

Annual Report Year 2
MatEd
National Resource Center for Materials Technology Education

Activities and Findings

1. Core Competencies

The core competency report draft was completed in year 1. The report was reviewed by each of the focus group participants and by our partners prior to finalization. Once final, the report was published the MatEd web site. (www.materialseducation.org)

The core competency results were compared to the Manufacturing Skills Standards Council (MSSC). MSSC are national manufacturing competencies and a crosswalk was prepared reflecting that in nearly all areas, our core competencies parallel the MSSC standards.

The core competency study results have been presented at two conferences, the National Educators Workshop and at the Materials Science and Technology 2006. The study was also discussed as part of seminars presented at the University of Washington and at the University of Hawaii. In May 2007 the report and the core competencies were delivered as part of a workshop for the Washington State Materials Science Technology and Principles of Applied Technology Counsel. Considerable positive feedback was received as a result of these presentations, and additional presentations are planned by our staff and MatEd partners.

A manuscript describing the results of the core competency study has been submitted to the Journal of Materials Education. Recognizing that the study is long and detailed, we are discussing means of simplifying the results for use with a broad audience. This may entail the development of a brochure or a set of white papers in which the needs and potential process for including our materials-related core competencies in technician courses are presented.

Our core competency ratings were developed with representation from a wide variety of materials-related industrial personnel; however, due to the small sample size and the absence of representation from evolving materials-related industries such as biomaterials and nano-structured materials, this set of competencies is considered a living document to be further developed as needed. It is also the case that some lower rated competencies in one area can be quite important in certain industries versus others. From this point of view, this study provides a starting point for the determination of basic materials-related competencies that are essential in technology education. While the authors plan to further expand and enhance this set of competencies using additional workshops and industrial input, we welcome further input from other interested parties to continue the elaboration of competencies in the materials area.

2. Curriculum Collection

To date, 571 curriculum modules and Activity Locator Sheets have been reviewed and developed for potential inclusion in our collection and the process is continuing. These include the review of several curriculum projects focused on materials technology, along with individual contributions made over the years to Journal of Materials Education and to the National Educators Workshops. Our goal is to have a significant number of curriculum modules available for initial posting on our web site when it is up and running. Modules of specific interest here are those that focus on the core competencies.

Current discussions relate to how best to define a module, necessary for both our use and for other potential contributors. Guidelines for the specific contents of a module are being defined for the modules that we will post on our web site, and module submission guidelines have been developed.

Ten simple modules, focused on developing instructor interest in materials technology and the role they play in technician competencies, are being developed for use at conferences and related venues. These can also be used as an example of utilizing the defined module format and focus on core competencies is emphasized.

Our partners are an excellent resource for the collection and development of modules related to the core competencies. We are working with our partners to develop appropriate workshops to ensure that they are up to speed on both materials competencies and needs for specific modules. We have developed a process whereby partners can submit their ideas and budget needs for such projects and activities. We expect that this process will be an important focus for the program in year 3.

The use of the National Educators Workshop, a long-standing set of workshops for materials science and technology college-level instructors, in our curriculum collection program is under development. All 2006 NEW participants were invited to submit their curriculum manuscripts for review for inclusion on our web site using a draft submission process. For 2007 and beyond, the NEW conference will be closely coordinated with MatEd as the administration of this conference series has been transferred from ASM to Edmonds Community College. Planning is underway for the 2007 conference with MatEd as the primary coordinator of the curriculum portion of the program. This will include specific sessions related to core competencies. All participants will be asked to provide manuscripts for review and potential posting on our web site.

We have also requested that a session on materials technology curriculum be included in the Materials Science and Technology annual conference involving four materials-related organizations. At present this request has been submitted for consideration of their 2008 conference.

A materials concepts inventory, in which a basic exam is used to judge the knowledge of students relative to a set of basic concepts, has been reviewed. This concepts inventory was developed for introductory engineering materials courses at Arizona State University

and at Texas A&M University. While the focus is more on engineering than technology, this inventory provides an excellent model for us to follow as we develop a concepts inventory for engineering and manufacturing technician education relative to materials technology.

Website Submission Format/Guidelines

In an effort to clarify the terms we have been using for curriculum submission; we are calling it the “Curriculum Submission Guidelines”. This way we will be clear in the title that we are looking for curriculum and not research paper general submissions.

