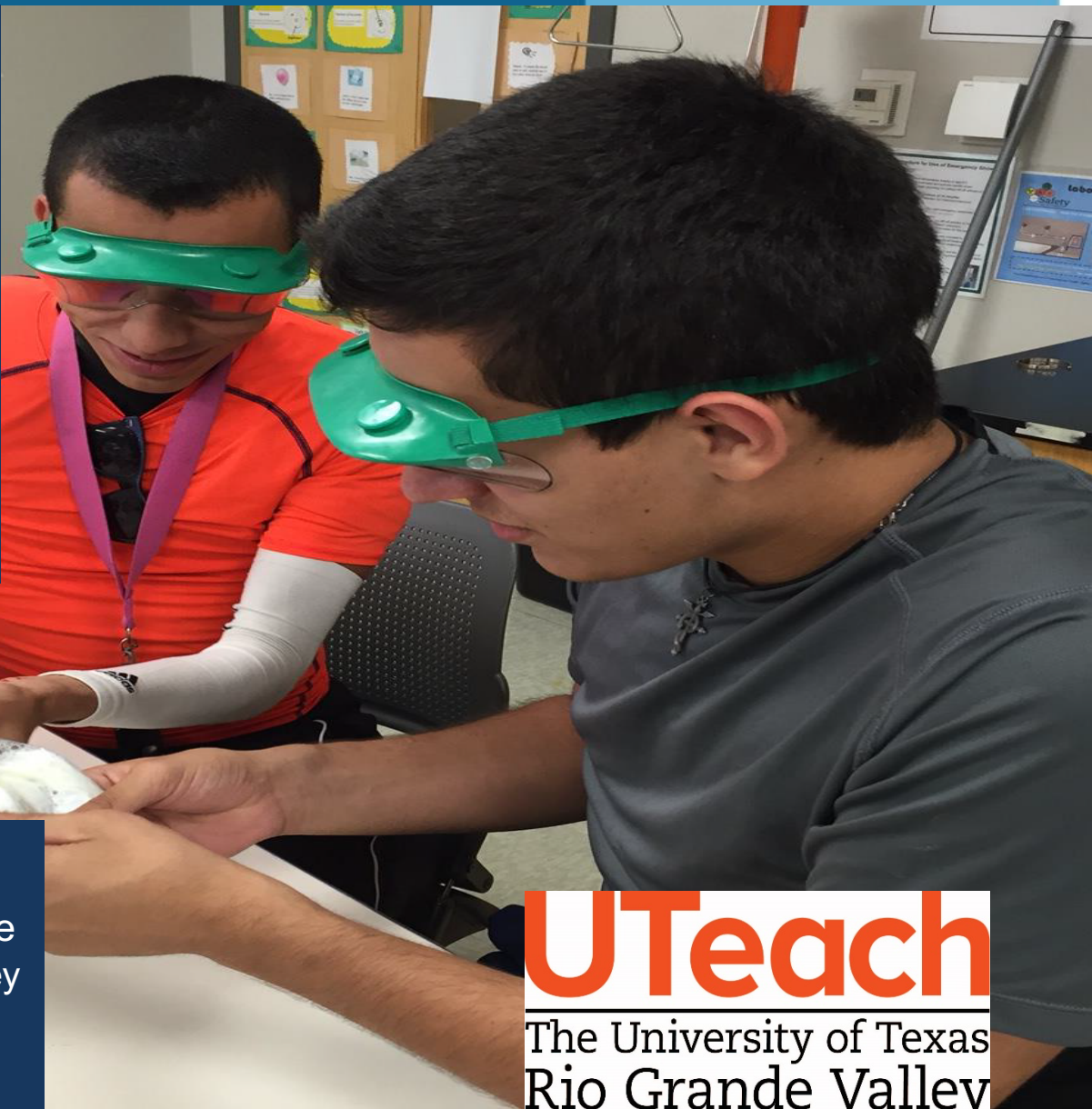*Enhancing STEM Teacher Preparation and Field Experiences: Infusing Teacher Education with High Engagement Instructional Practices*

Tim Sears

Associate Professor of Practice
The University of Texas Rio Grande Valley

CSOTTE Conference

October 2019

UTeach
The University of Texas
Rio Grande Valley

AVID *for* Higher Education
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Essential Questions

1. How do the UTeach RGV Program and *AVID Teacher Preparation* collaborate to prepare math and science majors for teaching?

