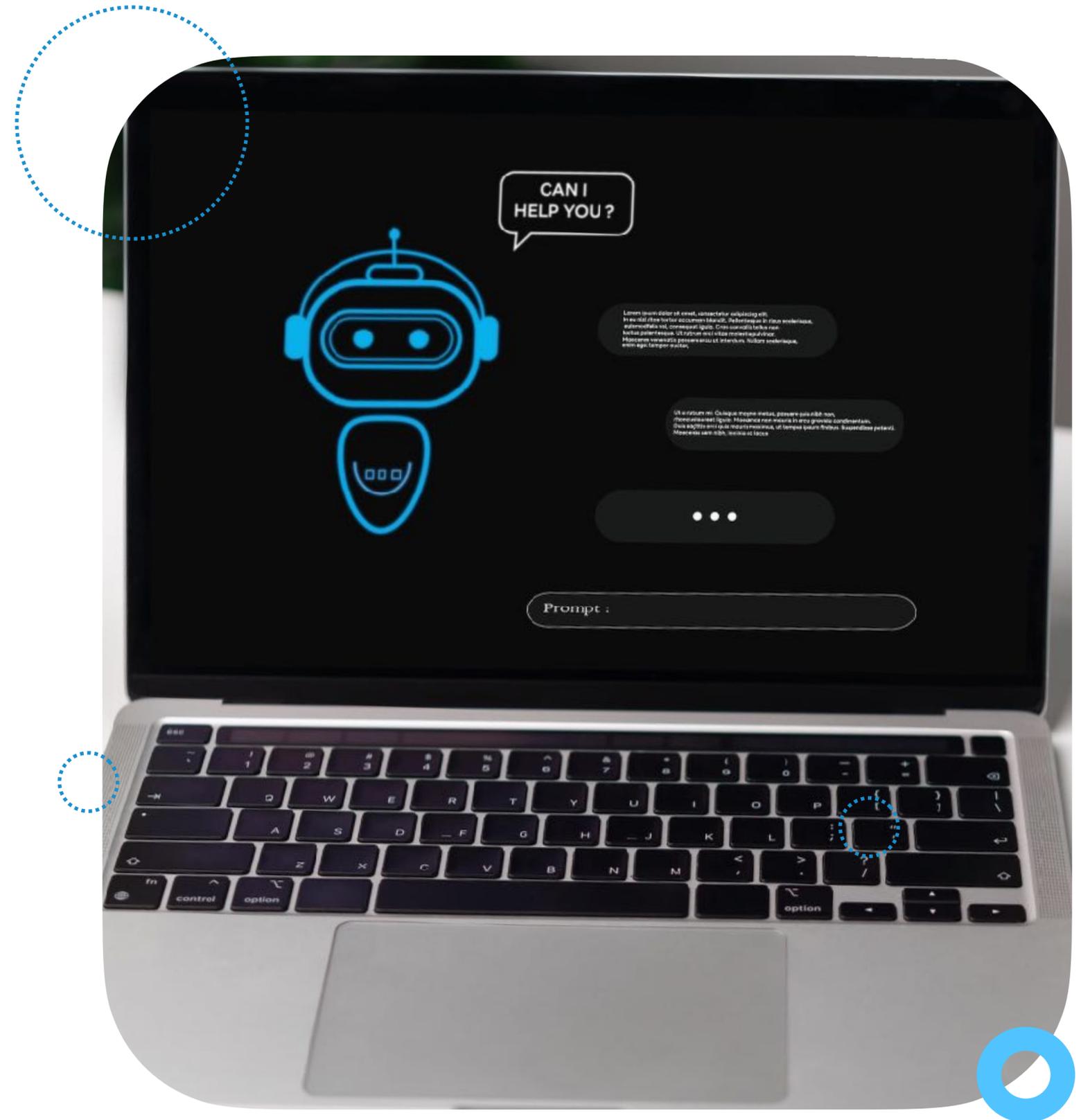


# AI Tutors as Vygotskian Mentors

## Scenario-Based Learning, Adaptive Feedback, and Target-Language Development

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Presenter

# Luis Hernández

Instructional Designer

# The Challenges I Faced as a Bilingual Teacher





# Mentorship Was My Lifeline

**Experienced teachers took me under their wing, shared their knowledge, and helped me bridge the gap between theory and practice.**

# The Challenges of **Teacher Preparation**





# Challenges Faced by Teacher Preparation Programs

**Balancing Institutional & Student Needs:** Many candidates juggle jobs and family, making it hard to structure training that fits both.