A student assistant, from the University of Washington Materials Science Degree program, is currently alpha testing the draft of the online submission template to identify areas to improve (enhance and/or streamline) the process for curriculum contributors. He is scheduled to report out in May any issues, concerns or barriers he identifies in our process. The process will include his evaluation from the point of submittal to the point of posting on-line or rejection. Below is the current draft overview for potential contributors:

Author Submission Guidelines for Consideration for Posting on the MatEd Resource Web Site:

These author submission curriculum modules instructions are to be used when applying for consideration of posting on the MatEd web site. Once reviewed and approved, full instructions will be provided for final submission. It should be noted that this is a fully reviewed site, and your final full submission will be subject to a full peer and editor review. Reviewed submissions will be posted on the web site with information provided indicating that the material has undergone a full review.

Submissions must adhere to the following format:

1. Full contact information for primary author
2. Names and contact information for collaborating authors
3. Copyright holder, if any
4. List any IP agreements that would limit publication
5. Title of module/course/duration
6. Abstract of module, lab or demonstration
7. Module/course objective
8. Pre-requisite knowledge and skills
9. Key words (up to 5)
10. Target grade level(s)
11. Table of contents
12. Identify MatEd core competencies that the training meets
13. List of equipment and supplies needed
14. Curriculum overview and notes to instructor

15. Mode of presentation
16. Module
17. Supporting handouts and materials
18. References
19. Bibliography
20. Evaluation packet:
 - Student evaluation materials
 - Instructor evaluation materials
 - Course evaluation materials
21. Method of how the effectiveness of the module was evaluated
22. If available, your web site where this and additional information is currently posted
23. Optional: Author Bios (Maximum 100 words)

3. Mentoring and Professional Development

We have been reviewing the potential place and form of mentoring appropriate for the MatEd program. Teacher mentoring programs at the University of California Santa Cruz, University of Washington and San Jose State University were reviewed along with a number of others and references on the Internet.

Based on our review, it is recommended that MatEd's workshops and regional support group programs be developed first, with the addition of informal peer mentoring among workshop participants using a listserv or related means. Once MatEd has experience with these programs, a more formal mentoring program should be examined, as this could be a new means for further dissemination of the project.

Professional development workshops will be undertaken at Edmonds as well as at partner sites. Currently, there are three professional development workshops scheduled for summer 2007. Working with the Office of the Superintendent for Public Instruction (OSPI) we are promoting the workshops for OSPI clock hours and certification within our state. These workshops are also marketed at national presentations and various venues as they are open to those outside of Washington State wishing to participate.

Specific professional development workshops offered in 2006 included:

Washington Association of Machinist Instructors (WAMI) Workshop—May 25-26, 2006
Provided a workshop for machinist instructors wanting to learn about machining composites. Title: *Fiber Reinforced Composites from a Machinist Perspective*.

Principles of Applied Technology Workshop—July 10-14 - a 40-hour Applied Principles of Technology workshop.

Applied Materials Science and Technology Workshop—July 17-21 - a 40-hour Applied Materials Science Technology workshop.

Applied Materials Science and Principles of Technology Workshop – second session— July 31-Aug 4 - a 40-hour combined Materials Science Technology and Principles of Technology workshop for high school and community and technical college advisors and career specialists.

Hands-on Composites Fabrication Mini Workshop—Aug 2 - a 4-hour hands-on mini workshop in vacuum bagging prepreg carbon fiber reinforced composites.

Workshops at our partner sites will occur in the balance of year 3 and in many cases in parallel with curriculum development workshops noted under goal 2. Regional support groups will follow, providing further support for faculty attending professional development programs. Participating faculty will also be encouraged to participate in informal regional peer mentoring, as noted above.

4. Web site and Communication

The overall editorial organization of our web site in terms of the presentation of curricula has been developed. This was assisted by close cooperation with the Journal of Materials Education. JME publishes primarily papers on educational activities, overall curricula and research related to materials education. Since our plan is to publish only actual modules, our work is complementary to JME and JME has become a great resource. JME editors have noted specific problems for us to avoid, namely avoiding submission of papers using non-standard work processing software and keeping careful control of the review process. JME personnel also noted that a focus on conferences is an excellent means of finding quality papers.