2. What structures enhance the use of high engagement instructional practices (WICOR framework) in our teacher education program?

3. How do graduates of UTRGV's UTeach program reflect upon these structures and their experiences?

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Who is in the Room?

Elementary

Bilingual

Secondary

STEM-specific

Administration

Higher Education

UTeach and AVID Teacher Preparation

- Cochran-Smith and Powers (2010) identified 10 trends in teacher preparation: one is the "proliferation of multiple routes into teaching".

- UTeach is a national program that addresses the shortage of math and science teachers; was founded at University of Texas at Austin (1997); and science and mathematics majors earn content degrees and secondary teaching certification.

- UTeach RGV is a middle and high school mathematics and science teacher preparation and certification program that promotes inquiry-based learning and instruction through early and consistent community-based teaching experiences.

- AVID Teacher Preparation provides teacher candidates with a deep understanding of, and practical experience with, AVID frameworks, methodologies, and strategies that they practice prior to teaching.

44 UTeach Sites in 23 States
Nationwide: more than 7,000 students & 4,000 graduates
UTeach RGV: 324 active science/math majors & 218 total graduates (Sept. 2019)
UTeach RGV began in 2012; UTRGV AVID Teacher Prep began in 2013
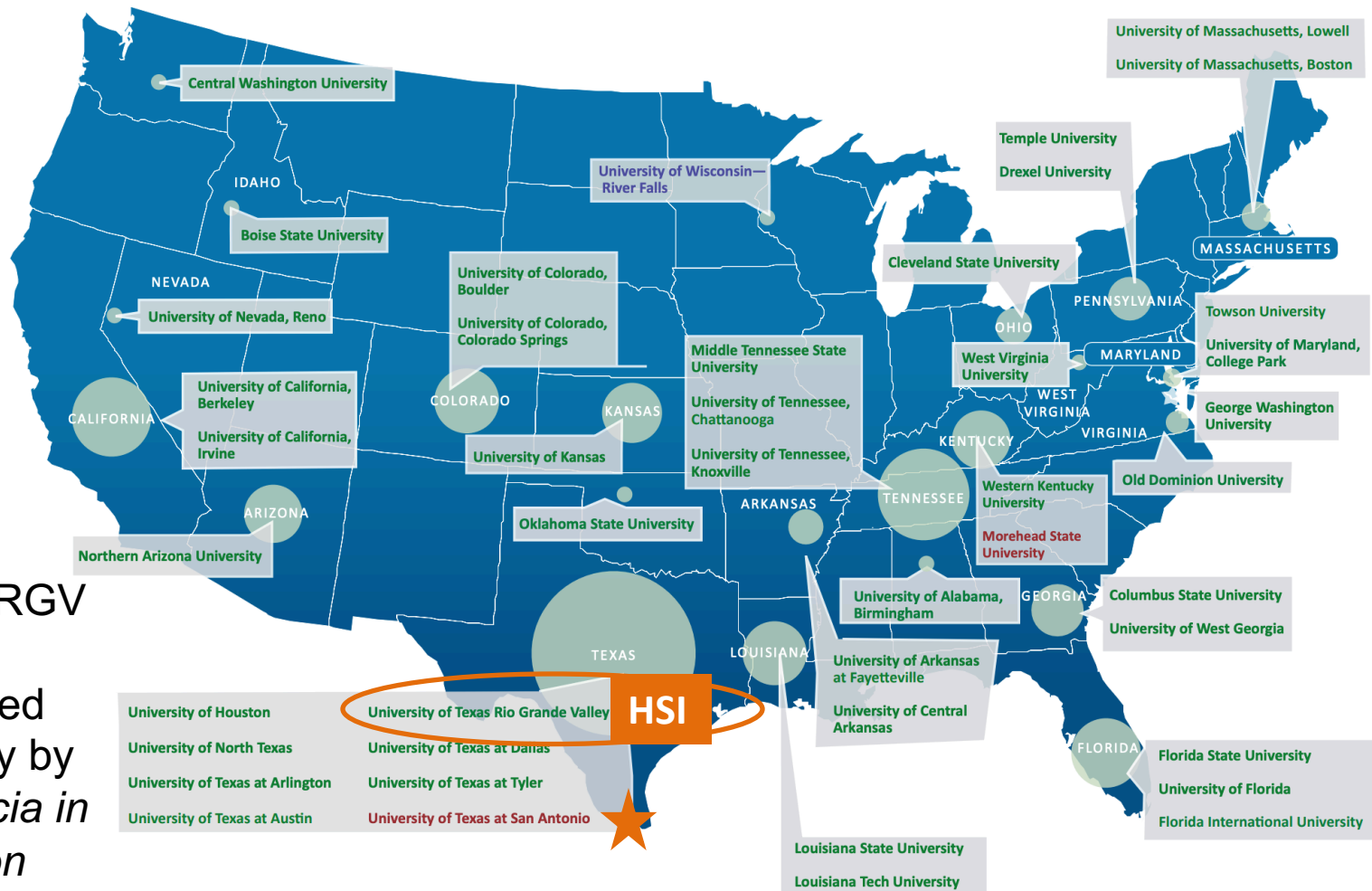

