

Minutes of August 11, 2011 STEP Advisory Board Meeting

Present:

STEP Advisory Board Members – Tim Greene (Chair of STEP Advisory Board and Provost), Diane Anderson (V.P. of Student Affairs), Tony Vizzini (CEAS Dean), Alexander Enyedi A&S Dean), Paul Engelmann (IME Chair), Don Schreiber (Chemistry Chair); Lenard Ginsberg (Biological Science Professor); Daina Briedis (external board member)

STEP Project Team: Edmund Tsang (Principal Investigator), Anetra Grice (STEP Program Director), Steven Butt (IME Professor), Andrew Kline (PCI Professor); Aekam Barot (STEP GA), Robert Ruhl (STEP Project Evaluator)

Briefing Report

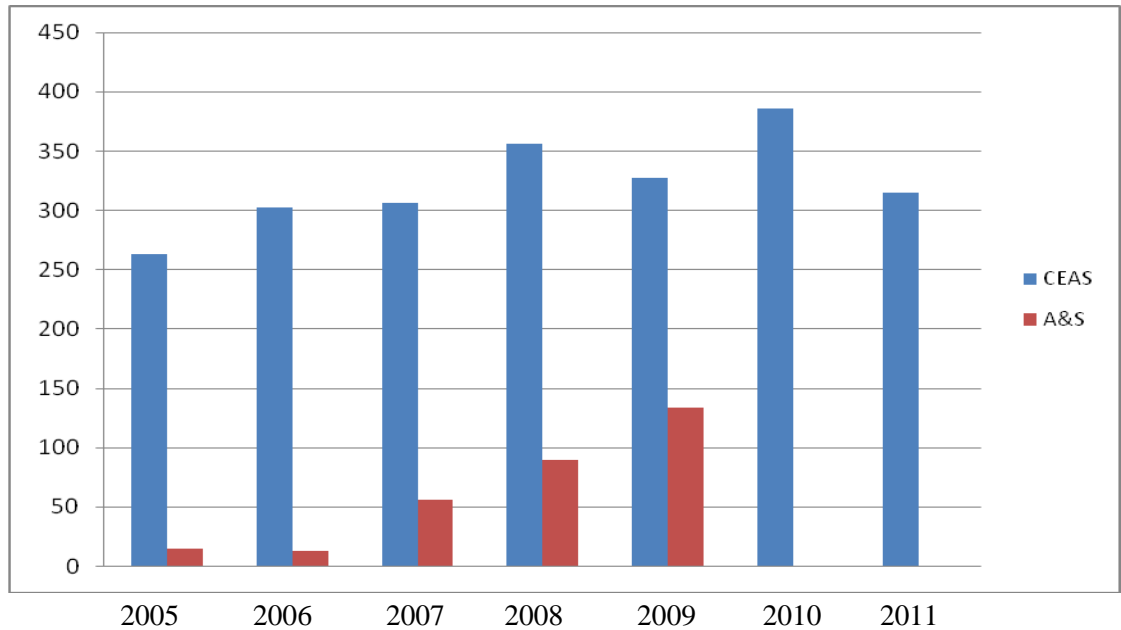
1. Performance of 2010 CEAS-STEP Cohort in First-Year Courses

	Fall 2010		Spring 2011	
	STEP	Comparison	STEP	Comparison
Algebra I (MATH 1100)	45.5	76.9	-	-
Algebra II (MATH 1110)	59.5	46.0	33.3	42.3
Pre-Calculus (MATH 1180)	63.6	59.2	77.4	55.7
Calculus I (MATH 1700)	66.7	57.9	58.8	57.3
Calculus I (MATH 1220)	75.0	62.1	76.7	52.0
Calculus II (MATH 1710)	-	-	61.1	48.1
Calculus II (MATH 1230)	80.9	53.8	88.4	63.3
CHEM 1100	84.3	74.2	73.5	76.3
PHYS 1130	-	-	100.0	44.7
PHYS 2050	-	-	80.2	47.8
IME 1020	85.4	77.4		
IME 1420	93.4	83.8		

Bold indicates statistically significant with $\alpha \leq 0.05$

2. Demographics of the 2011 CEAS-STEP Cohort

- a. A total of 386 first-time, first-year CEAS students attended summer orientation through July 1, and 315 are placed in 16 learning communities. This represents 81.6% of the students who attended summer orientation through July 1.



b. Mathematics Placement: The profile of the first-time, first-year CEAS students as indicated by first-semester mathematics enrollment is shown in the table below:

First Semester Math	2004 (%)	2005 (%)	2006 (%)	2007 (%)	2008 (%)	2009 (%)	2010 (%)	2011 (%)
Calculus II and higher	7.0	9.7	5.4	5.1	5.2	7.9	7.5	3.4
Calculus I	22.2	31.5	35.3	42.7	39.2	34.3	40.7	38.0
Pre-Calculus	23.7	24.9	31.0	31.1	29.8	27.9	25.2	34.0
Algebra II	30.3	23.4	17.7	13.7	18.9	22.0	19.1	16.8**
Algebra I and lower*	12.5	7.0	10.3	7.2	5.9	7.6	6.8	8.4
No Math Data	4.2	3.5	0.3	0.3	1.0	0.3	0.7	0
Total	100	100	100	100	100	100	100	100

*Include MATH 1090, 1100, 1160

** A total of 19 students or 4.8% of the incoming population have improved their math profile (mostly to Pre-Calculus) as a result of participation in the “Bridges to Success” in CEAS program.

- Facebook sign-up: Past attempts to use social medium such as Facebook to reach out to incoming STEP students were not as successful as we would like. At the March 2011 STEP Advisory Board meeting, the board re-emphasized the importance of using social medium to reach out to students. With the new STEP Program Director, Anetra Grice, the STEP Facebook has been redesigned – see screen shot on the next page. In addition, extra effort was made during the 2011 Summer Orientation to “sign up” as many incoming first-time first-year students as possible. So far, 50% of incoming first-time, first-year students have signed up during Summer Orientation, and the goal is to reach 75% of incoming first-year students by Fall Welcome.

In addition, there will be special content targeting transfer students and at-risk students, and emphasis on co-op/internship and other career-related content for STEP and current CEAS students.

facebook Search

Wmu Step
 WMU STEP Program Director at Western Michigan University Studied at Western Michigan University Lives in Kalamazoo, Michigan Add your hometown Add languages you know Edit Profile

Share: Status Photo Link Video Question

What's on your mind?

Wmu Step
 "Scientists, Engineers, Mathematicians, and Technologists...They are the ones that make tomorrow come. The foundations of economies will issue forth from investments we make in science and technology.

How much would you pay for the universe?" –Neil deGrasse Tyson

The Future of NASA with Neil deGrasse Tyson
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 Sweet!

Better Get Them to Sickbay Because These Aircraft Indicator Clocks are Sick
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 Over the past four years, Sine1040 has been tinkering with four aircraft Indicator Units from Rank Precision Ind. Ltd.. Produced sometime in the 1970s, the function of these aircraft indicator units remains unclear, but that really doesn't matter since Sine1040 had a higher purpose in mind for these

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4. Expansion of Student Success Center:

The Student Success Center will be expanded to three in Fall Semester 2011: Engineering House/Bigelow Hall, Valley I, and the Little Three. The expansion of SSC from one in 2010 to three in 2011 will be accompanied by the expansion of the Engineering Peer Mentors (EPM) program from three EPM's in 2010 to 6 in 2011. In addition to the EPM's, the SSC will be staffed by two additional tutors. We also plan to recruit and select one more EPM in Fall Semester 2011.

5. 2011 STEP Initiatives

- a. Pilot mandatory mathematics tutoring: With the collaboration of coordinators for Algebra II, Pre-Calculus, and Calculus I, a pilot project on mandatory tutoring will be implemented in one section of MATH 1110 (CRN 40455), MATH 1180 (CRN 40576), and MATH 1700 (CRN 43208).

In the pilot project, students who fall below a threshold score will be required to participate in content tutoring which will be provided by the STEP project. The threshold score as well as the incentive/penalty will be set by the coordinators of Algebra II, Pre-Calculus, and Calculus. For

example, the threshold score that will trigger mandatory tutoring in Pre-Calculus will be based on an average score of a combination of attendance and homework/quiz. Students will have one week to attend tutoring and re-do the quiz/assignment, and they will be awarded or penalized +/- 5 points.

STEP will use a swipe-card reader of students' Bronco ID to monitor attendance at the three Student Success Center, and student participation in content tutoring will be reported weekly to the math instructors. We are continuing to meet with the mathematics coordinators to work out the implementation logistics.

The intended outcomes of the Mandatory Tutoring in Math pilot are:

- Students who participate in mandatory tutoring will be more successful than students who did not participate in tutoring as evidenced by a higher course completion rate (% of students with grades C or better) and higher GPA
- A process for mandatory tutoring that is satisfactory to the mathematics instructors and students will be identified.

We are continuing to meet with the math instructors to work out the implementation logistics.

