

Institute for Mathematics Learning Strategic Plan F1 2005-Sp 2008

The Institute for Mathematics Learning (IML) and the IML Advisory Board developed a three year strategic plan for Fall 2002 through Spring 2005. The following is an extension and revision of the original strategic plan that will serve as a guide for the institute's future from Fall 2005 through Spring 2008. The strategic plan includes five components:

- **Mission** – identification of primary goals of the IML
- **Outcomes** – the outcomes of achieving the goals
- **Action** and Measure of Success – statement of actions to be implemented and development of an assessment plan to determine achievement of outcomes
- **Analysis** of Data – analysis and summary of data to determine redesign or change efforts
- **Reactions** – what needs to be done to address the identified problem areas

MISSION

The IML retains its three core missions:

1. The priority mission is to improve curriculum, instruction, and assessment in before-calculus classes through innovative and effective math learning models. This mission will be expanded to include calculus in the future.
2. Provide outreach to K-12 students and teachers.
3. Restructure math education courses for K-12 teachers.

The IML has three missions supporting the core missions:

4. Conduct research to support change in instruction, curriculum development, and assessment.
5. Secure grant awards supporting the IML mission.
6. Provide national leadership in innovative and effective math learning models.

Success in these missions is contingent upon growth in faculty and staff dedicated to attaining the outcomes related to these missions. In the period from 2002-2005 three new IML faculty members were hired, increasing IML faculty to a total of seven. While there has been some involvement of mathematics department members outside of the IML, a future goal must be to increase this involvement.

The remainder of this document addresses the outcomes, actions, analysis, and reactions related to each of the six missions. A brief analysis of data for the 2001-2004 period will be provided, with reactions to problem areas. These will guide the revised outcomes and actions for the period 2005-2008.

Mission 1: The priority mission is to improve curriculum, instruction, and assessment in before-calculus classes through innovative and effective math learning models. This mission will be expanded to include calculus in the future.

ANALYSIS OF DATA Fall 2001-Spring 2004

Success in courses over the first three years was measured by DFW and success in subsequent course for which the IML course was a prerequisite. The goal of reducing the DFW rate to 35% was met, with the average rate of success (A, B, or C) in all IML courses reaching 65%. By the spring of 2004 the success rate in subsequent courses (Applied Calculus and Statistics) exceeded 80% for students earning an A or B in an IML course. For those earning a C the success rate in Applied Calculus was 51%. When the subsequent course was Calculus, the success rate of students earning an A or B in an IML course was 64% and for those earning a C only about 20%.

REACTIONS

Upon review of the data with the Provost, the Dean of A&S, the Chair of the Mathematics Department, and the IML Advisory Board the following goals were set.

- The final goal for DFW rates will be 30%. Thus the IML will strive to reach and maintain a 70% success rate not counting Did Not Attend students (DNA students left the course while achieving a grade of less than 10%).
- Success in subsequent courses will be maintained at or above 80% for those receiving an A or B in an IML course. The goal for success rate in subsequent courses for those receiving a C in an IML course will be 60%.
- Since IML mathematics courses are often service courses for other departments, the IML will work with the Advisory Board to determine if the content in IML courses is the appropriate content. The IML will work cooperatively with other departments to determine subsequent courses for IML courses outside of mathematics, then track success in these subsequent courses. This will require tracking students across multiple semesters.
- The IML Advisory Board expressed strong concerns about implementing and measuring student achievement beyond DFW rates. Need to identify key cognitive outcomes (skills, concepts, and application) and affective outcomes (attitudes and beliefs) that are to be changed, then identify or create measures of these. Research based findings on what change is occurring should be an IML focus.
- The IML will continue to experiment with methods of improving student success and understanding, including the use of technology (Vista, PRS, Web based applets, mathematics software, Power Point presentations), multiple and varied assessments (quizzes, labs, PRS questions, exams), and model teaching techniques.

OUTCOME GOALS

The outcome goals for Mission 1 have not changed significantly for 2005-2008.