Universities Implementing UTeach

Nationwide graduates as of Spring 2019 (5,278 graduates)

UTeach Institute, uteach-institute.org

ESTABLISHED PROGRAMS (BEYOND THE INITIAL FOUR-YEAR IMPLEMENTATION PHASE)   DEVELOPING PROGRAMS (CURRENTLY IN THE FOUR-YEAR IMPLEMENTATION PHASE)   AFFILIATE PROGRAMS

University of Massachusetts, Lowell
University of Massachusetts, Boston
Central Washington University
Temple University
Drexel University
IDAHO
University of Wisconsin—River Falls
Boise State University
MASSACHUSETTS
Cleveland State University
PENNSYLVANIA
NEVADA
University of Colorado, Boulder
University of Nevada, Reno
OHIO
Towson University
University of Colorado, Colorado Springs
West Virginia University
MARYLAND
University of Maryland, College Park
University of California, Berkeley
COLORADO
Middle Tennessee State University
WEST VIRGINIA
VIRGINIA
George Washington University
CALIFORNIA
KANSAS
University of Tennessee, Chattanooga
KENTUCKY
University of California, Irvine
University of Kansas
University of Tennessee, Knoxville
Old Dominion University
ARIZONA
Western Kentucky University
ARKANSAS
TENNESSEE
Oklahoma State University
Morehead State University
Northern Arizona University
University of Alabama, Birmingham
GEORGIA
Columbus State University
University of West Georgia
UTeach RGV Program recognized nationally by *Excelencia in Education*
TEXAS
LOUISIANA
University of Arkansas at Fayetteville
University of Central Arkansas
FLORIDA
University of Houston
University of Texas Rio Grande Valley **HSI**
Florida State University
University of North Texas
University of Texas at Dallas
University of Florida
University of Texas at Arlington
University of Texas at Tyler
Florida International University
University of Texas at Austin
University of Texas at San Antonio
Louisiana State University
Louisiana Tech University

UTeach Courses

Introductory Pedagogy Recruitment Courses

Step 1: Inquiry Approaches to Teaching

Step 2: Inquiry-Based Lesson Design

Upper-Level Pedagogy Courses taught by College of Ed Faculty; field supervision supported by UTeach Professors of Practice

Knowing and Learning in Mathematics and Science

Classroom Interactions

Project-Based Instruction

Preliminary Portfolio

Content Courses taught by Science/Math/Philosophy Faculty

Perspectives on Science and Mathematics

Research Methods

Functions and Modeling

Course Mapping of AVID WICOR Strategies

Clinical Teaching
Professors of Practice serve as Field Supervisors and teach associated Weekly Seminar

Certification

Early Field Experience Model prior to Clinical Teaching

Science and Math Majors

Students observe their assigned Mentor Teacher multiple times

Students design 3 lessons

UTeach Professors of Practice provide feedback (in-person planning session and lesson practice sessions)

Lesson materials provided

UTeach Students Teach 3 Lessons

co-teaching and individual teaching

Mentor Teacher & UTeach Professor of Practice observe lessons and provide written feedback with debriefing sessions

AVID Teacher Preparation

- Provides teacher candidates with best teaching practices and practical teaching experiences

