, with support from NSF WIDER: EAGER #1256505

Initial results of a pilot were strong and suggest meaningful data can be gleaned from these questions.

Survey Administration

Institutions are welcome to use either electronic (e.g., Surveymonkey, Qualtrics), ScanTron, or paper versions to administer the survey.

When administering the survey, instructors should have the option of choosing not to answer by leaving blank any item.

Please make it clear to instructors that their answers will not be used in performance evaluation by the department or the institution.

No questions or items can be removed. No response categories can be changed.

Questions 2 and 3 are questions that will need to be adapted by the pilot institution to reflect which departments at the institution are involved in the AAU STEM Initiative and local vernacular and categories for faculty and instructors (please include a tenure and non-tenure track differentiation).

Questions 4 through 8 must be kept together and in the same sequence.

With these constraints, pilot institutions may add questions for local use and re-sequence questions, especially to make them flow better with questions added for local use.

The survey in PDF format is attached. A Word document containing the text of the questions and response categories can be provided upon request. This text can be used to copy and paste into whatever form or system the institution chooses to administer the survey.

The survey will be administered this year (2014) and then once again in the final year of the AAU project (early 2016).

Survey Data

We ask institutions to provide AAU with the following basic information about its survey administration:

- A copy of the final survey instrument used by institution (link to electronic survey or hard copy of final survey)
- Date of launch, dates of follow up reminders (if any), and final deadline
- Names of departments in which individuals received the invitation to complete the survey
- Number of individuals receiving the invitation to complete the survey
- Paragraph describing any unusual circumstances that may have influenced survey administration at your institution (provide only if needed)
- Contact information (name, email address, telephone number) for an individual who can answer questions about survey administration and data that was collected at your institution

When survey administration is closed and final, an electronic data file (Excel, CSV) should be submitted to AAU; please remove fields that include names or email addresses. Institutions administering the survey in paper form must enter all data into an electronic format for submission to AAU; please omit individual's names if they were collected.

Departmental Template on courses, enrollments, instructors, and faculty (for department chairs)
This template provides a "snapshot" of the courses taught in the first year of funding, e.g. their enrollments and who teaches them. Each department participating in the AAU STEM Initiative should complete a copy of the attached Excel table (named "AAU Project Site Department Course Summaries.xlsx). The department chairperson or her/his designee should be able complete the table. Alternatively, your institutional research office may be able to help you.

For each course offered by a department in Spring 2014, Fall 2013, and Summer 2013 the following elements are requested:

- Semester (or equivalent) course was offered
- Course enrollment by student level (freshman, sophomore, junior, senior, graduate)
- Number of TAs
- Instructor demographics
    - Title
    - Rank (tenured, tenure-track, not on tenure-track)

Space is also provided in the table to give a summary of other faculty in the department who did not teach during the past year.

Role of teaching in departmental tenure and promotion decisions (for department chairs)
Each department chair should provide a short (one page max) written description of the role of teaching in annual review, contract renewal, promotion and tenure processes in the department, addressing policy, practice, and perception, as well as any recent or ongoing activity.

PULSE Vision & Change Rubric (for project site leaders)
We ask that *only pages 11 and 12* of the rubric be filled out. The rubric can be found online here, but is also attached.

SURVEY INSTRUMENT FOR INSTRUCTORS

This survey has thirteen questions consisting primarily of close-ended items and will take you approximately 15 minutes to complete. Your participation in this survey is voluntary. Your answers will go directly to [NAME] and will be kept confidential. Only aggregated data will be shared in reports. The deadline for the survey completion is [FILL IN DATE]

If you have any questions, please contact [NAME] [CONTACT INFORMATION]

1. **With which AAU STEM Initiative Pilot Institution are you associated?**

2. **With which Department are you primarily associated?**

3. **What is your employment designation?**
   - __ Faculty-Tenured
   - __ Faculty-On Tenure Track
   - __ Faculty-Not On Tenure Track
   - __ TA/Graduate Student
   - __ Other Non-Faculty

Course Specific Information

We would like you to answer the following questions keeping in mind your LOWEST LEVEL, HIGHEST ENROLLMENT course you have taught within the past year.

4. **What is the title of the LOWEST LEVEL, HIGHEST ENROLLMENT course you have taught within the past year?**

5. **With regard to the course you identified about, how are most decisions about teaching practices in the course made?**
   - __ I make most decisions
   - __ I'm part of a team that makes most decisions
   - __ Somebody else makes most decisions

6. **To your knowledge, has the course you identified and/or any of its instructors received external funding support to enhance teaching and/or student learning?**
   - __ yes
   - __ no

7. **To your knowledge, is the course you identified targeted for attention in your institution's AAU STEM Initiative?**
   - __ yes
   - __ no

8. **Please indicate the degree to which the following statements are descriptive of your teaching in the lowest level, highest enrollment course that you identified above.**

	Not at all descriptive	Minimally descriptive	Mostly descriptive	Very descriptive
I guide students through major course topics as they listen and take notes.				
I design activities that connect course content to my students' lives and future work.				
I connect class activities to course learning goals.				
I provide students with immediate feedback on their work during class (e.g., student response systems, short quizzes, etc.).				
I use student assessment results to guide the direction of my instruction during the semester.				
I frequently ask students to respond to questions during class time.				
I use student questions and comments to determine the focus and direction of class discussion.				
I structure class so that students explore or discuss their understanding of new concepts before formal instruction.				
I structure class so that students regularly talk with one another about course concepts.				
I require students to work together in small groups.				
I structure problems so that students consider multiple approaches to finding a solution.				
I provide time for students to reflect about the processes they use to solve problems.				
I require students to make connections between related ideas or concepts when completing assignments.				

Now we would like your personal perspective about various teaching and learning techniques and practices. Your responses should not be limited to the course specified earlier.

9. The following are some statements about attitudes and beliefs towards undergraduate teaching. Please rate your personal level of agreement with each of these statements based on your own attitudes and opinions.

	Strongly Disagree	Disagree	Agree	Strongly Agree
To teach effectively requires knowing how students learn a subject and not just knowing the subject.				
To teach effectively requires establishing and articulating learning goals.				
Connecting assignments to learning goals throughout the course enhances effective teaching.				
It is important to engage students as active participants in learning.				
As a faculty member I try to promote interest in the subject matter.				
It is important to understand what motivates students to learn the course material.				
An instructor should convey enthusiasm for the subject being taught.				
Developing and utilizing tools to assess student learning is integral to effective teaching.				
Teaching effectiveness is enhanced by using data on student learning to refine teaching practice.				
It is important to provide relevant, real-life examples of the concept you are teaching.				
To the extent possible an instructor should ensure that STEM courses are inclusive of all students.				
Implementing practices that enhance students' self-efficacy in learning the subject matter is key to effective teaching.				
Learning can be facilitated through the use of social interaction among students.				
It is important for instructors to explicitly address any preconceptions of students (cultural biases, past learning experiences, etc.) in their learning.				
An instructor is responsible for engaging students in a subject.				
Interactive learning techniques are helpful in teaching effectively.				
Even without more resources, I believe it is possible to improve the effectiveness of my teaching.				

An instructor has been successful if students retain the important concepts of the class for the long-term.				
An instructor is responsible for providing students with useful feedback.				

10. Please indicate the availability of, and your participation, in the following ON CMAPUS (including institutional and departmental) professional development activities.

	No, and I would not use	No, but I would use if available	Yes, and I have not used	Yes, and I use at least once a year	Yes, and I use at least once a term	Don't Know/Not applicable
Teaching development events (i.e. talks, workshops) specifically for instructors.						
Teaching development opportunities and resources for NEW instructors.						
Peer evaluations/feedback of teaching.						
A mentor or other person to go to for advice about teaching.						
A center or unit focused on teaching and learning within your college or school.						
A university-wide center or unit focused on teaching and learning.						
University resources exist for instructors to improve their teaching methods						
Other (please specify and indicate your level of participation)						

11. Please indicate the availability of, and your participation, in the following OFF CAMPUS (including professional society and national association) professional development activities.

	No, and I would not use	No, but I would use if available	Yes, and I have not used	Yes, and I use at least once a year	Yes, and I use at least once a term	Don't Know/ Not Applicable
Teaching development events (i.e. talks, workshops) specifically for instructors.						
Teaching development opportunities and resources for **NEW** instructors.						
A mentor or other person to go to for advice about teaching.						
A cohort of scholars focused on teaching and learning.						
Resources exist for instructors to improve their teaching methods.						
Other (please specify and indicate your level of participation)						

12. Please rate your personal level of agreement with each of these statements.

	Strongly Disagree	**Disagree**	**Agree**	**Strongly Agree**
My departmental administration recognizes the importance of teaching and is supportive of faculty improving and changing teaching practices				
Campus administration at my university recognizes the importance of teaching and is supportive of faculty improving and changing teaching practices.				
Instructors in my department believe that ongoing improvement in teaching is part of their job.				
In my opinion, effective teaching plays a meaningful role in the annual review and salary processes in my college.				
In my opinion, effective teaching plays a meaningful role in the promotion and tenure processes at my institution.				

13. Please give your feedback regarding the quality of the evidence for effective teaching used in the following circumstances:

	Low Quality	Medium Quality	High Quality	Don't Know
By you COLLEGE in the annual review and salary process.				
By your INSTITUTION in the promotion and tenure process.				

Thank you! We value your input about teaching and learning.

AAU PROJECT SITE DATA COLLECTION: 2016

September 12, 2016

Dear AAU Project Site Leaders:

This email contains AAU's 2016 request for data from the eight AAU campus project sites. As you will recall, we asked project sites to provide similar data in 2014 to serve as a baseline. We are asking for this second iteration to help understand change during the course of the projects.

We would like to reiterate some information we provided to you two years ago about how we will and will not use data collected.

- AAU will use these data to provide requested information to our funder (The Helmsley Trust). The Trust is interested in progress made on individual campuses, but also in understanding progress across the project sites. With eight different institutions and projects focusing on a variety of departments, courses, and emphases, this is a challenging endeavor, but it is part of what motivates us to collect some common data across project sites.

- AAU will use these data in aggregated form to help inform national conversations that we participate in, including with federal policymakers and leaders of other national associations. We will also use these data, in aggregated form, to prepare a report or reports that describe the overall impact of the project and some of what we've learned.

- AAU will ***not*** use these data to benchmark or compare institutions directly to one another to assess progress or for other reasons (related to the AAU STEM Initiative or other issues). We encourage individual institutions to use these data for those purposes to the extent they deem appropriate. We will provide you with an individual campus report-back as we did after the 2014 data collection.

- AAU cannot and will not use instructor survey results in evaluating instructors' job performance and we hope you will make it abundantly clear to instructors that neither will individual institutions.

We thank you again for your participation in the Initiative and look forward to working with you on this request. Please feel free to contact Emily Miller (emily.miller@aau.edu; 202-408-7500) with any questions.

AAU PROJECT SITE DATA REQUIREMENTS BY CAMPUS ROLE/CHECKLIST: 2016

Who Responds	What Information Is Needed	Deadline
All individual instructors in each department participating in the AAU STEM Initiative project.	1. Fill out survey instrument.	December 12, 2016
Chairs of each department participating in the AAU STEM Initiative project.	1. Provide a short written description of the role of teaching in annual review, contract renewal, promotion and tenure processes in the department, addressing policy, practice, and perception, as well as any recent or ongoing activity. 2. Fill out infrastructure section of PULSE Vision & Change rubric (See attached rubric section, pp. 11-12). 3. Encourage all instructors in the department to fill out the survey.	Deadline for Items 1 and 2: December 12, 2016
Provosts/Chief Academic Officers	1. Fill out infrastructure section of PULSE Vision & Change rubric (See, attached rubric section, pp. 11-12).	December 12, 2016
Campus project leads	1. Coordinate overall campus response. 2. Encourage department chairs and individual instructors to complete their tasks. 3. Encourage Provosts to complete their task.	

Survey for Instructors (all instructors in departments participating in the AAU Initiative)

Who Should Receive the Survey?

Please invite all faculty and instructors, including graduate students, in the departments which have courses being adapted in your institution's AAU STEM Initiative. We recognize that the departments participating in the survey this time may not be exactly the same as those that participated last time, and this is fine. All faculty and instructors in participating departments should receive the survey whether they are actively involved in the AAU STEM Initiative or not.

Content of the Survey

The survey contains 14 questions, virtually all of which are closed-ended (i.e., they give respondents a set of answers from which to select a response). Respondents should be able to quickly advance through the survey by ticking off answers; the survey should take 20 minutes or less to complete. The survey assesses teaching practices and attitudes. Project sites have asked to administer the survey themselves rather than have it centrally administered by AAU. The survey can be added or appended to institutional

or other surveys with the limitations described below.

Survey Validation
Many of the survey questions are adapted from:

> Teaching Practices Instrument; Beach, A.L., Henderson, C., Walter, E. M., & Williams, C. Western Michigan University, with support from NSF WIDER: EAGER #1256505

Initial results of a pilot were strong and suggest meaningful data can be gleaned from these questions. We believe the first administration of the survey at the eight project site campuses provided useful and meaningful data.

Survey Administration
Institutions are welcome to use either electronic (e.g., Surveymonkey, Qualtrics), ScanTron, or paper versions to administer the survey.

When administering the survey, instructors should have the option of choosing not to answer by leaving blank any item.

Please make it clear to instructors that their answers will not be used in performance evaluation by the department or the institution.

No questions or items can be removed. No response categories can be changed.

Questions 4 through 9 must be kept together and in the same sequence.

