

# CRASE®

## Constructed-Response Automated Scoring Engine



Consistent, accurate, and reliable, our automated score engine meticulously scores student-written responses while providing cost saving and faster turnaround than hand scoring.

CRASE®, an ACT® Consulting Service, is an automated essay and constructed-response scoring solution that provides rapid and high-quality scores for millions of student essays and constructed responses every year.

CRASE® is the technology-based, scientifically engineered solution that immediately scores students' submissions to constructed-response test items. For short-answers and longer essays to technology-enhanced items, CRASE is proven to deliver accurate, reliable scores and achieve critical cost and time savings when compared with hand scoring.

- Reduce the personnel, facilities, and training cost associated with hand scoring.
- Include or retain constructed-response items in your assessments more affordably.
- Reduce teachers' grading burden.
- Provide students with feedback as they revise their response and enable students to submit their best response for teacher review.

### How does CRASE work?

The CRASE engine analyzes a sample of human-scored student responses to produce a model that emulates human scoring behavior. Responses scored by CRASE flow through three stages:

1. **Preprocessing:** standardizes responses to prepare them for the later scoring stages
2. **Feature extraction:** analyzes the response using Natural Language Processing tools to produce a set of numeric features that represent key elements of the rubric
3. **Score prediction:** applies a statistical or machine learning model to feature values to produce a rubric-based score

### Scoring Writing Prompts

In analyzing student essays, CRASE looks for information based on the six traits aligned to Education Northwest's 6+1 Trait® Writing framework. These traits can be configured in different ways to reflect local standards. CRASE is able to score these traits based on your specifications:

- Ideas
- Organization
- Voice
- Word choice
- Sentence fluency
- Conventions

### GETTING TO KNOW THE CRASE AUTOMATED SCORING SERVICE

#### CRASE offers both a generalized and a custom scoring service

- **Generalized essay scoring services** utilize a generalized, pre-built scoring model that relies on complex algorithms. CRASE extracts information representing ideas, organization, voice, word choice, sentence fluency, and conventions to analyze student essays and provide scores for any teacher-written or client prompt.
- **Customized automated scoring services** train the CRASE engine to most closely mimic hand scoring for any item—CR, essay or TE, or prompt provided by our client. ACT Consulting Services develops this model for clients upon request.

#### CRASE is a single-scoring platform that has six scoring modules that can be combined to produce the best possible score.

- **Non-Attempt Scorer** Catches non-attempts such as gibberish or off-topic responses
- **Constructed Response Scorer** Provides feedback on two-to-four sentence short-answer items
- **Math Scorer** Supports TEI graphing items and mathematical solutions, as well as equations/expressions

- **Short CR Scorer** Scores one-or-two sentence short-answer item responses, searching for the presence or absence of key phrases
- **Cloze Scorer** Supports cloze items or one-word/phrase responses
- **Essay Scorer** Evaluates longer-form essay responses

#### 1-Year CRASE License

- Generalized scoring models capable of scoring student essays for three grade bands across six writing traits
- Custom engine calibration with setup
- Cloud-hosted solution
- 24/7 on-demand scoring
- User login to access monitoring dashboard and help materials
- Data archived throughout contract
- Integration with test delivery platform via API
- Industry-standard security measures
- Telephone, instant message, and email customer support options

#### Optional Services (pricing available upon request)

- Engine training for additional items/prompts
- Research services for engine training
- Technology support for integration
- Item review for machine scoreability
- Item writer training for automated scoring optimization
- Proof-of-concept studies
- Human rater reliability studies
- Custom reporting and monitoring options