- Based on AVID's research-based writing, inquiry, collaboration, organization, and reading (WICOR) strategies

- Faculty members receive WICOR professional development to model for teacher candidates and coaching calls

- Courses are enhanced with WICOR strategies

- Teacher candidates implement the strategies during field experiences and clinical teaching

Components of UTeach & AVID Teacher Prep
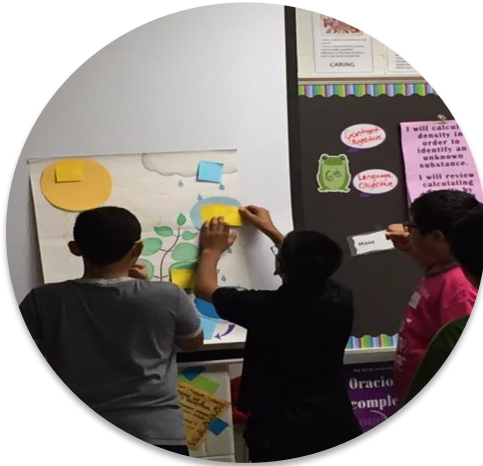
University UTeach Coursework: inquiry-based approaches

AVID strategies in demo lessons & field lessons as part of a service learning component; WICOR Framework
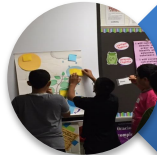
Early Field Experiences

Elementary, middle, and high school teaching experiences in 4 early field pedagogy courses involve AVID WICOR framework strategies

Clinical Teaching: UTeach Student Teachers

Full semester just prior to graduation

AVID Professional Learning

Clinical Teachers in UTeach and other UTRGV teacher prep programs; faculty (higher ed & K12): on campus, at local districts; & Summer Institutes
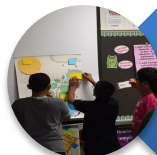
Community Engagement

Invited local school district teachers to professional learning, including mentor teachers and new teachers from local AVID campuses

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WICOR Curriculum Mapping (Coursework & Field)

UTeach Course	Strategy / Strategies [Introduce (I), Maintain (M), Apply (A)]
UTCH 1101 Step 1 (1 cr)	WICOR Overview using AVID WICOR poster (I) Think-Pair-Share, Appointment Buddy, or Give One/Get One (I) Jigsaw (I) Numbered Heads Together (I) Talking Chips (I) Quick Write (I) Four Corner Discussion (I) Whip Around (I) Costa's Levels of Thinking & Questioning (provide questioning stems (I) Parking Lot (I)
UTCH 1102 Step 2 (1 cr)	Philosophical Chairs (I) Carousel Brainstorming (I) WICOR Overview using AVID WICOR poster (M) Think-Pair-Share (M) Jigsaw (M) Numbered Heads Together (M) Talking Chips (M) Quick Write (M) Four Corner Discussion (M) Whip Around (M) Costa's Levels of Thinking & Questioning (focus on developing original questioning stems) (M) Parking Lot (M)

In-Class Demonstration Lessons

Lesson Plan Feedback (3 drafts)

Lesson Planning Sessions

Practice Teaches in Class

Practice Sessions Outside of Class

Observations & Feedback in the Field

Clinical Teaching Seminar

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AVID Professional Learning Sessions

UTeach / AVID Teacher Prep graduates meet the 12-hour AVID training requirement for AVID campuses

- WICOR Overview
- Inquiry
- Critical Reading
- Metacognition
- Socratic Seminars
- Philosophical Chairs
- ELL Strategies
- Tutorology
- Writing to Learn
- Collaboration
- Culturally Relevant Teaching

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AVID Online Resources:
Research & File Sharing

AVID Online Resources:
Professional Learning
& Curriculum Resources

AVID Professional Learning Modules Library

AVID Professional Learning Modules are 90-minute sessions which focus on one aspect of AVID K–12 implementation. They can each be used on their own for a short professional learning opportunity, or they can be assembled together to create a full day or multi-day professional learning event. The goal of these modules is to support AVID program staff and District Directors in implementing the AVID College Readiness System with fidelity and depth. Please help us improve the AVID Professional Learning Module Library by filling out this brief survey.

