



BUILDing SCHOLARS on a Foundation of Talent & Asset Bundles

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Agenda

- UTEP Context
 - Demographics
 - 2030 Strategic Plan
- Tapping our Hispanic Talent through Undergraduate Research
 - BUILDing SCHOLARS - Why & How
 - Asset Bundles Framework
 - Relevant NIH Hallmarks
 - BUILDing SCHOLARS Research Partner Institutions
 - Results

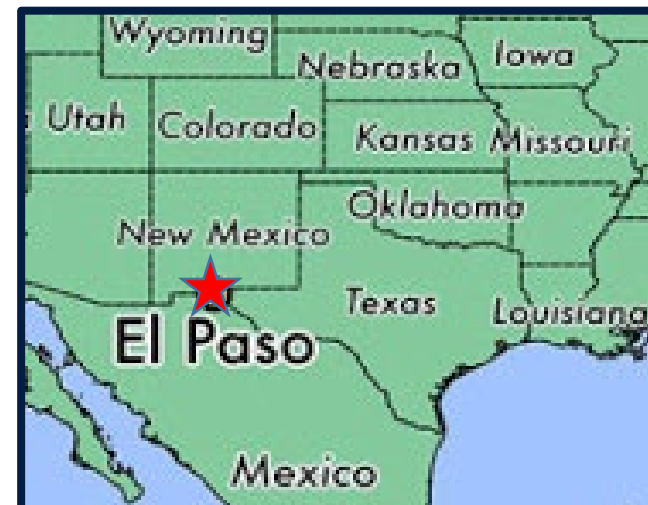


Context

- ~25,000 students (~21,000 undergraduates)
- 83% Hispanic (86% at UG level)
- 49% 1st generation
- 60% Pell recipients
- 37% with family income under \$20K/year
- 83% from El Paso County
- 73 Bachelor's – 26 BMRW* relevant (incl. Chem & Biochem)
- 71 Master's – 25 BMRW relevant (incl. Chem & Biochem)
- 22 doctoral - 16 BMRW relevant (incl. Chem & Biochem)

Well-positioned to enhance the diversity of
the biomedical research workforce

* BMRW = biomedical research work force





Context

30+ Years with an Access & Excellence Mission

A Hispanic Serving Institution
"We serve students with intentionality"

UTEP 2030 Strategic Plan

Launched in April 2021

Mission:

UTEP is a comprehensive public research university that is increasing **access to excellent** higher education. We advance discovery of public value and positively **impact** the health, culture, education, and economy of the community we serve

America's leading Hispanic Serving Institution

UTEP Strategic Goals

Four strategic advantages

- Location
- Diversity of our people
- Culture of care
- Partnerships

Goal 4

Positively impact American higher education as the exemplary **Hispanic-serving research university**

Only R1 Hispanic Serving Institution that achieved that designation while maintaining open access

