DRIVERS OF EQUITABLE ACHIEVEMENT IN K-12 STEM PROGRAMS

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Science

Technology

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Mathematics

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What Are Drivers of Equitable Achievement?

Student Aggregate Science Score (SASS)

SASS = [(1.5)* SSE - 0.5 + CEET + PEET + APDE + SR]

% of students passing 10th grade science examination (SSE)

% of students taking a college entrance examination

% of students passing or exceeding the criterion on a college entrance examination (PEET)

% of students completing an Advanced Placement course (APDE)
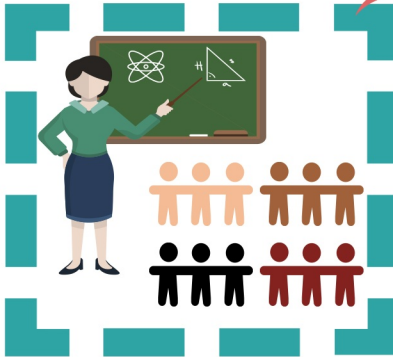
Overall state accountability (SR)

1,370
327
4th
28
2%

10

# High Achieving, Highly Diverse Science Classroom

Equity Pedagogy

"Teaching strategies and classroom environments that help students from diverse racial, ethnic, and cultural groups attain the knowledge, skills, and attitudes needed to function effectively within, and help create and perpetuate, a just, humane, and democratic society"
(Banks, 1995, p.152).

High Achieving, Highly Diverse High School Science Program
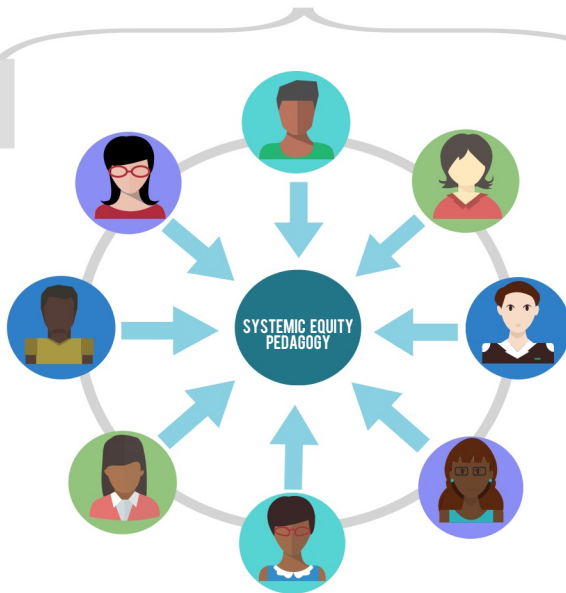
Systemic Equity Pedagogy
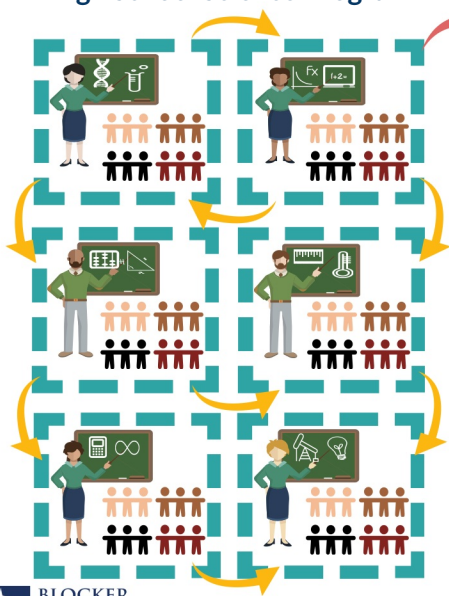
A systems approach to implementing equitable teaching and learning practices through the collaborative efforts of instructional team members at the program-level. SEP considers specific drivers and indicators that contribute to school-level organizational processes and outcomes that associate with high- student proficiency and college-readiness. (Blocker, 2013)
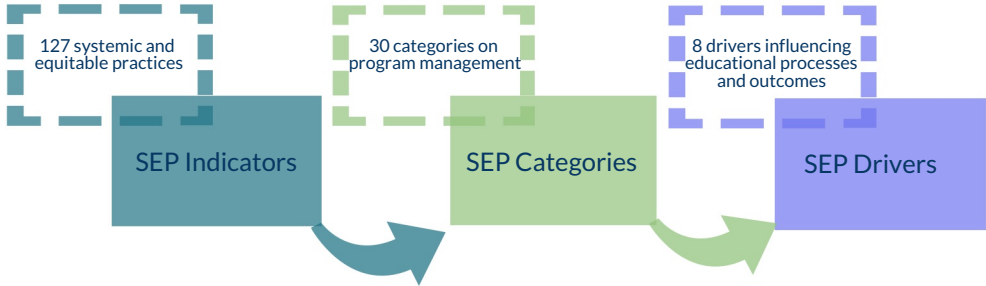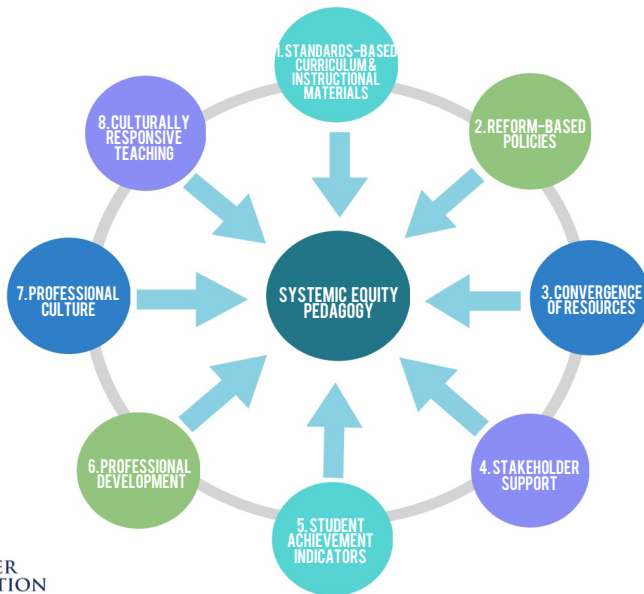
Equitable Program Practice