**Bridging Theory & Practice:** Real-world teaching scenarios are difficult to simulate within coursework.

**Flexible Learning Models:** Programs must offer hybrid, evening, and self-paced options to support diverse candidates.

**Meeting Certification & Accreditation Standards:** Aligning with evolving state and national requirements adds complexity to curriculum design.

# The Struggles I Faced as a Teacher **Still Exist Today**

- Just like in my first year, many new bilingual teachers enter the classroom feeling uncertain as they transition from preparation to practice.
- Mentorship isn't always accessible, making it harder for new teachers to gain the confidence and support they need to thrive.



# One More Challenge

Many bilingual preservice teachers struggle with:

## **Academic Spanish/English Proficiency**

Mastering subject-specific vocabulary and professional communication in Spanish and English.



# Upcoming Changes (September 2026)

## NEW: TExES 165 Bilingual Education Spanish Supplemental

Merges Bilingual Education Supplemental (164) + Spanish Proficiency (BTLPT 190) into one integrated exam

### What This Means for Universities:

- Teaching bilingual education theory and developing Spanish proficiency have traditionally been separate efforts, now they must be integrated
- Programs must prepare candidates to demonstrate pedagogical knowledge through academic Spanish, not alongside it
- Many programs already struggle to support students' target-language proficiency and this raises the bar significantly
- There is no existing playbook for preparing candidates for this type of integrated assessment



*Universities preparing candidates for two separate exams must completely restructure their approach.*



# Enter **Artificial Intelligence**

## The Breakthrough Moment > ChatGPT

- **Generative Pre-trained Transformers (GPT):** A type of AI model capable of generating human-like text, built on vast datasets.
- **ChatGPT:** OpenAI's model marked a significant leap with its ability to engage in contextual, real-time conversations, making AI interactions more accessible and relevant for educational purposes.
- **Exponential Growth:** The rise of sophisticated LLM ecosystems (**headlined by Gemini, Claude, and ChatGPT**) has redefined the potential of artificial intelligence in education.



# Our Approach

Technology serves pedagogy. Not the other way around.



## Academic Language Development

Research-based approaches to building academic vocabulary and discourse



## Assessment-Aligned Practice

Activities mapped to TSI, TOEFL, and college readiness standards



## Second Language Acquisition

Grounded in SLA theory and comprehensible input principles



## Research-Informed Systems

Doctoral and institutional research context



## AI-Supported Instructional Design

Controlled, guided AI use within pedagogical frameworks

*We bring pedagogical expertise first.  
AI amplifies what good instruction already does.*

# The Opportunities AI Brings to Teacher Preparation

AI-powered tools provide:

- **Personalized language and pedagogy training** tailored to individual needs.
- **Simulated real-world teaching scenarios** to enhance practical experience.
- **Immediate feedback and support** to refine instructional techniques.