The on-line “Journal of Materials Curricula” is the working name for the collection of curriculum materials, including modules, demonstrations and laboratory exercises collected by MatEd. This set of curricula will be fully reviewed and will be administered by an editorial board including content expert editors and reviewers, with overall coordination by an executive editor. A separate section of the “Journal” will constitute the specific modules developed by MatEd and its partners to address the core competency needs of engineering and manufacturing technicians in the area of materials; both sections will be posted on the MatEd web site.

The development of our web site can begin based on the ATERC meeting which is an ongoing effort to coordinate the development of our ATE resource centers website. This effort involves the use of some common frameworks that can support a consolidation of ATE resource centers under one portal sometime in the future. This was a critical issue that needed to be addressed before continuing with the development our MatEd web site. Among the critical issues that were addressed was the use of CWIS as the desired middleware for information searches. This involves the use of 14 fundamental recommended fields that are supported within the Dublin Core. Our web development will align with the recommendations made by the ATERC group and NSDL with the suggested fields with an additional configurable field. This configurable field will be

developed to support core competency searches. It will enable the materials science faculty to search for curriculum materials based on student learning objectives using our core competencies.

Therefore our priorities in chronological order are to:

1. review our current request for proposal (RFP) to include the ATERC recommendations to ensure uniformity of our web site and compliance with other ATE resource centers.
2. modify our RFP based on the February ATERC meeting and the recommendations made by the group where applicable.
3. modify and finalize our RFP based on what the MatEd team determines are key features for possible inclusion such as RSS feed, the use of password access, administrative levels of access for editors and reviewers, ability for curriculum authors to respond to reviewers' comments, etc.
4. add an addition feature to enable individual editors to enter curriculum materials along with rating and annotations via an easy to use interface.
5. send the RFP out to bid to appropriate web developers for bids.
6. select and award contract to an appropriate vendor that best fulfills our requirements under our RFP.
7. guide and monitors the creation of the graphic user interface, alignment with the Dublin Core as recommended, creation of a special fields to accommodate our core competencies as well as other features required in our RFP.
8. perform alpha testing to ensure that our web site performs according to our specifications and works across various platforms.
9. modify web site based on alpha tests as required to ensure peak performance and maximum utility to the materials science technology community.
10. identify faculty members who are willing to act as beta site testers and comply with specific requirements.
11. perform beta testing with a select group of educators to evaluate all aspects of the MatEd web site.
12. have vendor modify web site based on beta testing as necessary to ensure peak performance and maximum utility to the materials science community.
13. upon completion of beta testing and necessary modifications have the MatEd web site "go live."
14. ensure that our vendor will be responsible for future software updates, modifications, as well as maintenance of our site on their server.

In parallel the following efforts in support of our web site will continue as we develop our web presence. We will:

1. continue to identify editors, peer-reviewers, as well as faculty members who will locate curriculum materials for inclusion in our MatEd web site.
2. establish editorial boards with associated reviewers for each class of material e.g. metals, plastics, ceramics, etc.
3. define and establish our curriculum review process to ensure uniformity of our curriculum rating, annotations, and eventual posting on our web site.

4. review, rate, and annotate currently identified curriculum materials and prepare those that qualify for inclusion into our web site once it has been developed.
5. continue to locate, peer review, annotate, and post appropriate curriculum materials for the materials science technology community.
6. convert our core competencies, where necessary, to have them align with measurable student learning objectives.
7. promote the use of our web site within the technology community.
8. link our MatEd web site to key web sites within the ATE-NSF community as well as other appropriate private and corporate sites.
9. continue to refine and update web site to support the materials science technology community.

The MatEd program is developing contacts with several professional organizations in the materials area that will aid us in areas including curriculum collection, project dissemination and sustainability. These organizations include ASM International, the ASM Materials Education Foundation, the International Council for Materials Education, Society for the Advancement of Material and Process Engineering, Society for Manufacturing Engineers, the Federation of Materials Societies and the National Coalition of Advanced Technology Centers. These organizations can assist us in the short term in providing reviewers and beta test sites for our web page and in contacting faculty to contribute curricula. In the long range, it is to the advantage of these organizations to have our curriculum collection available for their members, hence the potential of long-term support for the program.

