The Academic Competence Evaluation Scales (ACES)

Rating scale technology for identifying students with academic difficulties and planning interventions to improve their functioning.

Definition of Academic Competence

- Academic competence is…
  a multidimensional construct composed of the skills, attitudes, and behaviors of a learner that contribute to academic success in the classroom.

Purpose and Uses of the ACES

- Assess academic skills and enabling behaviors for students in grades k-12 and college
- Facilitate planning and evaluation of classroom-based interventions for students experiencing academic difficulty

ACES Overview

- Three record forms: Teacher, Student, and College Student
  - Teacher Form appropriate for Grades k-12
  - Student Form appropriate for Grades 6-12
  - College Student Form appropriate for students at 2- and 4-year institutions
- Technical Manual
- Scoring Assistant (Optional)

ACES Teacher: Sample Items

- Please see your copy of the ACES record form to review sample items.

Companion Intervention Resources: AIMS

- The Academic Intervention Monitoring System (AIMS) is a companion guidebook that describes effective intervention strategies for skills measured by the ACES.
- The AIMS Forms are questionnaires designed to facilitate identification of specific instructional or learning tactics used by teachers, parents, and students.
Goal Attainment Scaling (GAS) provides a quick and reliable method for assessing change in student skills during intervention. GASs are developed by users after completing the ACES.

Together, the ACES, AIMS, & a GAS can be used as part of a 5-step problem-solving process for developing and evaluating interventions for academic difficulties.

Key Steps in a Problem-Solving Process

1. Identify academic concerns
2. Analyze academic concerns within the instructional environment
3. Plan for intervention
4. Implement intervention & monitor progress
5. Evaluate intervention

Research using the ACES has indicated that the skills, attitudes, and behaviors contributing to academic competence fall into one of two domains: Academic Skills or Academic Enablers.

(DiPerna & Elliott, 1999)

Model of Academic Competence

Academic Skills and Enablers Subscales

- Academic Skills Subscales
  - Reading/Language Arts
  - Mathematics
  - Critical Thinking
- Academic Enablers Subscales
  - Motivation
  - Engagement
  - Study Skills
  - Interpersonal Skills

Motivation reflects a student’s approach, persistence, and level of interest regarding academic subjects

Engagement reflects attention and active participation in classroom activities
Academic Enablers Subscales

- **Study skills** are behaviors that facilitate the processing of new material and taking tests.
- **Interpersonal skills** include cooperative learning behaviors necessary to interact with others.

Teacher Judgements of Academic Performance

- Teachers are accurate in predicting students’ achievement on standardized tests and distinguishing between students with low or high academic performance.
- Key Studies on “teachers as tests”
  - Hoge & Coladarci (1989)
  - Demaray & Elliott (1998)

ACES-Teacher Form: Fast Facts

- 2 scales: Academic Skills (33 items) & Academic Enablers (40 items)
- Requires less than 20 minutes to complete
- 2 ratings/item: Proficiency & Importance
- Competence ranges: Developing, Competent, & Advanced
- Worksheet for linking assessment results to interventions & creating a GAS

ACES-Teacher: Standardization Sample

- 1000 students
  - Four grade clusters: k-2, 3-5, 6-8, 9-12
  - Even distribution across sex
  - 64% Caucasian, 15% African American, 15% Hispanic, 6% Other Race
  - 9% students with disabilities, 19% students at-risk, 72% students with no identified concerns

ACES-Teacher: Evidence for Internal Structure

- Principal Components Analysis (PCA) including all 73 items yielded a 2-factor solution: Academic Skills & Academic Enablers
- Separate PCAs of the 33 Academic Skills items and 40 Academic Enablers items yielded 3- and 4-factor solutions respectively
- 100% of items on the Academic Skill subscales had primary loadings > .40
- 100% of items on the Academic Enablers subscales had primary loadings > .40

ACES-Teacher: Evidence for Reliability

- Internal consistency coefficients (Cronbach’s alphas) from .94-.99
- SEMs from 2.46-3.07 for Academic Skills and 3.63-4.73 for Academic Enablers
- Test-retest stability coefficients from .88-.97
- Inter-rater correlations from .31-.65
ACES-Teacher: Evidence for Validity

- Academic Skills - Iowa Test Basic Skills Composite correlations from .66-.76
- Academic Skills - Social Skills Rating System Academic Competence correlations from .75-80
- Discriminant function analysis with known groups (students with no identified concerns vs. students at-risk or with disabilities) indicated the ACES correctly identified average of 86% of students across multiple samples

Identifying Target Skills for Intervention

- Teacher form includes worksheet to facilitate the use of assessment results to select and design interventions
- Use ACES Behavior Classification Scheme to identify strengths, performance problems, and acquisition problems in academic skills and/or academic enablers

ACES Behavior Classification Scheme

- Strengths
  - Proficiency = 3, 4, or 5
  - Importance = 2 or 3
- Performance Problems
  - Proficiency = 2
  - Importance = 2 or 3
- Acquisition Problems
  - Proficiency = 1
  - Importance = 2 or 3

Analyze Environment & Plan Interventions

- Analyze target skills within the context of the instructional environment (using AIMS Intervention Forms, observations, and/or interview)
- Plan intervention based on the results of this analysis. (Consult AIMS Guidebook and other resources for intervention strategies.)

Monitor Intervention Progress

- Develop Goal Attainment Scale (GAS) to monitor progress via teacher ratings
- Implement intervention and collect GAS data to monitor effectiveness

GAS: A General Description

Goal Attainment Scaling (GAS) is a method of evaluating interventions that is:
1. Individualized,
2. Criterion-referenced,
3. Aetheoretical,
4. Time efficient, and
5. Based on rating scale technology.
GAS: Specific Features

There are three common features of GASs. They all have:

- A target behavior(s),
- Descriptions of treatment outcomes in objective terms, and
- Three to five descriptions of probable treatment outcomes that range from “least favorable” to “most favorable.”

Goal Attainment Scale Worksheet

+2 ________________________________
+1 ________________________________
0 ________________________________
-1 ________________________________
-2 ________________________________

Evaluate Intervention Outcomes

ACES provides two methods for assessing the effects of an intervention:

- Visual analysis of GAS results
- Pretest & Posttest ACES ratings analyzed using a Reliability Change Index (RCI = Posttest Mean - Pretest Mean/SEM)

ACES: Key Points to Remember

- Three forms: Teacher, Student, & College
- Assesses academic skills and enabling behaviors for students in Grades K-12 or college
- Designed to facilitate a pre-referral problem-solving process
- Research indicates strong evidence for internal structure, reliability, and validity
- AIMS companion Guidebook and Intervention Forms to assist with intervention planning

Summary Themes

- Respects Teachers’ Knowledge
- Solution Focused
- Data-Drive & Theoretically Balanced

References