SEP Process Map

127 systemic and equitable practices

30 categories on program management

8 drivers influencing educational processes and outcomes

SEP Indicators

SEP Categories

SEP Drivers

Systemic Equity Pedagogy Eight-Driver Model

Systemic Equity Pedagogy Eight-Driver Model diagram showing eight drivers pointing toward "SYSTEMIC EQUITY PEDAGOGY" at the center: 1.STANDARDS-BASED CURRICULUM & INSTRUCTIONAL MATERIALS, 2.REFORM-BASED POLICIES, 3.CONVERGENCE OF RESOURCES, 4.STAKEHOLDER SUPPORT, 5.STUDENT ACHIEVEMENT INDICATORS, 6.PROFESSIONAL DEVELOPMENT, 7.PROFESSIONAL CULTURE, 8.CULTURALLY RESPONSIVE TEACHING.
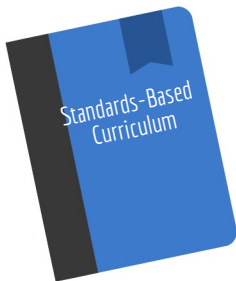
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1 Standards-based Curriculum & Instructional Materials

Instructional teams align curriculum resources and instructional materials with written academic standards and reflective practices to produce quality lessons and learning experiences designed to encourage student mastery of knowledge and skills.

Reflective Curriculum Practices

Basis of Selecting Instructional Materials

Standards-Based Curriculum

Instructional Material & Resources

2 Reform-based Policies on Teaching Practices

Instructional teams explore reform-based learning principles that guide the act of teaching and shape how educators carry out their professional practices in a classroom setting.

Collaborative Learning

Questioning Strategies
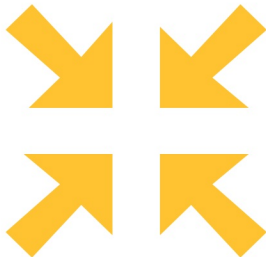
Scientific Inquiry

Enhanced Context

3 **Convergence of Resources into Science Programs**

Instructional teams benefit from the actions of school leaders to merge fiscal, intellectual, and material resources that enable support for systematic and programmatic improvement efforts.

Type of Shared Resouces

Instructional Material Provision & Distribution

4 Stakeholder Support

Instructional teams obtain extended abilities from actions that enhance the decision-making processes, communication pathways, and how support is accessed from other stakeholders including teachers, school leaders, and support staff.

Communication Pathways

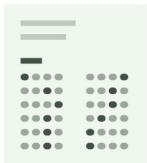Decision-making Processes

Staff Support

5 Student Achievement Indicators

Instructional teams examine student achievement indicators and use various assessment instruments, tools, and approaches to accurately assess and monitor student performance.