Our connections with ASM are strong and growing. We continue to interact with the ASM Materials Camp program and co-sponsor with ASM a summer workshop for teachers in materials technology and principles of applied technology. ASM is a co-sponsor of the NEW curriculum conference and submitted, with EdmondsCC and MatEd, a project proposal on curriculum development to enhance ASM's and our programs for teachers. Both Mel Cossette and Tom Stoebe serve on the ASM Education Committee, providing MatEd with access to ASM technology teaching materials.

ASM also provides MatEd with access to their conference telephone system for our partner and other conference calls at no charge. While ASM's internal issues and web site development project made it impossible for them to meet our needs relative to our own web site development, ASM continues their interest in utilizing our curriculum web site in their programs, and to explore enhanced means for dissemination and sustainability for our project. ASM provided a \$5,000 grant in support of teacher training in conjunction with MatEd goals. ASM, in collaboration with the National Association of Corrosion Engineers (NACE) donated twenty-four corrosion kits for use in the various workshops and presentations.

5. Outreach Activity - MatEd - January 1 to December 31, 2006

Overview:

Over the past year, the MatEd and Monroe Hall team has been dedicated to sharing education, presentations and experiences specifically focused on materials science. The teams have worked very hard to inform the public about several major activities that take place in Monroe Hall at Edmonds Community College. Monroe Hall is a showcase for materials science and the team, as well as the MatEd and CAM staff, constantly work together to mutually promote education and all activities.

First, the National Science Resource Center for Materials Technology Education (MatEd) is housed at Monroe Hall. The college team collaborates with the MatEd staff during its outreach and awareness activities to promote MatEd and resource center activities. There is a permanent MatEd display inside a main area of Monroe Hall that demonstrates Edmond's connection with NSF.

Monroe Hall is also the home of the Certificates for Advanced Manufacturing (CAM) grant, a three-year NSF funded Advanced Technological Education project focused on the development of four specialized certificates in composites.

Last, but not least, with its 11,000 square foot dedicated lab, Edmonds Community College is the only Washington State two-year institution that offers an Associated of Applied Science – Transfer (AAS-T) degree in materials science. All classes for this degree program are held in Monroe Hall.

The following is a summary of activities that were held at Monroe Hall. This is indicative of the leveraging of the various teams and the caliber of local and national presence we are building:

Educational Workshops:

Seventeen general workshops were held at Monroe Hall with a focus on materials science.

Specific workshops included:

- Principles of Applied Technology
- Materials Science Applied Technology
- Washington Association of Machining Instructors
- Federal Aviation Administration
- Quality Through Training Program (Boeing)
- ArtsNOW

Conferences/Meetings Hosted Involving Materials Science:

Fourteen conferences and/or meetings were hosted with 451 participants. Participants represented Edmonds Community College new student orientation, EdCC transition students, members of the Washington State School Counselors, Materials Process and Development Center (MPDC), Washington State Centers of Excellence Directors, Technology Student Association State Leaders, MatEd National Advisory Board, MatEd Partner Meeting, Statewide Materials Science Frameworks Committee, OSPI Manufacturing Strategic Planning Committee, occupational educators and college and high school vocational administrators.

Marketing Videos — The MatEd and Materials Science Technology Program staff developed two recruiting videos to present the materials science and the composite manufacturing industry to potential students. The video includes footage developed in collaboration with several industry partners: K2 Skis, O'Brien, Boeing Company (787 footage), Future of Flight, Oar Northwest, Extreme Gravity Racing Series, Dri-Eaz Products, EADS Composites Atlantic, C & D Zodiac, Mongrain Glass, Airtech International, Dillon Works, and MacKenzie Castings. Video footage includes manufacturing workplace on actual industry sites, and interviews with industry specialists and leaders. The 16-minute video focused on the materials science for outreach to students; and, a one-minute promotional video that was developed to be fast paced for use in a continuous loop during career fairs. Both videos were funded by Edmonds Community College.

The MatEd National Advisory Board and the Materials Science Program Advisory Committee reviewed the videos and both were well received. Both versions have also received excellent responses from teachers, counselors and students. To complement these videos, Edmonds Community College also funded several marketing and promotional pieces such as the development of a program logo, tri-fold brochure, program folder, etc. to assist with our activities. The MatEd logo is strategically placed on all marketing information and the video.