- b. Research Study on How Lower-Division CEAS Students Spend Time Outside the Classroom: The 2010 WMU National Survey of Student Engagement (NSSE) shows first-year students report less than 10 hours studying/doing homework and zero hours of meaningful activities outside of class. To better understand how lower-division CEAS students spend their time outside the classroom, STEP will initiate a pilot research study in Fall Semester 2011 by following a group of first-time first-year students and returning sophomore. The results of the initial findings may impact how we structure the support services such as the hours of operation of the Student Success Centers and prepare us for a larger-scale study in 2012.

Dr. Steven Butt is supervising a graduate student assistant in this research study, which will use social media (Facebook, Twitter) and GPS for students to report and to track their daily activities; e-Learning and blogs to record weekly activities, and monthly surveys and review of Bronco card swipes to probe deeper and to validate the students' reported activities.

Ten to fifteen students, split between first-year and returning students, will be recruited during Fall Welcome and prior to the semester to participate. STEP will pay the residence hall technology fee (\$80/semester) as an incentive for students to participate.

Planning Document

1. Expansion of the "Bridges to Success in CEAS" Program

Background

In July 2010, a pilot "Bridges to Success in CEAS" program targeting students whose MATH ACT scores place them in Algebra II was implemented. There were a total of five students in the program (plus another nine CEAS students from the LSAMP program who have a wider range of MATH ACT scores). The pilot program participation was low because there was insufficient time between the announcement of the new STEP grant (May 2010) and summer orientation (June 2010) to publicize the Bridges program and to recruit participants.

The Bridges program was a non-residential day program from 9 a.m. to 2 p.m. four days per week for three weeks and focused on topics traditionally covered in MATH 1110, Algebra II. At the conclusion of the Bridges program, 13 of the 14 participants took the math placement exam; nine (9) students were moved one math level up; two (2) students were moved two math level up; one student stayed at the same math level, and one student enrolled in math that was one level lower.

The preliminary result of the pilot Bridges program is encouraging. A breakdown in the performance of students in math in Fall Semester 2010 after participating in the “Bridges to Success in CEAS” is summarized in table below:

# of Students	MATH ACT	MATH Corres. to ACT	MATH Placed Fall 2010	MATH GPA	Comments
3	= $<$ 18	Algebra I	2 – Algebra II	Avg. GPA = 3.50	Student withdrew all classes
			1 – Pre-Calc	W	
8	19 – 23	Algebra II	1 – Algebra II	GPA = 0.00	
			6 – Pre-Calc	Avg. GPA = 2.91	
			1 – Calculus I	GPA = 3.00	
1	24 – 26	Pre-Calculus	1 – Pre-Calc	GPA = 1.50	
1	= $>$ 27	Calculus I	Pre-Calc	GPA = 2.50	

Residence Life contributed to the Bridges program in Year Two by offering a residential option to students so they do not have to commute to the program daily. For a fee of \$186.00, participants have housing and meals for the three weeks of the program, which runs for three weeks from Mondays to Wednesdays between 9:30 a.m. and 4 p.m.

Because the 2011 Cognos report of the admitted students has ACT scores, we were able to market the Bridges program to the target audience of students with MATH ACT scores between 19 and 23. In addition, we were able to use the results of the pilot program to encourage participation during 2011 Summer Orientation presentations.

A total of 24 students with MATH ACT 19 and 23 enrolled in the 2011 Bridges to Success in CEAS, plus another three (3) CEAS students from the LSAMP program. At the conclusion of the program, all 24 Bridges students took the math placement exam; 12 students were placed one math level higher; three (3) students were placed two math levels higher; and nine (9) students remained at the same math level.

Three of the LSAMP students attended STEP lectures; the other 15 remained in the LSAMP math classes, which used much of the same lecture material, but involved lectures spread over the entire four week, 5 days per week LSAMP program. One of the three LSAMP students attending STEP took the exam, and moved up one class level for Fall 2011 (now enrolled in MATH 1180). One was already placed in MATH 1180 prior to LSAMP and chose not to take the exam, and the other student left early due to a family medical emergency and did not take the exam. Of the 8 other students in the LSAMP math

classes who took the exam, 6 of those 8 moved up one math level (3 moved up to MATH 1180; 3 moved up to MATH 1110).

LSAMP is a university readiness STEM intensive program, not fully focused on math like STEP Bridges. Of the 18 LSAMP students, 15 will enroll at WMU for Fall 2011; 6 of those 15 in the College of Arts and Science, and 9 in CEAS. All 24 STEP Bridges students will enroll in CEAS.