Within these constraints, institutions may add questions for local use and re-sequence questions, especially to make them flow better with questions added for local use.

The survey in PDF format is attached. A Word document containing the text of the questions and response categories can be provided upon request, as can a "track changes" version that shows what changes were made to this. This text can be used to copy and paste into whatever form or system the institution chooses to administer the survey. Project site institutions probably already have the last iteration coded and can make the necessary updates to that version to save time and effort.

Survey Data
We ask institutions to provide AAU with the following basic information about its survey administration:

- A copy of the final survey instrument used by the institution (link to electronic survey or hard copy of final survey)
- Date of launch, dates of follow up reminders (if any), and final deadline
- Names of departments in which individuals received the invitation to complete the survey
- Number of individuals receiving the invitation to complete the survey
- Paragraph describing any unusual circumstances that may have influenced survey administration at your institution (provide only if needed)
- Contact information (name, email address, telephone number) for an individual who can answer questions about survey administration and data that was collected at your institution

When survey administration is closed and final, an electronic data file (Excel, CSV) should be submitted to AAU; please remove fields that include names or email addresses. Institutions administering the survey in paper form must enter all data into an electronic format for submission to AAU; please omit individual's names if they were collected.

Role of teaching in departmental tenure and promotion decisions (for department chairs)
Each department chair should provide a short written description of the role of teaching in annual review, contract renewal, promotion and tenure processes in the department, addressing policy, practice, and perception, as well as any recent or ongoing activity.

PULSE Vision & Change Rubric (for department chairs and Provosts/Chief Academic Officers)
We ask that *only pages 11 and 12* of the rubric be filled out. The rubric can be found online here, but is also attached. Please note that in 2014 we asked only that project site leaders fill out the rubric. This time, we are asking the chair of each participating department to fill it out with his or her own department in mind. We are also asking that the Provost or Chief Academic Officer of the institution fill it out with the institution's infrastructure in mind

SURVEY INSTRUMENT FOR INSTRUCTORS

This survey has 14 questions consisting primarily of close-ended items and will take you approximately 15 minutes to complete. Your participation in this survey is voluntary. Your answers will go directly to [NAME] and will be kept confidential. Only aggregated data will be shared in reports. The deadline for the survey completion is [FILL IN DATE]

If you have any questions, please contact [NAME] [CONTACT INFORMATION]

1. **With which AAU STEM Initiative Pilot Institution are you associated?**

2. **Which disciplinary area does the department you are primarily associated with best fit within?**
   - __ Physics
   - __ Molecular/Cellular Biology
   - __ Organismal/General Biology
   - __ Engineering
   - __ Chemistry
   - __ Psychology, Behavior, Physiology
   - __ Mathematics
   - __ Other

3. **What is your employment designation?**
   - __ Faculty-Tenured
   - __ Faculty-On Tenure Track
   - __ Faculty-Not On Tenure Track
   - __ Teaching Assistant/Graduate Student
   - __ Other Non-Faculty

Course Specific Information

We would like you to answer the following questions keeping in mind your LOWEST LEVEL, HIGHEST ENROLLMENT course you have taught within the past year.

4. **What is the title of the LOWEST LEVEL, HIGHEST ENROLLMENT course you have taught within the past year?**

5. **Which best describes the level of the LOWEST LEVEL, HIGHEST ENROLLMENT course you have taught within the past year?**
   - __ Lower division
   - __ Mid-level
   - __ Advanced/Graduate Level
   - __ Other

6. **With regard to the course you identified, how are most decisions about teaching practices in the course made?**
   - __ I make most decisions
   - __ I'm part of a team that makes most decisions
   - __ Somebody else makes most decisions

7. **To your knowledge, has the course you identified and/or any of its instructors received external funding support to enhance teaching and/or student learning?**
   - __ yes
   - __ no

8. **To your knowledge, is the course you identified targeted for attention in your institution's AAU STEM Initiative?**
   - __ yes
   - __ no

9. **Please indicate the degree to which the following statements are descriptive of your teaching in the lowest level, highest enrollment course that you identified above.**

	Not at all descriptive	Minimally descriptive	Mostly descriptive	Very descriptive
I guide students through major course topics as they listen and take notes.				
I design activities that connect course content to my students' lives and future work.				
I connect class activities to course learning goals.				
I provide students with immediate feedback on their work during class (e.g., student response systems, short quizzes, etc.).				
I use student assessment results to guide the direction of my instruction during the semester.				
I frequently ask students to respond to questions during class time.				
I use student questions and comments to determine the focus and direction of class discussion.				
I structure class so that students explore or discuss their understanding of new concepts before formal instruction.				
I structure class so that students regularly talk with one another about course concepts.				
I require students to work together in small groups.				
I structure problems so that students consider multiple approaches to finding a solution.				

I provide time for students to reflect about the processes they use to solve problems.				
I require students to make connections between related ideas or concepts when completing assignments.				

Now we would like your personal perspective about various teaching and learning techniques and practices. Your responses should not be limited to the course specified earlier.

10. The following are some statements about attitudes and beliefs towards undergraduate teaching. Please rate your personal level of agreement with each of these statements based on your own attitudes and opinions.

	Strongly Disagree	Disagree	Agree	Strongly Agree
To teach effectively requires knowing how students learn a subject and not just knowing the subject.				
To teach effectively requires establishing and articulating learning goals.				
Connecting assignments to learning goals throughout the course enhances effective teaching.				
It is important to engage students as active participants in learning.				
As a faculty member I try to promote interest in the subject matter.				
It is important to understand what motivates students to learn the course material.				
An instructor should convey enthusiasm for the subject being taught.				
Developing and utilizing tools to assess student learning is integral to effective teaching.				
Teaching effectiveness is enhanced by using data on student learning to refine teaching practice.				
It is important to provide relevant, real-life examples of the concept you are teaching.				
To the extent possible an instructor should ensure that STEM courses are inclusive of all students.				
Implementing practices that enhance students' self-efficacy in learning the subject matter is key to effective teaching.				
Learning can be facilitated through the use of social interaction among students.				
It is important for instructors to explicitly address any preconceptions of students (cultural biases, past learning experiences, etc.) in their learning.				

An instructor is responsible for engaging students in a subject.				
Interactive learning techniques are helpful in teaching effectively.				
Even without more resources, I believe it is possible to improve the effectiveness of my teaching.				
An instructor has been successful if students retain the important concepts of the class for the long-term.				
An instructor is responsible for providing students with useful feedback.				

11. Please indicate the availability of, and your participation, in the following ON CAMPUS (including institutional and departmental) professional development activities.

	No, and I would not use	No, but I would use if available	Yes, and I have not used	Yes, and I use at least once a year	Yes, and I use at least once a term	Don't Know/Not applicable
Teaching development events (i.e. talks, workshops) specifically for instructors.						
Teaching development opportunities and resources for NEW instructors.						
Peer evaluations/feedback of teaching.						
A mentor or other person to go to for advice about teaching.						
A center or unit focused on teaching and learning within your college or school.						
A university-wide center or unit focused on teaching and learning.						
University resources exist for instructors to improve their teaching methods						
Other (please specify and indicate your level of participation)						

12. Please indicate the availability of, and your participation, in the following OFF CAMPUS (including professional society and national association) professional development activities.

	No, and I would not use	No, but I would use if available	Yes, and I have not used	Yes, and I use at least once a year	Yes, and I use at least once a term	Don't Know/ Not Applicable
Teaching development events (i.e. talks, workshops) specifically for instructors.						
Teaching development opportunities and resources for **NEW** instructors.						

A mentor or other person to go to for advice about teaching.						
A cohort of scholars focused on teaching and learning.						
Resources exist for instructors to improve their teaching methods.						
Other (please specify and indicate your level of participation)						

13. Please rate your personal level of agreement with each of these statements.

	Strongly Disagree	**Disagree**	**Agree**	**Strongly Agree**
My departmental administration recognizes the importance of teaching and is supportive of faculty improving and changing teaching practices				
Campus administration at my university recognizes the importance of teaching and is supportive of faculty improving and changing teaching practices.				
Instructors in my department believe that ongoing improvement in teaching is part of their job.				
In my opinion, effective teaching plays a meaningful role in the annual review and salary processes in my college.				
In my opinion, effective teaching plays a meaningful role in the promotion and tenure processes at my institution.				

14. Please give your feedback regarding the quality of the evidence for effective teaching used in the following circumstances:

	Low Quality	Medium Quality	High Quality	Don't Know
By you COLLEGE in the annual review and salary process.				
By your INSTITUTION in the promotion and tenure process.				

Thank you! We value your input about teaching and learning.

THE PULSE VISION & CHANGE RUBRICS

Partnership for Undergraduate Life Sciences Education (PULSE) is a collaborative effort developed and funded by NSF, NIH/NIGMS, and HHMI to catalyze adoption of the principles outlined in the 2011 report *Vision and Change in Undergraduate Life Science Education: A Call to Action.* The PULSE Steering Committee selected 40 current and former life science department chairs or deans to serve as Vision & Change Leadership Fellows from September 2012-September 2013. One working group of Fellows, referred to as "Taking the PULSE", developed the PULSE Vision & Change Rubrics during the fellowship year.

The PULSE Vision & Change Rubrics articulate fundamental criteria for evaluating the level of adoption of the principles of *Vision and Change* in life science departments. The rubric descriptors designate different levels of adoption of *Vision & Change* principles from first steps to full departmental transformation. The rubrics initially can provide a structure for departmental reflection and self-assessment and discussion regarding a host of topics relevant to program transformation. The utility of the PULSE Vision & Change Rubrics is to provide a basic framework of expectations, such that evidence of adoption of *Vision & Change* principles can be gathered and self-assessed by departments and a roadmap for continued transformation can be plotted. Ultimately, the rubrics are intended to serve as the basis for a tiered certification program for undergraduate life science departments that have adopted some or all of the principles outlined in the *Vision & Change* report and a blueprint for change in departments that have not yet adopted those principles. These rubrics are designed for flexible use by undergraduate life science departments at a broad range of institution types including two-year colleges, four-year liberal arts institutions, regional comprehensive institutions and research institutions. The core expectations articulated in the PULSE Vision & Change Rubrics can and should be translated into the language of individual departments and institutions, in order to evaluate and expedite departmental transformation in the context of each institution. An institution of any type should be able to achieve each level of certification.

We also anticipate that the rubrics could be used in STEM departments of all types with some modifications, particularly to concepts and competencies specific for life sciences. However, most of the rubric criteria are robust and could apply broadly to the range of STEM disciplines.

SCOPE OF THE RUBRICS

Multi-component rubrics have been developed that can assess department or program alignment with *Vision & Change* recommendations in five areas: Curriculum Alignment, Assessment, Faculty Practice/Faculty Support, Infrastructure, and Climate for Change. Each rubric has several categories with multiple criteria to be assessed. Although many of the scoring criteria are clear, we realize that some criteria may require more explanation, definition of terms, and specific examples to make them comprehensible. At present, we are working on assembling a detailed instruction manual to aid in use of the rubrics. Points are assigned for the levels of achievement in each category. Ultimately each rating criterion will be weighted to reflect the significance of the criterion for program transformation. The weighting will be established through a series of pilot certifications in 2014 (pending funding) and feedback is welcome.

CURRICULUM ALIGNMENT RUBRIC (11 criteria)

This rubric considers the degree to which the curriculum in a Life Sciences program addresses the core concepts for biological literacy and core competencies and disciplinary practice outlined in *Vision & Change*. This rubric has rating criteria for each core concept and core competency providing programs the opportunity to evaluate the integration of these ideas and skills into their curriculum. Most of these criteria are specific to Life Science education and *Vision & Change*, although many of the competencies would be applicable to other STEM fields.

ASSESSMENT RUBRIC (12 criteria)

This rubric addresses the degree to which programs have developed and employ curricular and course learning goals/objectives for students, and have developed and use assessments that are aligned with learning outcomes desired for students at both the course and whole curriculum level. There are two major rating categories, Course-Level Assessment and Program-Level Assessment. Only one criterion is specific to Life Science education and *Vision & Change*; all other criteria would be relevant to any STEM discipline.

FACULTY PRACTICE/FACULTY SUPPORT RUBRIC (21 criteria)

This rubric considers *Vision & Change* implementation issues that primarily are driven by or affect faculty. Overall, there are three main categories including Student Higher Level Learning, Learning Activities Beyond the Classroom, and Faculty Development with 5-10 rating criteria in each category. The Student Higher Level Learning category evaluates faculty efforts and student willingness to reflect on and engage in activities and processes that require higher level cognitive efforts. The category on Learning Activities Beyond the Classroom evaluates the range of opportunities and support mechanisms available to students. The Faculty Development category evaluates the support for faculty within the department and institution that enables them to learn and practice the recommendations of *Vision & Change* and scientific teaching principles. The term "faculty" in this rubric can and should include all applicable appointments including graduate teaching assistants, post-doctoral fellows, adjunct faculty and full time faculty. Also included in this category is recognition of the importance of effective teaching in yearly review, promotion and tenure decisions. The criteria included in this rubric would be broadly applicable to other STEM disciplines.

INFRASTRUCTURE RUBRIC (12 criteria)

This rubric deals with institutional infrastructure issues that facilitate *Vision & Change* implementation. There are three main categories in this rubric: Physical Infrastructure, Learning Spaces, and Resources and Support. The criteria in the Physical Infrastructure category assess the quality of the physical teaching spaces, and the degree to which they enable innovative teaching practices consistent with *Vision & Change*. Criteria in the Learning Spaces category assess whether informal learning spaces and Learning Center spaces are available on campus. The criteria in the Resources and Support category assess various types of staff support for teaching, including administrative assistants, laboratory instructors, and IT specialists. The accessibility of electronic resources is also considered under Resources and Support. The criteria included in this rubric would be broadly applicable to other STEM disciplines.