UTEP was an HSI before becoming an R1

UTEP Strategic Goals

Four strategic advantages

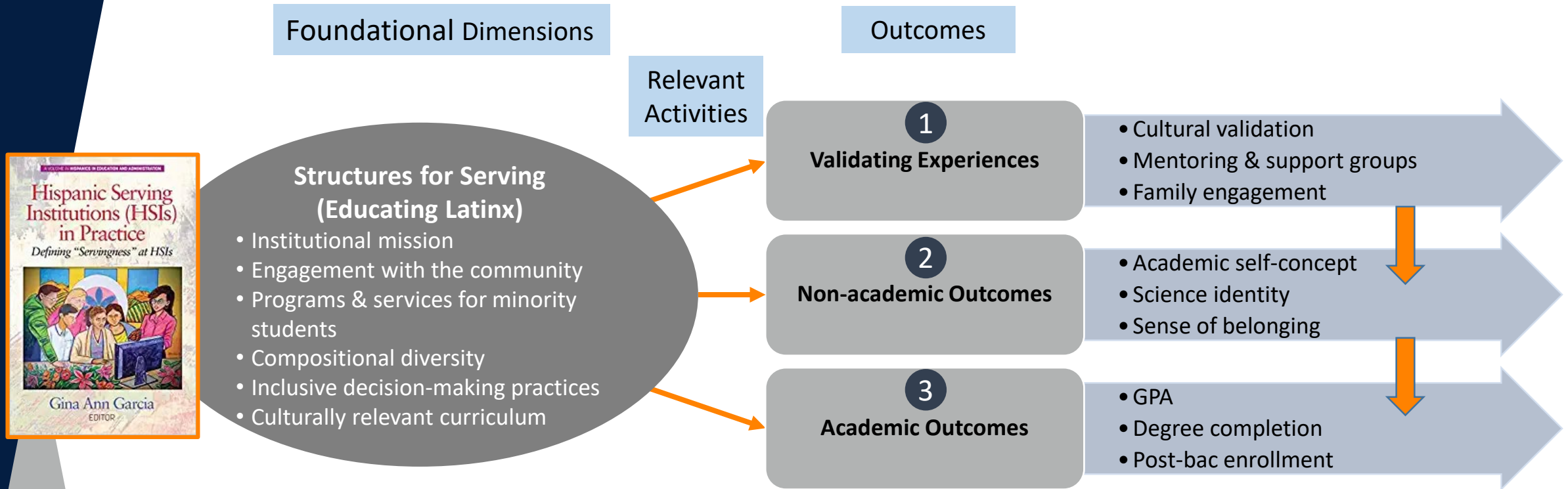
- Location
- Diversity of our people
- Culture of care
- Partnerships

Goal 3

Foster **well-being** in our community so that we all live healthier, more prosperous, and **culturally enriched** lives

INCLUSION

Conceptual Framework for Understanding Hispanic Servingness at HSIs



Hispanic Serving Institutions (HSIs) in Practice – Defining "Servingness" at HSIs,
Gina Ann Garcia, Editor, IAP, Charlotte, 2020

UTEP Strategic Goals

Four strategic advantages

- Location
- Diversity of our people
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- Partnerships

Goal 2

Advance **research, scholarship** and artistic expression with emphasis on areas of current and emerging strength.

Intentionality to include undergraduate students

UTEP Strategic Goals

Four strategic advantages

- Location
- Diversity of our people
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- Partnerships



UTEPEDGE

Goal 1

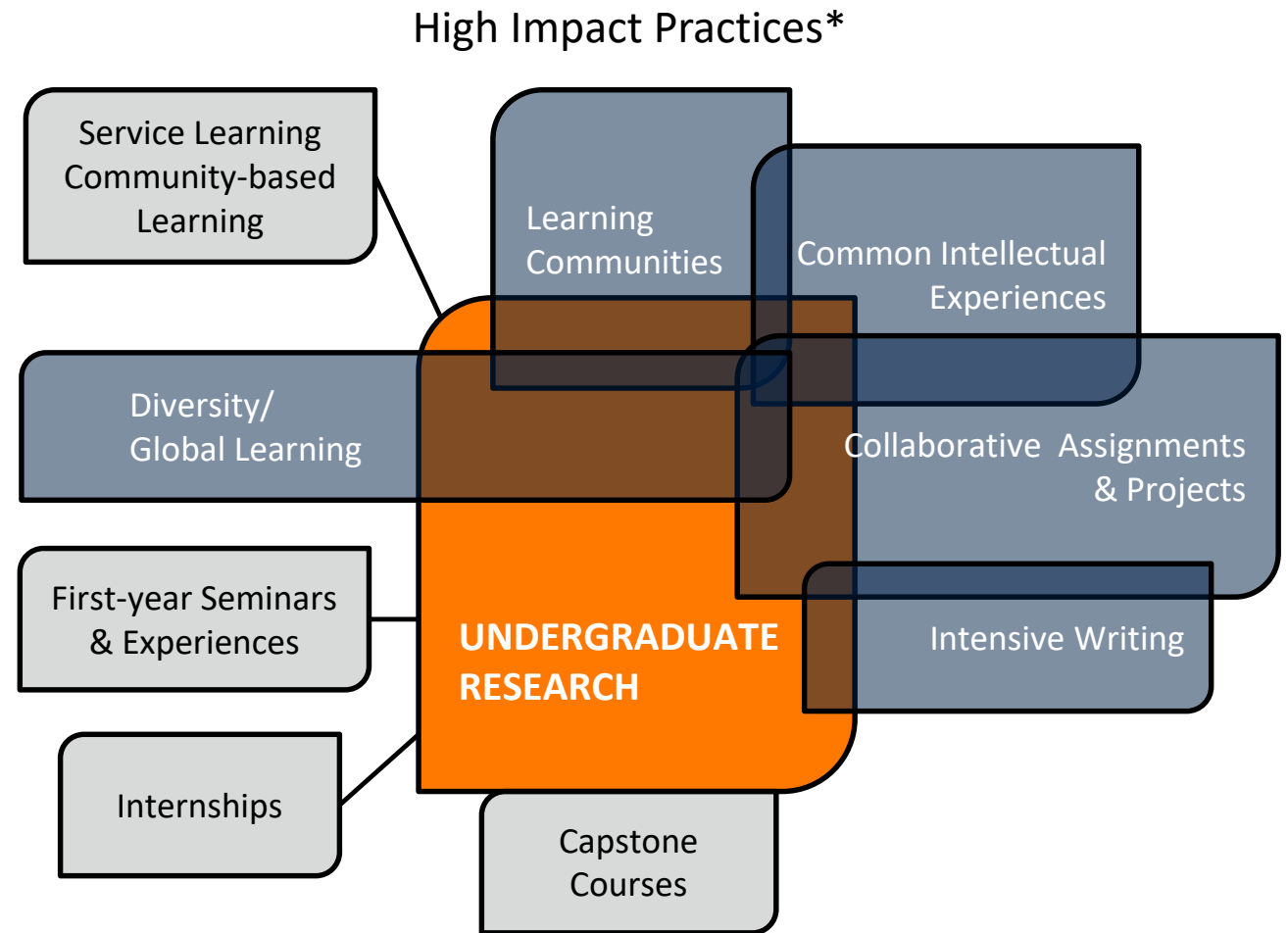
Provide students an excellent and **engaged** education in an **inclusive** university that builds on student strengths and demonstrates a **culture of care**

