Evaluating Developmental Education Programs: A Proposed Model and Guidelines for Higher Education Administrators

Sherri Stepp, Director of University College
Marshall University
(Stepp – Childress Paper)

SRCEA Conference, Oklahoma City, OK
October 24 – 27, 2013
The Context

- Developmental students represent a target group for increased retention
- Traditional developmental education is not working
- Schools facing budget allocations based on performance must evaluate current practices to use funding efficiently and effectively
- 25% of high school students entering 4-year programs need math remediation; 26% need writing remediation
- Once admitted, schools are obligated to provide the needed remediation
- Students deserve effective programming
Statement of the Problem

• Developmental education programming should be based on documented best practices
• Schools are not effectively evaluating their developmental programs
• Those who do evaluate find mixed results
• Improving evaluation must be a priority
Purposes of the Study

• Evaluate, identify, and compare evaluation models
• Propose an evaluation model
• Implement an element of model
• Provide guidelines for evaluating developmental education programs
Literature Based Approach to Evaluating Developmental Education

- Logistic Regression
- Regression Discontinuity Analysis
- Experimental Design
Evaluating with Logistic Regression Analysis

• Explores relationship between dependent variable and one or more independent variable

• Factors that might affect persistence are determined: gender, race, age, financial status, type of high school, standardized test scores, high school GPA, math GPA and number of math courses taken
Evaluating with Regression Discontinuity Analysis

• Regression discontinuity assigns students with scores slightly below the established cut score to a treatment group and students with scores slightly higher to a control group

• Using this method remains ethical because students are not withheld from needed remediation

• A causal relationship can be determined
Evaluation with an Experimental Design

• A group of Texas students were divided into study and controls groups
• Study group attended a summer bridge program in math
• The study and control groups enrolled in similar number of hours
• Students who completed bridge program were more likely to pass college-level math courses within five semesters
• Gains were short-term; results diminished after two years
• No evidence that participation yielded persistence
Evaluation in Developmental Education

- Little evidence of rigorous evaluation
- Little evidence that developmental programs are being evaluated at all
- Benchmarks should be established
- Performance measures should be established
- Continuous improvement is expected
- External factors should be considered when evaluating student performance
MU Summer Bridge Program Model and Theory of Change

Resources
- Participants/Students
- Staff
- Instructors
- Facilities
- Program Publicity
- University Funding

Interventions
- Placement Pre-Test
- Curriculum/Instruction
- External Tutoring
- Placement Post-Test
- Campus Orientation Activities

Short-Term Outcomes
- Improved Math and English/Writing Skills
- Improved Pass Rate for Developmental Courses
- Improved Pass Rate for 100-Level Gateway Courses
- Increased Campus Engagement

Mid-Term Outcomes
- Improved First-Year Fall-to-Fall Persistence Rate for Students Who Needed Developmental Math and/or English

Long-Term Outcomes
- Improved Graduation Rate for Students Who Needed Developmental Math and/or English
A Proposed Evaluation Model

• Theory-based model

• Successful evaluation
  – Identifies program goals and objectives
  – Recognizes the concerns of stakeholders
  – Understands the anticipated benefits
Components of Theory-Based Evaluation Model

- Need for Program
- Program’s Design
- Implementation and Service Delivery
- Program Impact / Outcome
- Program Efficiency
Evaluation Questions & Data Collection

Need for program

- What is the nature and extent of the need for this program?
- How does this program relate to other initiative, new or old?
- What are the characteristics of the population of students for whom this program is designed?
- What are the “local conditions” in relation to the program?
Evaluation Questions & Data Collection

Program Design / Conceptualization

• Is the model designed to meet the needs of population? Is it plausible?

• Is the model consistent with University and State (WVHEPC) policies?

• Are the interventions consistent with the mission of the University?