CLIMATE FOR CHANGE RUBRIC (11 criteria)

This rubric assesses the institution, administrative and department openness to and movement toward the type of change outlined for life sciences education in *Vision & Change*. Categories examine Administrative and Institutional Vision, Attitude and Action, as well as Departmental Support for administrative change efforts. There are 2-3 rating criteria in each category and while many of these criteria are out of the control of departmental faculty, they are critical for transformation and sustainability of reformed efforts in life sciences education.

To download the rubrics and for questions or feedback on the rubrics or the developing certification program, please contact the Taking the PULSE working group at http://www.pulsecommunity.org or the individuals listed below:

Karen Aguirre	Thomas Jack	Kate Marley	Pamela Pape-Lindstrom
Coastal Carolina University	Dartmouth College	Doane College	Everett Community College
kmaguirr@coastal.edu	thomas.p.jack@dartmouth.edu	kate.marley@doane.edu	ppape@everettcc.edu

INFRASTRUCTURE

	Factors	Weight	0 (not observed)	1 (initial stages)	2 (average)	3 (very good)	4 (excellent, exemplary)	Final Score
A. PHYSICAL INFRASTRUCTURE								0
1	**Classrooms and teaching laboratories can accommodate special needs and differing abilities**		None of the classrooms serve students with diverse needs.	<10% of assigned classrooms comply, very limited ability to serve students with diverse needs	10-25% of assigned classrooms comply	26-75% of assigned classrooms comply	>75% of assigned classrooms comply	
2	**Access to flexible, re-configurable teaching spaces to encourage student interaction, ability to work in small groups**		All assigned classrooms are lecture style with fixed seating	< 10% of assigned classrooms are flexible and reconfigurable	10-50% of assigned classrooms are flexible and reconfigurable	50-75% of classrooms are flexible and reconfigurable; different types of classrooms are available for diverse teaching styles	>75% of classrooms are flexible and reconfigurable; different types of classrooms are available for diverse teaching styles	
3	**Classroom IT infrastructure to encourages active-learning practices**		All assigned classrooms have no IT technology	< 10% of assigned classrooms have at least one IT resources for active learning purposes	10-50% of assigned classrooms have at least one resource for active learning purposes	10-50% of assigned classrooms have at least two IT resources for active learning purposes	More than 50% of assigned classrooms have at least two IT resources for active learning purposes	
4	**Access to intelligently-designed laboratory space flexible enough to allow different uses that blur distinction between lecture and lab**		Laboratories are antiquated (possibly dangerous); prep and equipment space is not separated	<10% of laboratories are well designed with prep and equipment space separated	10 - 50% of laboratories are well designed with prep and equipment space separated; IT resources available	51 - 75% of laboratories are well designed with prep and equipment space separated; IT resources available	76% - 100% of all laboratories are well designed with prep and equipment space separated; IT resources available	
5	**Equipment/supplies in teaching laboratories**		Limited laboratory equipment available to students, >90% of equipment is old or antiquated, supplies for laboratories are very limiting	>25% of equipment is new, equipment is available for student use but not enough equipment for the student load, supplies for laboratories are limiting	>50% of equipment is new, equipment is comes close to meeting the student load, supplies for laboratories are adequate	51 - 75% of equipment is new, amount ouf available equipment matches the student load, supplies for laboratories are adequate	>75% of equipment is new, amount ouf available equipment matches the student load, supplies for laboratories are adequate	

INFRASTRUCTURE

	Factors	Weight	0 (not observed)	1 (initial stages)	2 (average)	3 (very good)	4 (excellent, exemplary)	Final Score
B. LEARNING SPACES								
1	**Informal gathering spaces that encourage collaboration**		Informal gathering space not available	A space is available but not located near labs, classrooms, or faculty offices - use is not encouraged	A space is available but not located near labs, classrooms, or faculty offices; use is encouraged by administation	Several good spaces are available; at least one is near labs, classrooms, or faculty offices; use is encouraged by administation	Several good spaces are available; all are near labs, classrooms, or faculty offices; use is encouraged by administation	
2	**Learning Center for Students - for example, college-wide writing centers, learning centers or dept. level center with staff, tutor meeting rooms, TAs, computers and printers, study space for students**		None	Facility available; no staff; limited range of options; limited hours	Staffed facility available; limited range of options; limited hours	Facility available; multiple staff members (overseer, tutors), addressing multiple student needs (writing, math, bio); extended hours; multiple breakout rooms available	All characteristics listed for a score of 3 are present; also staffed with learning specialist; open most of the time to meet students needs	
C. RESOURCES AND SUPPORT								
1	**IT support for innovative teaching, responds quickly to IT crisis; support includes hands-on technology training for faculty and proactive survey of new technology**		No IT support	IT staff provides limited support; faculty are not satisfied with level of support when issues arise	IT staff provide support adequate to meet faculty needs when issues or problems arise	All characteristics listed for a score of 2 are present, in addition IT staff provide hands-on training	All characteristics listed for a score of 3 are present; proactive IT staff also suggest innovative technologies	
2	**Staff support for teaching: administrative help to support teaching, lab managers/lab instructors, curriculum development/learning specialists, tenure-track faculty with education specialty**		No staff support for faculty	Very limited support, e.g. part time administrative support or part-time lab support help	A minimum of the equivalent of one full time position dedicated to teaching support	Adequate administrative and lab managers/instructor support provided. Department has <u>either</u> a curriculum development position or biology education-based tenure-track faculty position	Adequate administrative and lab managers/instructor support provided. Department has <u>both</u> a curriculum development position or biology education-based tenure-track faculty position	
3	**Institutional support for electronic resources, e.g. journal subscriptions and databases**		No institutional subscriptions available	Very limited subscriptions available, only to top journals (e.g. *Nature* , *Science* , *PNAS*)	Subscriptions extend to the top journals in each subfield (e.g *Ecology* , *Journal of Cell Biology* , *Nature Genetics* etc.), but specialty journals offerings are limited	Subscriptions extend to some specialty journals in selected subfields. But it is still common that articles that faculty and students require are not freely available	Wide range of electronic journals, databases are available for use by faculty and students without fee. Rare that a journal article cannot be freely obtained	

AAU BASELINE DATA COLLECTION

February 12, 2014

Dear AAU STEM Campus Points of Contact:

Metrics and evaluation are key components of the AAU Undergraduate STEM Education Initiative. AAU obtained an NSF WIDER grant (Metrics to Shift Institutional Culture Toward Evidence-based Instructional Practices) to work on metrics broadly; additionally, we are interested in helping universities track the progress of their reform efforts and in evaluating the overall impact of the AAU STEM Initiative.

AAU has developed a set of baseline measures that institutions may use to better understand the current status of teaching and learning and to begin documenting progress. These measures align with the AAU *Framework for Systemic Change in Undergraduate STEM Teaching and Learning*, which was earlier produced by AAU in close consultation with its STEM advisory committee and with campuses. These baseline measures were developed with input from a working group consisting of campus experts and scholars, as well as through several rounds of feedback and iteration with the eight project sites.

AAU has requested these baseline data elements from the eight AAU STEM Project Sites. We plan to collect this information this year, and then once again in the final year of the AAU project (about two years from now, in early 2016). Enclosed is the final request for baseline data, along with attachments.

We are writing to share these baseline data tools with all AAU campuses, and to encourage you to consider using them to better understand the current status of STEM educational reforms on your campus. Because the materials were designed with the eight project sites primarily in mind, they may require slight adaptation to align with your campus. In particular, one component of baseline data collection involves surveying faculty in departments participating in one of the AAU projects. On your campus, selecting the sample of faculty to survey may depend upon your interests and objectives, as well as any interventions currently underway. Please don't hesitate to contact us if you are interested in administering the study and would like to discuss how best to select the sample.

As AAU works to understand the aggregate impact of AAU-member campuses efforts to reform undergraduate STEM teaching and learning, we would greatly appreciate your campus participation in this baseline data collection. You may wish to collect some of this information for internal purposes only, but we encourage you to share the information you collect with AAU. We are sensitive to concerns about sharing data. Information will be used (and not used) in ways specified in the attachments, and data will be reported in aggregated or anonymized form only without your explicit permission to do otherwise. Deadline for project sites to provide this information are specified in the attached documents; ideally, you would provide information by May so that we may incorporate it into analyses. We welcome any questions about these baseline data tools or on how to incorporate these measures into your work. Please feel free to contact Emily Miller (emily.miller@aau.edu; 202-408-7500).

Thank you.

Project Site Baseline Data Summary Report

Summary

AAU is excited by the visible momentum across all eight project sites to improve teaching and learning. Through AAU STEM Initiative workshops and conferences, the collection of baseline data, individual project site annual reports, campus visits to each of the eight project sites, and opportunities to engage with your project teams at national meetings, AAU has gained a deeper appreciation of the projects' goals and objectives, implementation and progress. In addition, the information we have gathered from these sources has allowed AAU to begin to assess the effects of the AAU STEM Initiative.

Based upon our assessment, it is clear that the AAU Undergraduate STEM Education Initiative is having a positive impact. It has catalyzed institutional action toward reforming undergraduate STEM education, enhanced communication and collaboration on campuses, leveraged campus support (financial and other resources) from all levels of institutions, and aligned to some degree efforts to improve undergraduate STEM education within campuses.

In the first year of implementation, more than 58 courses were directly impacted by redesign efforts at the eight sites. These courses enrolled well over 50,000 undergraduate students, the large majority of whom were freshmen and sophomores. Around 150 tenure track or tenured faculty and a nearly equal number of non-tenure track faculty, as well hundreds of lecturers and graduate and undergraduate assistants, were involved in instruction for these courses[7].

All project sites have made progress in addressing the core elements of the Framework for Systemic Change to Undergraduate STEM Teaching and Learning.

Pedagogy

Each site worked on redesigning a handful of introductory STEM courses. These courses spanned at least two departments, many sites committing to inter-departmental collaboration during the redesign. Through pre- and post-test methods, many of the sites gathered data on the learning outcomes of students in redesigned courses in addition to the baseline data requested by AAU.

Scaffolding

All sites indicated a commitment to supporting faculty in evidence-based teaching techniques with varying approaches. Examples of approaches to support improved faculty instruction include developing mentoring and apprenticeship programs, training TAs in evidence-based pedagogy and collaborating with teaching and learning centers to provide training for faculty. In addition to providing training and learning community opportunities for faculty, several project sites have developed tools to measure changes in faculty instructional practices.

[7] Note that some courses were offered multiple times and in multiple sections, and these figures separately count each time a student or instructor was involved in course offerings.

Cultural Change

Each project site made some effort to provide incentives to faculty to engage in pedagogical reform. Some institutions studied how to better align faculty reward and evaluation systems with a commitment to student-centered pedagogy. The level of effort varied substantially among the project sites, as did the extent to which campus teams made explicit the difference between written policy pertaining to the importance of teaching and the way in which the policy was actually implemented within departments on their respective campuses.

Review of the statements on the evaluation of teaching from participating departments shows a substantial gap between the ambitious plans of the project sites to bring about significant change in instruction and an incentive system where rewards for faculty who invest effort in achieving student-centered instruction are uncertain. This is not unexpected—achieving cultural reform is difficult and long-term. To help achieve the hoped-for larger effect, we believe that greater emphasis in faculty evaluation policies and practices should be placed on the use of evidence-based student-centered methods as an expectation for instruction in promotion and tenure/annual reviews.

Survey Methodology and Data

AAU developed a set of common data elements to better understand the current status of undergraduate teaching and learning at the project sites. We collected information about faculty practices and attitudes, physical infrastructure to support evidence-based teaching, and departmental summaries of the evaluation of teaching for salary increases and for promotion and tenure. This summary report contains information describing the overall respondent population and provides the mean response to each question in the survey across all eight project sites.

AAU assured the campuses that we will only use these data in aggregated form to help inform national conversations in which we participate, including with federal policymakers and leaders of other national associations. AAU will not use these data to benchmark or compare institutions directly to one another to assess comparative progress between project sites. We caution that these comparisons are of limited utility given the mix of respondents and disciplines across institutions, which we made no attempt to correct for. Individual institutional responses may prove more useful in identifying strengths, as well as areas for improvement, and will serve as an important internal point of comparison for project sites when the survey is administered subsequently (currently planned for Spring, 2016, in the final term of the three-year AAU project site duration). AAU has encouraged project sites to use this information internally for purposes they deem appropriate and ask that institutions refrain from sharing or describing it publicly (e.g., on project or departmental websites).

Instructor Survey—The eight project site institutions were asked to survey instructional staff (both faculty and graduate students) in the STEM departments in which specific changes were planned. The goal of the survey was to document aggregate behaviors, attitudes, and perceptions of local culture early on in the funding period. The survey focused on:

- **Instructor information**: such as institution, department, rank.
- **Classroom practices**: instructors were asked to rate how descriptive various statements were of their own teaching practices.
- **Attitudes towards teaching**: instructors were asked to indicate their level of agreement with statements about teaching practices and techniques.
- **Professional development related to teaching**: instructors were asked to rate the availability of, and their participation in, various types of on- and off-campus professional development activities.
- **Institutional environment for teaching**: instructors were asked to indicate their level of agreement with statements about the attitudes of other instructors, department chairs, and campus administrators toward teaching, as well as their perception of how important a role teaching played in annual and salary reviews and promotion and tenure.