Standardized Assessments

Benchmark Assessments

Pre/Post Tests

6 Professional Development

Instructional teams participate in high-quality job-embedded and external professional development opportunities to increase the joint capacity at delivering effective, evidence-based, and student-centered instruction.

Job-embedded

PLC Meetings
Model Teaching
In-district PD

External

STEM-related Education Conferences

Regional Education Service Center

7 Professional Culture

Instructional teams cultivate a strong professional culture by developing collective norms, philosophy, and establishing modes of professional practice.

Professional Philosophy
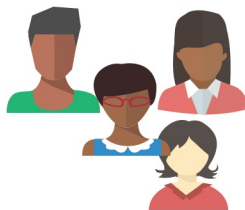
Shared Practices Among Teachers

Teacher Individuality

Reflective Teaching Practices

8 Culturally Responsive Teaching

Instructional teams employ teaching practices that enhance academic competence by incorporating the students' cultural background, and that meet social and emotional needs during the learning experience.

Differentiate Instructional Practices

Engage Students' Personal Interests

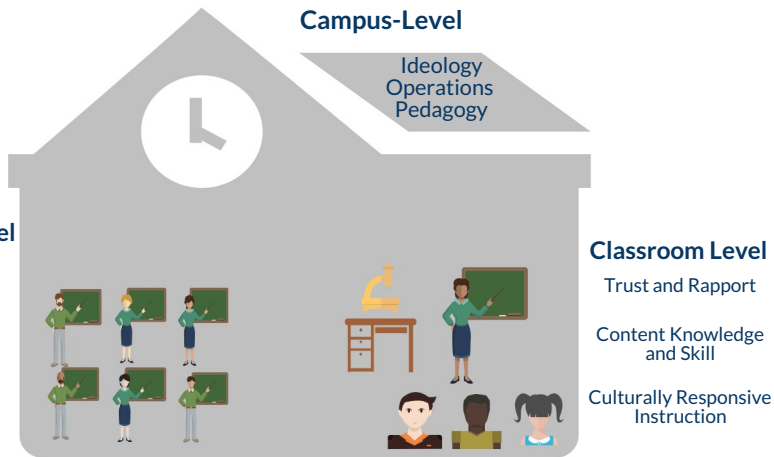College-Ready Preparation

Career Plan Development

Equitable Teaching Strategies in STEM Programs

Questioning
Enhanced Context
Collaborative Learning
Manipulation
Multiple Assessments
Scientific Inquiry
Project-based Learning
Performance-based Learning

Equitable School Program Model

Campus-Level

Ideology
Operations
Pedagogy

Department Level

Transformative
Curricular

Culturally Responsive
Instruction

Alternative
Assessments

Classroom Level

Trust and Rapport

Content Knowledge
and Skill

Culturally Responsive
Instruction

**Promote Excellence and Equity in Classrooms
Through the Combined Effort of Instructional Teams**

Systemic Practices for Excellence and Equity in Diverse Schools (SPEEDS) Using Instructional Teams

During this practical two-day professional development training, instructional teams will delve into the research-based findings on equitable program practices from high-achieving, highly diverse schools. Instructional team will also create strategic and integrated action plans that guide their next steps toward implementing concrete and equitable program practices in their content area.

A few goals of this training include:

Leading school teams to assess their current perceptions toward teaching, repertoire of instructional practices, and goals for improving student performance outcomes working as a unit.

Equipping school teams to understand how collective, regular, and strategic equitable program practices impact cultural, instructional, and operational factors that move heterogeneous student group toward achievement.

Registration fee: $150   **Length:** 2-Days (12-hours)   **Training mode:** Face-to-Face

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Leading Change for Excellence and Equity
Using the SPEEDS Framework

This training will target instructional leadership teams at the school-level including campus principals, assistant principals, curriculum specialists, and grade level/content area chairperson(s). Participants will walk through the Systemic Practices for Excellence and Equity in Diverse Schools (SPEEDS) Framework, develop specific goals for leading change for excellence and equity in classrooms and then create an action plan for implementation and monitoring.

A few goals of this training include:

Guiding instructional leaders to evaluate their current perceptions and practices on leading the change process for equitable teaching.

Engaging instructional leaders in the design of a customized action plan that incorporates reflective, relevant, and evidence-based strategies for increasing the educational outcomes for all students.

Registration fee: $75   **Length:**   1-Day (6-hours)   **Training mode:** Face-to-Face

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