• Are resources sufficient to meet the needs of the model?
Evaluation Questions & Data Collection

Program Operation / Implementation

• Do all stakeholders know what is expected of them?
• Is the rationale for the program clear to all stakeholders?
• Do the instructors follow the implementation instructions?
• Did the facilities allow for a comfortable and effective teaching environment?
• How did the students find out about the program?
Evaluation Questions & Data Collection

Program Outcome / Impact (Short-Term)

• How many students completed the program?
• Does the program delivery meet the stakeholders’ expectations and desired level of satisfaction?
• Does the program delivery meet the participant/student needs?
Evaluation Questions & Data Collection

Program Outcome / Impact (Long-Term)

• Do the participants obtain passing grades in 100-level gateway courses?
• Do the participants persist to second year?
• Do the participants persist to graduation?
• Are the participants engaged in student organizations and activities?
Evaluation Questions & Data Collection

Program Cost / Efficiency

• Are resources used efficiently?

• Could additional students be served in a cost effective manner?

• Are there alternatives with equivalent benefits and less cost?
Framework for Evaluation Questions

<table>
<thead>
<tr>
<th>Evaluation Questions</th>
<th>Data to be Collected</th>
<th>Data Collection Process/Strategy</th>
<th>Data Collection Schedule</th>
<th>Reporting Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Need for Program</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>What is the nature and extent of the need for this program?</td>
<td>Number of MU students needing developmental coursework</td>
<td>Student Data Base</td>
<td>Available upon request</td>
<td>Program outcomes annually at the conclusion of the program</td>
</tr>
<tr>
<td></td>
<td>Comparison to National, State and Peer School Data</td>
<td>Research (Complete College America)</td>
<td>Available upon completion of a literature review</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Success rate of students in current developmental courses</td>
<td>Student Data Base</td>
<td>Available upon request</td>
<td></td>
</tr>
<tr>
<td>How does this program relate to other initiatives, new or old?</td>
<td>Description of other alternatives for students needing developmental coursework</td>
<td>Description of Current Courses, Placement Exams, Upcoming Pilot Programs, etc. (MU Catalog)</td>
<td>Available upon request</td>
<td></td>
</tr>
</tbody>
</table>
Initial Model Implementation

MU Summer Bridge Impact Survey for Math Participants

• **Electronic Survey via Qualtrics**
  – 9 multiple choice questions
  – 12 Likert Scale responses
  – 4 open-ended questions

• **120 Math Participants**
  – 37 responses (30.8%) after three requests
Survey Findings: Respondent Characteristics / Demographics

- 91% of respondents were traditional-aged students; 95% were new freshmen; 69% attended main campus program; 31% attended off-campus programs.

- 77% agreed with program start time; 70% agreed with length of day; 65% agreed with length of program.

- 59% found out about the program via direct mail; 19% found out from parents; 18% found out from friends.

- 27% reported enrollment in 100-level courses in first semester; 78% reported enrollment in MTH 098 or 099; 10 reported C or higher in 100-level course; 25 reported a grade of CR in MTH 098 or MTH 099.
## Survey Findings

### Participant Level of Agreement with Summer Bridge Elements

<table>
<thead>
<tr>
<th>Program Element</th>
<th>Means</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Participation in the Summer Bridge Program improved my math skills.</td>
<td>3.00</td>
<td>0.94</td>
</tr>
<tr>
<td>2. The instructor was knowledgeable about the math skills he/she was teaching.</td>
<td>3.49</td>
<td>0.73</td>
</tr>
<tr>
<td>3. The instructor was helpful.</td>
<td>3.38</td>
<td>0.86</td>
</tr>
<tr>
<td>4. The teaching materials distributed in class were helpful.</td>
<td>3.19</td>
<td>1.00</td>
</tr>
<tr>
<td>5. Class time was well used.</td>
<td>3.27</td>
<td>0.90</td>
</tr>
<tr>
<td>6. Tutoring outside of the classroom instruction was helpful.</td>
<td>3.15</td>
<td>0.83</td>
</tr>
</tbody>
</table>

n=37  
Scale: 1=Strongly Disagree, 2=Disagree, 3=Agree, 4=Strongly Agree
## Survey Findings