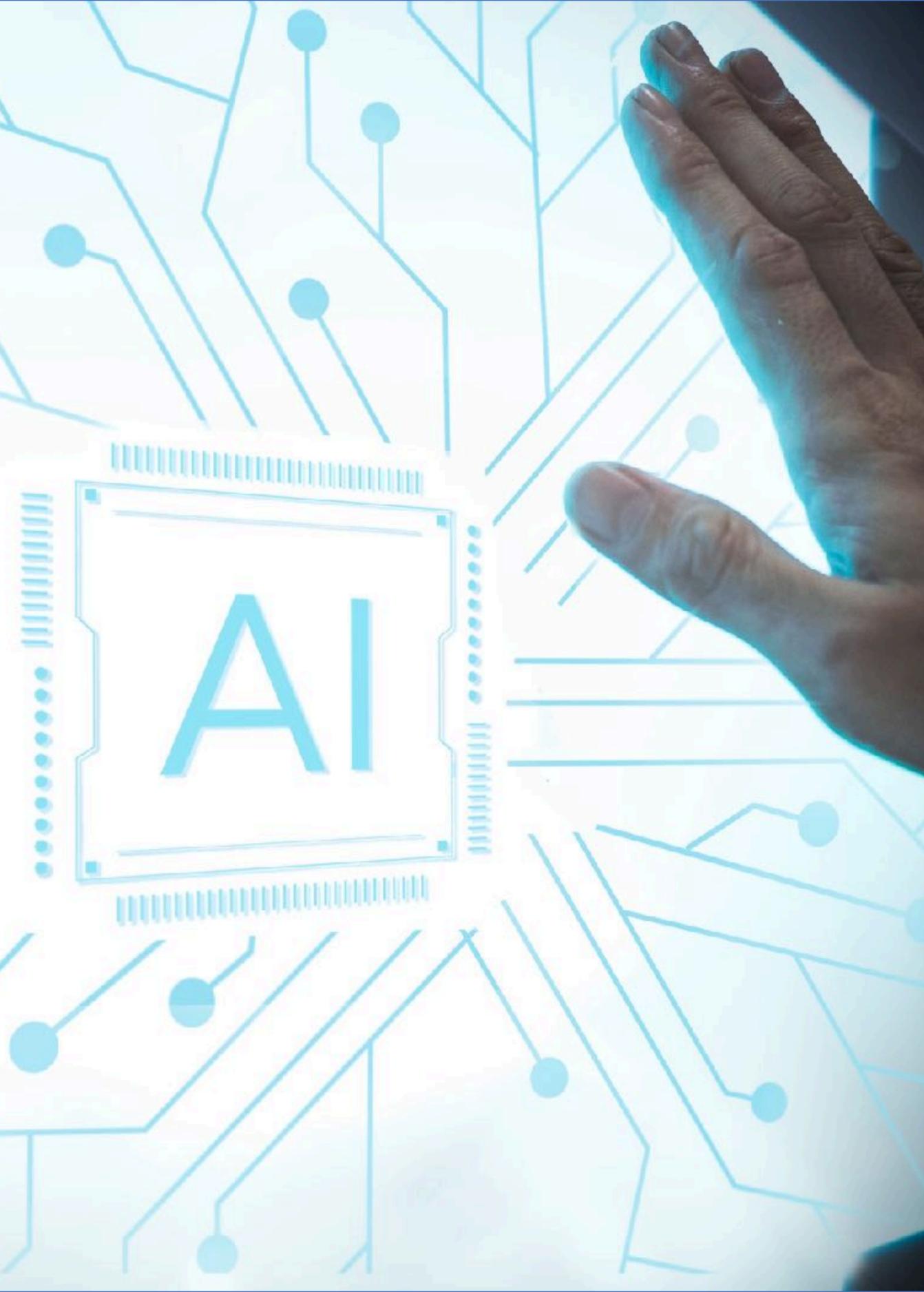
# Our AI Tutor

**Our AI tutor, Verónica, is designed to support preservice bilingual teachers in mastering both academic Spanish and effective instructional strategies.**

Trained using **bilingual education competencies, real-world classroom scenarios, and curated expertise from bilingual education specialists**, the system provides context-aware guidance to help educators prepare for certification exams and navigate the complexities of multilingual classrooms.

The system integrates **best practices in bilingual instruction**, ensuring that teacher candidates receive reliable, research-backed support tailored to their needs.





