Enhancing the Scope and Quality of Mathematics Teacher Preparation at UTEP

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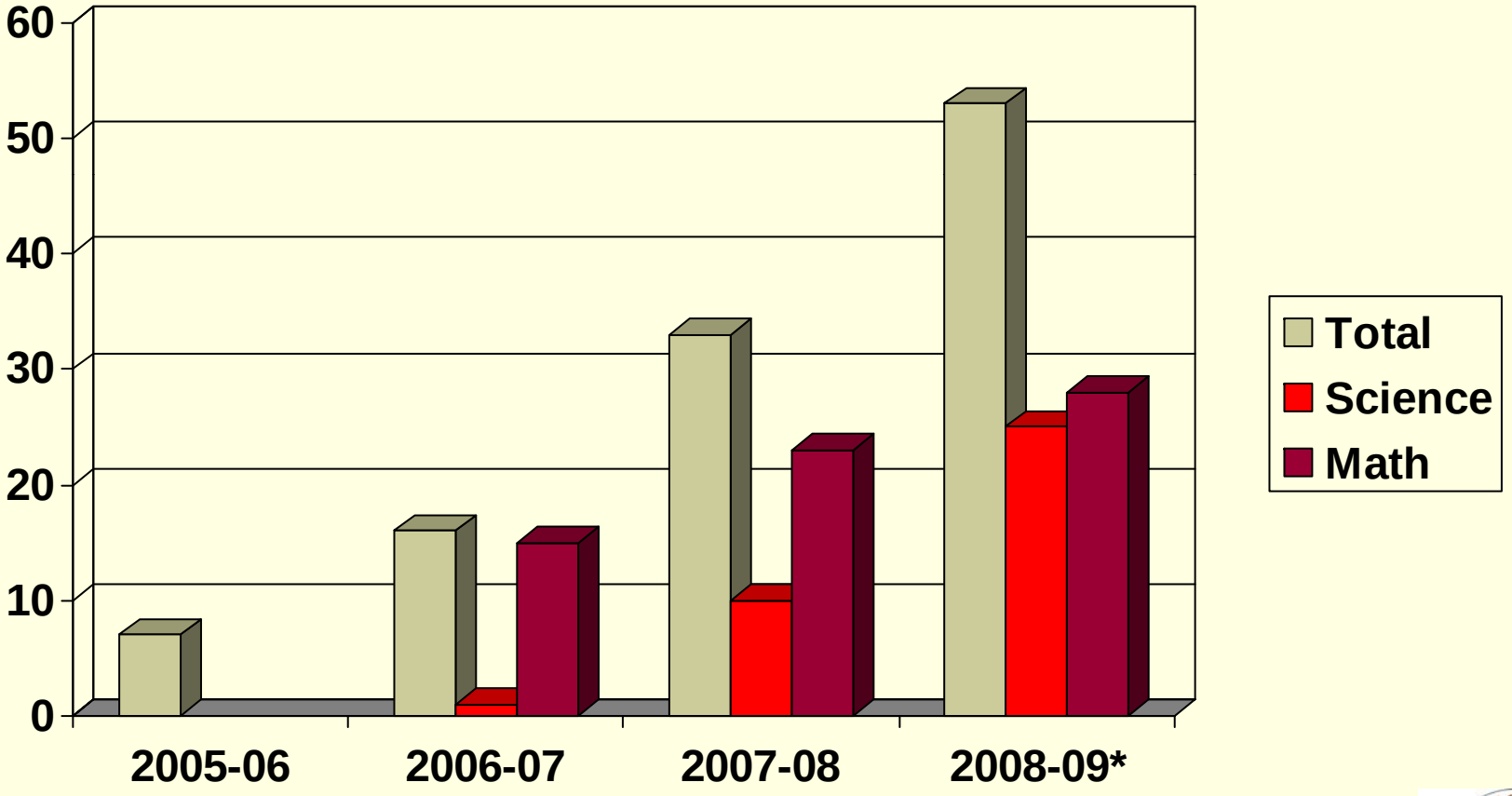
TNE at UTEP