Curriculum – student cognitive outcomes

1. Improve student skill in manipulation and implementing algorithms
2. Develop deeper student understanding of key concepts

3. Develop student mathematical reasoning and problem solving, including the modeling of real-world problems

Curriculum – student affective outcomes

1. Improve student attitude and belief about mathematics
2. Improve student perception of the utility of mathematics

Instruction

1. Design, implement and assess pedagogy that is student centered rather than teacher centered, and which accounts for student characteristics (such as learning style). This will be a challenging goal with the constraint of large enrollment classes.
2. Design, implement and assess efficacy of technology as a tool in exploring math concepts, providing multiple representations (numeric, graphic, and analytic), and modeling and solving application problems
3. Design, implement and assess efficacy of means of developing mathematical communication and quantitative literacy through techniques such as writing, cooperative learning, and open-ended problem solving
4. Increase student accountability through required attendance and weekly homework quizzes

Assessment

1. Incorporate multiple forms of assessment, both formative and summative in nature, as well as individual assessment and group assessment
2. Assess changes in student performance in the areas of skills, understanding concepts, and application of mathematics to solve problems (cognitive attributes)
3. Assess changes in students' attitudes and beliefs about math (affective attributes)
4. Measure student success in course via DFW and success in subsequent course.
5. Serve as an advocate on course placement issues, including: appropriate admissions standards, placement testing, and measurement of prerequisite skills.

ACTION AND MEASURE OF SUCCESS

Actions

1. Work cooperatively with other departments to determine the appropriate topics for the IML service courses. Revise courses to meet these needs.
2. Maintain homework accountability (weekly on-line quizzes) and attendance accountability (scan/PRS and post weekly).
3. Implement protocol for consistent and frequent feedback on student progress via Vista (weekly posting of grades on quizzes, labs, exams, and a minimum of quarterly postings of the course average).
4. Incorporate measures of student skill in manipulation and implementing algorithms into IML course assessments and labs. Collect and analyze data.
5. Incorporate measures of student conceptual understanding into IML course assessments and labs. Collect and analyze data.

6. Incorporate measures of student mathematical reasoning and problem solving, including the modeling of real-world problems into IML course assessments and labs. Collect and analyze data.
7. Measure student affect towards mathematics (using surveys and focus groups) and use findings to improve affect.
8. Incorporate multiple forms of assessment (individual vs. group, formative vs. summative, open vs. closed) using Vista on-line.
9. Implement model pedagogical/instructional techniques (writing in mathematics, technology for assessment and exploration, cooperative learning, active student participation in lectures and labs, demonstrating the utility of the subject).
10. Incorporate the IML Course Expectation guidelines provided in Table 1 below.
11. Conduct and revise weekly teaching seminars and Lab Mentor meetings.

Measures of Success

1. Improvement on measure of student skill in manipulation and implementing algorithms to 80% success rate (ACT or course exams).
2. Establish measure(s) of student understanding of key concepts and determine current level of achievement. Use data to establish baseline for improvement.
3. Establish measure(s) of student mathematical reasoning and problem solving, and determine current level of achievement. Use data to establish baseline for improvement.
4. Establish measure(s) of student attitude and belief about mathematics, and student perception of the utility of mathematics. Determine current attitudes and beliefs. Use data to establish baseline for improvement.
5. Attain and retain a success rate of 70% in all IML courses (30% DFW) not including DNAs.
6. Maintain success rate of 80% or higher in the approved subsequent course if student receives an A or B in the IML course. Achieve subsequent success rate of 60% or higher if the student receives a C in the IML course.

Table 1: IML COURSE EXPECTATIONS

Sustained and effect change in curriculum and instruction requires standards to ensure quality and progress. The following standards for course implementation and instruction will be enacted in all IML supported courses.

