# Teacher Perspectives: A Case Study of Adolescent Math Education in South Texas

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## Abstract

The State of Texas Assessments of Academic Readiness (STAAR®) math scores show stagnant achievement levels among middle school students (Texas Education Agency, 2024). This study explored math teaching practices and teacher perspectives at two middle schools. Focus group discussions and classroom observations were conducted to evaluate math instructional methods and identify challenges teaching math to adolescents.
The study addressed two questions:
1. What are teachers' experiences and perceptions of teaching middle school math?
2. How do teachers implement state standards?
Teachers are dedicated to state standards but face challenges with a rigorous curriculum and limited time to address individual student needs, often constrained by pressures from state testing.

**State STAAR® Math Results Grades 6-8: 2023 and 2024**

| Proficiency Level | 2023 (%) | 2024 (%) | Description |
|---|---|---|---|
| Did Not Meet Proficiency | 30 | 36 | Ongoing Academic Intervention |
| Approached Proficiency | 31 | 28 | Targeted Academic Intervention |
| Met or Mastered Proficiency | 39 | 36 | Short-Term Targeted Intervention |

**2024 STAAR® Math Results Grades 6-8 Comparisons**

| Proficiency Level | State Average (%) | District Average (%) | School One Average (%) | School Two Average (%) |
|---|---|---|---|---|
| Did not Meet Proficiency | 36 | 37 | 44 | 34 |

## Introduction

- Texas math assessments aim for college and career readiness, but a gap persists between curriculum standards and student performance.
- Local education agencies have flexibility to tailor curricula, yet the remains a gap in implementing standards and achieving desired outcomes on the STAAR® test.
- Middle school math in Texas focuses on career and college readiness, embedding topics like statistics, probability, and finance, with an emphasis on computational thinking and math fluency.
- Each grade incorporates vertically aligned standards and skills to support smooth transitions between grades and schools.
- Ensuring smooth transitions is key, because drops in achievement can occur when moving from elementary to middle school (Jordan & Frasier, 1959; Tang et al., 2020).

## Methodology

- This study is an ethnographic case study that explore teachers' views on state standards and their classroom practices. Through discussions and observations, the research aimed to identify barriers to curriculum implementation and assess teaching methods.
- There were 7 focus groups with 27 math teachers and 24 classroom observations that highlighted the challenges of teaching math in this setting.
- IRB Approval: Secured approval and obtained superintendent's permission to visit schools.
- Recruitment: Emailed principals, who connected with 6-8 grade math teachers. Sent consent forms to participants before visits.
- Scheduling: Set dates through follow-up emails and calls. Finalized schedules on-site.
- Data Collection: Conducted 7 focus groups with 27 teachers and specialists (30-45 minutes each). Observed 24 classrooms (5-10 minutes each).
- Data Analysis: Reviewed TEKS use, teacher attitudes, student backgrounds, and strategies to identify areas for improvement in math instruction.

**Results Research Question 1**
**What are teachers' experiences and perceptions of teaching middle school math?**

| Trend | Description | Quote |
|---|---|---|
| **Test Focused vs Student Focused** | State exams place pressure on students and teachers. Participants avoid teaching to the test but find it difficult with high-stakes exams. | "Do you teach to the test, or do you teach for understanding?... Scores are what matter. That is what's being pushed" |
| **Rigorous Curriculum** | The state curriculum, along with the school's scope and sequence, provides little flexibility in instruction. | "Because we have so many TEKS, we can't concentrate if we're teaching a certain concept. We have to move on." |
| **Socio-economic Factors** | Students' home environments impact performance in the classroom, influencing factors such as academic motivation, behavior, and overall achievement. | "Without those basic needs, students can't come to school and learn. We don't spend time teaching because we spend time fulfilling those needs, which are attention, love, and care." |
| **Classroom Content Challenges** | Students across grade levels have difficulties with curriculum and classroom content resulting in gaps in knowledge. | "Even with some of the GT students, some of them can't divide..." |

## Conclusion

- Findings
  - Participants expressed a desire for more flexibility in instructional practices. Strict adherence to the state curriculum and school-provided scope and sequence can be demanding, limiting opportunities for student-centered learning while prioritizing test preparation.
- Recommendations
  - Adopt adaptable teaching strategies.
  - Integrate real-world math applications that are relevant to students.
  - Foster strong relationships with colleagues, students, guardians, and stakeholders.
- Impact
  - Balancing state, district, and school requirements with flexible, student-tailored lessons can help bridge the gap between curriculum standards and student performance.

**Research Question 2**
**How do teachers implement state standards?**

| Whole Group | Small Group | Individualized |
|---|---|---|
| • Explicit Instruction | • Peer Tutoring | • Guided Questions |
| • Math Notebook | • Think-Pair-Share | • Rephrasing Directions |
| • Real-World Applications | • Group Work | • One-on-One Assistance |
| • Visuals | • Project-Based Learning | • Choice Boards |
| • Vocabulary | • Math Games | • Self-Paced Learning |
| • Hands-on Activities | • Stations | • Formative Assessments |
| • Questioning Techniques | | |
| • Interactive Tools | | |

## Discussion

Wong and Wong (2018) emphasize that clear objectives are vital for effective learning. Teachers implement state standards through district curriculum guides, which specify the order and scope of these objectives. As a result, teachers must design lessons that not only meet state expectations but also enhance math proficiency. However, despite their efforts to adapt instruction for improved student understanding, they often find it challenging to prioritize student-centered learning due to the focus on state assessments.
Participants in the study discuss how state standards establish clear objectives for students and inform teachers about student knowledge. They recognize adolescence as a critical time for cognitive and social development. Although participants strive to prioritize their students, they feel pressure from standardized testing requirements and the Teacher Incentive Allotment (TIA).

## References

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