Science Curriculum
Denton ISD Workshop

Denton ISD
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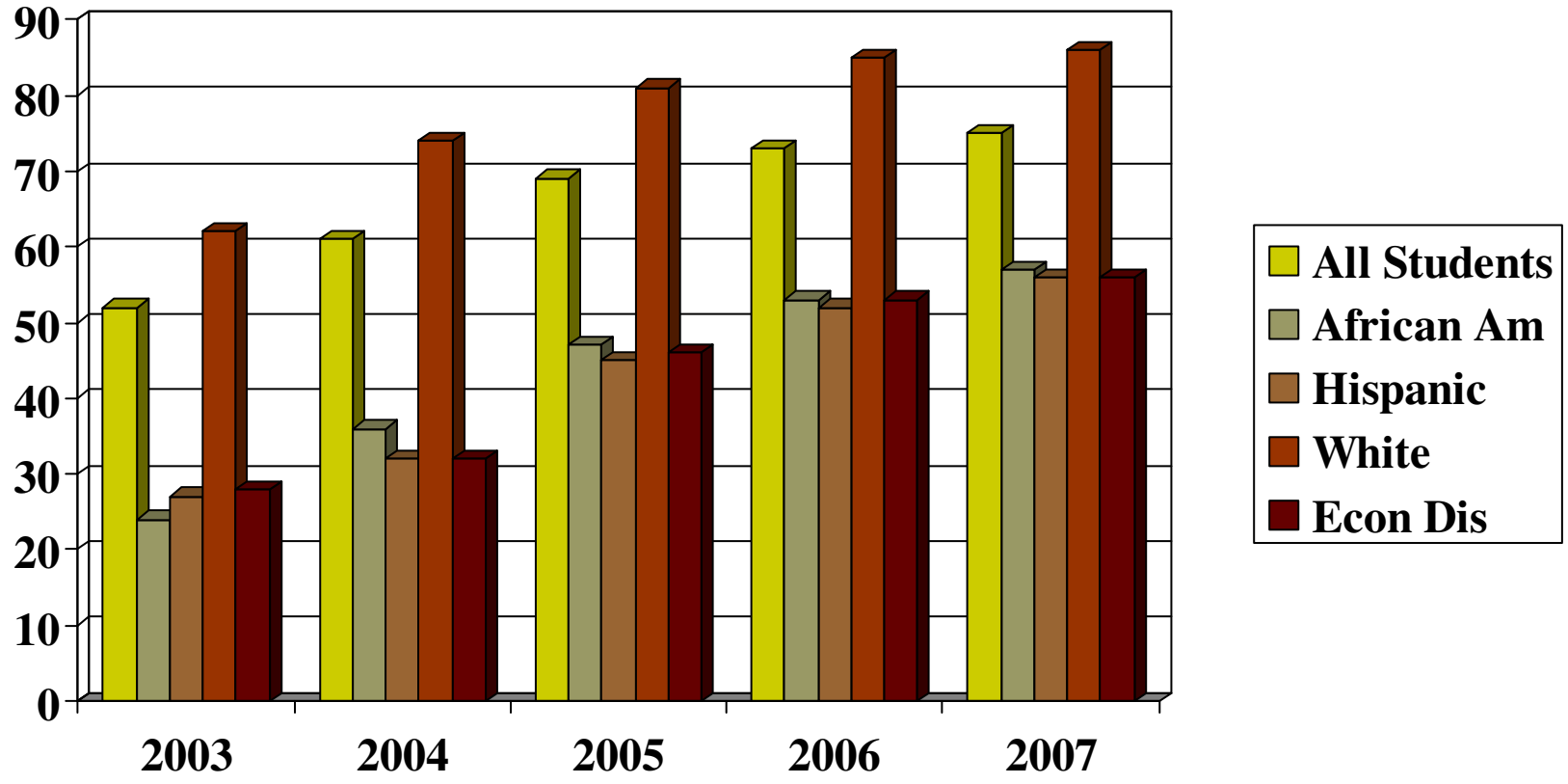
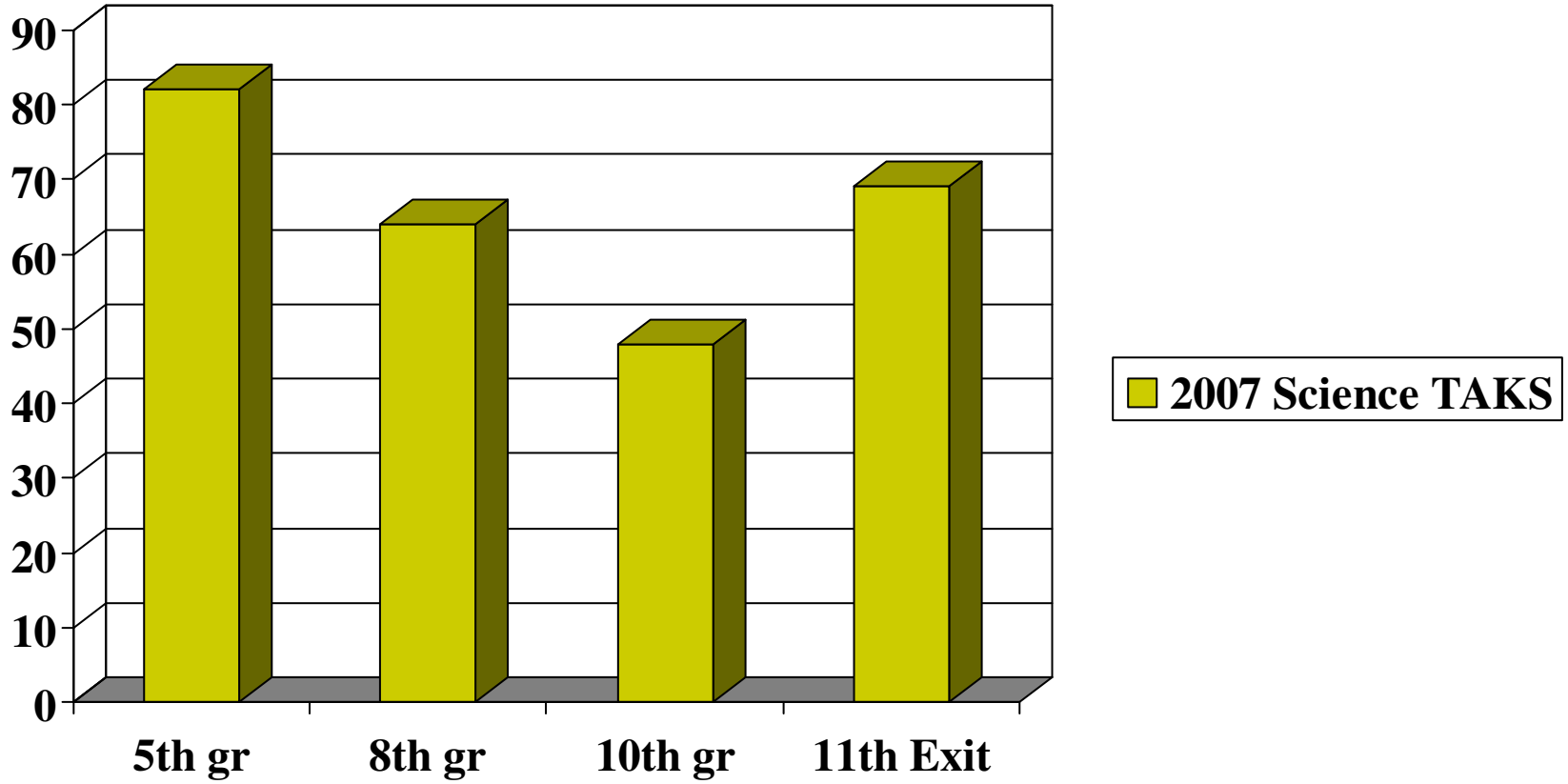
Science TAKS
All Students Over Last 5 Years



