ASEE Engineering Technology Division Membership Survey, 2007

Background

As part of its effort to better understand the broader spectrum of stakeholders, and to tailor offerings and services so they would be of greatest use to a diverse number of materials science educators and programs, the National Resource Center for Materials Technology Education (MatEd) at Edmonds Community College solicited responses to a Web-based survey from materials technology educators. The survey was designed to gather the following information:

1. Whether there was a full materials science program or just a course or two at the respondents' institution
2. What types of materials the program or courses addressed
3. What types of new instructional materials or instructional elements would be useful to the respondents
4. What format was preferred for delivery of instructional materials or instructional elements
5. Whether the respondent would be interested in authoring materials
6. Whether the respondent would be interested in collaborating on professional development workshops or seminars.

Form late spring 2007 until mid-September 2007, MatEd collected 87 individual responses as determined by analysis of the respondents' IP addresses. 23 of the 87 respondents (26%) only partially answered the survey, leaving one or more questions blank, while 74% of the respondents completed the entire survey. In analyzing surveys partially completed, we found the answers most often left blank concerned requests for contact information or information on professional development opportunities.

We did not require full contact information from survey respondents. We assumed the closed e-mail list of manufacturing technology educators who were invited to respond to the survey would limit the possibility of spurious responses. A list of those respondents specifically requesting contact is attached to the end of this report. We did capture the IP address of each respondent and this data is also attached. It would be a relatively simple exercise to do a "who-is" query for each IP to determine the originating DNS for future follow - up.

The following exhibits are the graphical responses to each survey question.

E T D Membership Survey for MatEd

1. Do you have a materials technology program at your school?

	Response Percent	Response Count
Yes	36.8%	32
No	63.2%	55

Virtually all respondents answered this question, and approximately 1/3 of the respondents have materials technology programs at their institutions. We asked respondents who did not have materials programs if their institutions offered any stand-alone materials courses, with the following result:

2. Does your insitution offer stand-alone credit courses in materials science in your technology program?

	Response Percent	Response Count
Yes	89.7%	26
No	10.3%	3

26 of the 32 respondents (89%) who answered “no” to question 1 responded that they did have some materials science courses, and two indicated that while they did not offer stand-alone courses, materials concepts were presented in some way in other technology courses. This accounts for all but one of the total responses to this three-question set.

3. Since you answered NO to Question 2, does your program teach materials concepts in other courses in your technology program?

	Response Percent	Response Count
Yes	100.0%	2
No	0.0%	0

It appears the majority of respondents make some effort to include materials science concepts in technology programs, and we can conclude Mat Ed services could have a broad appeal, extending beyond schools with full-blown materials science programs.

Respondents were asked to report on current and anticipated needs for new materials, in order to help Mat Ed prioritize its services to the materials technology community. Question 4 shows the results of these free responses. Perhaps not unexpectedly, metals, plastics, and composites lead the list of five choices in terms of what content areas are taught. Within these topical categories, the greatest desires appear fairly evenly distributed among lecture, lab or demonstration types of presentations. This would suggest the majority of courses are taught in traditional lecture-lab format, and that need for lecture materials would beget a corresponding need for lab and demonstration materials.

4. Please indicate your current or anticipated need for new course materials in the following areas

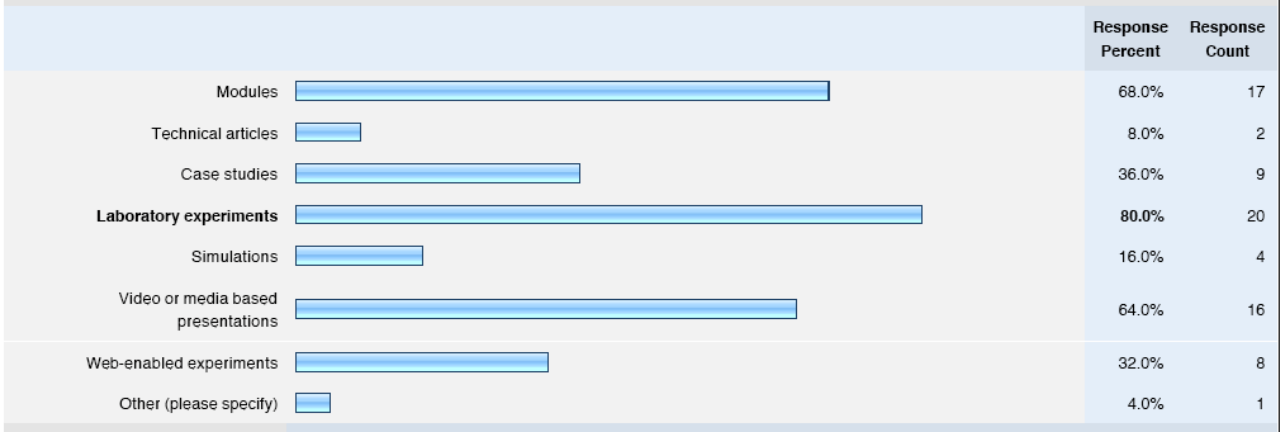
	Lecture materials	Labs	Demonstrations	No need for this topic area	Response Count
Metals	29.5% (18)	32.8% (20)	**34.4% (21)**	3.3% (2)	61
Plastics	**32.8% (19)**	**32.8% (19)**	**32.8% (19)**	1.7% (1)	58
Composites	**32.2% (19)**	**32.2% (19)**	**32.2% (19)**	3.4% (2)	59
Nuclear materials	**31.3% (10)**	18.8% (6)	21.9% (7)	28.1% (9)	32
Wood	**29.7% (11)**	27.0% (10)	27.0% (10)	16.2% (6)	37

