Sound Measure of Student Growth:
*The Iowa Assessments*
History of Iowa = A History of Innovation

- 1935: The Iowa Tests introduced by College of Education at The University of Iowa
- Pioneered use of machine-scorable documents using high-speed scanners
- Developed use of machine-scorable booklets for primary grade students
- Introduced multilevel booklets which allow individualized testing
- Offered first individual narrative report
- On-demand, web-based access to test results
Forms E and F – Test Similarities

Balance of Concepts, Applications and Procedures
Range of Cognitive Demands
Aligned to Common Core in ELA and Math
Online tool, DataManager, Supports both Forms
Connects Practice to Content
Forms E and F – Technical Similarities

Vertical Scale to Measure Growth
Allow Direct Comparisons to Previous Forms
Parallel Forms allow the Tracking of Students
Forms Support Within- and Across-year Testing
Valid, Reliable and Technically Sound
Form F -- Enhancements

Alignment
• Domain coverage at the same level
• Expanded standards covered

Format
• Paired Passages
• Additional informational texts

Rigor
• Using evidence from texts in social studies and science
• Assessing research and inquiry across all areas
✓ Growth Assumptions
✓ Growth Metrics
✓ Reporting
Iowa Growth Model Assumptions

- Learning is a continuum
- Students start at different places
- Growth expectations vary with the starting place
- Growth can be measured and reported
Iowa Growth Model Assumptions

Learning is a continuum

3rd grade

4th Grade

5th Grade
Iowa Growth Model Assumptions

*Students start at different places*
Iowa Growth Model Assumptions

Growth expectations vary with the starting place
Iowa Growth Model Assumptions

Growth can be measured and reported

- Observed growth
- Expected growth
  - Exceeding expected
  - Meeting expected
  - Not meeting expected
- Growth goals
Expected Growth

The Iowa Growth Model defines *expected growth* as the amount obtained by a *nationally representative group* of students who took the *Iowa Assessments* at *multiple grade levels*. 
Expected Growth
(aka Estimated Growth)

Within an Academic Year
- Fall Grade 4
- Spring Grade 4

Across Two Academic Years
- Fall Grade 4
- Fall Grade 5

Across Multiple Academic Years
- Fall Grade 4
- Fall Grade 6
## How is Expected Growth Calculated?

### Expected Growth Example

<table>
<thead>
<tr>
<th>Grade</th>
<th>2010 Fall</th>
<th>2011 Spring</th>
<th>2011 Fall</th>
<th>2012 Spring</th>
<th>2012 Fall</th>
</tr>
</thead>
<tbody>
<tr>
<td>3rd</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Research Study</td>
<td>September to May</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4th</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Research Study</td>
<td>September to May</td>
<td></td>
</tr>
<tr>
<td>5th</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Research Study</td>
</tr>
</tbody>
</table>
Expected Growth Example – Grade 4 to Grade 5

Scatter Plot
With 95% Prediction Ellipse

Iowa Assessments Math NSS – Grade 4

Iowa Assessments Math NSS – Grade 5

Expected Grade 5 Math NSS
Observed Growth
(aka Gain Score, Change)

National Standard Score Time 2

National Standard Score Time 1

Observed Growth
Observed – Expected
(*aka Value-Added*)

- The difference between the observed and the expected is value-added.
- The increment of growth that is different than expected.
- If the value is positive, then the student has exceeded expectations in growth.
- If the value is zero, then the student has met the expectations in growth.
- If the value is negative, then the student has failed to meet the expectations for growth.
Expected, Observed, and Value-Added

Grade 3
- Expected Growth
- Observed Growth -- Student 1

Grade 4
- Expected Growth
- Observed Growth -- Student 1
- Observed Growth -- Student 2

+14 Value Added
-16 Value Added
Grade 3

160 176 181 181 207

Expected Grade 4

172 192 199 199 230
Grade 3

160 176 181 181 207

Expected Grade 4

172 192 199 199 230

Observed Grade 4

175 192 190 210 232
<table>
<thead>
<tr>
<th>Expected Grade 4</th>
<th>172</th>
<th>192</th>
<th>199</th>
<th>199</th>
<th>230</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observed Grade 4</td>
<td>175</td>
<td>192</td>
<td>190</td>
<td>210</td>
<td>232</td>
</tr>
<tr>
<td><strong>Exceeds</strong></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Meets</strong></td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Does Not Meet</strong></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>
MEASURING GROWTH WITH THE IOWA ASSESSMENTS

A Black and Gold Paper

Abstract

The primary interpretations, statistical foundations, and data for the Iowa Growth Model are described in this overview for practitioners. Use of growth measures on individuals and groups for student and program evaluation is discussed and illustrated with sample data and reports.

Catherine Welch and Stephen Dunbar

Leaders. Scholars. Innovators.

COLLEGE OF EDUCATION, UNIVERSITY OF IOWA