2007 Science TAKS by Grade



Science Facts

- Achievement gaps exist among sub-population groups such as economically disadvantaged, and minority students.
- Tenth grade students are not performing on par with other grade levels.
- TAKS scores are improving in all areas when comparing annual performance for the past five years.
- DISD students are performing at a higher level than the state average. Additionally, the improvement rate is greater than the state rate of growth.

Science Instruction

- Science is taught in all grade levels beginning in kindergarten.
- Science is tested using the TAKS test in grades 5, 8, 10, and 11.
- All courses are taught using the state mandated science curriculum. See example:
  TEKS 112.43.Biology 1.A. Scientific Process. The student, for at least 40% of instructional time, conducts field and laboratory investigations using safe, environmentally appropriate, and ethical practices

Elementary Science

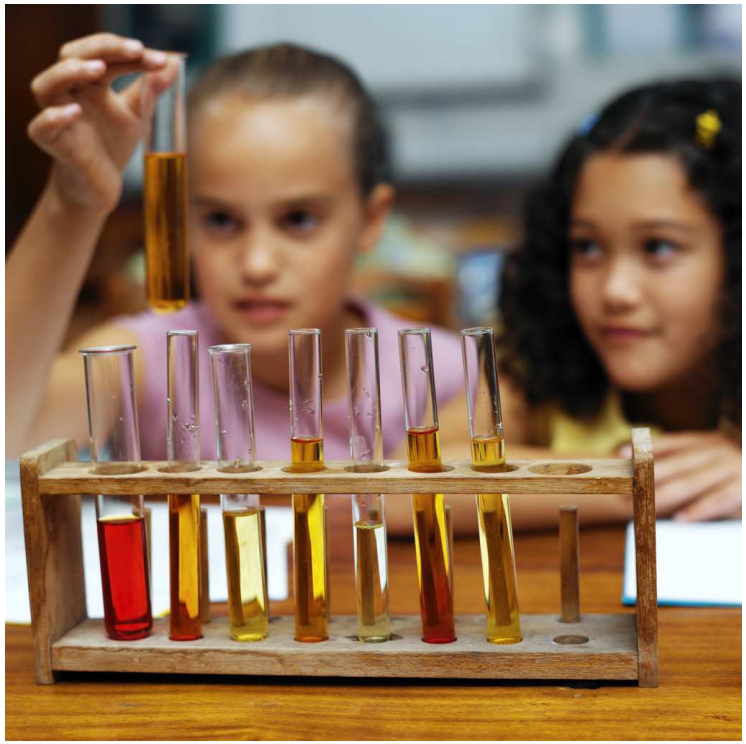
- Science Fair
  - Designed for elementary grade level students for the purpose of selecting a problem and using the scientific method in an authentic approach including collecting data and drawing conclusions. The photo shows a demonstration lesson for parents of bilingual students about how to carry out a science project.

Elementary Science cont.

- Family Fun Science Nights
  The activity includes parent participation during the evening at each elementary school. Parents are shown how science activities can be done at home in the simplest of ways with household materials.

Elementary Science cont.

- **GALS** (Girls About Loving Science)--After-school science tutorials created specifically for girls only. Every campus but one has a GALS group now.
- **GUYS** (Great Unusual Young Scientists)– Adapted for boys after the huge success of GALS



Elementary Science cont.

Science and Literacy Saturday Academy

Known as SALSA – It is a successful and award-winning professional learning opportunity for teachers. Teachers learn how to integrate science and literacy objectives into lessons in meaningful ways during Saturday professional learning days. There are four levels of training and experiences.

Science Coordinators

- Performing demonstrations in Schools
- Working with the PBMAS monitoring system for bilingual/ESL teachers
- Assists with schools that are “in needs of improvement” by developing lesson plans, hands-on lessons, and procuring materials
- Staff Development

Field Experiences

- Clear Creek
  - Clear Creek is designed for DISD students that wish to experience outdoor science activities led by their teachers in a wilderness setting. Currently serving 2nd and 5th grades.
  - It is a joint venture between Denton ISD, City of Denton, and University of North Texas

Field Experiences cont.

- Elm Fork
  - Designed for primary grade level students of Denton ISD for the purpose of outdoor science in a controlled environment.
  - It is a joint venture between Denton ISD and the University of North Texas

Other Science Work

- Core Plan for Professional Development
- Critical Issues class
- Science Discovery Center
  - Self-contained science modules collected in a tub for teacher check-out
- SALSA Library
  - SALSA trained teachers are allowed to check out leveled books for use with SALSA units

Other Science Work

- Science Classroom Observation Checklist designed for principals
- Principal Cluster – Keeps leaders current
- Elementary Leadership Team
- “Target the TEK” work with Bilingual Teachers
- GT Credit for the following Prof. Development --
  - Project Learning Tree (certified trainer: Kathy Morrison)
  - Project Wild (certified trainer: Sharon Betty)