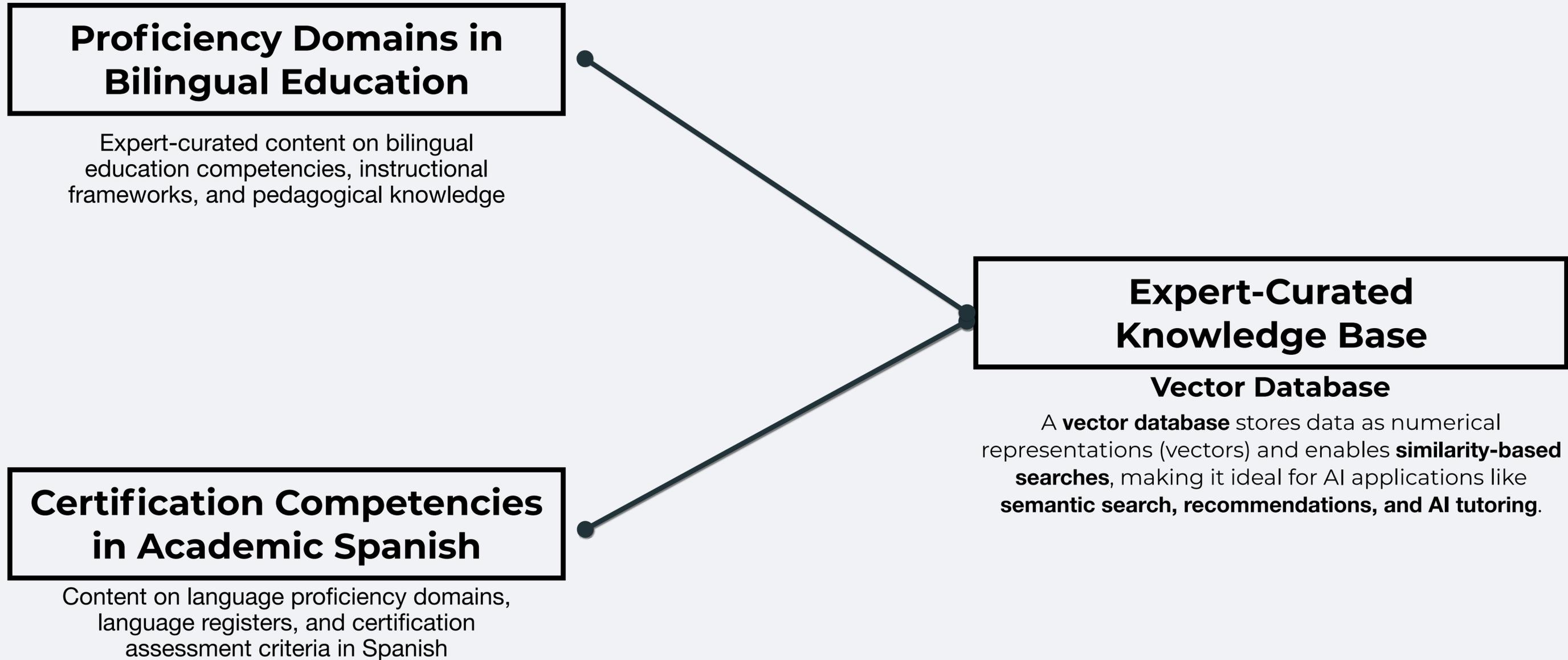
# How Our AI Tutor is Built

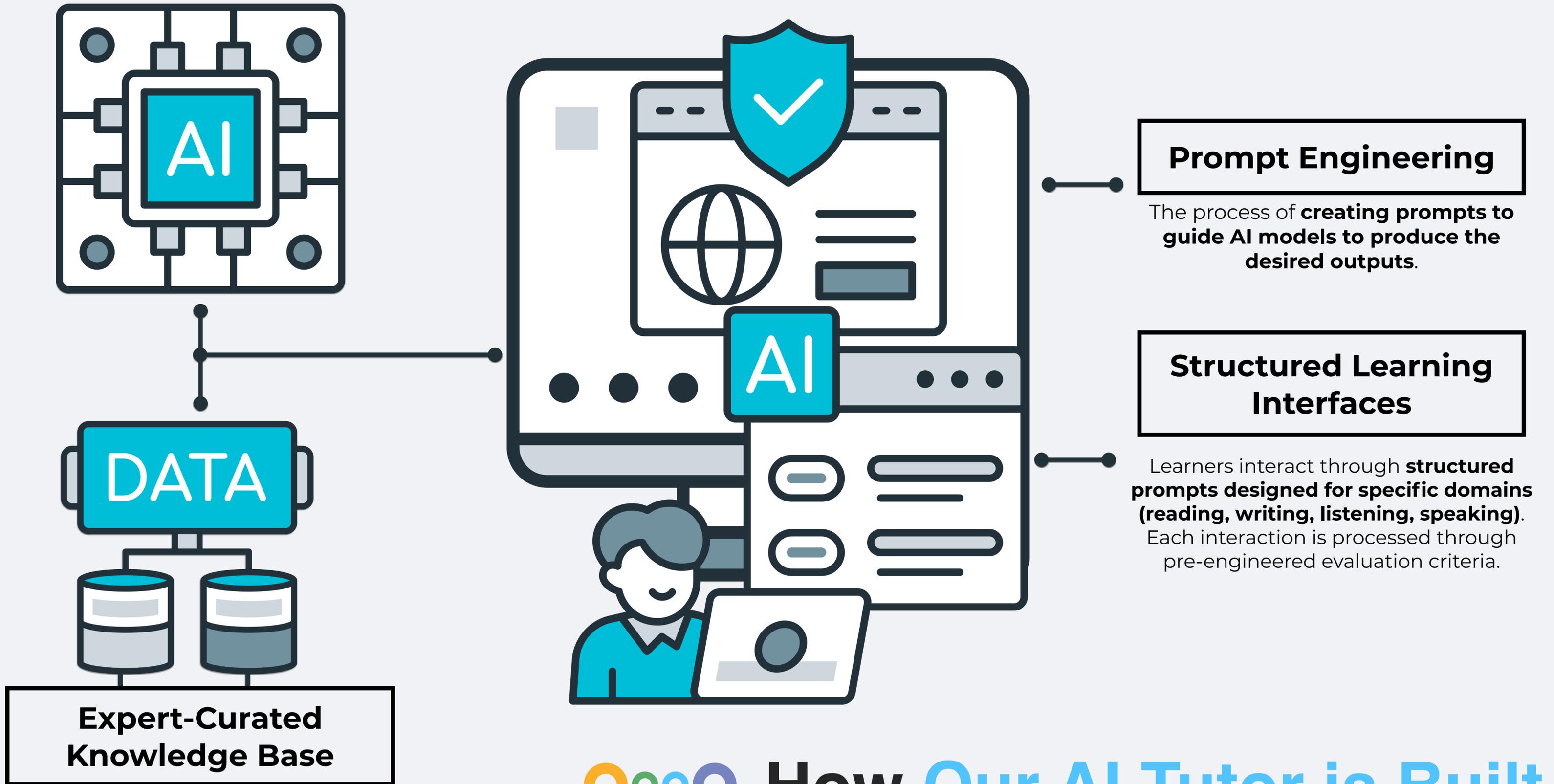
**AI Embeddings & Vector Databases:** Enables context-aware responses based on bilingual education knowledge.