1. **Lab Component:** minimum of 8 computer labs with focus on conceptual understanding and application of mathematics in solving problems via writing
 - incorporate a writing component for open-ended constructed response
 - utilize technology as a tool in exploring mathematics, including tools such as Computer Algebra Systems (CAS), Geometric Construction Packages, Java applets, and World Wide Web
 - cooperative learning through Math Communities consisting of 25 students peer mentored by undergraduate and graduate students, student teams of 2 to 4 working cooperatively on lab assignments
2. **Assessment:** Measure skill acquisition, conceptual understanding and problem solving via
 - weekly on-line WebCT homework quizzes
 - minimum of 4 on-line WebCT exams, one of which is a comprehensive final
 - conceptual and application based labs
3. **Technology:** Use of technology in every IML course to improve student learning, conceptual understanding, and ability to apply mathematics to solve problems. In addition to the on-line quizzes, on-line exams, and computer based labs, courses will strive to implement:
 - graphing technology (web based applets, math software, or graphing calculators) on assignments and labs
 - web based tools
 - Vista WebCT computer based course management
 - Personal Response Systems (PRS)
4. **Quantitative Literacy:** Develop mathematical communication and quantitative literacy, demonstrate the utility of the mathematics in the students world
5. **Active Student Learning:** Students are engaged in learning activities in both course computer labs and in course lectures, they are not passively receiving information. Development of large lecture activities that actively engage students is a current priority, with the new PRS serving as a delivery mechanism.
6. **Student Accountability:** Increase student accountability for actively engaging in class activities
 - track daily attendance and post on-line
 - class participation activities that engage students in hands-on cooperative learning can be used as part of attendance requirement (PRS)
 - combination of attendance and participation will count for no more than 10% of the grade
 - consistent and frequent feedback on progress via WebCT
7. **Reporting:** implement on-line current grade status for students in Vista WebCT. The current grade status is to be posted a minimum of four times, once every 4 weeks including a final grade posting. It is recommended that a current status be posted on all major course components, such as quizzes, labs, and exams.

Mission 2: Provide outreach to K-12 students and teachers

ANALYSIS OF DATA Fall 2001-Spring 2004

The IML is currently involved in numerous outreach missions that generate a substantial amount of funding (\$890,966.00 currently active). The Web Algebra and Web Trigonometry courses impact the entire state. ACCLAIM is a regional project with national impact.

Project	Numbers Served	Description
ACCLAIM Project	31 PhD >100 Teachers	Partnership with five universities to build capacity for leadership in mathematics education.
Blue Ribbon Committee	>50	Cooperative effort with regional mathematics leaders to provide professional development.
Blue Ribbon Pre-Calculus	>30	High school web enhanced Pre-Calculus course taken for dual high school and college credit.
Math Counts	15	South Middle School cooperative program leading to national contest.
MS Courses MERIT/MSP	26	Professional development for middle school teachers in West Virginia – WVU/MU partnership.
Saturday Series	70	Middle school student mathematics enrichment.
SERB/WVU Project	New	Professional development for 16 state regions via computer mediated distance education.
Student Math Symposium	51	High school students learn about novel areas of math, focus on presentations by college faculty.
Web Algebra /Trigonometry	490	High school web enhanced courses taken for dual high school or college credit.

REACTIONS

The IML has been highly successful in the area of outreach. The IML is poised to become a distance education center for mathematics, impacting both K-12 students directly and indirectly through teacher professional development. The partnership with the South Regional Education Board (SREB) could blossom into professional development for a 16 state region. Grant support of outreach in mathematics and mathematics education is extensive, providing a great opportunity for funding in the IML.