An index of all of the current AVID Professional Learning Modules within the APLM library is now provided for your convenience. To find exactly what you need, click on the arrows at the top of each column to filter search results. Modules Index

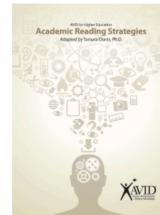| Culture | Instruction | Leadership | Systems |
| AVID Elective | Site Team | Writing | Inquiry |
| Collaboration | Organization | Reading | New Modules |

Curriculum Library

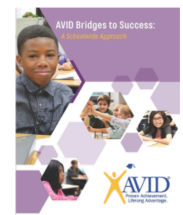Search for books, resources, videos or programs

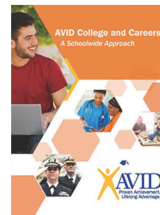| 1 | 2 | > |

Academic Reading Strategies
Learn More

AVID Academic Language and Literacy
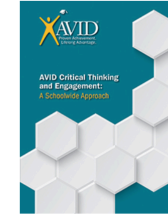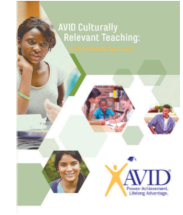Learn More

AVID Bridges to Success
Learn More

AVID College and Careers
Learn More

AVID Critical Thinking and Engagement
Learn More

AVID Culturally Relevant Teaching
Learn More

AVID Strategies:
Consistent Terminology
University→Field
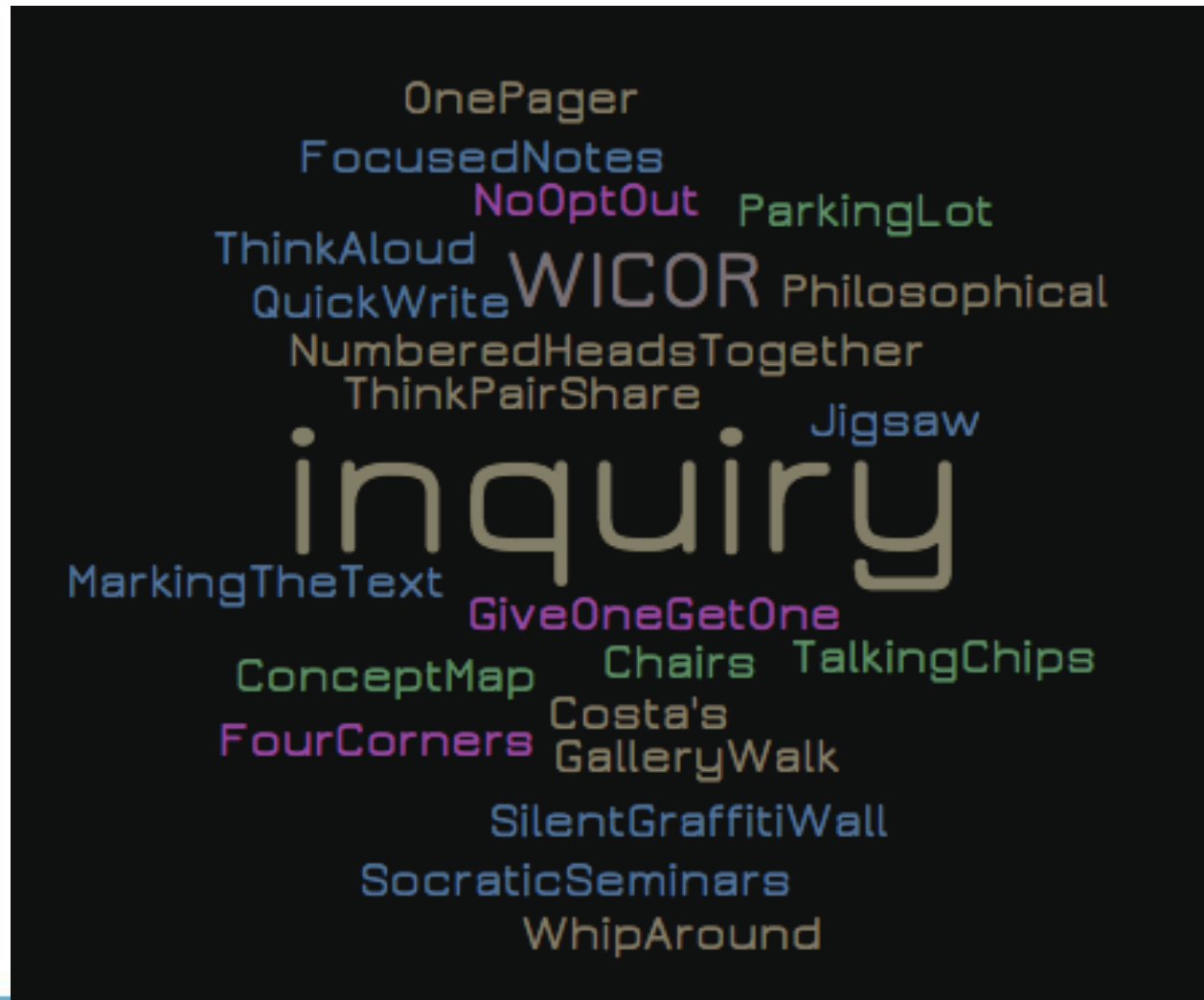
AVID Strategies in the Field
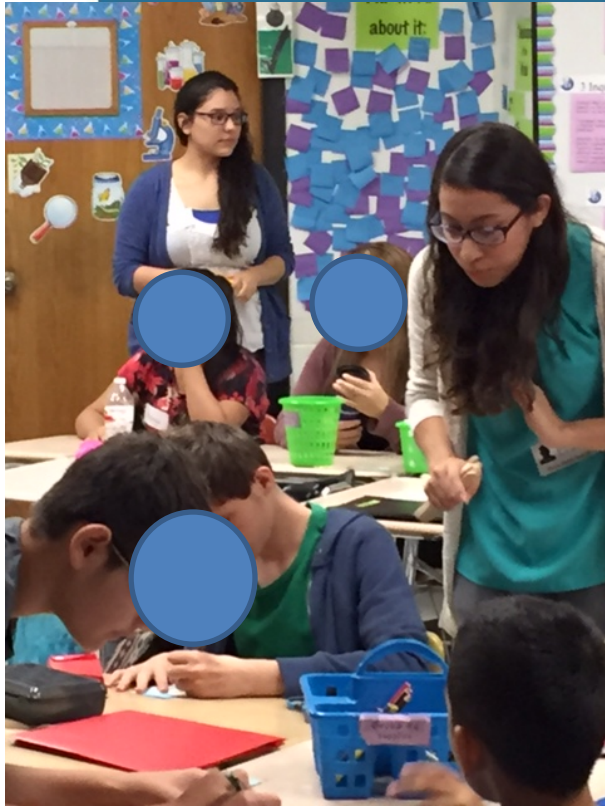
Give One-Get One
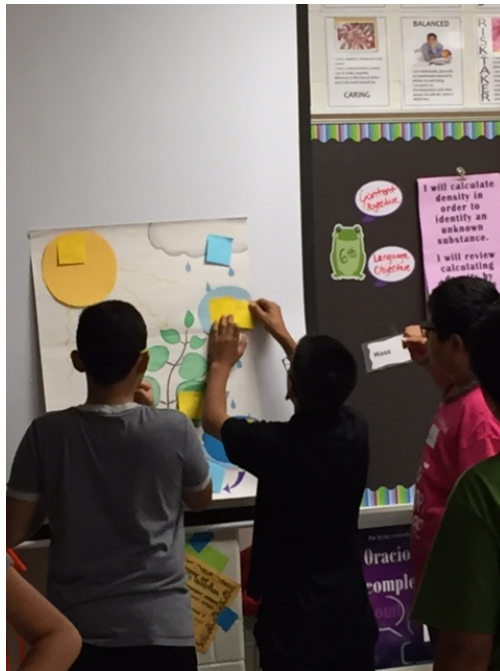
Costa's Levels
of Questioning
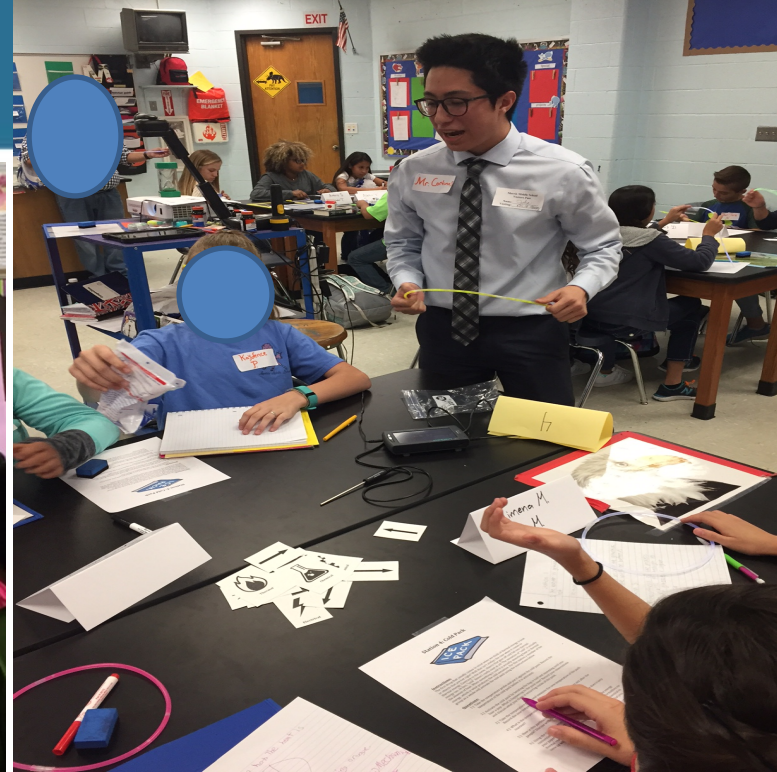
Quick Writes and One-Pagers