To standardize respondent demographics between institutions, we classified respondents into one of the following categories:

- Tenured faculty
- Tenure track faculty
- Non tenure track faculty
- Instructor/lecturer
- Graduate student
- Other

We binned departmental affiliations into one of the following disciplines:

- Chemistry
- Engineering
- Mathematics
- Molecular and cellular biology
- Organismal and general biology
- Physics
- Psychology, Behavior, Physiology

We asked respondents to specify the lowest level, highest enrollment class they had taught within the past year, and then assigned those courses to one of the following categories:

- Lower division
- Mid-level
- Advanced/graduate
- Unable to be characterized

Campus Infrastructure—We asked respondents to fill out pages 11 and 12 of the PULSE Vision & Change rubric (which can be found here: http://www.pulsecommunity.org/page/v-c-certification) to describe their campus infrastructure for teaching and learning. Some respondents provided one institutional response; others provided one response per participating department. In the case of the latter, we averaged departmental responses to arrive at a single institutional response. We are reporting overall campus responses, as well as the aggregate response, for each item. Again we caution against reading too much into the comparisons, and we state that AAU has no plans to use these comparisons for any purpose. But we believe the responses may be useful for you both to identify strong and weak areas and against which a future application of these pages of the rubric may be compared.

Promotion and Tenure - The process for collecting benchmark data from the project sites included a request that the chairs of all impacted departments write a summary of the evaluation of teaching for salary increases and for promotion and tenure. Thirty-two department chairs from across seven of the sites responded with statements from one to three pages in length.

Summary Report on AAU STEM Initiative Baseline Instructor Survey

Response Rate

2,971 instructional staff received the AAU Faculty Survey across the eight project site institutions. Over 1,000 (1,093) submitted at least a partially completed survey, resulting in an overall response rate of 36.8%; individual institutional response rates ranged from 21.6% to 69.4%.

Demographics of Respondents

A majority of respondents (542 or 49.6%) were either associate professors or professors with tenure. Twelve percent were tenure-track professors, who did not yet have tenure at the time they were surveyed. Over a quarter of respondents were graduate students (26%) and the final 12.5% were Instructor/Lecturers, Non-Tenure Faculty, No Response, or Other Instructional Staff. Responses from private institutions comprised 36% of the total with 64% from public institutions.

AAU staff categorized the many departments that respondents reported into broader subject areas; percent of responses by subject area are:

Physics – 27%

Chemistry AND Engineering – both 16.5%

Molecular and Cellular Biology AND Psychology, Behavior, Physiology – both 12%

Organismal and General Biology – 7%

Mathematics – 6%

No Response – 3%

Internally, AAU staff also categorized courses that faculty reported based on the titles and course numbers as given. The categories used were Lower Division, Mid-Level, and Advanced/Graduate. Not surprisingly, because the question asked respondents to focus on the "lowest level, highest enrollment course that they had taught in the past year" 45.6% fell into the Lower Division category. An additional 32% were unable to be categorized based on responses given or no title and/or course number was given. Approximately one tenth were categorized as "Mid-Level" (9.5%) or "Advanced/Graduate" (13.1%) courses.

Survey Results

Average responses to statements about the use of certain instructional behaviors in the course identified by the individual ranged from a low of 2.20 to a high of 3.40, with an overall mean on behavior statements of 2.76. See Table 1.

Table 1. Overall Means for Survey Statements of Instructional Behavior

1= Strongly Disagree, 2 = Disagree, 3 = Agree, 4 = Strongly Agree

Statement	Mean	Std. Dev.	Valid N
I guide students through major course topics as they listen and take notes.	2.91	.99	812
I design activities that connect course content to my students' lives and future work.	2.57	.94	808
I connect class activities to course learning goals.	3.20	.81	805
I provide students with immediate feedback on their work during class (e.g., student response systems, short quizzes, etc.).	2.72	1.12	808
I use student assessment results to guide the direction of my instruction during the semester.	2.54	1.01	810
I frequently ask students to respond to questions during class time.	3.40	.80	810
I use student questions and comments to determine the focus and direction of class discussion.	2.87	.87	812
I structure class so that students explore or discuss their understanding of new concepts before formal instruction.	2.20	1.00	809
I structure class so that students regularly talk with one another about course concepts.	2.72	1.07	809
I require students to work together in small groups.	2.66	1.22	810
I structure problems so that students consider multiple approaches to finding a solution.	2.54	.93	810
I provide time for students to reflect about the processes they use to solve problems.	2.45	.96	808
I require students to make connections between related ideas or concepts when completing assignments.	3.14	.83	809

The overall mean on instructional attitudes and beliefs was 3.37, mid-way between "Agree" and "Strongly Agree." The range of responses to statements of instructional attitudes and beliefs was 2.83 to 3.76. (See Table 2.) The higher overall mean for attitudes and beliefs (3.37) may indicate that respondents have more openness and willingness to certain instructional ideas compared to their self-reported instructional behaviors (overall mean of 2.76). These data are limited because respondents were asked to answer with regard to a single identified class.

Table 2. Overall Means for Survey Statements of Instructional Attitudes and Beliefs

1= Strongly Disagree, 2 = Disagree, 3 = Agree, 4 = Strongly Agree

Statement	Mean	Std. Dev.	Valid N
To teach effectively requires knowing how students learn a subject and not just knowing the subject.	3.50	.61	995
To teach effectively requires establishing and articulating learning goals.	3.33	.66	990
Connecting assignments to learning goals throughout the course enhances effective teaching.	3.42	.61	984
It is important to engage students as active participants in learning.	3.66	.55	987
As a faculty member I try to promote interest in the subject matter.	3.73	.52	980
It is important to understand what motivates students to learn the course material.	3.31	.68	991
An instructor should convey enthusiasm for the subject being taught.	3.76	.50	988
Developing and utilizing tools to assess student learning is integral to effective teaching.	3.23	.68	986
Teaching effectiveness is enhanced by using data on student learning to refine teaching practice.	3.14	.68	981
It is important to provide relevant, real-life examples of the concept you are teaching.	3.44	.72	985
To the extent possible, an instructor should ensure that STEM courses are inclusive of all students.	3.39	.73	983
Implementing practices that enhance students' self- efficacy in learning the subject matter is key to effective teaching.	3.33	.64	962
Learning can be facilitated through the use of social interaction among students.	3.25	.67	981
It is important for instructors to explicitly address any preconceptions of students (cultural biases, past learning experiences, etc.) in their learning.	2.83	.80	977
An instructor is responsible for engaging students in a subject.	3.18	.72	986

Statement	Mean	Std. Dev.	Valid N
Interactive learning techniques are helpful in teaching effectively.	3.36	.65	980
Even without more resources, it is possible to improve the effectiveness of teaching.	3.30	.71	982
An instructor has been successful if students retain the important concepts of the class for the long-term.	3.46	.63	985
An instructor is responsible for providing students with timely and useful feedback.	3.48	.58	989

Use of on-campus and off-campus professional development activities are included in Tables 3 and 4. The highest use levels (greater than 40%) for on-campus activities among respondents were for teaching development events held specifically for instructors, peer evaluations/feedback of teaching, and the availability of a mentor or other person to go to for advice and teaching. Potential users (those who answered that the activity was not available but they would use it if it were available) most wanted a center or unit focused on teaching and learning within (their) college or school (15.6%); over 20% noted that they already used such a facility (21.7%). The largest percentages for yes, the activity is available on campus, but not used (greater than 30%) were for university wide centers and resources.

Table 3. Use of On-Campus Professional Development Opportunities

On-Campus Professional Development Opportunity	Yes, and I use at least once a term.		Yes, and I use at least once a year.		Yes, I used in the past.		Users (sum of Yes and use)		Yes, and I have not used.	
	N	%	N	%	N	%	N	%	N	%
Teaching development events (i.e. talks, workshops) specifically for instructors.	122	11.2%	262	24.0%	61	5.6%	445	40.7%	291	26.6%
Teaching development opportunities and resources for NEW instructors.	48	4.4%	139	12.7%	64	5.9%	251	23.0%	284	26.0%
Peer evaluations/feedback of teaching.	175	16.0%	224	20.5%	56	5.1%	455	41.6%	238	21.8%
A mentor or other person to go to for advice about teaching.	227	20.8%	227	20.8%	40	3.7%	494	45.2%	196	17.9%
A center or unit focused on teaching and learning within your college or school.	79	7.2%	130	11.9%	28	2.6%	237	21.7%	288	26.3%
A university wide center or unit focused on teaching and learning.	95	8.7%	164	15.0%	34	3.1%	293	26.8%	336	30.7%
University resources for instructors to improve their teaching methods	84	7.7%	179	16.4%	40	3.7%	303	27.7%	359	32.8%

On-Campus Professional Development Opportunity	No, but I would use if available. (Potential Users)		No, and I would not use.		NA or No Response	
	N	%	N	%	N	%
Teaching development events (i.e. talks, workshops) specifically for instructors.	81	7.4%	86	7.9%	190	17.4%
Teaching development opportunities and resources for NEW instructors.	84	7.7%	73	6.7%	401	36.7%
Peer evaluations/feedback of teaching.	130	11.9%	60	5.5%	210	19.2%
A mentor or other person to go to for advice about teaching.	120	11.0%	70	6.4%	213	19.5%
A center or unit focused on teaching and learning within your college or school.	171	15.6%	116	10.6%	281	25.7%

A university wide center or unit focused on teaching and learning.	87	8.0%	115	10.5%	262	24.0%
University resources for instructors to improve their teaching methods	122	11.2%	59	5.4%	250	22.9%

The off-campus activity most frequently used by respondents was "resources for instructors to improve their teaching methods" (18.6%); it is unclear where these resources come from, but it's likely that they include many disciplinary association and NSF sponsored websites. Respondents indicated that if mentors (14%) or cohorts of scholars (15.4%) or additional resources to help improve teaching (14.7%) were available off-campus that they would use them.

Table 4. Use of Off-Campus Professional Development Opportunities

Off-Campus Professional Development Opportunity	**Yes, and I use at least once a term.**		**Yes, and I use at least once a year.**		**Yes, I used in the past.**		**Users**		**Yes, and I have not used.**	
	N	%	N	%	N	%	N	%	N	%
Teaching development events (i.e. talks, workshops) specifically for instructors.	17	1.6%	116	10.6%	20	1.8%	153	14.0%	216	19.8%
Teaching development opportunities and resources for NEW instructors.	8	0.7%	26	2.4%	14	1.3%	48	4.4%	182	16.7%
A mentor or other person to go to for advice about teaching.	44	4.0%	96	8.8%	22	2.0%	162	14.8%	147	13.4%
A cohort of scholars focused on teaching and learning.	39	3.6%	75	6.9%	14	1.3%	128	11.7%	170	15.6%
Resources for instructors to improve their teaching methods.	64	5.9%	115	10.5%	24	2.2%	203	18.6%	202	18.5%

Off-Campus Professional Development Opportunity	**No, but I would use if available. (Potential Users)**		**No, and I would not use.**		**NA or No Response**	
	N	%	N	%	N	%
Teaching development events (i.e. talks, workshops) specifically for instructors.	139	12.7%	239	21.9%	346	31.7%
Teaching development opportunities and resources for NEW instructors.	115	10.5%	230	21.0%	518	47.4%

A mentor or other person to go to for advice about teaching.	153	14.0%	249	22.8%	382	34.9%
A cohort of scholars focused on teaching and learning.	168	15.4%	184	16.8%	443	40.5%
Resources for instructors to improve their teaching methods.	161	14.7%	166	15.2%	361	33.0%

Finally, respondents rated statements that would give some indication of the value placed on teaching in their department, college, and school. The purpose of this section was to try to provide some baseline of the overall culture toward teaching at these various levels. Respondents agreed that their departmental administration recognized the importance of teaching and is supportive of faculty improving and changing their teaching practices (3.20) and that campus administration at their universities also recognize the importance and are supportive (3.02). When asked whether instructors in their departments believe that ongoing improvement in teaching is part of their jobs the level of agreement drops slightly (2.90). When asked to give their opinion whether effective teaching plays a meaningful role in the annual review and salary processes within their colleges and within the promotion and tenure processes at their institutions, the mean responses were in the middle between agree and disagree (2.50 and 2.54, respectively). This difference might suggest some disconnect between what is publicly supported within colleges and universities and what actually happens in day to day processes.

Table 5. Overall Means for Survey Statements about Importance and Recognition of Teaching

1= Strongly Disagree, 2 = Disagree, 3 = Agree, 4 = Strongly Agree

Statement	Mean	Std. Dev.	Valid N
My departmental administration recognizes the importance of teaching and is supportive of faculty improving and changing teaching practices.	3.20	.74	964
Campus administration at my university recognizes the importance of teaching and is supportive of faculty improving and changing teaching practices.	3.02	.75	960
Instructors in my department believe that ongoing improvement in teaching is part of their jobs.	2.90	.74	962
In my opinion, effective teaching plays a meaningful role in the annual review and salary processes in my college.	2.50	.87	950
In my opinion, effective teaching plays a meaningful role in the promotion and tenure processes at my institution.	2.54	.86	950

When respondents were asked to provide their opinion about the quality of the evidence for effective teaching used by their colleges in annual review and salary processes as well as the promotion and tenure processes at their institutions (probably the most controversial survey questions), those choosing "Don't Know" or not answering increased to a little more than 40% (See Table 6.). Of those who chose to respond, in both cases, one third noted the teaching evidence was of "low quality" and half cited "medium quality" evidence of effective teaching.

