

Mid-Atlantic Center of Ocean Science Education Excellence

Final Recommendations

from the

COSEE-MA Minority Advisory Committee

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Acknowledgments

The partners of COSEE-MA would like to thank all committee members for agreeing to assess how we engage and address issues of diversity and underrepresented groups in our activities and products. Addressing diversity and underrepresented groups are major goals for COSEE-MA and the insights provided are invaluable to the entire COSEE network.

EXECUTIVE SUMMARY

PURPOSE

As the Mid-Atlantic Center of Ocean Science Education Excellence (COSEE-MA) moved forward in attempting to produce national products, it was recognized that such products must be as reflective as the communities being served in the Mid-Atlantic Region. With regards to issues of diversity and underrepresented groups, it was understood that many of COSEE-MA's activities and products needed improvement. Thus, the partners of COSEE-MA made a proactive attempt to improve their products and understanding of such issues through the creation of a committee of leading scientists and educators (Appendix A) with expertise in such areas. The main goal of this committee was to identify 1) areas of success, 2) areas for improvement, 3) new activities for inclusion, and 4) strategies for implementation of recommendations, as it relates to the inclusion of diversity and underrepresented groups in COSEE-MA's products and activities.

OVERVIEW

The committee had two teleconference calls and **met** once in order to discuss COSEE-MA's products and activities. During the first conference call, committee members were familiarized with COSEE-MA's summer teachers' workshop, graduate student training, and associated web materials. Several partners of COSEE-MA were on hand to answer any questions that arose in addition to joining the discussions. Materials particular to the first teleconference can be found in Appendix B.

During the second teleconference call, the committee discussed 1) their ideas, comments, and suggestion on COSEE- MA's summer teachers' workshop, graduate student training, and associated web materials, 2) ways of enhancing the connection between researchers and educators, and 3) COSEE-MA's plans to broaden the scope of the workshop to serve educators in other U.S. regions. The second teleconference specifically addressed the issue of diversity and underrepresented groups in the activities and products of COSEE-MA. One key theme and recommendation that emerged from the call was the idea of cultural competency and the development of a rubric that would evaluate the cultural competency of all of COSEE-MA's activities and products.

The final meeting of the committee took place at the Virginia Institute of Marine Science. The purpose of this final meeting was to produce a short written document identifying 1) areas of success, 2) areas for improvement, 3) new activities for inclusion, and 4) strategies for implementation of recommendations. This document can be found in Appendix C.

TABLE OF CONTENTS

Executive Summary	i
Results in Brief	
Areas of Success.....	1
Areas for Improvement.....	1
New Activities for Inclusion.....	2
Strategies for Implementation of Recommendations.....	2
Appendices	
A Members of the Minority Advisory Committee.....	4
B Materials for First Teleconference call.....	6
C Minority Advisory Committee's Written Document.....	9

RESULTS IN BRIEF

AREAS OF SUCCESS:

The Minority Advisory Committee congratulated COSEE-MA on their endeavors in increasing both consciousness and education within the ocean sciences. One area of success identified by the committee was graduate student training. The graduate student training offered by COSEE-MA was seen as an excellent way of getting soon to be scientists familiarized with the world of k-12 education. As it related to the issues of diversity and underrepresented groups, the committee looked favorably on the fact that one of the three graduate students receiving training was a member of one of the underrepresented groups in ocean sciences.

AREAS FOR IMPROVEMENT:

The Minority Advisory Committee identified several areas of COSEE-MA that needed improvement as it related to the issues of diversity and underrepresented groups. The summer teachers' workshop and associated COSEE-MA web materials were thought to lack the diversity reflected in the communities being served in the Mid-Atlantic region. In addition, the committee thought that the partners themselves would benefit from some form of cultural competency training.

Specifically for the summer workshop, COSEE-MA needs to recruit more under-represented teachers to participate in the workshop. Recruitment needs to be actively done in underrepresented communities. In addition, COSEE-MA partners need to push beyond their current comfort level of advertising and recruiting, as it relates to bringing in teachers from underrepresented groups, because it is not working. Due to the fact that half of the teachers participating in the workshop feel that teaching ethnic students is enough, according to follow up surveys, COSEE-MA needs to improve on how the teachers recognize their own cultural biases and how that influences how they perceive their students. The summer workshop needs to focus on cultural competence regardless of the participant's race or ethnicity.