Companies that visited Monroe Hall from:

- Airtech International
- Alteon
- ATOC
- Boeing
- C&D Zodiac (formerly Northwest Composites)
- Cincinnati Technologies
- Cornerstone Prosthetics
- DillonWorks
- Eaton Corporation
- Ed Halloran Consulting
- Flow International
- Genie Industries
- General Plastics Manufacturing

- Goodrich Aviation
- Hobart Machined Products
- INTEC
- Heatcon
- Janicki Industries
- Kenworth
- MicroGreen
- Mills Meyers Swartling
- Nova Composites
- Patent Leverage
- ProMetal
- Railbike Tours
- Vaupell
- Z-Corp.

Industry Representatives Visited From:

- Alabama
- California
- Canada
- England
- Florida
- New Mexico
- Ohio
- Oregon
- Virginia
- Washington

School District and Skill Center Representatives From:

- Anacortes
- Auburn
- Bellevue
- Bethel
- Blaine
- Buckley
- Chimacum
- Concrete
- Coupeville
- Edmonds
- Everett
- Graham
- Issaquah
- Island County
- Juanita
- Lake Washington

- Marysville
- Monroe
- Mukilteo
- North Kitsap
- North Mason
- North Shore
- North Thurston
- NOPSkill Center—Port Angeles
- Oak Harbor
- Office of the Superintendent for Public Instruction
- Port Angeles
- Prosser
- SeaTac Skills Center
- Shoreline
- Snohomish
- Sno-Isle Skill Center
- Stanwood
- Sumner
- Vancouver
- Yakima

Two-Year College Representatives:

- Allen Hancock College
- Bates Technical College
- Bellevue Community College
- Brevard Community College
- Calhoun Community College
- Central Oregon Community College
- Cerritos Community College
- Clark Community College
- Clover Park Technical College
- Community College of the Air Force
- Connecticut College of Technology
- Cuyahoga Community College
- Don Bosco Technical Institute
- Dona Ana Branch Community College
- Everett Community College
- Gadsden Community College
- Lake Washington Technical College
- Maricopa Community College District
- Metropolitan Community Colleges
- Renton Technical College
- Riverside Community College District
- State Board for Community and Technical Colleges

- Shoreline Community College
- Skagit Valley College
- Tarrant Community College
- Thomas Nelson Community College
- UNM Los Alamos Community College
- Yakima Valley Community College

Four-Year College Representatives:

- Central Washington University
- Embry Riddle Aeronautical University
- Keene State College
- Kettering University
- Norfolk State University
- Seattle University
- Wentworth Institute of Technology
- Western Washington University
- University of Washington

Professional Organizations:

Monroe Hall hosted seventeen professional organization meetings with ninety-five participants. A representation of organizations includes: the Society for Manufacturing Engineers, Technology Student Association Student Leaders, the TSA Board, Washington State Counselors, Manufacturing Technology Advisory Group, MST/PT Council, Materials Science Student Association and the Washington Industrial Technology Education Association.

Specific Presentations:

- Washington Association of Occupational Educators Conference Presentation - March 2-3, 2006, Gene Fusch, Pasco WA.
- WITEA and Technolog & Industry Conference Presentation - March 16-17, 2006 in Wenatchee WA. Gene Fusch
- Washington School Counselors Association Conference Presentation - March 18, 2006 in Sea-Tac, WA, Gene Fusch.
- Washington Association of Vocational Administrators Conference - March 22-23, 2006 in Wenatchee WA, Gene Fusch.
- Technology Student Association Leadership Conference - March 24, 2006 in Ellensburg WA, Gene Fusch.
- Skagit Manufacturing Summit Presentation - March 24, 2006 in Mount Vernon, WA, Gene Fusch
- Sumner Career and Technical Education Teachers - March 30, 2006, Lynnwood, WA, Mel Cossette
- Soundview School Video - April 11, 2006, Lynnwood WA, Gene Fusch