Table 6. Percent Responses to Quality of Evidence of Effective Teaching

Your feedback regarding the quality of the evidence for teaching used in the following circumstances:								
	Low Quality		**Medium Quality**		**High Quality**		**Total**	**Non Response or Don't Know**
	N	**%**	**N**	**%**	**N**	**%**	**N**	**%**
By your College in the annual review and salary process.	224	34.4%	331	50.8%	97	14.9%	652	441
By your Institution in the promotion and tenure process.	212	33.2%	325	50.9%	101	15.8%	638	455

Conclusion

These findings represent the most basic aggregation of responses to the initial faculty survey conducted in Spring 2014 at the eight AAU project sites. They will provide a comparison point for the subsequent administration of this survey in 2016. More granular analysis of these initial survey results may continue into the following months.

Summary Report on Campus Infrastructure

PULSE Vision & Change Rubric 1.0. Each response scored as 0 (not observed), 1 (initial stages), 2 (average), 3 (very good), 4 (excellent, exemplary).

A. Physical Infrastructure

#	Factor	Aggregate Response
1	Classrooms and teaching laboratories can accommodate special needs and differing abilities.	3.7
2	Access to flexible, re-configurable teaching spaces to encourage student interaction, ability to work in small groups.	2.5
3	Classroom IT infrastructure encourages active learning practices.	2.8
4	Access to intelligently designed laboratory space flexible enough to allow different uses that blur distinction between lecture and lab.	2.7
5	Equipment/supplies in teaching laboratories.	2.7

B. Learning Spaces

#	Factor	Aggregate Response
1	Informal gathering spaces that encourage collaboration.	2.5
2	Learning Center for Students – for example, college-wide writing centers, learning centers or department level center with staff, tutor meeting rooms, TAs, computers and printers, study space for students.	3.2

C. Resources and Support

#	Factor	Aggregate Response
1	IT support for innovative teaching, responds quickly to IT crisis; support includes hands-on technology training for faculty and proactive survey of new technology.	3.4
2	Staff support for teaching: administrative help to support teaching, lab managers/lab instructors, curriculum development/learning specialists, tenure-track faculty with education specialty.	2.6
3	Institutional support for electronic resources: e.g., journal subscriptions and databases.	3.9

Summary Report on Evaluation of Teaching

The department statements on the evaluation of teaching for salary increase and for promotion and tenure had much in common across departments and institutions, including strong assertions that teaching is highly valued. All departments make use of student evaluations at the end of courses, and some also use peer observation for some decisions. Many have some kind of annual award for excellence in teaching. Most provided conventional descriptions of review processes and the provision of feedback to faculty members. From many of the statements (19 of 32, or 59% of those submitted), it would be impossible to discern whether attention to student-, active-, or evidence-based pedagogy was either recognized or required.

Across the 32 project site departments that submitted statements, only six had some form of explicit statement that included "introduction of innovative methods" or "introduction of active learning techniques" among the key criteria for excellence in teaching for tenure track faculty. Interestingly, two more included such criteria for their lecturers but not their tenure track faculty. Three of the six were explicit about their encouragement of active learning methods, via department discussion or department funding of attendance at faculty trainings provided by their professional societies. Another seven of the thirty-two had some statement that could be classified as permissive, for example, "the committee will review and consider any other elements the faculty member includes in their personal statement" or "publications or presentations on education may also be considered among the criteria for excellence in teaching" or "the time taken to introduce new methods is factored into the consideration of total workload" or "attendance at local or national meetings on education is taken as evidence of commitment to teaching." One explicitly acknowledged that student evaluations might drop in the first run of a new approach, and that this is taken into account in evaluating instructors who've used innovative or active-learning methods in the classroom.

Campus Site Visit Interview Protocols

AAU Undergraduate STEM Education Initiative

Campus Site Visits

Purpose: Evaluation is a key component of the AAU Undergraduate STEM Education Initiative. We aim to better understand the current status of STEM teaching and learning and to begin documenting progress along specific elements identified in the *Framework for Systemic Change in Undergraduate STEM Teaching and Learning* made on individual campuses, but we are also interested in being able to understand the progress made across the project sites.

To address the questions AAU seeks to answer, we intend to collect some common baseline data from all project sites. Beyond this baseline data request, AAU will ask project sites to provide additional information in their annual reports. Integrated with the collection of these baseline measures and annual reports, AAU will visit each of the eight project sites to allow a more qualitative evaluation of project implementation and progress, as well as the effects of the reform effort.

Site Visit Agenda: AAU project team members are scheduled visit each of the eight project sites during the 2013-2014 academic year. AAU has requested to meet with the following individual and/or teams: 1) Interviews with project team leadership and 2) Interviews with relevant department chairs, deans, and senior administrators (e.g. Provost). Interviews will occur individually or in small groups.

INTERVIEW PROTOCOL FOR PROJECT TEAM LEADERSHIP

We wish to understand the project at a deeper level, help situate and align local activities with the national initiative, demonstrate AAU's support, and address questions.

- What is the plan for implementation?
- What is the current progress toward implementing the project?
- With the launch, have they confronted unanticipated challenges or opportunities? Have changes occurred to the plan / scope of work? Why? How are they adapting?
- What activities, types of support, and the like is the institution, college, and department providing to help the project succeed?

INTERVIEW PROTOCOL FOR RELEVANT DEPARTMENT CHAIRS AND DEANS

- Please tell us about yourself and about your role and responsibilities in the AAU STEM Initiative. Looking to understand
    - What is their personal belief about the importance of reforms in undergraduate STEM educational reform?
    - What is their buy-in/commitment to their campus project?
- How do they perceive faculty attitudes toward using evidence-based instructional practices?
- Has the AAU STEM Initiative provided a new forum for conversations about teaching and learning?
- What is their sense of broad-based faculty support within the departments for the project?
- Can you tell us about any changes in the department's program and in how courses are taught?
- What kind of data does the department have/gather about the teaching practice of individual faculty members? How does that relate to promotion/tenure?
- What is the status of teaching and learning infrastructure (e.g., facilities, technology) in terms of facilitating the use of evidence-based teaching practices?

INTERVIEW PROTOCOL FOR PROVOSTS

- What is the current campus climate for change in undergraduate STEM teaching and learning?
- Considering departments are the locus for change, what are institutional efforts to support changes to teaching within the STEM departments?

AAU Undergraduate STEM Education Initiative

Campus Site Visits

Purpose: Evaluation is a key component of the AAU Undergraduate STEM Education Initiative. We aim to better understand the current status of STEM teaching and learning and to begin documenting progress along specific elements identified in the *Framework for Systemic Change in Undergraduate STEM Teaching and Learning* made on individual campuses, but we are also interested in being able to understand the progress made across the project sites.

To address the questions AAU seeks to answer, we intend to collect some common baseline data from all project sites. Beyond this baseline data request, AAU will ask project sites to provide additional information in their annual reports. Integrated with the collection of these baseline measures and annual reports, AAU will visit each of the eight project sites to allow a more qualitative evaluation of project implementation and progress, as well as the effects of the reform effort.

Site Visit Agenda: AAU project team members visit each of the eight project sites during the 2013-2014 academic year and are schedule to return to the project sites during the 2015-2016 academic year. AAU has requested to meet with the following individual and/or teams: 1) Interviews with project team leadership; 2) Interview with the evaluation team for the project site 3) Interviews with faculty members participating in course reforms; and 4) Interviews with relevant department chairs, deans, and senior administrators (e.g. Provost). Interviews will occur individually or in small groups.

INTERVIEW PROTOCOL FOR PROJECT TEAM LEADERSHIP

We wish to continue to understand the project at a deeper level, help situate and align local activities with the national initiative, demonstrate AAU's support, and address questions. It is also important now to discuss in greater detail achievements to date, the strategies used to successfully implement the project as well as the continued challenges faced by the project team in achieving scaled change. In addition, we want to review the modified timeline of the project sites.

- From the project teams perspective, what are key outcomes of the project at this time? What has really worked and been successful?
    - What indicators are you using to measure progress?
    - What have been successful strategies for achieving these outcomes?
    - Are there specific activities, types of support, and the like that the institution, college, and department is providing to help the project succeed? What else could be done?
- What are the unanticipated challenges or opportunities that the project team continues to confront? How can AAU be of support?
- How is the project team considering sustaining this effort? Are you observing spill over effects from the project? How is this project being aligned with established or new reform efforts?

INTERVIEW PROTOCOL FOR EVALUATION TEAM

- What are you evaluating?
- How are you conducting evaluation?
- What are your main findings at this time?
- What challenges are you confronting in evaluating the progress and outcomes of this project? Has this required you/your team to change the evaluation approach and/or plan?

- How is the evaluation being used? Are your findings informing and redirecting efforts of the project? Are the evaluation efforts aligned or linked with other evaluation efforts/reform projects on campus?
- How do you plan to disseminate what you have learned?

INTERVIEW PROTOCOL FOR FACULTY MEMEBERS

Provide background about AAU and the AAU Undergraduate STEM Education Initiative

- Please tell us about yourself and about your role and responsibilities in the AAU STEM Initiative.
- Within your reformed courses, what effects have you observed? What do you want to call to our attention?
- Within the university and your department, how do you perceive faculty attitudes toward using evidence-based instructional practices? Have you seen a change during the AAU project, i.e., the past 2-3 years ? What about during the past 5-10 years? If so, what were the changes and what do you attribute the changes to?
- Has the AAU STEM Initiative had an impact on policy, practices, and attitudes about teaching and learning? If so, how?
- From their perspective, what is necessary to have sustained improvement of undergraduate STEM education on your campus?
- If AAU could do one thing to change policies, practices, and attitudes to improve undergraduate STEM education what would it be?

INTERVIEW PROTOCOL FOR RELEVANT DEPARTMENT CHAIRS AND DEANS

- Please tell us about yourself and about your role and responsibilities in the AAU STEM Initiative.
- What are key outcomes of the project at this time? What has really worked and been successful? What do you want to call to our attention?
- Have you seen a change in the last 2-3 years? If so, in what ways and what do you attribute the changes to? Areas of interest:
    - Faculty attitudes toward using evidence-based instructional practices
    - Broad-based faculty support within the departments for the project
    - Changes in the department's program/curriculum and in how courses are taught
    - Teaching and learning infrastructure (e.g., facilities, technology) in terms of facilitating the use of evidence-based teaching practices?
- What kind of data does the department have/gather about the teaching practices of individual faculty members and student learning? How does that relate to promotion/tenure?
- Has the AAU STEM Initiative had an impact on policy, practices, and attitudes about teaching and learning? If so, how?
- If AAU could do one thing to change policies, practices, and attitudes to improve undergraduate STEM education what would it be?

INTERVIEW PROTOCOL FOR PROVOSTS

- In your view, what has changed since we last meet? (When applicable)
- What is the current campus climate for change in undergraduate STEM teaching and learning? Have you seen a change and if so, in what ways and what do you attribute the changes to?
- Considering departments are the locus for change, what are institutional efforts to support changes to teaching within the STEM departments? How are you holding departments accountable for faculty teaching practices and outcomes?

- What institutional data are organized and used on campus to inform decisions about undergraduate education?
- From your point of view, how well does the rewards system align with the undergraduate educational mission of your university? Are you aware of changes to the promotion and tenure process, and annual review, that reflect alignment with the value of evidenced- based instruction?
- How does the university intend to continue to sustain and support improvements to undergraduate STEM education?
- What are your thoughts on the continued role of AAU in supporting systemic improvement to undergraduate STEM education? If AAU could do one thing to change policies, practices, and attitudes to improve undergraduate STEM education what would it be?

Workshop & Conference Agendas

Improving Undergraduate STEM Education Workshop

May 21-22, 2012
AAU Office, 1200 New York Avenue, N.W., 5th Floor, Washington, DC 20005

AGENDA

MONDAY, MAY 21, 2012

6:00 – 7:00 p.m. **Welcome Reception**
Bobby Van's Grill – New York Ave.
1201 New York Avenue, N.W. *(just across the street from the AAU Office)*

7:00 – 9:00 p.m. **Dutch-Treat Dinner**
Bobby Van's Grill – New York Ave.
1201 New York Avenue, N.W.