In order to further examine client need we asked respondents to indicate the top three preferred formats for materials, and when asked in this way, some clear format preferences emerged in the following order:

1. Laboratory experiments – 89%
2. Instructional modules – 68%
3. Media-based presentations – 64%

The least preferred format was technical articles, garnering only 2 requests.

5. Please indicate up to THREE most preferred formats for instructional materials and elements

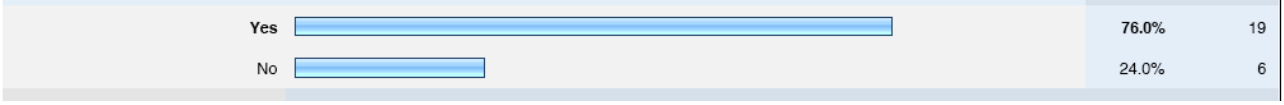


	Response Percent	Response Count
Modules	68.0%	17
Technical articles	8.0%	2
Case studies	36.0%	9
Laboratory experiments	**80.0%**	20
Simulations	16.0%	4
Video or media based presentations	64.0%	16
Web-enabled experiments	32.0%	8
Other (please specify)	4.0%	1

This does not suggest that other formats are not worth some consideration – Web-enabled experiments may be a promising area for future development, especially considering the inexorable trend to online course offering. Case-based instruction shows promise as a way to attract and hold students in technology programs whose learning styles may not be compatible with traditional lecture type instruction, and it may be worthwhile piloting some case-based activities with one or more schools interested in developing this approach, and the CITE team, ultimately sharing the results with others in the technology education community.

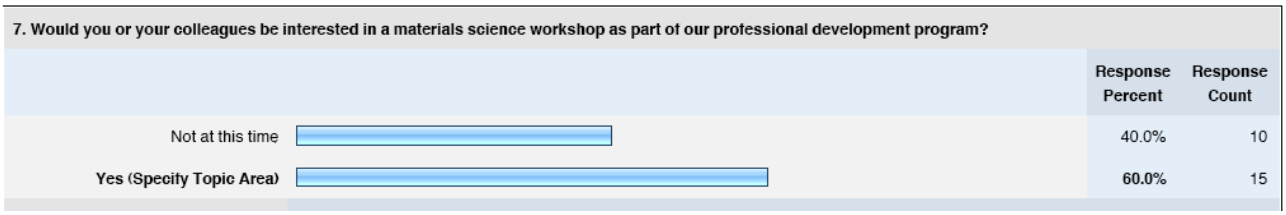
Nineteen respondents indicated they would be willing to submit or author instructional elements for Mat Ed, and the resulting contact information is attached at the end of this report.

6. Would you be interested and willing to submit or author curriculum materials or instructional elements to the National Resource Center for Materials Technology Education?



	Response Percent	Response Count
Yes	**76.0%**	19
No	24.0%	6

We also asked respondents' interest in a materials workshop and if so, to specify the content area(s) of greatest interest. Fifteen respondents indicated they would be interested as show below:



7. Would you or your colleagues be interested in a materials science workshop as part of our professional development program?	Response Percent	Response Count
Not at this time	40.0%	10
Yes (Specify Topic Area)	60.0%	15

Content areas suggested by respondents included:

- Composites
- Polymers
- Concrete
- Wood
- Materials testing
- Nano-technology (manufacturing)
- Alloys
- Ceramics
- Medical specific materials

We did find nano-technology mentioned, but not by 100% of the respondents. In fact, nano was not mentioned with greater frequency than any other topic area, suggesting that there is considerable viability and durability in many materials topic areas.

This brief survey provides some good (though very general) guidance and direction for Mat Ed to consider in concentrating its efforts in a way that would produce usable products and services for the (primarily) sub-baccalaureate materials education community.