Specifically for the associated COSEE-MA web materials, the committee recommended that the partners develop a more personal relationship than a centralized website. Relationships with people are necessary for information to flow. For many underrepresented groups, information is shared orally; therefore many underrepresented groups may not access the website. In addition, many underrepresented groups may not have technological access to the website. More importantly, once the web site is accessed, the issue of serving underrepresented groups is a separate entity and could be better integrated throughout the website. Additionally, the COSEE-MA website needs pictures of underrepresented groups

actively engaged in ocean sciences (researchers, educators, or students) so that when accessed, the website reflects more diversity.

Lastly, the Minority Advisory Committee stressed the need for COSEE-MA to assist all partners in completing a cultural competency training course. It is believed that such a course would better help partners of COSEE-MA understand and address the national demographic shift in which the traditional populace cannot meet the growing needs in the ocean sciences and, that the development and implementation of new ocean science and engineering solutions requires perspectives from various backgrounds. Such diverse perspectives are suggested to accelerate and inform science innovations, in general, which are necessary for Americans to compete scientifically and economically in the current global market.

NEW ACTIVITIES FOR INCLUSION:

The Minority Advisory Committee suggested one new activity for inclusion in COSEE-MA. It was recommended that a diversity and cross-cultural competency evaluative instrument be developed and used to evaluate all of the activities and products of COSEE-MA. Specifically, the committee suggested the development of a cultural rubric, whereby all activities and products would be evaluated for its cultural sensitivity and inclusion (or exclusion) of underrepresented groups.

In addition, the committee suggested one new product for inclusion in COSEE-MA, the production of a CD/DVD for middle and high school students. The CD/DVD would contain content information relative to State Standards of Learning for ocean science education. The CD/DVD would also contain underrepresented groups and regional communities served by COSEE-MA in the Mid-Atlantic region. This CD/DVD could be used as an advertisement tool for COSEE-MA activities and products in addition highlighting underrepresented researchers, educators, and students in the ocean sciences.

STRATEGIES FOR IMPLEMENTATION OF RECOMMENDATIONS:

The most crucial strategy necessary for proper implementation of all recommendations of the Minority Advisory Committee is that COSEE-MA partners take steps to develop cross-cultural competencies. It is imperative that COSEE-MA sponsor continuous formal training in this area. In addition, partners of COSEE-MA should be able to address the following questions:

1. Was the project or activity consciously designed with diversity in mind?

2. Were community stakeholders sought out during the designing and executing of projects or activities?
3. Were underrepresented professionals involved in the decision making process?
4. Does COSEE-MA know the needs, issues, and resources of the audiences being served (i.e., Digital divide driven by socio-economic class and generation)?
5. Is there a match in the project or activity and the community infrastructure (e.g., appropriate media)?
6. Were culturally relevant analogies developed and used in the project or activity?
7. Was the importance of family, community and ethnicity incorporated in the design of the project or activity?
8. Is the curricula appropriate for the knowledge level (curricula prep)?
9. Was mentoring for teachers and students incorporated in the design of the project or activity?
10. Were collaborative efforts with local higher education institutions for student teaching (e.g., pre-service teachers) considered?
11. Is there an appreciation and understanding of the economic diversity within the targeted communities?
12. Are appropriate evaluation techniques for targeted communities (e.g., in-person interviews, focus groups, etc.) used to properly assess the project or activity?

After careful critique of curricula developed by COSEE-MA, the Minority Advisory Committee suggested the following implementation strategies to address the issues of diversity and underrepresented groups:

1. Make educators and students aware that science is a *culture*. Specifically, science can be interrupted as is a highly structured culture with language, norms and nuances that need to be learned just like any other culture.
2. Mentorship needs to be included in curricula because mentoring often provides a support network for underrepresented groups.
3. All curricula should place emphasis on acculturation, not assimilation.
4. Curricula should consciously explore cultural misconceptions about science.
5. Translation of curricula concepts into other cultural languages should be further investigated.
6. Make curricula self reflective... incorporate the ethnic culture with the culture of science.
7. Incorporate intercultural representations in the science curricula ways of knowing.