TUESDAY, MAY 22, 2012

7:45 – 8:15 a.m. **Continental Breakfast**

8:15 – 8:30 a.m. **Review of Workshop Format and Objectives**

Welcome and Introductions:

Hunter R. Rawlings III, President, Association of American Universities
Martha Gilliland, Vice President, Research Corporation for Science Advancement

8:30 – 9:00 a.m. **Opening Discussion: Our Nation's Needs for STEM Undergraduate Education Reform**

Speaker:

Carl Wieman, Associate Director for Science, White House Office of Science and Technology Policy

9:00 – 10:30 a.m. **SESSION I: Background: Why STEM Students Leave?**

Moderator:
Hunter R. Rawlings III, President, Association of American Universities

Discussion Leaders:

Elaine Seymour, Director Emerita and Research Associate of Ethnography & Evaluation Research (E&ER), Center to Advance Research and Teaching in the Social Sciences, University of Colorado at Boulder
Kevin Eagan, Assistant Professor/ Assistant Director of the Higher Education Research Institute, University of California, Los Angeles
Richard Freeman, Herbert Ascherman Chair of Economics, Harvard University/Program Director for Labor Studies, National Bureau of Economic Research

10:30 – 10:45 a.m. **Break**

10:45 – 12:15 p.m. **SESSION II: What We Know Works: Teaching and Learning Models**

Moderator:
Martha Gilliland, Vice President, Research Corporation for Science Advancement

President's Council of Advisors on Science and Technology (PCAST) Report

- **S. James Gates Jr.**, John S. Toll Professor of Physics and Director of the Center for String and Particle Theory, University of Maryland, College Park/ Co-Chair, PCAST Working Group on Undergraduate STEM Education

National Academies Discipline-Based Education Research (DBER) Report

- **Susan Singer**, Laurence McKinley Gould Professor of Natural Sciences, Carleton College

12:15 – 12:30 p.m. **Introduction to Session III**

Discussion Leaders:

Michael S. Teitelbaum, Wertheim Fellow, Harvard Law School
Linda Slakey, Senior Advisor for STEM Education, Association of American Universities

12:30 – 1:00 p.m. **Working Lunch**

1:00 – 2:15 p.m. **SESSION III: Options for Action and Next Steps**

Discussion Leaders:

Michael S. Teitelbaum, Wertheim Fellow, Harvard Law School
Linda Slakey, Senior Advisor for STEM Education, Association of American Universities

2:15- 2:30 p.m. **Wrap-Up and Closing Comments**

Hunter R. Rawlings III, President, Association of American Universities
Martha Gilliland, Vice President, Research Corporation for Science Advancement

ASSOCIATION OF AMERICAN UNIVERSITIES

AGENDA

Wednesday, July 24, 2013

6:00 – 8:30 pm	Welcome & Networking Dinner Bobby Van's Grill 1201 New York Avenue, NW Introductory Remarks from Program Officers Myles Boylan, National Science Foundation Ryan Kelsey, The Helmsley Charitable Trust

Thursday, July 25, 2013

AAU STEM Initiative Workshop
AAU Office, 1200 New York Avenue, NW, Suite 550, Washington, DC 20005

8:30 – 9:00am	**Breakfast** AAU Conference Room A/B
9:00 – 9:45am	**Welcome & Framing** AAU Conference Room A/B <u>Welcome</u> John Vaughn, AAU Executive Vice President <u>AAU Undergraduate STEM Education Initiative: Momentum for Reform</u> Toby Smith, AAU Vice President Policy and AAU STEM Initiative co-PI, will provide an update on the status of the STEM Initiative and preview future initiative activities. <u>Workshop Objectives and Format</u> Emily Miller, AAU STEM Initiative Project Manager
10:00am – 10:45am	**Small Group Campus Share**

Many AAU universities are serious about advancing efforts to improve undergraduate STEM teaching and learning. During this session each member of the group will introduce themselves briefly and will share about a current campus effort to reform undergraduate STEM education or the area on campus where they see the greatest need for reform. The focus is to discuss barriers (and alternatively facilitators) present on their campus to reform undergraduate STEM education. The group will articulate at least one critical challenge and one critical facilitator to advancing undergraduate STEM reform and post these on large post-it pages.

***See enclosed breakout session assignments and room locations*.**

10:45 – 11:00am **Morning Break**
Read small group reflections.

11:00 -12:15pm **AAU Project Sites: Panel Presentation**
AAU Conference Room A/B

A project leader from each of the eight selected AAU project sites will present the focus of their project.

12:15 - 1:45pm **Project Site Lunch Tables**
A project leader from one of the eight selected AAU project sites will be at each table. Please sit at a table with a site where you see mutual interest or potential synergies with your campus. This will be a time for deeper questions and answers from a member of the project leadership team.

***See enclosed project site lunch table locations*.**

1:45 – 5:00pm **Measuring Progress**
AAU Conference Room A/B

1:45 – 2:00 <u>Introduction and Framing</u>
Jim Fairweather, Professor, Michigan State University
AAU STEM Initiative co-PI

2:00 – 3:00 <u>What are the metrics?</u>
AAU seeks your guidance to identify and develop a set of metrics that will allow individual institutions to document teaching practice, measure learning outcomes, and to assess factors that support sustained institutional change in STEM education.

- How are you currently measuring student progress and success in teaching and learning on your campus?

- How do you plan to evaluate/measure success of your campus project? How would you measure it for areas of interest where no activity is yet underway?
- What additional data would be helpful (classroom level, institutional-wide effects)?
- What are the challenges in developing the right metrics and collecting and using the data?

Each campus is asked to share their thoughts on metrics/measures as it pertains to assessing their own campus activities or areas of interest.

***See enclosed breakout session assignments and room locations*.**

3:00 – 3:45 Break

4:00 – 5:00 Metrics and Evaluation Small Group Discussions

Each small group will focus on a layer of the AAU framework (pedagogy, scaffolding, and cultural change). For each category, what are the most useful metrics on your campus? What metrics would be less useful or too burdensome to collect? Are the same measures useful to those playing different roles on campus? What are potentially useful common measures across institutions?

1. Pedagogy
2. Faculty Scaffolding
3. Student Measures
4. Institutional Change
5. Common Baseline Measures

***See enclosed breakout session assignments and room locations*.**

5:00 **Light Reception at AAU**
AAU Conference Room A/B

6:30 and 7:00pm **Dutch-Treat Dine-Around**
AAU has made reservations at a selection of restaurants. If you are interested in joining a dine-around, please sign up prior to the last session at 4pm.

Friday, July 26, 2013

8:30-9:00 am **Breakfast**
AAU Conference Room A/B

9:00 – 12 noon **AAU STEM Network**
AAU Conference Room A/B

9:00 – 9:10 am — Welcome

Hunter Rawlings, AAU President

9:15 – 10:30 am — Small Group Discussion

In an effort to sustain the campus-based dialogues on systemic change in undergraduate STEM education that have already been generated by the Initiative, we wish to create an AAU STEM Network. Please respond to the concept paper and contribute additional ideas.

- What would make a network meaningful and valuable?
- How can the network help your campus overcome barriers/challenges and provide support mechanisms?
- What support can AAU provide through the network to help advance local institutional efforts?
- How can the AAU network support the sharing of information among members?

The AAU STEM project team will facilitate discussions and have a note-taker. Each group will consist of a mixture of participants who each hold different roles on their campus. Please identify three action steps to move the network forward and prepare to present at report out.

***See enclosed breakout session assignments and room locations*.**

10:30 – 10:45 am — Break

10:45 – 12 noon — Small Group Report Out

AAU Conference Room A/B

Hunter Rawlings, AAU President, will moderate and summarize what he hears from groups as next steps for the AAU STEM Network.

Workshop on Effective Evaluation of Teaching and Learning

January 15 – 17, 2014

Cottrell Scholars Collaborative of RCSA and the Association of American Universities

1200 New York Avenue NW, Suite 550
Washington, DC 20005

Phone: (202) 408-7500 ❋ Fax: (202) 408-8184

AGENDA

WEDNESDAY, January 15

5:30 p.m. – 7:30 p.m. — **Welcome Reception**
Conference Rooms A & B — *Drinks and hors d'oeuvres will be provided*

7:30 p.m. — **Dine-Arounds at Area Restaurants**
See restaurant list to check which group you will be joining

THURSDAY, January 16

8:00 a.m. – 8:30 a.m. — **Coffee**
Conference Rooms A & B

8:30 a.m. – 9:30 a.m. — **Opening Remarks: Toby Smith**, Vice President for Policy, AAU
Conference Rooms A & B

Keynote: Susan Singer, Director, NSF Division of Undergraduate Education

9:30 a.m. – 9:45 a.m. — **Break**
Conference Rooms A & B

9:45 a.m. – 11:45 a.m. — **Pre- and Post-Testing & Discipline-Based Outcomes**
Conference Rooms A & B

Session Leader: **Adam Leibovich**, Professor of Physics, University of Pittsburgh

Panelists: **Noah Finkelstein,** Director, Center for STEM Learning, University of Colorado Boulder

Chandralekha Singh, Professor of Physics, University of Pittsburgh

Maura Borrego, Associate Dean of Engineering, Virginia Tech

11:45 a.m. – 1:00 p.m. **Lunch**
Conference Rooms A & B

THURSDAY, January 16

1:00 p.m. – 3:00 p.m. **Student Identification of Learning Outcomes and Improved Student Evaluations**
Conference Rooms A & B

Session Leader: **Will Dichtel**, Professor of Chemistry, Cornell University

Panelists: **Susan Elrod,** Dean of Sciences & Mathematics, California State University, Fresno

Scott Strobel, Henry Ford II Professor of Molecular Biophysics & Biochemistry, Yale University

3:00 p.m. – 3:15 p.m. **Break**
Conference Rooms A & B

3:15 p.m. – 5:15 p.m. **Administration & Implementation: Incentivizing, Uses and Abuses of Evaluation and Assessment**
Conference Rooms A & B

Session Leader: **Emily Miller**, STEM Project Manager, AAU

Panelists: **Kathryn Miller,** Professor and Chair of Biology, Washington University in St. Louis

Karen Bjorkman, Dean and Distinguished University Professor of Natural Sciences and Mathematics, University of Toledo

Mary-Ann Rankin, Senior Vice President and Provost, University of Maryland, College Park

6:00 p.m. – 7:00 p.m. **Reception**
Bobby Van's
1201 New York Ave NW

7:00 p.m. – 7:15 p.m. **Opening Remarks**
Bobby Van's

Introduction: **James Martin,** Professor of Chemistry, North Carolina State University

Speaker: **Peter Dorhout,** Dean of Arts & Sciences, Kansas State University

7:15 p.m. – 9:00 p.m. **Dinner**
Bobby Van's

FRIDAY, January 17

8:00 a.m. – 8:30 a.m. **Coffee**
Conference Rooms A & B

8:30 a.m. – 10:15 a.m. **Peer Observation and Evidence of Learning**
Conference Rooms A & B

Session Leader: **Andrew Feig**, Professor of Chemistry, Wayne State University

Panelists: **Pratibha Varma-Nelson,** Executive Director, Center for Teaching & Learning, and Professor of Chemistry, Indiana University – Purdue University Indianapolis

Robin Wright, Associate Dean of Biological Sciences, University of Minnesota

Gail Burd, Vice Provost for Academic Affairs, University of Arizona

10:15 a.m. – 10:30 a.m. **Break**
Conference Rooms A & B

10:30 a.m. – 12:15 p.m. **Analytics and Longitudinal Assessment**
Conference Rooms A & B

Session Leader: **Stephen Bradforth**, Professor of Chemistry, University of Southern California

Panelists: **Lynne Molter,** Chair of Engineering, Swarthmore College

Stephen Benton, Senior Research Officer, IDEA Education

Marco Molinaro, Assistant Vice Provost for Undergraduate Education and iAMSTEM Hub Director, University of California, Davis

12:15 p.m. – 12:30 p.m. **Closing Remarks**
Conference Rooms A & B

Speaker: **Hunter Rawlings,** President, AAU

ASSOCIATION OF AMERICAN UNIVERSITIES

AAU STEM Project Site Workshop

May 12 – 14, 2014

AGENDA

Monday, May 12, 2014

6:00 – 8:30pm **Welcome Dinner**
Bobby Van's Grill
1201 New York Avenue, NW

6:00 – 6:30pm **Opening Remarks**
Introduction: **Toby Smith,** Vice President for Policy, AAU
Speaker: **Richard F. McKeon,** Program Director, Helmsley Charitable Trust

6:30 – 8:30pm **Seated Dinner**

Tuesday, May 13, 2014

Location: AAU, 1200 New York Ave, NW, Suite 550 – AAAS Building

8:00 – 8:20am **Breakfast**

8:20 – 8:30am **Welcome and Introduction**
Toby Smith, Vice President for Policy, AAU

8:30 – 9:15am **Opening Session**
National Policy Environment
Mollie Benz Flounlacker, Associate Vice President for Federal Relations, AAU
Josh Trapani, Director of Policy Analysis, AAU

9:15 – 10:15am **AAU Project Site Presentations**
Presentations by Project Sites highlighting the work campuses have engaged in during year one and focuses on successful strategies that have addressed challenges. Time will be allocated for discussion and questions by other campuses.
9:15 – 9:45 am – Brown University
9:45 – 10:15 am – Michigan State University

10:15 – 10:45am **Break**

10:45 – 12:15pm **AAU Project Site Presentations**
10:45 – 11:15 am – The University of Arizona
11:15 – 11:45 am – University of California, Davis
11:45 – 12:15 pm – University of Colorado Boulder

12:15 – 1:00pm **Lunch and Remarks**
Hunter Rawlings III, President, AAU

1:00 – 2:30pm **AAU Project Site Presentations**
1:00 – 1:30 pm – University of North Carolina at Chapel Hill
1:30 – 2:00 pm – University of Pennsylvania
2:00 – 2:30 pm – Washington University in St. Louis

2:30 – 3:00pm **Cross Project Site Discussion**

3:00 – 3:30pm **Break**

3:30 – 5:00pm **Problem Solving: Challenges and Solutions**
Three groups with a representative from each campus. AAU will provide summary notes on strategies and challenges from presentations. Session will be facilitated by an AAU staff member.