- A student success framework
- Increase participation in high impact practices (HIP) – Edge experiences

High Impact Practices & UGR

UTEP EDGE Experiences

1. Capstone Experiences
2. Community Engagement
3. Creative Activities
4. First Year Experiences
5. Internships
6. Learning Communities
7. Research & Scholarly Activities
8. Student Employment
9. Student Leadership
10. Study Abroad/study away



*Kuh, G.D., 2008. Excerpt from high-impact educational practices: What they are, who has access to them, and why they matter. Association of American Colleges and Universities, 14(3), pp.28-29.

Intentionality

Issue:

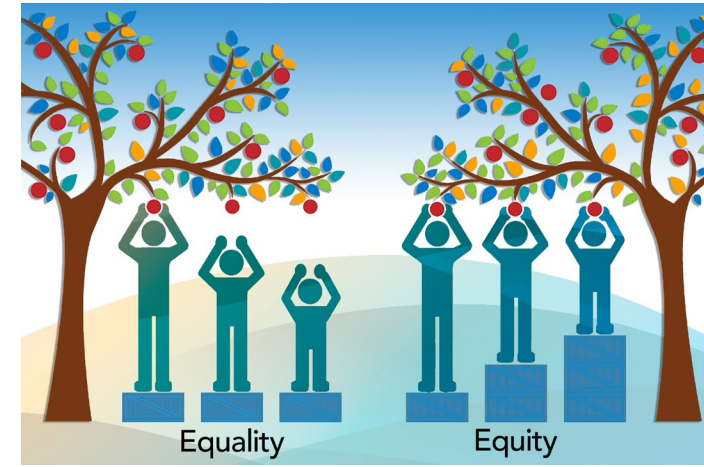
The majority of UTEP students must work part- or full-time to help support themselves and their families. They also commute to campus

Consequences: Students

- must prioritize financial survival;
- take longer to graduate;
- are not as involved in their major or with the university;
- are unable to fully engaged with their professional development.