APPENDIX A
(MEMBERS OF MINORITY ADVISORY COMMITTEE)

NSF COSEE-MA Minority Advisory Committee – 2006

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APPENDIX B
(MATERIALS FOR FIRST TELECONFERENCE CALL)

COSEE-MA Information Pertinent to Diversity – Teleconference Call 1

Summer Workshop, Graduate Students, and Associated Web Materials

Outline of General COSEE-MA Activities

(<http://www.cosee-ma.net/public/activities.htm>, or click “Activities Index” from the top row of buttons on the front COSEE-MA page). The planned activities of the COSEE-MA group can be reviewed from the web page given above.

Front Page “Pulse People Profiles”

(<http://www.cosee-ma.net>)

We have produced profiles of educators and scientists involved in the NSF COSEE project. These include one minority scientist whose profile can be viewed by clicking on the currently featured “Pulse Person,” and then selecting Deidre Gibson from the menu at the top of the resulting screen.

Graduate Student Engagement

One PhD minority student is funded on this project, Erica Holloman, elhollom@vims.edu. Webpage: <http://www.vims.edu/env/people/students/holloman.html>. Several other VIMS and University of Maryland minority graduate students have become engaged in the summer teacher workshops.

Summer Workshop Materials Archived on the COSEE-MA Website

(Go to <http://www.cosee-ma.net/education/index.htm> or click “Educators” from the top row of buttons on the front COSEE-MA page)

1. We provide materials outside of the passworded workshop pages. For example, on the page given above, we have materials for underserved audiences: <http://www.cosee-ma.net/education/diversity.html>
2. Course materials were archived for the summer workshops of 2004 and 2005. You can gain access to these materials using the username (macosee) and passwords (summer04 or summer05) after selecting either the summer 2004 or summer 2005 materials.
 - a. 2005 – under Teacher Resources
 - i. There is a PowerPoint presentation by one of the teachers called "[Minorities in the Sciences](#)" - Eric von Battles, Jr., a University of Maryland minority student.
 - ii. There is a PowerPoint presentation by the VIMS, minority graduate student called "[Environmental Justice](#)" - Erica Holloman
 - iii. There are a series of web links for Environmental Justice, including those specific to each mid-Atlantic State

- iv. Under “Teachers as Change Agents” there are several links directly addressing problems that minorities face in science.
 - v. Under the topic, What is an Observing System?, GE, Foundation report, “Upping the Numbers: Using Research-Based Decision Making to Increase Diversity in the Quantitative Disciplines”, a link is made relative to minority issues.
- b. 2004 – Under Teacher Resources
- i. Under the topic, What is an Observing System?, GE, Foundation report, “Upping the Numbers: Using Research-Based Decision Making to Increase Diversity in the Quantitative Disciplines”, a link is made relative to minority issues.
 - ii. Under the topic, What is an Observing System?, Table of Resources Related to Underserved Communities.
 - iii. Under Teachers as Change Agents, see link named Role Models of Today Examples, Rubrics to Help Teachers Assess Gaps in Equity Awareness, and Profile of An Equitable Classroom.

Directly Relevant Website News Articles

(Select (see older News articles [here.](#)) from <http://www.cosee-ma.net/public/news.htm>

August 2005: "The New Latino South"

January 2005: "Equal Opportunity to Achieve"

October 2004: "Nobel Peace Prize Awards Kenyan Environmentalist"

APPENDIX C
(MINORITY ADVISORY COMMITTEE'S WRITTEN DOCUMENT)

**COSEE – MA
Minority Panel Meeting @ VIMS**

The panel met on Thursday 5/25/06 in order to review and discuss issues of diversity and inclusion within COSEE. The panel would like to first congratulate COSEE for their extraordinary interest in increasing both consciousness and education within the ocean sciences. The COSEE website is both compelling and provocative in its presentation, and reflects an accessible and pedagogical dynamic for the user.