Furthermore, detailed information on student performance in the math placement was collected that can be used to guide further improvement of the Bridges program.

Planning Question:

Should the “Bridges to Success in CEAS” be expanded to include 40 students in Summer 2012?

Factors to consider in the expanding the Bridges Program:

- The percents of incoming first-time first-year students with MATH ACT 19-23 (Algebra II) range from 14% to 22% over the last five years (the actual number of students range from 73 to 81), and the number is expected to remain a significant portion of the incoming first-year students.
- 75% of the 2011 Bridges participants came from the eastern part of Michigan or out-of state and they took advantage of the housing option. To expand the Bridges program, we need the continual support of Residence Life to provide the housing option at an affordable cost to the participants.
- When the Bridges students moved math enrollment from Algebra II to Pre-Calculus or Calculus I, their schedules need to be revised to include the new math course, IME 1020 (Technical Communication) and/or possibly General Chemistry I and Lab (CHEM 1100/1110). To enable students to remain in a learning community in which they share three-to-five courses, a new Pre-Calculus (MATH 1180) section and/or General Chemistry I Lab section (CHEM 1110) may be needed because the seats that are available at the conclusion of the Bridges program in July may not fit the schedules (General Education, Engineering Graphics, etc) that these students have registered for during Summer Orientation.

Discussions

The STEP Advisory Board agreed it is a good idea to expand the Summer Bridges program. Dr. Diane Anderson recommended Dr. Andrew Kline, Director of the Bridges program, to contact Auxiliary Services as soon as possible to reserve rooms for participating students. Dean Alex Enyedi indicated his support with providing math and chemistry seats to support those students who would be moving from Algebra II to Pre-Calculus/Calculus I as a result of participating in the Bridges program.

Provost Greene proposed a challenge to the Algebra II students by enrolling them in Pre-Calculus during summer orientation and providing them with pathways to achieve readiness to take Pre-Calculus in Fall Semester. The pathways would include: participation in Bridges; take and pass the math placement exam; enroll in Algebra II in a community college near the student’s hometown; or enroll in Algebra II at WMU. Dr. Daina Bredies suggested the psychology of potentially taking away a “gift” could be a strong incentive for students to be Pre-Calculus ready for fall semester. Dean Tony Vizzini said CEAS would support all CEAS students to start at least at Pre-Calculus.

Edmund Tsang will bring Provost Greene's suggestion back to CEAS, discuss with and solicit the department chairs' ideas, and operationalize it should the College accept the suggestion.

2. Recruit One Additional External Board Member

Background

In the first STEP grant, which supported students from the College of Arts and Sciences (CAS) and the College of Engineering and Applied Sciences (CEAS), there were two external board members: Dr. Penny Gilmore, Professor Emerita of Chemistry and Biochemistry at Florida State University, and Dr. Daina Briedis, Associate Professor of Chemical Engineering and Materials Science at Michigan State University. In her initial visit to Western Michigan University in March 2006 to participate in the STEP Advisory Board meeting, Dr. Gilmore also presented a seminar on classroom action research hosted by the Mallinson Institute on Science Education (MISE) for which Dr. Gilmore was provided an honorarium shared by MISE and STEP. After participating in the 2007 STEP Advisory Board meeting, Dr. Gilmore asked for an honorarium even though the letter of invitation to join the advisory board indicates the position would be *pro bono* with reimbursement for travel and other incidental expenses. Since 2008, Dr. Gilmore has not participated in the Advisory Board meeting because the STEP did not have a budget for advisory board honorarium.

Also since 2008, only the August meeting of the STEP Advisory Board was attended by the external board member because scheduling for the February/March meeting was difficult for the external board member.

The new STEP grant, which began on June 2010, targets only CEAS students – first-time first-year students, returning sophomores, transfer students, and students from traditionally underrepresented populations in engineering and applied sciences. Moving forward, it is imperative to expand external representation on the STEP Advisory Board.

Planning Question:

What would be an optimum number of external member(s) on the STEP Advisory Board?

Who would make an ideal candidate to serve on the STEP Advisory Board?

Factors to consider in recruiting additional external board member

- There is already representation of engineering schools from the State of Michigan on the STEP Advisory Board.
- Participation on the STEP Advisory Board is *pro bono*.
- Availability and commitment of the external board member to travel to Kalamazoo in August.

Discussions

Dean Tony Vizzini nominated Dr. Joseph Slater of Wright State University to be the second external advisory board member. After some discussions, the STEP Advisory Board accepted the nominated and directed Edmund Tsang to contact Dr. Slater about participation on the advisory board and to attend the February/March board meeting.