- Counselor Breakfast and Presentation - April 28, 2006, Lynnwood, WA, Mel Cossette and Gene Fusch
- MPDC Manufacturing Conference - May 4, 2006, Everett, WA, Mel Cossette and Gene Fusch
- National Coalition of Advanced Technology Centers (NCATC) - October 5, 2006 Anaheim, CA, Mel Cossette
- National Educators Workshop - October 16, 2006, Cincinnati, OH - Mel Cossette and Gene Fusch
- National Science Foundation ATE National Meeting - October 2006 – Mel Cossette, Gene Fusch and Tom Stoebe, Washington DC
- Juanita High School Career Day - October 26, 2006, Juanita, WA, Gene Fusch and David Wood
- Mount Lake Terrace High School Presentation - October 14, 2006, Mount Lake Terrace, WA, Gene Fusch and David Wood
- AFA 2006 Aerospace and Manufacturing Job Fair - November 14, 2006, Gene Fusch and David Wood
- Boeing 787 Technology Integration Team Presentation - December 1, 2006, Lynnwood, WA, Mel Cossette, Gene Fusch and David Wood
- Federation of Material Societies (FMS) - December 6, 2006, Washington D.C.
- Riverside Community College District (RCCD) - December 18, 2006, Lynnwood, WA, Mel Cossette
- Manufacturing a Workplace Conference - January 12, 2007, Mt. Vernon, WA, Gene Fusch and Mia Murphy
- Monroe Hall Materials Science Open House - January 18, 2007, Lynnwood, WA, Mel Cossette, Gene Fusch, Mia Murphy and David Wood
- WAOE/Tech-Prep Spring Conference - February 27, 2007 – March 1, 2007 – Gene Fusch
- Sno-Isle and Tech Prep Presentation - March 15, 2007, Lynnwood, WA, Mel Cossette and Gene Fusch
- Launch Your Future - March 16, 2007, DuPont, WA, Mel Cossette and Mia Murphy
- Women's Conference Outreach, Edmonds Community College - March 17, 2007, Lynnwood, WA, Mel Cossette, Mia Murphy and David Wood
- Women's Conference Presentation - Edmonds Community College, March 17, 2007, Lynnwood, WA, Mel Cossette
- Healthy Living Expo - March 18, 2007, Seattle, WA – Mel Cossette

Outreach Summary:

We also participated in twenty-three organized outreach events which connected us with 1,077 members of the public. All of the above statistics were directly connected to the promotion of materials science. For the purposes of this report, outreach activities were defined as activities conducted outside of Monroe Hall; however, the total number of

people we had contact with including all events, workshops, meetings, conferences, outreach, local presentations, etc. was 1,995.

6. Project Management and Planning

To ensure that our ongoing activities focus on our mission, vision and priorities, our staff has undertaken a strategic planning exercise which is reviewed periodically by our program partners and provided to the National Advisory Board. In this process, during year 2 we have reviewed our mission and vision and undertaken a Strengths/Weaknesses/Opportunities/Threats (SWOT) analysis. We also developed a specific list of planning priorities. This effort ensures that we are focused on the most immediate needs of the program. The results of these activities has allowed us to provide a basis for determining our core priorities and hence to focus our time and funding on the most important aspects of the project.

As part of our focused efforts in year one, our original mission and vision statements were developed with input from our partners as follows:

Vision

The MatEd Resource Center will be the national focal point where industry, education and community work together to meet the workforce needs of manufacturing enterprises now and into the future, with particular emphasis on applications related to materials and processes.

Mission

MatEd will achieve its vision by creating a dynamic partnership focused on enhancing education for manufacturing and engineering technicians that:

- Creates and sustains a national clearinghouse for materials science educational materials open and accessible to all educators;
- Develops and disseminates core competencies needed by technicians in manufacturing and engineering that deal with materials and processes;
- Provides appropriate curriculum materials to faculty to enable them to teach the core competencies; and
- Provides professional development and mentoring opportunities for community and technical college educators, encouraging faculty to include materials education in their engineering and manufacturing technician courses.

However, during our Partner Meeting in Cincinnati, OH, in October 2007, the MatEd Mission and Vision was revised with input (once again) from our partners to the following:

Mission: MatEds mission is to advance materials technology education nationally.

Vision: MatEd will be the focal point where industry education and community collaborate to meet materials technology workforce needs.

Further, our SWOT analysis has provided specific input for our program planning, both in general for the program and for each specific goal. This analysis will be used in the further development of our planning activities and establishment of priorities. Strategically, we must take advantage of our strengths and our opportunities while negating the weaknesses and threats. One example is the question of mentoring which was discussed earlier. Formal mentoring programs require considerable staff time and expense. As a result, our analysis has recommended that only informal peer mentoring be included in the program at this time.

Accompanying these activities, the overall timeline for the program has been revised in response to changing priorities to ensure that we understand exactly where we are in the program development process. These activities will continue into years 3 and 4.