September 2003 – Present

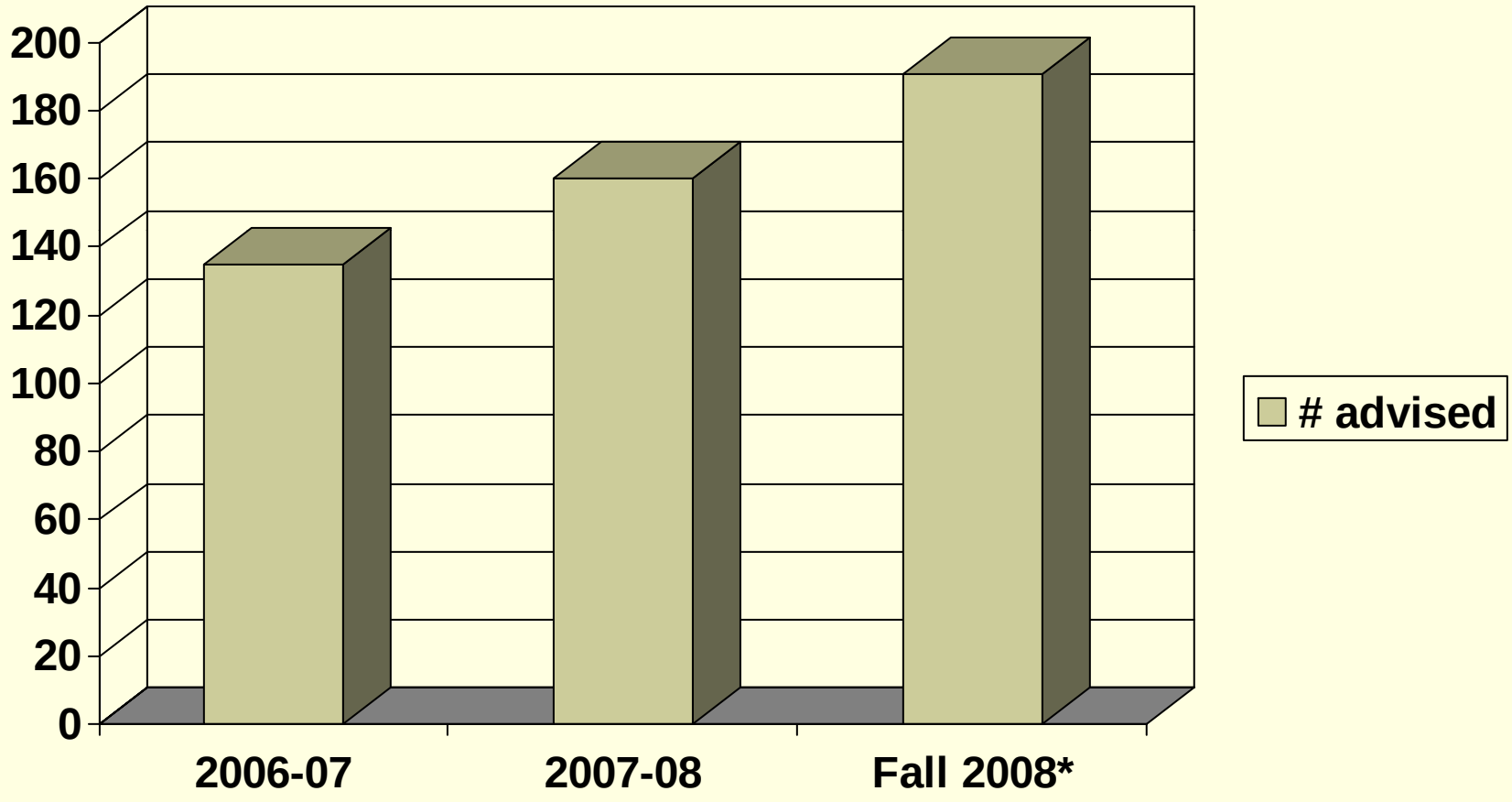
TNE has supported an active dialogue on math and science education, which has resulted in significant improvements in teacher preparation.

Significant Growth in Secondary Math/Science Teacher Production



*expected # of graduates

Growth in the Pool of Future Secondary Math/Science Teachers



*expected # of advisees in the College of Science

Increased Enrollment of Students Preparing for Secondary Certification

Liberal Arts/Science Majors with Education Minors*		
Fall Semester	Liberal Arts	Science
2003	250	86
2005	395	125
2007	490	146

*Duplicate counts of UTEP Liberal Arts and Science majors with Secondary education minors (across all grade levels)
Source: UTEP Web Reports (unofficial data)

Students Enrolled in Secondary Education Curriculum Course	
Fall Semester	Enrollment
2004	63
2005	70
2007	180

Source: UTEP College of Education, Teacher Education (unofficial data enrollment in SCED 3311—the first course required of preservice secondary teachers)

Before TNE
Retention Rate by Certification Area
(Secondary Class of 2000)