5:00 – 6:30pm **Refreshments**
Drinks and hors d'oeuvres provided at AAU

Dine-Arounds at Area Restaurants

Wednesday, May 14, 2014

8:00 – 8:30am	**Breakfast**
8:30 – 9:00am	**Open Forum**
9:00 – 10:00am	**Looking Forward: AAU STEM Networking Conference** Discuss role of project sites in facilitating conference sessions.
10:00 – 10:15am	**Break**
10:15 – 11:50am	**Campus Team Reflection and Sharing** Campus teams reflect on their project, the problem solving session, and identify priorities for immediate action. Each project team will report out action items they will pursue once back on campus.
11:50 – 12:00pm	**Closing**

AAU STEM Network Conference
July 21 – 23, 2014
AGENDA

Monday, July 21, 2014

Location: Ronald Reagan Building Rotunda, 1300 Pennsylvania Ave., NW

6:00 - 8:30 pm **Poster Session and Networking Reception**
Welcome Remarks: Hunter Rawlings, AAU President

Tuesday, July 22, 2014

Location: PEW Charitable Trust, DC Conference Center, 901 E St., NW
Rooms: Americas (100); OK(40); AK(22); EU (22); HI(22); NM(18); KA(12)

8:00– 8:30am **Breakfast**

8:30 – 9:00am **Welcome & Introductions**
Room: *Americas* (100)
Welcome Remarks: Helmsley Charitable Trust (confirmed) and NSF (invited)

PLENARY PANEL
9:00 - 10:00am **National & State Policy Environment Panel**
Room: *Americas* (100)
Mollie Benz Flounlacker, Associate Vice President for Federal Relations, AAU (invited)
David Longanecker, President of the Western Interstate Commission for Higher Education (confirmed)

10:00 – 10:15am **Break/Transition**

BREAKOUT SESSION I
10:15 – 11:45pm

Pedagogy
Curriculum Alignment across STEM Disciplines

Presenters: Melanie Cooper, Lappan-Phillips Chair of Science Education and Cori Fata-Hartlety, Assistant Professor, Michigan State University (confirmed)

Cultural Competent Pedagogies / Implicit Bias
Presenters: Jamie Bracey, Director of STEM Education, Outreach & Research, Office of the Dean, Temple University (confirmed)

Scaffolding

Redesign of Space to support high impact teaching practices
Presenter: Dennis DeTurck, Dean of the College and Beth Winkelstein, Associate Dean of Undergraduate Education in School of Engineering and Applied Science, UPenn (confirmed)

Faculty Learning Communities
Presenter: Edward Prather, Executive Director, Center for Astronomy Education (CAE), University of Arizona (confirmed)

Cultural Change

How Faculty Learn
Presenter: Ann Austin, Professor, Michigan State University and Mary Deane Sorcinelli, Associate Provost for Faculty Development, Director of the Center for Teaching and Learning, University of Massachusetts Amherst (confirmed)

Data to support decision making at multiple levels – faculty, department, institutional
Presenters: Marco Molinaro and Chris Pagliarulo, iAMSTEM, Office of Undergraduate Education, UC Davis (confirmed)

LUNCH
11:45 – 12:30pm **Lunch**

PLENARY PANEL
12:30 – 1:30pm **Reforming Undergraduate STEM Teaching and Learning National Projects Panel** [Map campuses to national project.]
Room: *Americas* (100)
Moderator: Linda Slakey

- Howard Gobstein, APLU (confirmed)
- AACU/PKAL/TIDES – TBD
- Bob Mathieu, CIRTL (confirmed)
- Gabriela Weaver, Bay View Alliance (confirmed)
- Karen Elzey, BHEF (invited)
- Jennifer Turns, CPREE
- David Asai, HHMI Sustaining Excellence (confirmed)

1:30 - 1:45 **Transition**

BREAKOUT SESSION II

1:45 – 3:00pm **Round Table Discussions**

AAU STEM Initiative team members will facilitate an information sharing conversation. [Discussion questions/prompts TBD] A recorder will capture notes.

Room 1: Department Chairs: Challenges and Strategies
Facilitator: Emily Miller, Notetaker: AAU Intern

Room 2: Teaching and Learning Centers: Challenges and Strategies
Facilitator: Linda Slakey, Notetaker: AAU Intern

Room 3: University Leadership: Challenges and Strategies
Facilitator: Toby Smith, Notetaker: Traci

Room 4: Faculty**:** Challenges and Strategies
Facilitator: Jim Fairweather, Notetaker: Matt Stephen

Room 5: HUBzero Quick Questions with Ann Bessenbacher, Project Coordinator, Discovery Learning Research Center, Purdue University

Room 6: How to work with your federal and state leaders [Invitations TBD], moderated by AAU CFR Staff

Location TBD: AAU Baseline Data Collection Questions with Josh Trapani, AAU Director of Policy Analysis and Karen Paulson, NCHEMS

3:00 – 3:30pm Break

BREAKOUT SESSION III
3:30 – 5:00pm

Pedagogy
Topic Title TBD
Presenter: Myles Boylan, Program Director, National Science Foundation (invited)

Using collaborative ePortfolios to foster metacognitive inquiry thinking
Presenter: Kathy M. Takayama, Executive Director, Sheridan Center, Brown University (confirmed)

Scaffolding
Professional Development for Faculty and TAs
Presenters: Laurie McNeil, Bernard Gray Distinguished Professor in the Department of Physics and Astronomy, UNC and Chris Pagliarulo, iAMSTEM, Office of Undergraduate Education, UC Davis (confirmed)

Teaching and Learning Centers as partners in Reforming Undergraduate STEM Teaching
Presenter: Gina Frey, Executive Director of The Teaching Center and the Co-Director of the Center for Integrative Research on Cognition, Learning, and Education (CIRCLE), WashU (confirmed)

Cultural Change
Facilitating Change in Undergraduate STEM Education
Presenter: Andrea Beach, Director of faculty development and an associate professor of higher education leadership at Western Michigan University (WMU) and Noah Finkelstein, Professor of physics at the University of Colorado-Boulder and a director of the Physics Education Research (PER) group and of the university's Center for STEM Learning. (confirmed)

Promotion and Tenure Policies & Committees
Discussion moderated by Jim Fairweather, Professor, Michigan State University (confirmed)

5:00 – 5:30pm: **Closing**

Dutch-Treat Dine-Arounds at Area Restaurants

Wednesday, July 23, 2014

Location: PEW Charitable Trust, DC Conference Center, 901 E St., NW
Rooms: S.America(60); OK(40); EU(22); HI(22); NM(18)

Breakfast
7:30 – 8:00am
SESSION IV
8:00 – 9:00am **Round Table Discussions**
Strategies that are working within your department to scale the adoption and usage of evidence based practices. Conference participants representing the discipline will be invited to moderate the discussion. Disciplinary society representatives invited to join round table discussion as an observer.

Room 1: Physics
Moderator: TBD, Notetaker: Emily Miller

Room 2: Chemistry
Moderator: TBD, Notetaker: Linda Slakey

Room 3: Engineering
Moderator: TBD, Notetaker: Jim Fairweather

Room 4: Mathematics
Moderator: TBD, Notetaker: Traci

Room 5: Biology
Moderator: TBD, Notetaker: Matt Stephen

Location TBD: HUBzero Quick Questions with Ann Bessenbacher, Project Coordinator, Discovery Learning Research Center, Purdue University

Location TBD How to work with your federal and state leaders [Invitations TBD], moderated by Toby Smith, AAU VP for Policy

Location TBD: AAU Baseline Data Collection Questions with Josh Trapani, AAU Director of Policy Analysis and Karen Paulson, NCHEMS

9:00 - 9:15 **Transition**

PLENARY PRESENATION

9:15 – 10:30am **Achieving Cultural Change: Indicators of Progress**
Presenters: Stan Deetz, Professor in the Graduate School, University of Colorado at Boulder. Director of the Center for the Study of Conflict, Collaboration and Creative Governance and the Peace and Conflict Studies Program (confirmed)

10:30 - 11:00am **Break & Transition**

BREAKOUT SESSION V

11:00 – 12:00 noon **Reflection: What have we learned from others that can inform what we do next?**

Room 1: Facilitator – Toby, Notetaker - Karen
Room 2: Facilitator – Jim, Notetaker – Matt
Room 3: Facilitator – Linda, Notetaker -Traci
Room 4: Facilitator – Emily, Notetaker – Ann B.

12:00 – 12:30pm **Closing**
Report outs from groups (5 mins per group)
Hunter Rawlings – Thank you for attending.

AAU Undergraduate STEM Education Initiative

Improving Undergraduate STEM Teaching & Learning: The Role of the Department Chair
April 27-28, 2015

AAAS Building
1200 New York Avenue NW, Washington D.C. 20009
Phone: 202-405-7500

MONDAY, April 27

4:00 – 5:00 p.m.
2nd Floor Foyer

Registration

5:00 – 6:00 p.m.
2nd Floor Auditorium

Welcome & Introduction
Brief history and current status of the AAU Undergraduate STEM Education Initiative

- **Toby Smith**, Vice President for Policy, AAU
- **Emily Miller**, Project Director, AAU Undergraduate STEM Education Initiative

6:00 – 8:00 p.m.

Networking Dinner
Food is not allowed in Auditorium.

TUESDAY, April 28

8:00 – 8:30 a.m.
2nd Floor Foyer

Registration and Breakfast
Please finish breakfast by 8:30 a.m. Food is not allowed in Auditorium.

8:30 – 8:45 a.m.
2nd Floor Auditorium

Welcome: Hunter Rawlings, President, AAU

8:45 – 9:45 a.m.
2nd Floor Auditorium

The department chair as an agent of change to improve STEM Education
Moderator: James Fairweather, Professor, Michigan State University
Panelists:

- **Matthew Ando**, Chair and Professor, Department of Mathematics, Illinois Urbana Champaign
- **Vicki Bautch**, Professor and Department Chair, Department of Biology, The University of North Carolina at Chapel Hill
- **Cori Fata-Hartley**, College of Natural Science, Assistant Dean, Michigan State University
- **Kathryn Miller,** Chairman Department of Biology, Washington University, St. Louis
- **Diane O'Dowd**, HHMI Professor, Developmental & Cell Biology, University of California, Irvine

9:45 – 10:15 a.m. **Break and transition to discussion groups**

10:15 – 11:45 a.m. **Small Group Discussion: Session I**
2nd and 5th Floors – See Handout

- All STEM departments teach courses in service to other departments. How are learning objectives established for introductory service courses and courses for department majors?
- What are the benefits and limitations of the various staffing models for introductory STEM courses?

11:45 – 1:15 p.m. **LUNCH**
2nd Floor Foyer *The 2nd Floor Foyer, Ravelle, Haskins, Abelson rooms are open for lunch seating.*

1:15 – 2:00 p.m. **Reports by Discussion Groups**
2nd Floor Auditorium

2:00 – 2:15 p.m. **Break and transition to discussion groups**

2:15 – 3:45 p.m. **Small Group Discussion: Session II**
2nd and 5th Floors – See Handout

- How do STEM departments assess curricular innovations?
- What are meaningful metrics and indicators for evaluating and rewarding teaching and learning?

3:45 – 4:15 p.m. **Break**

4:15 – 5:00 p.m. **Reports by Discussion Groups**
2nd Floor Auditorium

5:00 – 5:45 p.m. **A dialogue with a Department Chair and Dean**
2nd Floor Auditorium
Moderator: Toby Smith, Vice President for Policy, AAU
Alignment of leadership across the university is necessary to overcome the inherent obstacles to systemic and sustainable change in undergraduate STEM education. Engage in a discussion on how to align and situate department goals within the priorities of the college and the university.

5:45 – 6:00 p.m. **Closing**

The Association of American Universities extends its gratitude to The Leona M. and Harry B. Helmsley Charitable Trust, the National Science Foundation, and Elsevier for making this workshop possible through their financial support.

AAU Undergraduate STEM Education Initiative
Network Conference

October 13-14, 2015

Hosted by the Center for Integrative Research on Cognition, Learning, and Education and the Association of American Universities

Location: The Charles F. Knight Executive Education & Conference Center,
Corner of Throop Drive & Snowy Way Drive

TUESDAY, October 13

8:00, 8:15, 8:30 a.m. — ***Shuttles from Clayton Plaza Hotel***

8:30 – 9:00 a.m. — **Registration**
Outside Room 200
Continental breakfast at the Knight Center and Clayton Plaza Hotel for all conference participants

9:00 – 9:30 a.m. — **Welcome**
Room 200
Provost Holden Thorp, PhD, Washington University in St. Louis

The following presentations and roundtables are structured around the key elements in AAU's Framework for Systemic Change in Undergraduate STEM Teaching and Learning.

9:30 – 10:15 a.m. — **Pedagogy**
Room 200

Chemical Thinking: A Story of Curricular and Instructional Transformation
John Pollard, Associate Professor of Practice in the Department of Chemistry and Biochemistry, University of Arizona

Understanding and Measuring Project Ownership in Undergraduate Inquiry Based Laboratory Courses
David I. Hanauer, Lead Assessment Coordinator of the SEA-PHAGES Program, Hatfull Laboratory, University of Pittsburgh & Professor of Applied Linguistics, Indiana University of Pennsylvania

10:15 – 10:30 a.m. — ***Break & Transition to Roundtables***

10:30 – 11:30 a.m. — **Roundtables**
Room 200,210, 255 & Boardroom, Additional rooms

- Articulated Learning Goals / Curriculum Redesign
- Educational Practice
- Assessments
- Access

11:30 a.m. – 1:00 p.m. — **Lunch**
Main Dining Room 3rd floor

TUESDAY, October 13

1:00 – 1:45 p.m.
Room 200

Scaffolding

Learning Spaces
Jeanne Narum, Principal, Learning Spaces Collaboratory

The Role of Teaching and Learning Centers
Jennifer Frederick, Executive Director, Center for Teaching and Learning, Yale University

1:45 – 2:00 p.m. ***Break & Transition to Roundtables***

2:00 – 3:00 p.m.
Room 200, 210, 255 & Boardroom, Additional Rooms

Roundtables

- Provide faculty professional development
- Easily accessible resources
- Collect and share data on program performance
- Align future facilities planning

3:00 – 3:15 p.m. ***Break & Transition***

3:15 – 4:00 p.m.
Room 200

Cultural Change

Excellence in Research and Teaching: Career Pathway Models
Diane O'Dowd, HHMI Professor; Vice Provost, Academic Personnel, University of California, Irvine

Endowed Chairs in STEM Education
Gina Frey, Florence E. Moog Professor of STEM Education, Co-Director, CIRCLE and Executive Director, The Teaching Center, Washington University

4:00 – 4:15 p.m. ***Break & Transition to Roundtables***

4:15 – 5:15 p.m.
Room 200, 210, 255 & Boardroom, Additional Rooms

Roundtables

- Leadership commitment
- Establish strong measures of teaching excellence
- Align incentives with the expectation of teaching excellence

5:15 – 5:30 p.m. ***Break and Set-up for Poster Session***
Main Dining Room, 3rd floor

5:30 – 7:30 p.m.
Main Dining Room, 3rd floor

Networking Reception & Poster Session
To allow everyone to have the opportunity to speak with poster authors, we ask that individuals with odd numbered posters staff them from 5:30 – 6:15 p.m. People presenting even numbered posters, please staff them from 6:15 – 7:00 p.m. From 7:00 – 7:30 p.m., all posters are available for display.