Summary of SWOT, Strategic Plan, Correlation Grid and Timeline

In response to a recommendation made by the National Advisory Board, MatEd staff performed a SWOT analysis to gain information that would serve in developing their Strategic Plan for Year 3.

SWOT Analysis for MatEd

OVERALL

Strengths

- Focus on grant goals
- Partner structure, relations with other centers and projects
- Strong connections to IT via other resource centers
- Financial stability (at least for 2.0 more years)
- Diversity among partners
- Useful initial curriculum collection
- Potential relationship to NEW for curriculum collection

Weakness

- Partner lack of training, capabilities
- Staff size and resources
- Branding not strong, needs marketing
- Lack of digitized, electronic curriculum

Opportunities

- Acquire modular curriculum resources focused on core competencies

- Build partner strength
- Continue to build on strengths of other centers
- Sustainability
- Dissemination
- Web site potential
- Marketing to develop awareness
- Potential for additional resources (industry, other)

Threats

- Lack of partner buy-in, time, interest
- Changing/increasing requirements for partners (could alienate them)
- Trying to do too much with existing program resources
- Straying from focus on highest priorities
- Competition from other programs

GOAL 1: Core Competencies

Strengths

- Thorough report
- Thorough, well planned process
- Provides information to prioritize search for curriculum materials
- Provides information needed for gap analysis
- Flexibility on how we use and present the report material
- Allows for expansion into new areas of materials technology—a live document

Weakness

- Some areas not covered
- Not all geographical areas in the US covered
- Report is hard to navigate--hard to find what you want
- Not all faculty work off core competencies to develop curriculum

Opportunities

- Disseminate widely
- Simplify format—use 75 list!
- Publications, presentations
- Multiple venues
- Develop review focus groups (different technologies, areas)
- Allows us to expand and be more inclusive
- Ability to do gap analysis re curriculum
- Get faculty to focus on competencies when developing curriculum
- Include as a topic in our professional development workshops

Threats

- Some detail could be challenged
- Report viewed as not user friendly by some segments
- Could try to make it too big, too all-inclusive
- Faculty do not know how to apply the report/and many don't care

GOAL 2: Curriculum

Strengths

- EMTECH and other available libraries
- NEW Curriculum Contribution
- Comprehensive web search
- Partners who can be a big help if motivated
- Collection process

Weakness

- Collection to date has not focused on core competency needs
- Have not gotten faculty's attention
- No curriculum from industry/professional societies
- Much available curriculum in non-digital, non-modular format
- Some available curriculum not reviewed
- Format of available curriculum not consistent

Opportunities

- Lots more curriculum is out there to collect
- Enhance focus on tech education and on core competency needs
- Develop partner focus on curriculum
- Utilize curriculum module format
- Develop industry/professional society curriculum contacts
- Focus on taking advantage of strengths
- Have lots of info from longer modules—need to rewrite/reverse engineer
- Pilot workshop with teachers from workshops at EdCC
- Need key roles—reviewers, editors, collectors, testers

Threats

- Other curriculum collection programs with better visibility
- Limited staffing and resources to take advantage of opportunities
- Can we find the material that is already out there?
- Attitude of professional societies and industry

GOAL 3 – Professional Development

Strengths

- Partners with direct contact with faculty who need professional development
- Opportunities for regional support groups to do mentoring in local areas
- Potential for workshops in each partner area

Weakness

- Mentoring goal is difficult to implement--too expensive, too staff intensive, too much potential liability
- Partners don't know what they need in terms of professional development

Opportunities

- Encourage partner participation in all aspects of MatEd
- Offer workshop at partner sites
- Develop regional support groups using partners
- Develop a specific plan for professional development
- Develop a set of lead instructors in materials technology at the community college level
- Create a community of faculty who can and will work together
- Develop partner support structure
- Provide professional development guide to partners for program development

Threats

- Potential Lack of partner interest
- Stability of faculty in various programs
- Program stability in colleges

Goal 4 – Communication and Website Development

Strengths

- Good coordination with other resource centers on web site development
- Positive interactions with partners via conference calls and in-person meetings
- Developing positive interactions with professional societies
- Web site editorial process and needs defined

Weakness

- Web development delayed
- No comprehensive sustainability plan
- No comprehensive dissemination plan

Opportunities

- Develop great web site, avoiding mistakes of others/build on prior and current knowledge
- Work with other resource centers towards standardization

- Define marketing/PR plan (awareness, importance)
- Sustainability opportunities/branding
- Develop broad-based dissemination plan

Threats

- Competing web sites
- Competition for time by partner-leaders
- Need to make MatEd a priority to all!