**Fine-Tuning & Expert Curation:** Trained using BTLPT competencies, real classroom scenarios, and instructional best practices.

**Multimodal Learning:** Integrates text-based, voice-based, and interactive features for deeper engagement.







**How Our AI Tutor is Built**

So that's Stage 1, a conversational AI tutor grounded in expert content.  
But we asked ourselves:

What if the AI could do more than guide?  
What if it could evaluate?



THE INNOVATION

# Dual-Axis Evaluation

Our AI simultaneously evaluates both dimensions that TExES 165 requires.

## Pedagogical Knowledge

Evaluates theoretical understanding and practical application:

- Classroom management strategies
- Bilingual education theory application
- Assessment and differentiation
- Parent and community engagement

## Linguistic Proficiency

Measures target language communication across all modes:

- Academic vocabulary usage
- Grammatical accuracy
- Professional register
- Fluency and coherence

STEP 1

**AI generates scenario**

STEP 2

**Student responds (voice/text)**

STEP 3

**Dual-axis evaluation**

STEP 4

**Actionable feedback**

# From Conversational Support to Performance-Based Evaluation

The Evolution of AI in Language Education

## STAGE 1

### Conversational AI Mentors

AI tutors that guide learners through content and provide support in the target language

Retrieval-augmented guidance grounded in pedagogical research

Bilingual support across courses and certification preparation



## STAGE 2

### Scenario-Based Evaluation

AI systems that present authentic professional situations and evaluate performance

Learners respond to realistic scenarios in their target language

AI evaluates both professional competency AND linguistic proficiency

**The shift: *from answering questions → to measuring applied performance***

# Dual-Axis Evaluation: A New Framework

Measuring What Matters in Multilingual Professional Contexts

## AXIS 1

### Professional / Pedagogical Competency

Can the learner make correct decisions, apply theory, and follow protocols?

## AXIS 2

### Target-Language Proficiency

Can the learner communicate effectively in the target language?

↓ Evaluated simultaneously, in context ↓

### Evidence-Based Scoring

AI extracts direct evidence from the learner's actual response to justify each score

### Vocabulary Analysis

Tracks use of domain-specific terminology and academic register in the target language

### Actionable Feedback

Descriptive, goal-oriented guidance that tells learners what to improve and how (ADG framework)

**Traditional assessments measure these separately. This framework measures them together, in context.**

# Scalable Content Through Expert-AI Collaboration

Human Expertise + AI Generation = Validated Scenario Libraries



Expert-quality content at AI speed, with human oversight at every stage.