Solution:

Engage students in undergraduate research programs that pay a stipend



BENEFITS OF PARTICIPATION IN UGR

- Increased learning (higher GPAs)
- Mentor involvement (role-model, advising, coaching, sponsorship)
- Improved retention
- Shorter time-to-degree
- Development of transferrable skills employers and graduate schools seek
- Increased interest in graduate education and acceptance into graduate programs

Then came the NIH BUILD initiative

A core component of the NIGMS funded Diversity Program Consortium (DPC)

BUILD = Building Infrastructure Leading to Diversity (10 sites)

NRMN = National Research Mentoring Network (13 sites)

CEC = Coordination and Evaluation Center (1 site)

“to implement and evaluate effective approaches to training and mentoring undergraduate students with the goal of increasing the participation and persistence of individuals from diverse backgrounds in the biomedical research pipeline”

UTEP is one of ten BUILD sites across the US

All BUILD sites include activities for

- Institutional development
- Faculty development
- Student Development



...and we proposed...

Asset Bundles Framework

Educational Endowments

- Innovative courses, resources and educational support to **strengthen existing assets** and build upon those

Science Socialization

- Activities that enable students to form a personal identity compatible with a possible career in academic medicine or STEM professions => **Science self-efficacy & Science Identity**

Network Development

- Activities that allow students to **build positive social capital** through mentoring relationships, involvement in extracurricular activities, and peer influence

Family Expectations

- Activities that encourage or mitigate **interpersonal dynamics within families** that operate to encourage or discourage children from pursuing higher education and careers in academic medicine and STEM fields

Materials Resources

- Resources that **mitigate** the **financial burden** to fund college – students of low socio-economic status who work to support themselves miss on a number of opportunities that result in attrition or less competitive preparation

BUILDing SCHOLARS Student Development Opportunities

Financial & Academic Assistance

- Accepted as FR, SO or JR
- Tuition scholarship – up to 60%
- Monthly stipend (12 months)
- Research Foundations & CUREs for Freshman
- Mentored academic year research
- Summer research at **partner institutions**
- Travel to present at conferences
- Personalized advising
 - Degree plan - course enrollment
 - Complete 30 credit-hours/year
 - Research mentor selection assistance

Professional development training

- Peer mentor training
- Responsible conduct of research
- How to travel to conferences
- Finding work-life balance
- Applying to graduate school
 - How to apply – requirements & timeline
 - GRE preparation
 - Grad school interview
- Writing intensive sessions
 - Abstract & poster preparation
 - Research report & thesis preparation
 - Crafting a personal statement
 - Resume/CV
- Multiple seminars

+ Family engagement throughout

BUILDing SCHOLARS Asset Bundles

Asset Bundle	What the asset bundle represents*	Relevant Interventions Offered by BUILDing SCHOLARS
Educational Endowments	Innovative courses, resources and educational support to strengthen existing assets	Freshman CUREs and mentored research experiences (AY and summer), professional development workshops, peer-mentor training , research-mentee training, research teaching integration, research reports and thesis writing, develop research presentation skills
Science Socialization	Activities that develop/strengthen science identity	Team work in CUREs , peer-mentor training , mentored-research experiences (AY & summer), presentations at local and external conferences , team work at professional development workshops, social gatherings with PIs and mentors
Networks Development	Activities that develop social & navigational capitals	Freshman assigned to PIs for informal mentoring, critique presentations at BUILDing SCHOLARS symposium, mentored research experiences at UTEP and research partner institutions , research presentations at local and external conferences
Family Expectations	Activities that intervene on interpersonal dynamics within families to ensure they encourage advance degree aspirations	Parents attend: orientation for new cohorts, program welcome panels & breakout groups, biomedical research careers workshop/panel, pre-departure orientation for summer programs at research partner institutions, BUILDing SCHOLARS symposium, BUILDing SCHOLARS graduation ceremony
Material Resources	Support to mitigate the financial burden to fund college	Tuition scholarship, monthly stipend (incl. summer), fully supported summer research program at research partner institutions , tutoring and supplemental instruction, registration and travel to conferences , GRE training

*Johnson, J., and Bozeman, B. Perspective: adopting an asset bundle model to support and advance minority students' careers in academic medicine and the scientific pipeline. Journal of the Association of American Medical Colleges. 2012, 87, 1488-1495

Research at partner institutions

Institution
Arizona State University
University of Arizona
University of Connecticut
Clemson University
Rice University
University of Texas at Austin
Baylor College of Medicine
University of Texas Southwestern
University of Utah
Mayo Clinic