### Participant Level of Agreement with Summer Bridge Elements

<table>
<thead>
<tr>
<th>Program Element</th>
<th>Means</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>7. The online placement pre-test and post-test were easy to use.</td>
<td>3.03</td>
<td>0.97</td>
</tr>
<tr>
<td>8. The online placement test reflected material taught in the program.</td>
<td>2.75</td>
<td>1.08</td>
</tr>
<tr>
<td>9. The housing arrangements in the University residence halls met my needs.</td>
<td>3.05</td>
<td>0.94</td>
</tr>
<tr>
<td>10. The cafeteria lunch provided each day was good.</td>
<td>3.50</td>
<td>0.71</td>
</tr>
<tr>
<td>11. Parking was convenient.</td>
<td>3.53</td>
<td>0.67</td>
</tr>
<tr>
<td>12. I would recommend this program to other students.</td>
<td>3.54</td>
<td>0.89</td>
</tr>
</tbody>
</table>

n=37  
Scale: 1=Strongly Disagree, 2=Disagree, 3=Agree, 4=Strongly Agree
Survey Findings: Open-Ended Responses

What were the strengths of the Summer Bridge Program?
• Participants found instructors helpful
• Participants liked the teaching materials
• Several indicated math improvement

What were the weaknesses of the Summer Bridge Program?
• Several wanted to change the length of the day, the length of the program, and/or the start time
• Some believed they were not prepared for exam

What changes would you suggest to improve the Summer Bridge Program? Additional comments?
• Several indicated that they liked the program and would not change it
• Some recommended logistic changes
• Some recommended additional content material for placement exam
Conclusions

Evaluate, identify, and compare evaluation models

• Reviewed logistic-regression model, a regression-discontinuity model, and a true experimental model
• Little evidence to support a particular model

Propose an evaluation model

• A comprehensive theory-based model presented
Conclusions

Implement an element of model

• Impact survey was implemented
• Available participant data should be compared with self-response data
• Impact data are valuable

Provide guidelines for evaluating developmental education programs

• See table
# Guidelines & Recommendations for University Administrators

## Evaluating Developmental Education Programs

<table>
<thead>
<tr>
<th>Evaluation Topic</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Program Design</td>
<td>• Establish feasible goals and objectives</td>
</tr>
<tr>
<td></td>
<td>• Articulate clear goals and objectives</td>
</tr>
<tr>
<td></td>
<td>• Establish a realistic change process</td>
</tr>
<tr>
<td></td>
<td>• Clearly identify the target audience</td>
</tr>
<tr>
<td></td>
<td>• Establish a clear method of delivering the service to the target audience</td>
</tr>
<tr>
<td></td>
<td>• Establish well-defined activities and program components</td>
</tr>
<tr>
<td></td>
<td>• Obtain adequate resources to implement the program</td>
</tr>
<tr>
<td></td>
<td>• Re-evaluate and clarify program goals and objectives</td>
</tr>
<tr>
<td></td>
<td>• Work with stakeholders to reconsider the program logic and desired outcomes</td>
</tr>
</tbody>
</table>
### Guidelines & Recommendations for University Administrators

#### Evaluating Developmental Education Programs (continued)

<table>
<thead>
<tr>
<th>Evaluation Topic</th>
<th>Recommendation</th>
</tr>
</thead>
</table>
| Evaluation Design | • Use a regression discontinuity analysis or theory-based model  
|                   | • Obtain adequate resources to evaluate the program  
|                   | • Follow the National Association for Developmental Education (NADE) Guidelines (Exhibit D)  
|                   | • Establish benchmarking  
|                   | • Establish performance reporting  
|                   | • Commit to a model of continuous improvement  
|                   | • Consider external factors including the number of hours student works each semester, the student’s responsibilities outside the classroom, and financial aid eligibility.  
|                   | • Analyze success in gateway courses at the conclusion of the first semester of enrollment |
## Guidelines & Recommendations for University Administrators

### Evaluating Developmental Education Programs (continued)

<table>
<thead>
<tr>
<th>Evaluation Topic</th>
<th>Recommendation</th>
</tr>
</thead>
</table>
| Survey Design    | • Capture the audience while you have them in the program  
                  | • Ensure survey questions are valid |
Implications for Further Research

- With pending budget concerns, schools must evaluate programs to justify their effectiveness.
- Inconsistent evaluation methods among states and schools make comparison of data impossible.
- Future research needs to consider a standardized set of benchmarks.
- A systems approach should be implemented.
- National Association for Developmental Education (NADE) has prepared benchmarks.
Contact Information

Sherri L. Stepp, M.S.
Director of University College
Marshall University, One John Marshall Drive, Huntington, WV 25755
Doctoral Student: Leadership Studies

goodall@marshall.edu