# LIVE DEMO



# Published Chapter

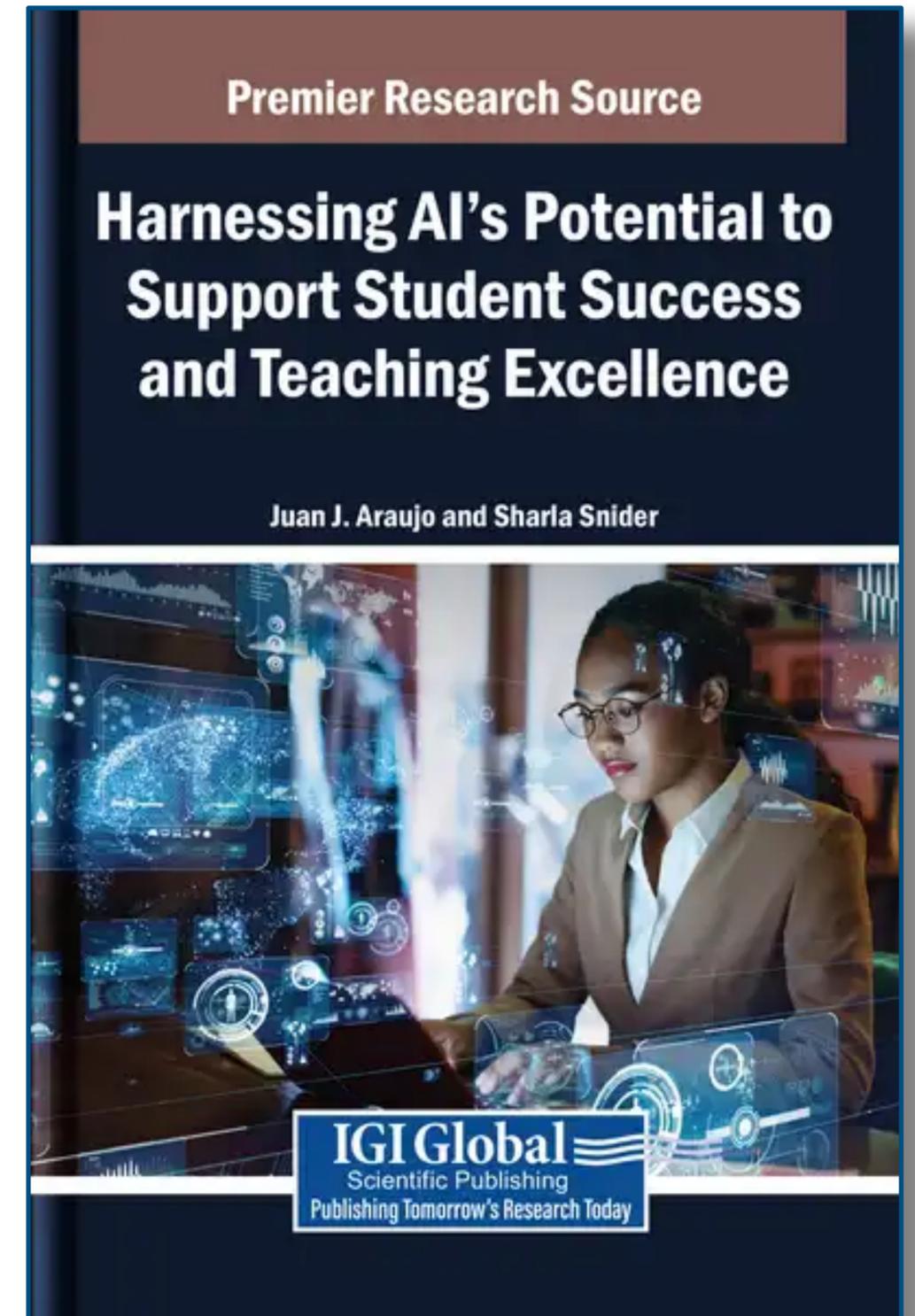
Co-authored chapter in IGI Global volume:

***"AI-Guided Professional Development: A Vygotskian Approach for Teachers in Multilingual Classrooms"***

with Dr. Uvaldina Janecek

What we documented:

- *AI-powered scenario-based training for bilingual educators*
- *Validated framework for dual-competency assessment*
- *Real-world implementation with pre-service and in-service teachers (Online Preparation Courses)*



# Thank You!

