The Academic Competence Evaluation Scales (ACES)

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

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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.

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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

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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)

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ACES Teacher: Sample Items

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

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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.

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Companion Intervention Monitoring Method: GAS

❖ Goal Attainment Scaling (GAS) provides a quick and reliable method for assessing change in student skills during intervention. GASs are developed by users <u>after</u> 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.

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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
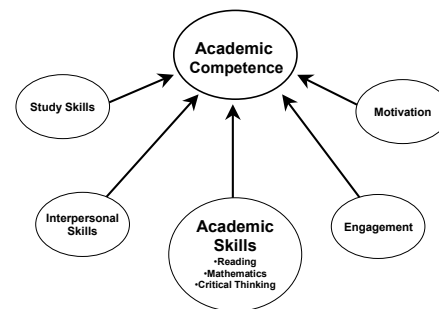5. **Evaluate** intervention

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Model of Academic Competence

❖ Research using the ACES has indicated that the skills, attitudes, and behaviors contributing to academic competence fall into one of two domains:

A*cademic Skills* or A*cademic Enablers.*

(DiPerna & Elliott, 1999)

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Academic Skills and Enablers Subscales

❖ **Academic Skills Subscales**
   ◆ Reading/ Language Arts
   ◆ Mathematics
   ◆ Critical Thinking

❖ **Academic Enablers Subscales**
   ◆ Motivation
   ◆ Engagement
   ◆ Study Skills
   ◆ Interpersonal Skills

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Academic Skills and Enablers Subscales

❖ *Motivation* reflects a student's approach, persistence, and level of interest regarding academic subjects

❖ *Engagement* reflects attention and active participation in classroom activities

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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

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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)
  ◆ Gresham, Mac Millan, & Bocian (1997)
  ◆ Demaray & Elliott (1998)

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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

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ACES-Teacher: Standardization Sample

❖ 1000 students
  ◆ Four grade clusters: k-2, 3-5, 6-8, 9-12 (n = 250 each)
  ◆ 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

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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

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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

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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

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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

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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

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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.)

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Monitor Intervention Progress

- ❖ Develop Goal Attainment Scale (GAS) to monitor progress via teacher ratings

- ❖ Implement intervention and collect GAS data to monitor effectiveness

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GAS: A General Description

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

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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."

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Goal Attainment Scale Worksheet

+ 2 _____
_____

+ 1 _____
_____

0 _____
_____

-1 _____
_____

- 2 _____
_____

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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)

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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

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Summary Themes

- Respects Teachers' Knowledge

- Solution Focused

- Data-Drive & Theoretically Balanced

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References

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