OUTCOME GOALS

1. Improve practicing mathematics teachers' content knowledge and pedagogical knowledge by providing professional development that is content based, which integrates teaching methods, and is offered via workshops and distance learning education courses
2. Improve the mathematical preparation of future college students by providing college course work for K-12 students and adults via distance education

3. Recruit and retain students in mathematics by providing mathematics enrichment to West Virginia K-12 students
4. Work in cooperation with HR&E, WVCTM, and other mathematics education organizations to improve mathematics teaching and learning

ACTION AND MEASURE OF SUCCESS

Actions

1. Formalize the MERIT cadre of courses as a distance graduate program for middle school teachers and extend these courses to the 16 states of the Southern Regional Education Board.
2. Sustain Web Algebra and Web Trigonometry courses for dual credit.
3. Assist in development and delivery of ACCLAIM PhD course in mathematics, mathematics education, and rural sociology.
4. Sustain Math Saturday Series and High School Math Symposium.
5. Sustain Blue Ribbon Committee efforts.
6. Extend and maintain the MSP courses for middle and high school quality teacher attainment as defined by No Child Left Behind.

Measures of Success

1. Offer MERIT Number and Algebra and MERIT Geometry in partnership with Marshall University with a minimum of 20 students in each course.
2. Establish program of 24 graduate hours through the MERIT courses for middle school teacher professional development.
3. Sustain enrollment of 200 in Web courses for high school students.
4. Enroll and maintain 15 graduate students in the ACCLAIM Ph.D. program.
5. Increase Math Saturday Series and High School Math Symposium to average of 50 students.

Mission 3: Restructure math education courses for K-12 teachers

ANALYSIS OF DATA Fall 2001-Spring 2004

Efforts to this point have focused on restructuring **Math 231: Algebra and Geometry for Elementary School Teachers**. The course now reflects the NCTM and MAA recommendations for preparation to teach mathematics.

REACTIONS

The IML has the goal of restructuring a number of mathematics content courses that primarily serve mathematics teachers. However a number of obstacles have minimized progress on this mission. First, the focus on revision of before calculus courses has consumed the IML faculty members, leaving little time to revise the teacher courses. Second, most of the previously existing courses for teachers were eliminated by the Mathematics Department, requiring them to be completely reestablished. Finally, the facilities to offer these courses are not adequate. Such courses require the development of a **Model Classroom** where manipulatives and technology related to this effort can be housed and an appropriate and flexible classroom environment can be established. Without additional resources little progress will be made on the goals listed below.

OUTCOME GOALS

1. Integrate pedagogy with math content for all K-12 mathematics education students
2. Strengthen the number and quality of the mathematics courses for elementary teachers
3. Develop a middle school program with stronger math content and standards based outcomes
4. Strengthen the quality of the mathematics courses for secondary teachers
5. Strengthen the quality of the Masters Program with emphasis in Education offered through the Mathematics Department
6. Aggressively seek the creation of a model classroom for the mathematics education students that allows state-of-the-art methods and materials to be used for teacher professional development

ACTION AND MEASURE OF SUCCESS

Actions

1. Offer sequence of two restructured content courses that serve middle and high school teachers.
2. Recruit graduate students for Masters Program in Math for Education.
3. Implement second elementary teacher content course (when needed for students in program).
4. Employ the new model classroom for instruction of all content courses for mathematics teachers.

Measures of Success

1. Offer two restructured courses to a minimum of 20 pre-service mathematics teachers.

2. Recruit 5 graduate students for cohort in Masters Program.
3. Offer a section of the second course for elementary teachers in the spring of 2006.
4. Implement a minimum of four different content courses for teachers with a focus on modeling appropriate pedagogy, which are taught in the model classroom.

Mission 4: Conducting research to support change in instruction, curriculum development, and assessment in IML sponsored courses

ANALYSIS OF DATA Fall 2001-Spring 2004

Research to this point has focused on DFW rates and success in subsequent courses (see Mission 1 for an overview of findings). While this is important data for course evaluation, it does not provide detailed information on what skills, concepts, and problem solving abilities are being mastered. Research has been published on this data and a summary of qualitative data on student attitudes for Math 124.

REACTIONS

A subcommittee of the IML Advisory Board was formed to focus on IML research issues. Dr. Phil Chase and Dr. Jim Harner are serving as research consultants. A commitment was made to fund a GRA to support research efforts for 2004-2006.