Level and Subject Area	# of Teachers		Teacher Retention Rate					Attrition Rate
	Produced	Employed	2001	2002	2003	2004	2005	
Secondary								
Bilingual Spanish	8	8	100%	100%	100%	75.0%	62.5%	37.5%
English	25	20	100%	95.0%	90.0%	85.0%	85.0%	15.0%
English/ESL	6	5	100%	80.0%	40.0%	60.0%	40.0%	60.0%
Mathematics	11	9	100%	77.8%	77.8%	77.8%	55.6%	44.4%
Science	14	12	100%	66.7%	50.0%	41.7%	25.0%	75.0%
Social Studies	13	11	100%	81.8%	72.7%	72.7%	63.6%	36.4%
PE/Health	19	16	100%	100%	87.5%	87.5%	87.5%	12.5%
Foreign Language	8	5	100%	100%	100%	100%	100%	0.0%
Fine Arts	8	8	100%	100%	100%	100%	100%	0.0%
Technology Appl	2	2	100%	100%	100%	100%	50.0%	50.0%
Other	1	1	100%	0.0%	0.0%	0.0%	0.0%	100%
Special Educ (All level)	12	10	100%	90.0%	80.0%	70.0%	50.0%	50.0%
All Sec/All Level	127	107	100%	88.8%	80.4%	76.6%	67.3%	32.7%

Key Changes: Students

- High-quality aggressive advising for future teachers in the College of Science
- Students are placed in classrooms in their junior year under the guidance of Master mentor teachers via MaST Academy.
- Saturday training in classroom instruction and pedagogy via MaST Academy.
- Induction program mentors new teachers through their first years of teaching.
- Formation of FEMaS – Future Educators of Math and Science provides continual support for pre-service teachers.

Key Changes: Faculty

- TNE personnel help math/science-education faculty write math/science education grants.
- TNE funds faculty educational innovations
- Creation of capstone courses for future middle and secondary school teachers
- Creation of new "in-the-field" experience programs
- Engagement of mathematics faculty in review of state mathematics teacher certification and development of online reviews for state certification
- Improvement in the MAT in Mathematics
- Creation of MAT in Science

Key Changes: Administration

- Strong leadership at the University, College and Departmental levels emphasizing the importance of teacher preparation
- Recruitment of corporate funding for education initiatives.
- Changes in Tenure and Promotion Guidelines
- Creation of the Center for Mathematics, Science, and Technology Education and Research (*CenMaSTER*)
- Collaborations with the College of Education resulted in the restructuring of course offerings for secondary math/science teachers
- Collaborations with school districts to meet the needs of new programs.

TNE

keeps math/science education a major priority,

facilitates programs and research,

and networks continuously between the area high schools, the community college, and UTEP.

Enhancing the Scope and Quality of Mathematics Teacher Preparation at UTEP

Dr. Larry Lesser
Associate Professor of Mathematical Sciences

Faculty Profile: Matthew Winsor

- TNE-related study on effects of capstone course on preservice teachers (paper in PRIMUS)
- TNE-related study on teacher's content knowledge connection to pupil's content knowledge
- TNE-related research on English language learners in mathematics/statistics classes
- SABEMAS initiative (combines master teacher certification with TNE initiatives to create Learning Academy in STEM, with EPISD and YISD)

Faculty Profile: Kien Lim

- Study (supported in part by TNE) exploring use of prediction to battle student tendency to apply algorithms without analyzing problem

  (5-5:15 Saturday, Hall Ideas F)

- Study investigating pre-service teachers' spontaneous application of proportionality on non-proportional situations

  (1:45-1:55 Saturday, Hall Ideas I)

Faculty Profile: Larry Lesser

- In TNE Math Item Writing Group [which included many beyond math educators] for testing engine of problems at varying levels of cognitive demand
- Above work informed my work (with Tchoshanov) "item analysis-driven big ideas" professional development with middle school teachers. See our paper in upcoming issue of

  J. of Mathematics Education Leadership.
- My work with Pedagogical Content Knowledge has led to an ICTCM paper.
- Lesser (& Lim, Winsor, Tchoshanov) support teachers doing action research

Faculty Collaborations: TNE Research Study Teams (of K-16 Education Research Center)

- August 4-5 off-campus retreat !

3 studies:

- Induction Instrument Development Pilot
- Pupil Learning Growth Exploratory Sub-Study
- Teacher Knowledge and Pedagogical Content Knowledge

UTEP's Induction Plan

- Builds on research showing where there is greatest need to support novice teachers
- Acknowledges unique setting for schools and new teachers in region, and opportunities for practice and research
- Faculty representing many colleges (Science; Health Sciences; Liberal Arts; Education) develop conceptual model, resources, podcasts, etc.
- Partnership with UTEP, EPCC, area schools/districts
- Priority areas: teacher effectiveness in classroom, school climate, assessment and grading, engagement of parents, understanding students'/teachers' rights and policy issues, and ongoing professional growth

Thank you!

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- Larry Lesser

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