Focus Groups

UTRGV Doctoral Students in Educational Leadership

Focus groups conducted in 2015, 2016, 2018

Qualitative Research Courses taught by Dr. Karen Watt, PhD

Instructors, mentor teachers, students, clinical teachers, graduates in the field

2018 Focus Group: graduates teaching full-time

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Focus Group Process

Doctoral Student Assignments

- Collected video and audio recordings of interviews
- Transcribed the interviews
- Coded the interview transcripts
- Themes emerged from the analysis of transcripts
- Lessons learned are presented here

Focus Groups
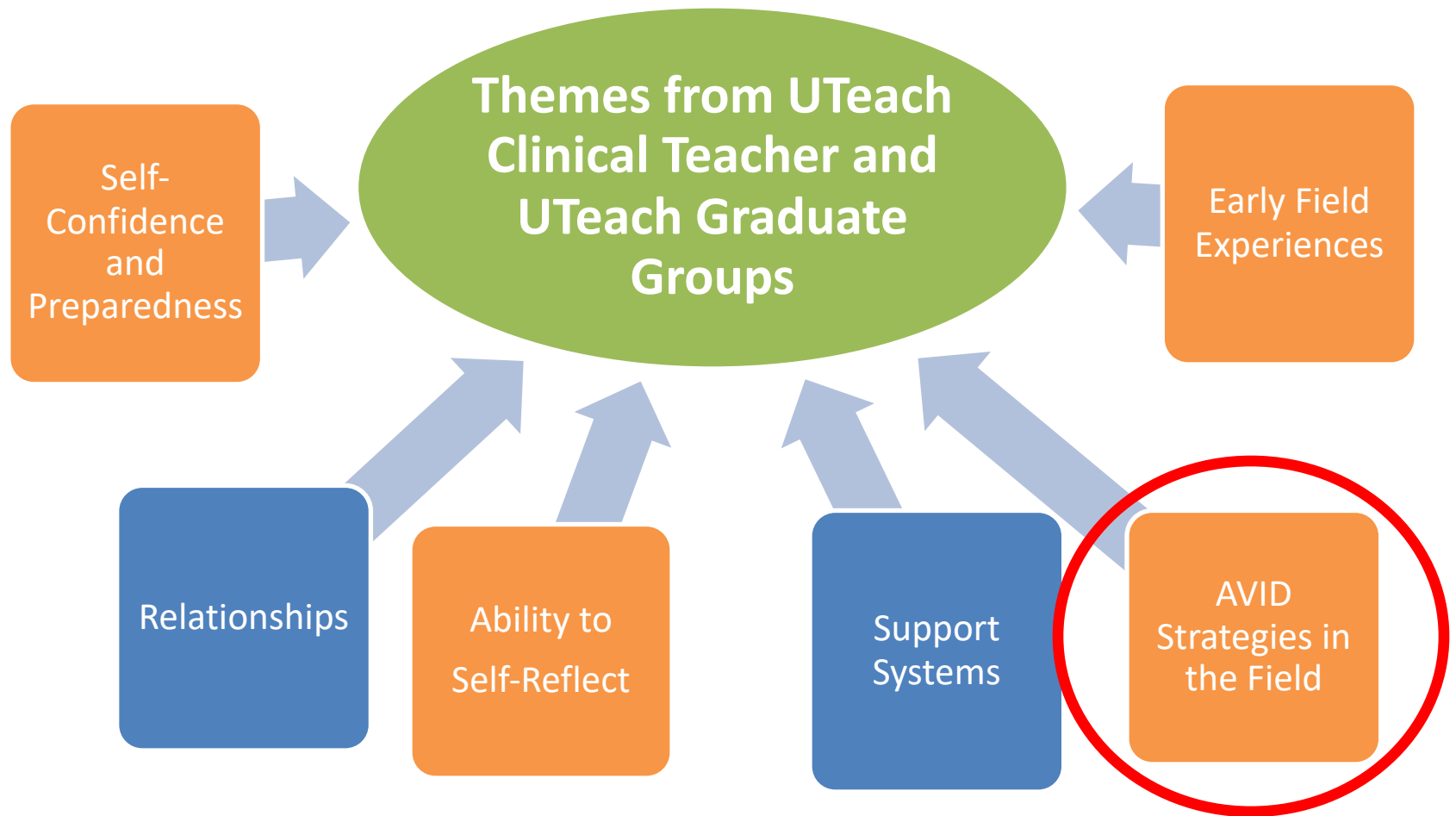
Theme: Preparedness

So, I feel I'm really prepared for almost, I would say, every type of learner. Like different strategies and all of that. And now that I'm at the end I realized that all of the work we did, because it was a lot of work, but none of it was in vain, that's what prepared me. I'm applying everything I learned from Step 1, everything from Step 2… I really soaked it all in. While I was taking the classes I didn't realize it, but now everything is coming together.

-Clinical Teacher, 2016

Challenges

Preparedness: Diverse and vulnerable populations

I feel like that's one of the things that I didn't really feel prepared for…dealing with 504 students and all the special ed stuff…It's hard because you have to be exposed to it. Because there are so many different variables. Not one kid is going to be exactly the same. There is an infinite amount of disabilities.

-Clinical Teacher, 2018

Theme: Self-Reflection

Ongoing instructor and peer feedback

What helps us is that our professors observe us and then provide feedback…'this is what I really liked that you did and this is what you need to modify'. Then we come to seminar class and talk about all these modifications…other students share how their day was, how their lessons went. So we learn by their experiences…not only ours. We learn by stories they tell us, too. And then we modify it again.