Currently the subcommittee is working on a number of issues:

- Identifying and refining research questions
- Searching for appropriate measurement instruments for assessing skills, concepts, problem solving, and affect
- Evaluating current data from attitude surveys, ACT Mathematics Exam, and extended tracking data on students
- Establishing a study on supplemental instruction (variable contact hours focused on supporting students most in need of assistance in mathematics)

OUTCOME GOALS

1. Improve methods of teaching by studying the components of restructured IML courses to determine what is effective in improving student success, both from a cognitive and affective perspective
2. Improve student success by studying the characteristics of students in IML courses, including their learning styles, motivation, and ability level
3. Improve course content by studying what skills, concepts, and applications are essential for students to be successful in subsequent courses both in mathematics and outside of mathematics
4. Implement and evaluate multiple forms of assessment to determine what provides the best feedback for both instructional change and student progress
5. Publish research on learning and teaching collegiate level mathematics
6. Present research at state, regional, national, and international conferences

ACTION AND MEASURE OF SUCCESS

Actions

1. Sustain evaluation of DFW and tracking data.
2. Incorporate student focus groups into all of the IML courses.
3. Implement in-depth study of affective and cognitive change in all IML courses, including a study of which components of the course were most effective.
4. Publication of expository articles on pedagogical innovations for each IML course.

5. Publication of a research article on student learning in collegiate mathematics for each IML course.

Measures of Success

1. Semester reports on DFW and tracking data will be prepared for the Chair, Dean and Provost.
2. Reports of findings from the focus groups will be prepared for the Chair, Dean and Provost.
3. Report of the findings of the in-depth studies will be prepared for the Chair, Dean, and Provost.
4. Publication of expository articles in appropriate journals (see suggested list of journals below in Table 2).
5. Publication of research articles in appropriate journals (see suggested list of journals below in Table 2).
6. Presentation of teaching innovations and research at state, regional, national, and international meetings (see suggested list of conferences below in Table 2).

Table 2: SUGGESTED CONFERENCES AND PULICATIONS

Conference	Date	Submission Deadline
International Conference on Technology in Collegiate Mathematics (ICTCM)	Moving Spring 06	
International Conference on Mathematics Education (ICME) once every 4 years – Mexico 2008	July	
Psychology of Mathematics Education (PME-NA)	October	January 17
MathFest – MAA	August	
First Year Experience Conference – South Carolina Annual Conference	February	October
International Conference	July	March 1
Joint Meetings of AMS/MAA	January	October
National Council of Teachers of Mathematics (NCTM) National Meeting	April	
Regional Meetings	October	
Annual Conference on Distance Teaching and Learning - Univ. of Wisconsin, Madison	August	January 24
West Virginia Council of Teachers of Mathematics (WVCTM)	March	
SIGMA of RUME (Research on Undergraduate Mathematics Education)	February	
Supporting Assessment in Undergraduate Mathematics (SAUM) – MAA has invited papers at Joint Meetings and MathFest		
Organize Contributed Paper Session at Joint Meetings of AMS/MAA, need paragraph proposal a year in advance		

Places to Publish:

1. College Mathematics Journal – published by MAA, Classroom Capsules section publishes SHORT mathematics ideas for classroom use
2. Journal of Online Mathematics and its Applications (JOMA) – published by MAA, web-based learning materials and innovative uses of technology, published on-line so they like links and full color graphics
3. The Mathematics Teacher – published by NCTM, teaching ideas appropriate for pre-college math including calc
4. Journal for Research in Mathematics Education (JRME) – research journal published by NCTM, forum for disciplined inquiry into the teaching and learning of mathematics
5. Educational Studies in Mathematics (ESM) – research journal, European equivalent of JRME
6. On-Math: Online Journal of School Math – NCTM journal, materials which are “useful to grades preK-14 teachers and teacher educators in their classrooms”
7. Mathematics and Computer Education – computer and calculator based, mostly expository