Entry Point	When
Freshman	3 summers
Sophomores	2 summers
Juniors	1 summer

NIH-DPC Hallmarks of Student Success

Basis for evaluating DPC member student activities

	STU-1	High academic self-efficacy
→	STU-2	High self-efficacy as a researcher
→	STU-3	High science identity
	STU-4	Satisfaction with quality of mentorship
	STU-5	Perceived sense of belonging within the university
	STU-6	Perceived sense of belonging within the research community
	STU-7	Intent to pursue a career in biomedical research
	STU-8	Entry into an undergraduate biomedical degree program
→	STU-9	Persistence in biomedical degree or other formal research training program
	STU-10	Frequent receipt of mentoring to enhance success in the biomedical pathway
→	STU-11	Participation in mentored or supervised biomedical research
→	STU-12	Evidence of competitiveness for transitioning into the next phase in the biomedical career pathway
	STU-13	Participation in academic or professional organizations related to biomedical disciplines
→	STU-14	Evidence of excelling in biomedical research and scholarship
	STU-15	Strong academic and professional networks
→	STU-16	Completion of biomedical degree or other formal training program
	STU-17	Application and acceptance to a subsequent research training program in a biomedical discipline
→	STU-18	Entrance into a subsequent research training program in a biomedical discipline

Academic Outcomes

Persistence (STU-9), Competitiveness (STU-12), Evidence of Excelling in Research & Scholarship (STU-14), Degree Completion (STU-16), & Graduate School Enrollment (STU-18)

	FTF (2013-2016) N	Persistence		Graduated	Cumulative GPA	Entered Advanced Degree
		1-year retention	2-year retention			
Top 25%*	1,635	1,510 (92%)	1,395 (85%)	884 (54%)	3.52	514 (31%)
BUILD	71	71 (100%)	68 (96%)	53 (75%)	3.66	30 (42%)

As of May 2021
32 publications with
 BUILDing SCHOLARS
 students as co-authors:
 • 23 with UTEP mentors
 • 9 with RP mentors

***Comparison group:** UTEP students who are

- ✓ Top 25% of cumulative GPA in 1st year
- ✓ First-time students in Fall 2013-2016
- ✓ From the following Colleges: Science – all majors; Engineering – all majors; Health Sciences – all majors & Liberal Arts - Psychology & Sociology only

Non- Academic Outcomes

Science Self-Efficacy & Science Identity Development for BUILDing SCHOLARS Participants Academic Year (& Summer) Research Experiences (2018-19)

- Positively & significantly impacts the **science self-efficacy** of both
 - continuing & (retrospective pre-post = 2.93 - 3.89; $p = 0.002$)
 - graduating students (retrospective pre-post = 3.17 - 3.78; $p = 0.001$)
- Positively & significantly impacts the **science identity** of graduating students
(retrospective pre-post = 3.94 - 4.48; $p = 0.01$)
- Positively but not significantly impacts the **science identity** of continuing students
(retrospective pre-post = 3.75 - 4.06; $p = 0.19$)

Science self-efficacy may mediate, or be the first step in developing a science identity.*

*Robnett, R.D., Chemers, M.M., & Zurbriggen, E.L. (2015). Longitudinal Associations Among Undergraduates' Research Experience, Self-Efficacy, and Identity. Journal of Research in Science Teaching (52)6, 847-857. <https://doi.org/10.1002/tea.21221>

Summary

The asset bundles approach works!



BUILDing SCHOLARS students from 2015 and 2016 cohorts:

- graduated at much higher rates than UTEP students in general
- graduated at higher rates than top 25% of UTEP students & with slightly higher GPAs
- had TTDs similar to top 25% of UTEP students
- enrolled in graduate programs at higher rates than top 25% of UTEP students
- developed strong research self-efficacy and science identity through participation in research opportunities
- attributed program impact to funding, research and other PD opportunities

Expanding on Verna Myers quote:
“Diversity is being invited to the party; inclusion is
being asked to dance”

My six-word memoir:

**Inclusion requires dancing
with different partners**

Lourdes E. Echegoyen



THANK YOU!