Secondary Science Program *Strengths*

- DISD offers at least **17** different science courses in the high schools—See attachment for Sequence of Course Work
- Well-equipped science classrooms and labs that meet standards
- Collaborative teacher and TAKS planning
- Increased enrollment in AP Biology, AP Chemistry, and AP Environmental Science courses

Secondary Science Program *Strengths*

- Effective use of Science Department Chairs
- Safety Training Procedures in place
  - Safety Training held each August
  - Safety Check of Labs prior to school starting
  - Annual update of safety documentation
  - New teachers to DISD are required to attend Safety Training before teaching

Secondary Science Program *Strengths*

- Annually, teachers will complete the **Science Professional Update Questionnaire** that ensures that they are aware of (see attachment):
  - Science TEKS and 40% lab rule
  - DISD Science Program and Philosophy
  - Science Instructional Exemplars
  - And other pertinent items relative to DISD science instruction

Secondary Science Program *Strengths*

- Increased enrollment in middle school enhanced science classes
- Implementation of new middle school curriculum technology – Curriculum on Wheels (C.O.W.s) from Ignite Learning--jumpstarted by sizeable donation from United Copper

Secondary Science Program *Strengths*

- Increased involvement in science UIL competition in High School and Middle School
- Implementation of common and benchmark assessments for the purpose of formative data collection
- Journal/data lab book writing at all grade levels
- HS Academic Leadership Team used for curriculum decision-making and communication

Professional Learning- Secondary

- UT Dana Center
- TEXTEAMS- TEA
- Critical Thinking Foundation – University of California, Santa Cruz
- NANO Technology Conference
- UNT – Regional Collaborative for Excellence in Science Teaching
- UNT – Extreme Science training

Partnership / Community Programs

Support for a variety of science initiatives

- DC Best Robotics
- Texas A&M Engineering Summer Camp for girls
- UT Arlington Engineering Camp for boys
- Science Olympiad Competition

Partnership / Community Programs

- Clear Creek: with City of Denton and UNT
- Elm Fork: with UNT
- Metroplex Area Science Supervisors (MASS)– members work together on current science issues, e.g. Currently working on building background knowledge for TEKS

Partnership / Community Programs

- Expanding Your Horizons – TWU– designed for middle school girls
- Science Fair judges – TWU
- TWU Summer Science Camp – for secondary students
- Emily Fowler Library: Science Fair training in cooperation with local physicist

Partnership / Community Programs

- TWU faculty conduct professional development
- DISD Summer Institute: TWU faculty person will serve on our planning committee
- Studying future partnership opportunities/grant possibilities with TWU:
  - Project Seed
  - Partners in Science

Secondary Science - *Concerns*

- Lower student achievement on TAKS for our low SES and minority students
- Inconsistent implementation of district-wide scope and sequence
- Decline in enrollment in AP Physics
- Lack of hands-on, relevant instructional activities in all classrooms

Future Work - Secondary

- Create Professional Learning Communities for high school Chemistry, Biology, and Physics teachers including science teachers of grades 6 – 8
- Professional Learning designed for increasing teacher background knowledge and closing the achievement gaps

Future Work- Secondary

- Assessing student artifacts by teacher teams
- Development of common assessments for each course/grade level
- Grade level/course specific culminating “project” – i.e. Science Fair project, Invention Convention, Community Service projects, etc.
- Develop a plan for district-wide cycle for replacement of lab equipment
- Hire a Secondary Science Coordinator (job posted February 21)

Elementary Science - Concerns

- Achievement gap among minority students and economically disadvantaged
- Science background knowledge among students
- First year science teachers
- Confidence among 5th grade teachers
- Lack of rigor

Future Work - Elementary

- Professional Development in the area of Science Vocabulary
- Benchmark Assessment Development
- Assist with “deeper level” of lesson plan development – higher order lessons that are beyond knowledge and comprehension --- increased rigor!

Future Work - Elementary

- GT Credit for the following Professional Development
  - Project Learning Tree (certified trainer: Kathy Morrison)
  - Project Wild (certified trainer: Sharon Betty)

Future Work – Elementary

- Build teacher background knowledge (Science Content)
- Create Science Vocabulary List that is aligned vertically
- Bundle TEKS into “big ideas”
- Adding FOSS kits
- Outfitting elementary science labs