-Clinical Teacher, 2016

Theme: AVID Strategies in the Field

I think if anything the AVID strategies are more helpful to the student who doesn't already take really good notes or who doesn't actually sit and think about the problem for themselves. They need to be pushed to compare and contrast things. They are the ones that really get help by the strategies. The kids that already do that are like 'I see it, I have to write it down' and they do that automatically. The kids that don't, it forces them to do it and then sometimes that's the thing that will make it click for them.

-UTeach Graduate (now teaching), 2018

AVID K-12 Schools

This year our school became an AVID school, so they were pushing the AVID strategies a lot. I do the "the bell ringers" at the beginning of class and that worked really well for most of my classes. 'We are probably going to take notes today because there's a bell ringer'. It helps them be organized. We do the interactive journal. It's a way for them to organize their content and have everything ready. If I say go back to the notes, some students will look back at the notes and read it and they're like "oh, okay I get it". It's a way to organize their thoughts.

-Clinical Teacher, 2016

UTeach Induction Program

All the mentors and instructors are truly invested in your well-being and in your development as a teacher...we've graduated a while ago and they still e-mail us for professional development. They're still there if we need help. And they truly care for how we're doing as teachers and how our students are going to do because we're their teachers.

-UTeach Graduate (now teaching), 2018

UTeach Graduate Focus Group (Fall 2018)

Questions?

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