8. International Journal of Computers for Mathematical Learning (The Netherlands) – “publishes contributions that open the way to new directions, particularly those which recognize the unique potential of new technologies for deepening our understanding”
9. PRIMUS – Problems, Resources, and Issues in Mathematics Undergraduate Studies – “PRIMUS is a rich forum for the exchange of ideas in mathematics education at the college level. The journal is refereed quarterly devoted to dialogue among those interested in teaching undergraduate mathematics.”
10. FOCUS: MAA journal
11. Journal of Computers in Mathematics and Science Teaching (JCMST) – published by the Association for Advancement of Computing in Education (AACE), “devoted specifically to using information technology in the teaching of mathematics and science”
12. International Journal for Technology in Mathematics Education (IJTME) – expository and research articles with focus on technology
13. Supporting Assessment in Undergraduate Mathematics (SAUM) – an MAA project, <http://www.maa.org/saum/>, publishes case studies on website about ongoing research
14. Innovative Teaching Exchange – editor Bonnie Gold, online, max 750 words, peer-reviewed, questions to answer: what was the purpose, describe the method, describe size and level of course, how did it work, what were the difficulties, how can they be overcome
15. Mathematics Magazine – lively, bed-time reading, particularly interested in history, must contain some interesting mathematics – not strictly pedagogy, aimed at undergraduates
16. College Math Journal – more classroom oriented, aimed at enriching undergrad education, especially interested in 1st two years, used to be “2 year College Math Journal, specific guidelines on website
17. The AMATYC Review
18. Mathematical Thinking and Learning
19. Research in Collegiate Mathematics Education (RCME) – one of top journals
20. More journals at <http://www.rume.org/journals.html>

Mission 5: Securing grant awards supporting the IML mission

ANALYSIS OF DATA Fall 2001-Spring 2004

The IML has generated over \$1,000,000 in external funding from the State of West Virginia, NSF, DoED, and foundations. The IML is a partner in a \$10,000,000 NSF Center for Learning and Teaching grant that is currently submitting for renewal for another five years at \$10,000,000. The IML is a leader in the DoED Mathematics Science Partnership efforts to improve the quality of teaching, receiving a \$229,727 grant for 2004-2005, with a potential for two more years at similar funding levels. The IML is becoming a leader in the area of distance education professional development for mathematics teachers, expanding on a \$123,000 Benedum Foundation grant to partner with the South Regional Education Board (\$100,000 grant) to provide services to a 16 state region.

REACTIONS

The IML has been extremely successful at generating grant dollars in the area of outreach. In fact, the faculty members within the IML are operating near maximum capacity in this area. However, grant support for research on the teaching and learning of mathematics are noticeable absent from the IML portfolio. An IML goal for the future is to pursue and secure research grants.

OUTCOME GOALS

1. Grant monies to support improvement of curriculum, instruction, and assessment in undergraduate mathematics courses
2. Grant monies to support assessment and program evaluation
3. Grant monies to support outreach to K-12 students and teachers
4. Grant monies to support development of the teacher education program
5. Grant monies to support research into the learning, teaching, and assessment of mathematics

ACTION AND MEASURE OF SUCCESS

Actions

1. Submit a minimum of three proposals for state level funding.
2. Submit a minimum of three proposals for national level funding, contingent on previous successes.
3. Submit a minimum of three proposals to a foundation, contingent on previous successes.
4. Participate in nationally funded ACCLAIM project.
5. Take leadership role in the MSP initiative to address No Child Left Behind.
6. Take leadership role in State of West Virginia Mathematics Our Future project.

Measures of Success

1. A minimum of three funded grants at state level.
2. Funding or follow-up on non-funded proposal for a minimum of one national level grant, if new grant submitted.

3. Funding or follow-up on a minimum of one foundation level grant, if new grant submitted.
4. Co-PIs from IML on ACCLAIM as well as participation of IML faculty in ACCLAIM activities.
5. Co-PIs from IML on MSP project.
6. Co-PIs from IML on Mathematics Our Future project.

