

An Index for Gauging Effectiveness

Measuring Success of Developmental Studies Programs

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The Question

What makes a developmental studies program successful? Choose one. Explain your answer.

- Success in college level courses
- Success in developmental studies courses

Which of these rates are most important?

- Check all that apply:
 1. Dev Course pass rates
 2. Average GPA of Dev students
 3. Dev Program Math pass rates
 4. Other Dev Studies pass rates

Let's Do the Math

.5

- Basic Math

.5

- Elementary Algebra

.5

- Intermediate Algebra

.5

- College Algebra

.5

- Degree Program

- Chances of Graduating = $.5^5 = .03125$

- TBR Study 2007

- Students starting at the lowest levels of developmental studies have a 3% chance of graduation – in 5 years!

Good or Bad?

Consider the following scenarios for a developmental studies program:

- 30% of students exit the program
- 70% of the students exit the program
- At the college level, students have a 70% success rate
- At the college level, students have a 30% success rate

Gauging Effectiveness

Calculating Developmental Studies Effectiveness



- Examples
 - 30% of students exit, succeed at a 70% rate in college
 - 70% of students exit, succeed at a 30% rate in college
- Observations
 - The first example fits many dev studies programs
 - **Most colleges have an effectiveness between .15 and .25**

Prepared for Success

Which of these students is best prepared for college?

- Student 1
 - Ch. 1 95 Ch. 2 85 Ch. 3 70 Ch. 4 70 Ch. 5 30
- Student 2
 - Ch. 1 90 Ch. 2 90 Ch. 3 50 Ch. 4 70 Ch. 5 50
- Student 3
 - Ch. 1 90 Ch. 2 85 Ch. 3 65 Ch. 4 60 Ch. 5 50
- Student 4
 - Ch. 1 90 Ch. 2 80 Ch. 3 75 Ch. 4 70 Ch. 5 80

Keys to Closing the Gap

- Getting students to Do the Math
- Helping Struggling Students
- Making Sure They Learn the Material – Mastery Learning

I believe that mastery learning is the critical missing link in the education of low achievers.

Patricia K. Cross, 1976 Accent on Learning

Effectiveness Matters: What if it works?

- Increase in students passing Developmental studies has a **direct increase** on the numbers of students entering and passing college level courses
- Increase passing rates for college level increases student retention

What If It Works? (Chattanooga)

Chattanooga State Math Department

Student Enrollment



Semester

Developmental Studies Effectiveness Index

- Uses **course success rates** from developmental studies through college level
- Provides a “**snapshot**” of student success in a developmental program thru college level
- **Track effectiveness** year to year

Let's DO The Math!!

The DSE: Just 4 Steps

- Step 1: Course Success Rate, CSR
- Step 2: Course Path Rate, CPR
- Step 3: Proportion of Developmental Enrollees, PRO
- Step 4: The DSE

The DSE: Step 1

- Step 1: Course Success Rate

$$\text{CSR} = \frac{\text{\# of passing grades}}{\text{\# of dev students enrolled}} \quad (\text{for each course})$$

- Example:

$$\text{CSR (Math 0810)} = 360 / 720 = 0.50 \quad (\text{DM1})$$

$$\text{CSR (Math 0820)} = 240 / 480 = 0.50 \quad (\text{DM2})$$

$$\text{CSR (Math 1530)} = 280 / 400 = 0.70 \quad (\text{College})$$

The DSE: Step 2

- Step 2: Course Path Rate

$$\text{CPR} = \text{CSR} * \text{CSR} * \text{CSR} \dots$$

(success rate in each dev course times college rate)

Example:

$$\text{CPR (Math 0810)} = 0.50 * 0.50 * 0.70 = 0.175 \quad (\text{DM}_1)$$

$$\text{CPR (Math 0820)} = 0.50 * 0.70 = 0.35 \quad (\text{DM}_2)$$

The DSE: Step 3

- Step 3: Proportion of Developmental Enrollees

$$\text{Pro} = \frac{\text{\# of enrollees}}{\text{total}} \quad (\text{for each dev course})$$

Example:

$$\text{PRO (Math 0810)} = 720/1200 = 0.60 \quad (\text{DM}_1)$$

$$\text{PRO (Math 0820)} = 480/1200 = 0.40 \quad (\text{DM}_2)$$

The DSE: Step 4

- Step 4: Developmental Studies Effectiveness Index

$$\text{DSE} = \text{CPR} * \text{PRO} + \text{CPR} * \text{PRO} \dots$$

(multiply for each course then add)

Example:

$$\text{DSE} = (0.175 * .60) + (0.35 * 0.40) = 0.2450$$

Now change to Percent: Multiply by 100%

$$0.2450 * 100 = 24.50\%$$

The DSE represents

...the percentage of students enrolled in developmental studies who successfully exit developmental and succeed in their first corresponding college course

This means that 24.5% of students enrolled in developmental math actually exit the program and pass a college level math course in the previous example!

What if ...

...developmental studies student success rate increased by 50% to a Course Success Rate of 75% for the same example...

Step 1: CSR	0.75	0.75	0.70
Step 2: CPR	$(.75 * .75 * .70)$ = .394	$(.75 * .70)$ = .525	
Step 3: PRO	0.60	0.40	
Step 4: DSE	$(.394 * .60) + (.525 * .40)$ = 0.4464		

...the DSE nearly doubled from 25% to 45%

Things to Remember...

- Collect Data & Use Data
- Do the Math – Know your Success Rates
- Let Data inform Decision making

*Increase * Increase = Increase²*

Questions?

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