Taking Pulse of Our Ocean (2005) provided our committee with an example of COSEE's work and helped the panel to generate a framework from which to understand the COSEE mission.

The panel recognizes the importance of institutional participation and recognition of diversity.

It is necessary to pursue diversity to address two critical needs...

- 1) National demographic shift in which the traditional populace (i.e., white males) cannot meet growing needs in the ocean sciences.
- 2) New science and engineering solutions require perspectives from varying backgrounds.

Diverse perspectives will accelerate and inform science innovations which are necessary for Americans to compete scientifically and economically in the global arena. Given the aforementioned discussion it is critical that all COSEE partners take steps to develop cross- cultural competencies. It is imperative that COSEE sponsor continuous formal training in this area.

Additionally, the panel has identified four major outcomes which will define COSEE's mission.

- a. Encourage lifelong learning & passion for ocean science
- b. Increase ocean literacy in underserved communities
- c. Ultimately recruit and retain under-represented groups (URGs) in the ocean sciences
- d. Incorporate intercultural representations in science curricula of ways of knowing

The following suggestions and recommendations result from our day long meeting and previous teleconferences:

- A. **COSEE generates a diversity and cross-cultural competency evaluative instrument:**
 - i. Did you consciously design your project with diversity in mind?
 - ii. Were target community professionals (e.g., URGs) involved in the decision making process?
 1. Did you seek community stakeholders in designing and executing your project?
 - iii. Document prior audience knowledge
 - iv. Document audience suppositions (i.e., pre-conceived science notions)

- v. Reflection (group or individual)
- vi. Do you know your audiences needs, issues and resources (i.e., Digital divide driven by socio-economic class and generation)?
 - 1. Did you consider ESL and needs for the challenged?
 - 2. Did you consider learning styles (i.e., how students from diverse backgrounds learn... like hands on learning)?
 - 3. Is there a match in the project and the community infrastructure (e.g., appropriate media)?
 - a. Telemundo, TV-one, Tom Joyner, Tavis Smiley, inner city radio stations, NPR (Living on Earth), PBS, Discovery channel, USA Today, Informal learning centers (science centers, museums, aquaria, Children's television workshop etc.).
- vii. Did you make culturally relevant analogies in your projects?
- viii. Did you incorporate the importance of family, community and ethnicity in the design of your project?
- ix. Appropriate curricula for the knowledge level (curricula prep).
- x. Did you incorporate mentoring for teachers and students in your project design?
- xi. Did you consider collaborative efforts with local higher education institutions for student teaching (e.g., pre-service teachers)?
- xii. Is there appreciation of the economic diversity within the targeted communities?
- xiii. Appropriate evaluation techniques for targeted community (e.g., in-person interviews, focus groups, etc.).

B. Production of CD/DVD for middle/high school students

- i. Content (Has to tie in to individual State Standards of Learning (SOLs) and make it thru the state and local school administrations)
 - 1. CD/DVD creativity committee will include minority panel members.
 - 2. CD/DVD production committee will produce CD/DVD in conjunction with creativity committee.
 - 3. Bundled (middle school or high school) for teachers through NSF and/or Publishers
 - 4. Produced to include under-represented groups and regional communities.
 - 5. Include a matrix for teachers on the CD/DVD (easy searchable index)
 - 6. Needs assessment and pilot
 - 7. Face to face focus groups

C. COSEE website lacks diversity (e.g., COOL Cards).

D. Critique of COSEE-MA Curricula

- 1. Make educators and students aware that science is a *culture*
- a. Highly structured culture w/ language, norms and nuances that need to be learned just like any other culture.
 - 2. Mentoring to provide support network
 - 3. Acculturation not assimilation
 - 4. Address cultural misconceptions about science

5. Translation of concepts into other cultural languages
6. Close the loop on suggested activities so that students can easily understand concepts and take them “home.”
7. Make curricula self reflective... incorporate the ethnic culture with the science culture