Mission 6: Providing national leadership in innovative and effective math learning models

ANALYSIS OF DATA Fall 2001-Spring 2004

The IML has provided extensive leadership in mathematics education in the State of West Virginia and in the Appalachian region. The WebCT Algebra and Trigonometry courses serve hundreds of West Virginia high school students each semester. The ACCLAIM project provides professional development for mathematics teachers in West Virginia, Ohio, Kentucky, and Tennessee, and is expanding with each cohort to new states. The participation of the IML in ACCLAIM is providing a stage for national exposure. The potential of the SREB/IML partnership is to provide professional development for a 16 state region.

REACTIONS

The Provost declared national leadership and exposure as an IML imperative for the next three years. Developing a national leadership role requires many factors, including:

- Presentations on the IML and its initiatives in regional, national, and international forums
- Publication of curriculum materials, expository articles, and research articles in respected journals
- Promoting the IML on campus, as well as across the state and nation
- Grants supporting the IML mission
- IML engagement in regional and national change efforts
- Dissemination of teaching practices, curriculum, and software

Publication and presentation have been discussed under the research mission. The focus here will be on how to generate national exposure.

ACTION AND MEASURE OF SUCCESS

Actions

1. Create an on-line IML web portal which provides an open forum, access to coordinators web pages, electronic submissions area for posting expository and research position papers related to IML missions, and samples of IML curriculum materials.
2. Create a professional grade IML presentation, perhaps both a slide show and video, which can be accessed at the on-line IML web portal and be used as a traveling show for conferences and meetings.
3. Post position papers to the IML web portal for each course, one expository and one research, as a precursor to publication in a journal.
4. Host an IML conference on Undergraduate Change in Mathematics Teaching and Learning.
5. IML Orientation to advertise the IML to the students and faculty at WVU as well as parents. This could include a session at the current WVU freshmen orientation, an IML Open House, a parent letter distributed through Banner and the Parents Club News Letter, a list serve for the IML that provides information on what is happening in the course, poster sessions of student work for parents and administrators, or even a study skills component for mathematics courses.

6. Establish an IML travel schedule for attending and presenting at conferences related to IML missions. IML Faculty will share this responsibility by paring faculty with conferences to be attended.
7. Creating an IML logo for market purposes. Using this logo for branding of IML commodities.
8. Pursue a three year IML Visiting Professor or IML PostDoc position to assist in research, grant, and outreach efforts.
9. Establish a more personal contact with the NSF and DoED. Invite a representative for the NSF or DoED to visit the IML. Setup a meeting with a representative of the NSF or DoED to discuss IML missions and possible funding. We have Jim Lightbourne and Rosemary Haggett as contacts in the NSF with WVU connections.
10. Establish connections to MAA subcommittees related to IML missions, such as the MAA subcommittee on College Algebra.

Measures of Success

1. MSP partnership, Web Algebra, and Web Trigonometry will provide state level exposure for the IML.
2. ACCLAIM partnership will provide regional and national exposure for the IML.
3. The IML web portal, IML presentation, and IML logo will be operational.
4. An expository and research position paper will be posted to the IML web portal for each IML course.
5. IML orientation will be implemented.
6. IML faculty will attend or present at all conferences determined to be essential to national exposure efforts.
7. An IML visiting professor or postdoc will be hired by the end of the three year period of the strategic plan.
8. NSF and DoED contacts will be developed and nurtured.
9. IML will have a representative on an MAA subcommittee related to IML missions.
10. A minimum of two expository articles on IML curriculum and change efforts will be published in a referred journal.
11. A minimum of four presentations at the state and national levels.
12. A minimum of two research articles on the learning and teaching of mathematics will be published in referred journals.

SUMMARY

Yearly reports will be submitted to the Chair and Dean for review and used to guide future action. The expectation is that the IML will engage in research-based change. Analysis and summary of data will be applied to define future actions and measures of success for each goal. A strategic plan for F1 2008 through Sp 2011 will be developed beginning no later than F1 2007.