7:15, 7:30, 7:45 p.m.

Shuttles returning to Clayton Plaza Hotel

WEDNESDAY, October 13

7:30, 7:45, 8:00 a.m.

Shuttles from Clayton Plaza Hotel

8:00 – 8:30 a.m.
Outside Room 200

Breakfast

8:30 – 8:45 a.m.
Room 200

Opening Remarks

8:45 – 10:00 a.m.
Room 200, 210,255

Workshop Time: Measuring Progress
Participants are asked to come prepared to discuss information, data sources, and analytical tools that are currently being used on their campus to inform decision making and measure progress toward systemic change in undergraduate STEM

- Indicators of sustained change at the university
- Department performance indicators
- Effective teaching evaluation approaches

10:00 – 10:15 a.m.

Break and Transition

10:15 – 11:30 a.m.
Room 200

Thinking Bigger – The Science Education Initiative: Results from a Large Scale Experiment in Transforming Teaching throughout Multiple Science Departments
Dr. Carl Wieman, Professor of Physics and of the Graduate School of Education at Stanford University

11:30 – 12:00 p.m.
Room 200

Future Directions of AAU Undergraduate STEM Education Initiative
Emily Miller, Director, AAU Undergraduate STEM Education Initiative
Tobin Smith, Vice President for Policy, Association of American Universities

12:00 – 1:00 p.m.
Main Dining Room, 3rd floor

Closing Lunch

AAU Undergraduate STEM Education Initiative

AAU STEM Project Site Workshop

April 3 – 5, 2016

Location: Association of American Universities, 1200 New York Avenue, NW, Suite 550 – AAAS Building

SUNDAY, April 3

5:30 – 7:30 p.m.
Zaytinya, 701 9th ST NW

Welcome & Networking Dinner
Opening Remarks: **Sue Cui,** Associate Program Officer, Helmsley Charitable Trust

MONDAY, April 4

8:30 – 8:45 a.m.
Conference Room B

Breakfast

8:45 – 9:00 a.m.
Conference Room B

Welcome
Hunter R. Rawlings III, President, AAU

9:00 – 9:45 a.m.
Conference Room B

AAU Presentation & Panel Discussion
Moderator: **Emily Miller**, Director, AAU STEM Initiative

Panelists: **Tobin Smith**, Vice President for Policy, AAU
James Fairweather, Professor Emeritus, Michigan State University
Linda Slakey, Senior Advisor, AAU STEM Initiative
Adrianna Kezar, Professor of Higher Education, University of Southern California

9:45 – 10:00 a.m.

Break & Transition to Small Groups

10:00 – 11:30 a.m.
Conference Room A, Conference Room B, Founders' Room, AAAS GL100

Strategies & Future Horizons (Cross-Team)
What are future opportunities and challenges you foresee related to:

- Aligning curriculum within and between departments
- Embedding STEM pedagogical expertise within departments
- Developing and reconfiguring instructional space
- Aligning reward structures with the expectation of evidence-based teaching

11:30 a.m. – 12:00 p.m.

Develop a Just-in-Time Poster

12:00 – 1:30 p.m.
Conference Room B

Lunch & Poster Session

MONDAY, April 4

1:30 – 2:45 p.m.
Conference Room A, Conference Room B, Founders' Room, Tobin Smith's Office, Josh Trapani's Office, AAAS GL100

Project Site Team Discussions (Campus Team)
Thinking beyond the initial project, we want project site teams to use the following time to discuss and develop strategies and/or action plans:

- To continue to measure impact of undergraduate educational improvement at the individual and institutional levels
- To sustain and scale effective change strategies learned from the project within the department, college, and university
- To align and connect this work to established or new efforts being advanced on campus to improve undergraduate education

2:45 – 3:00 p.m. — **Break**

3:00 – 4:30 p.m.
Conference Room B

Cross Project Site Discussion
Moderator: **Tobin Smith**, Vice President for Policy, AAU
Each project site will present a summary of action plans to continue the current efforts and to work toward long-term change.

4:30 – 5:00 p.m.
Conference Room B

Ask AAU
Hunter R. Rawlings III, President, AAU
Tobin Smith, Vice President for Policy, AAU
Emily Miller, Director, AAU STEM Initiative

5:00 – 6:00 p.m. — **Refreshments**
Drinks and hors d'oeuvres provided at AAU

TUESDAY, April 5

9:00 – 9:30 a.m. — **Breakfast**
Conference Room B

9:30 – 10:30 a.m.
Conference Room A, Conference Room B, Founders' Room, AAAS GL100

Collective Impact (Cross-Team)
Each project site team has advanced institution-wide efforts to improve undergraduate STEM education. Is there an interest in developing or producing a group "product" that contains cross-cutting themes, recommendations, or strategies about educational reform? Please develop a few concepts for consideration.

10:30 – 10:45 a.m. — **Break**

10:45 – 11:30 a.m.
Conference Room B

Group Reports & Discussion

11:30 a.m. – 12:00 p.m. — **Final Remarks & Closing Comments**

SMALL GROUP ROOM ASSIGNMENTS

Monday, April 4

10:00 a.m. – 12:00 p.m. **Strategies & Future Horizons (Cross-Teams)**

Conference Room A
Facilitator: James Fairweather
Participants: Melanie Cooper, Joel Corbo, Marina Crowder, Lisa Elfring, Bruce Lenthall, Kurt Thoroughman

Conference Room B
Facilitator: Emily Miller
Participants: Dennis DeTurck, Diane Ebert-May, Jane Hunter, Michele Igo, Gina Frey, David Smith

AAAS GL100
Facilitator: Linda Slakey
Participants: Gail Burd, Noah Finkelstein, Kelly Hogan, Chris Pagliarulo, Erin Solomon, Jim Valles

Founders' Room
Facilitator: Tobin Smith
Participants: Kathryn Miller, Marco Molinaro, Cheryl Moy, Lynmarie Posey, Daniel Reinholz, Beth Winkelstein

1:30 – 2:45 p.m. **Project Site Team Discussions**

Conference Room A
Team: Washington University in St. Louis
Facilitator: Joanna Drivalas

Conference Room B1
Team: University of Pennsylvania, Brown University
Facilitator Emily Miller

Conference Room B2
Team: University of North Carolina, Chapel Hill
Facilitator: Adrianna Kezar

Founders' Room
Team: University of California, Davis
Facilitator: Hannah Poulson

Josh Trapani's Office
Team: University of Colorado Boulder
Facilitator: Linda Slakey

Tobin Smith's Office
Team: Michigan State University
Facilitator: Tobin Smith

AAAS GL100
Team: University of Arizona
Facilitator: James Fairweather

Tuesday, April 5

9:30 – 10:30 a.m.

Collective Impact (Cross-Teams)

Conference Room A
Facilitator: James Fairweather
Participants: Gail Burd, Dennis DeTurck, Noah Finkelstein, Kathryn Miller, Marco Molinaro, David Smith

Conference Room B
Facilitator: Emily Miller
Participants: Melanie Cooper, Lisa Elfring, Kelly Hogan, Chris Pagliarulo, Erin Solomon, Beth Winkelstein

AAAS GL100
Facilitator: Linda Slakey
Participants: Joel Corbo, Marina Crowder, Jane Hunter, Cheryl Moy, Lynmarie Posey, Kurt Thoroughman

Founders' Room
Facilitator: Tobin Smith
Participants: Diane Ebert-May, Gina Frey, Michele Igo, Bruce Lenthall, Daniel Reinholz, Jim Valles

AAU-Cottrell Scholars Collaborative
Implementing Effective Evaluation of Teaching Workshop

May 22 – 24, 2016

Location: Surf & Sand Resort,

1555 South Coast Highway, Laguna Beach, CA 92651

SUNDAY, May 22

3:00 – 4:00 p.m.
Sand Dollar
Registration

4:00 – 4:30 p.m.
Sand Dollar
Welcome
Silvia Ronco, Senior Program Officer, Research Corporation for Science Advancement
Michael Dennin, Cottrell Scholar, Professor of Physics, Vice Provost for Teaching and Learning, University of California, Irvine

4:30 – 5:30 p.m.
Sand Dollar
Keynote Speaker

Advancing a Culture of Teaching at Research Universities
Mary Deane Sorcinelli, Distinguished Scholar in Residence, Mount Holyoke College

5:30 – 7:30 p.m.
Ocean Terrace
Networking Dinner

MONDAY, May 23

8:30 – 9:00 a.m.
Sand Dollar Terrace
Breakfast

9:00 – 9:15 a.m.
Sand Dollar
Welcome
Enrique J. Lavernia, Provost, University of California, Irvine

9:15 – 9:45 a.m.
Sand Dollar
Introductions & Overview of AAU-Cottrell Scholars Collaborative Project
Zachary Schultz, Cottrell Scholar, Associate Professor of Chemistry & Biochemistry, University of Notre Dame

9:45 – 10:45 a.m.
Sand Dollar
Implementing Better Approaches to Evaluate Teaching: Bridging Policy and Practice
James Fairweather, Professor Emeritus, Higher, Adult and Lifelong Education, Michigan State University
Emily Miller, Director, AAU Undergraduate STEM Education Initiative

10:45 – 11:00 a.m.
Break

MONDAY, May 23

11:00 – 12:00 p.m.
Sand Dollar

Practices to Value, Promote & Assess Teaching Quality at Multiple Levels
Moderator: **Toby Smith**, Vice President for Policy, AAU

Individual Improvement
Melissa D. Barnett, Associate Director for Assessment & Evaluation, Teaching and Learning Laboratory, Massachusetts Institute of Technology

Department Level Criteria: A Rubric for Department Evaluation of Faculty Teaching
Andrea Greenhoot, Professor of Psychology, Director and Gautt Teaching Scholar, Center for Teaching Excellence, University of Kansas
Daniel Bernstein, Professor of Psychology, University of Kansas

Institutional Level Improvement: Tools & Dashboards
Marco Molinaro, Assistant Vice Provost for Educational Effectiveness, University of California, Davis

12:00 – 1:30 p.m.
Ocean Terrace

Lunch

1:30 – 2:30 p.m.
Sand Dollar

Building a Culture of Continuous Improvement
Moderator: **James Martin**, Cottrell Scholar, Professor of Chemistry, North Carolina State University

Understanding the Academy
Andrea Beach, Professor of Higher Education Leadership
Co-Director of WMU Center for Research on Instructional Change in Postsecondary Education (CRICPE),Western Michigan University

Perspective of the STEM Department
Kathryn Miller, Professor and Chair of Biology Department, Washington University in St. Louis

Towards a Framework for Assessing and Promoting Teaching Quality
Noah Finkelstein, Professor of Physics, Director of the Physics Education Research Group, Director of CU's Center for STEM Learning, University of Colorado Boulder

2:30 – 2:45 p.m.

Break & Transition

2:45 – 4:30 p.m.
Sand Dollar

Small Group Workshop Time

A goal of this workshop is to develop a practitioner-focused document that can inform and improve how quality teaching is valued, evaluated, and recognized at research universities. Presenters will facilitate breakout discussions and obtain feedback on a draft document.

4:30 – 4:45 p.m. **Break**

MONDAY, May 23

4:45 – 5:45 p.m.
Sand Dollar

How teaching is evaluated and valued in the merit and promotion process at UC Irvine: A story of incremental change

Moderator: **Andrew Feig**, Cottrell Scholar, Professor of Chemistry, Associate Dean for Data Management, Wayne State University

Presentation: **Diane O'Dowd**, HHMI Professor; Vice Provost, Academic Personnel, University of California, Irvine

Respondents: **Seth Cohen**, Cottrell Scholar, Professor and Chair of Chemistry & Biochemistry Department, University of California, San Diego
Stephen Bradforth, Professor and Chair of Chemistry, University of Southern California

TUESDAY, May 24

8:30 – 9:00 a.m. **Breakfast**
Sand Dollar Terrace

9:00 – 9:15 a.m.
Sand Dollar

Opening Remarks
Michael Dennin, Cottrell Scholar, Professor of Physics, Vice Provost for Teaching and Learning, University of California, Irvine

9:15 – 10:15 a.m.
Sand Dollar

Workshop Time: Guidelines & Recommendations for P&T Committees

At roundtables develop 3-4 key guidelines or recommendations for P&T committees at the department, college and university levels to more effectively recognize and reward quality undergraduate teaching.

10:15 – 10:30 a.m.
Sand Dollar

Closing Comments
Toby Smith, Vice President for Policy, AAU

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