Year 3 MatEd Strategic Plan

MatEd's **mission** is to advance materials technology education nationally.

MatEd's **vision** is to be the focal point where industry, education and community collaborate to meet materials technology workforce needs.

I. General strategies for program success

- Review partner contribution capabilities
- Extend partner list by recruiting contributors
- Develop a business/sustainability plan
- Define MatEd staff roles and responsibilities
- Focus on forefront technology in materials and manufacturing
- Implement SWOT analysis to overcome potential roadblocks
- Build on identified program/partner strengths
- Identify opportunities for project enhancement

II. Specific Project Goals with strategies to accomplish these goals

Website:

- Develop initial introductory website
- Revise and maintain current website
- Develop a new website incorporating easy access to available teaching materials utilizing an editorial system, review process, rating system, etc.
- Alpha test website
- Beta test website
- Implement a sustainability plan for website

Core Competencies:

- Utilize industry-centered core competency focus groups to enhance and expand the basic set of competencies
- Develop an initial set of core competencies in the area of materials technology defining materials-related skills a technician needs in a clear and precise format
- Continuous refinement of core competencies
- Developing marketing tools

Teaching Materials:

Use available venues and professional organizations to collect curriculum materials

Implement material curriculum submission guidelines

Implement curriculum online template

Evaluate submission curriculum process

Develop editorial board roles and responsibilities

Maintain editorial board and peer reviewers

Professional Development/Activities:

Work with partners to identify and establish professional development opportunities and related activities

Investigate the potential of a mentoring program and its format

Assist partners in developing potential regional mentoring programs

Dissemination:

Develop a dissemination plan

Develop a branding plan

Implement a marketing plan

Correlation of NAB, Site Visitor and Evaluator Reports to MatEd Goals

Goal	Recommendation	NAB	S.V.	Eval.
1	Simplify, refine core comp	x	x	x
	expand comps to other areas	x		x
2	Expand curriculum collection to industry, professional societies	x		x
	ensure easy use of web site for curriculum organization and presentation	x	x	x
		x		
3	Detailed plan for professional development	x	x	x
	involve the community	x		x
	determine potential of a mentoring program	x		x
	enhance use of partners	x	x	x
	monitor partner contributions			x
	engage partners in regional activities		x	x
4	Develop marketing program	x		
	market to industry and professional societies	x		
	plan for web site success	x	x	x
	learn from other's success and failure	x		x
General	Update vision and mission	x		
	review partner contribution capabilities			x
	extend partner list--recruit real contributors			x
	develop SWOT analysis	x		
	develop sustainability plan			x
	define roles and responsibilities		x	x
	focus on forefront technology in materials and manufacturing			
	develop strategies to avoid potential barriers	x	x	x
	Continuation of funding	x	x	x

Summary:

All the activities listed above from the SWOT Analysis, Strategic Plan Revisions, Correlation of Reports and the Development Plan assisted the team in developing and establishing a plan of action for Year 3. It was important to dedicate time to these exercises as a way to position ourselves and identify our priorities while meeting several recommendations made by the NAB, the Site Visitor and MatEd's Evaluator. Also, these activities helped the MatEd staff focus on year 3 tasks which will enable us to work more effectively with our partners by utilizing their strengths.

MatEd Resource Center Project Timeline

	Year - 1	Year - 2				Year - 3				Year - 4			
	Completed	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Quarter 1	Quarter 2	Quarter 3	Quarter 4
• Teaching Materials													
Use available venues and professional organizations to collect curriculum materials													
Implement curriculum submission guidelines													
Implement curriculum online template													
Evaluate submission guideline process													
Develop editorial board roles and responsibilities													
Maintain editorial board and peer reviewers													
• Professional Development/Activities													
Work with partners to establish professional development opportunities and related activities													
Investigate the potential of a mentoring program and its format													
Assist partners in developing potential regional mentoring programs													
• Dissemination													
Develop a dissemination plan													
Develop a branding plan													
Implement a marketing plan													

Legend	
• Research and Planning = Intent	
• Impact = Implementation	