Using Multiple Measures to Improve Placement Accuracy in Community Colleges

U.S. Department of Education – Office of Career, Technical, and Adult Education
Minority Serving Community Colleges: Uniting for Student Success
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Agenda

- Background Research on Multiple Measures

- CAPR Research on Alternative Placement Systems

- CAPR Initial Data

- CAPR Implementation Research

How would you describe the status at your college?

1. Expect to continue using single placement tests.

2. Considering using multiple measures.

3. Already using multiple measures.

Background and Prior Research

Under-placement and Over-placement

| | | Placement According to Exam | |
		Developmental	College Level
Student Ability	**Developmental**	✔	*Over-placed*
	College Level	*Under-placed*	✔

Many more students could succeed in college level courses (Belfield & Crosta, 2012)

- Many students assigned to developmental education using COMPASS could have gotten a B or better in a college-level class:

  - 1/3 of students – English
  - 1/4 of students – Math
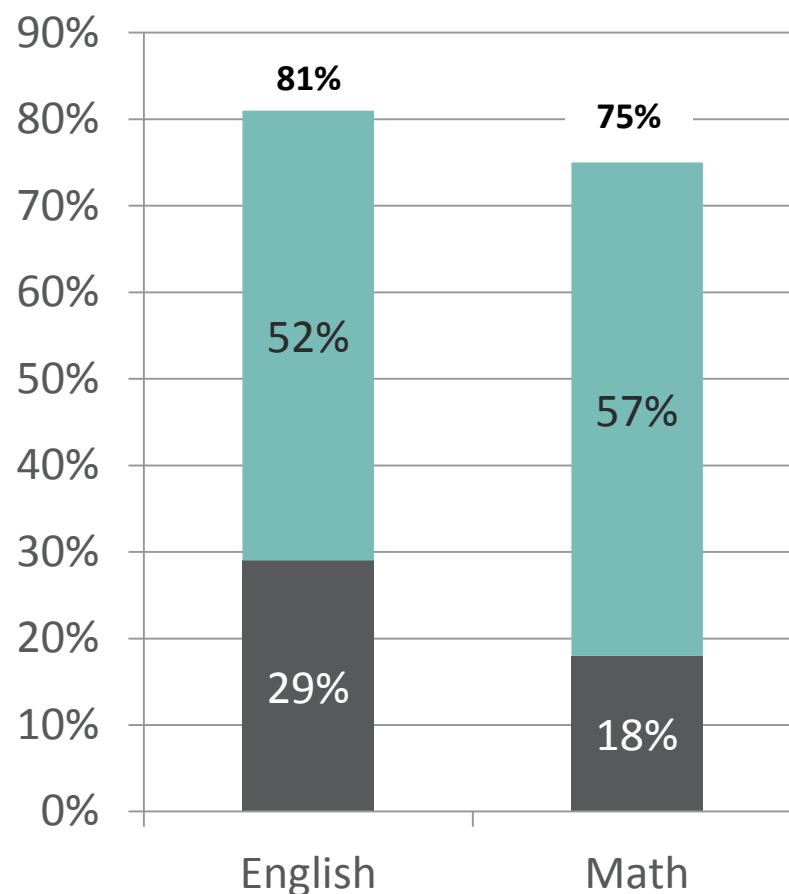
Error Rates

		LUCCS 1	SWCCS 1	SWCCS 2
Math	Over-placement rate	5.3%	5.8%	12.3%
	Under-placement rate	18.5%	28.4%	14.3%
	Total Error Rate	23.9%	34.2%	26.6%
English	Over-placement rate	4.5%	8.8%	5.6%
	Under-placement rate	28.9%	17.3%	27.8%
	Total Error Rate	33.4%	26.2%	33.5%

Scott-Clayton, J., Crosta, P. M., & Belfield, C. R. (2014). Improving the Targeting of Treatment: Evidence From College Remediation. *Educational Evaluation and Policy Analysis*, *36*(3), 371–393.

EDUCATIONAL EVALUATION AND POLICY ANALYSIS

Placement into C.L. Coursework

TABLE 5

Simulated Composition of College-Level Courses, Using Alternative Measures for Remedial Assignment (LUCCS Only)

	All tested students	Students placed in college-level (simulation)		
		Test scores	HS GPA/units	Test + HS combined
Math				
% female	58.2	53.4	60.6	54.8
% White	14.8	18.9	19.3	19.4
% Black	28.8	23.7	20.6	21.2
% Hispanic	34.2	22.3	30.8	26.0
% Asian	10.4	22.7	17.3	21.4
% Other/unknown race/ethnicity	11.8	12.5	12.0	12.1
Sample size	37,860	9,041	9,465	9,465
English				
% female	57.2	62.1	63.0	62.6
% White	13.4	17.9	18.4	20.9
% Black	28.1	31.2	14.6	19.5
% Hispanic	35.0	30.0	33.9	31.7
% Asian	12.0	8.2	22.8	15.9
% Other/unknown race/ethnicity	11.5	12.7	10.4	12.0
Sample size	34,808	6,787	6,962	6,962

Source. Administrative data from LUCCS (2004–2007 entrants).
Note. For comparison to subsequent columns, the first column provides the demographic breakdown of all students in our analysis sample (corresponding to the sample in columns 3 and 5 of Table 1). Subsequent columns indicate the simulated composition of college level classrooms that would result from the three alternative placement strategies. See Table 2 for additional notes. LUCCS = large urban community college system; GPA = grade point average; HS = high school.

Scott-Clayton, J., Crosta, P. M., & Belfield, C. R. (2014). Improving the Targeting of Treatment: Evidence From College Remediation. *Educational Evaluation and Policy Analysis*, *36*(3), 371–393.

CAPR: Research on Alternative Placement Systems (RAPS)

CAPR

1. Partnership between Community College Research Center at Teachers College and MDRC

2. Support from IES

3. Three Main Studies

    1. Descriptive Study

    2. Assessment Study

    3. Instruction Study

RAPS

1. 7 SUNY Community Colleges.

2. Each works with CAPR team to develop an alternative placement method using an algorithm.

3. Students are randomly assigned to be placed using either the existing placement method or the algorithm.

4. We look for differences in student outcomes based on placement method.

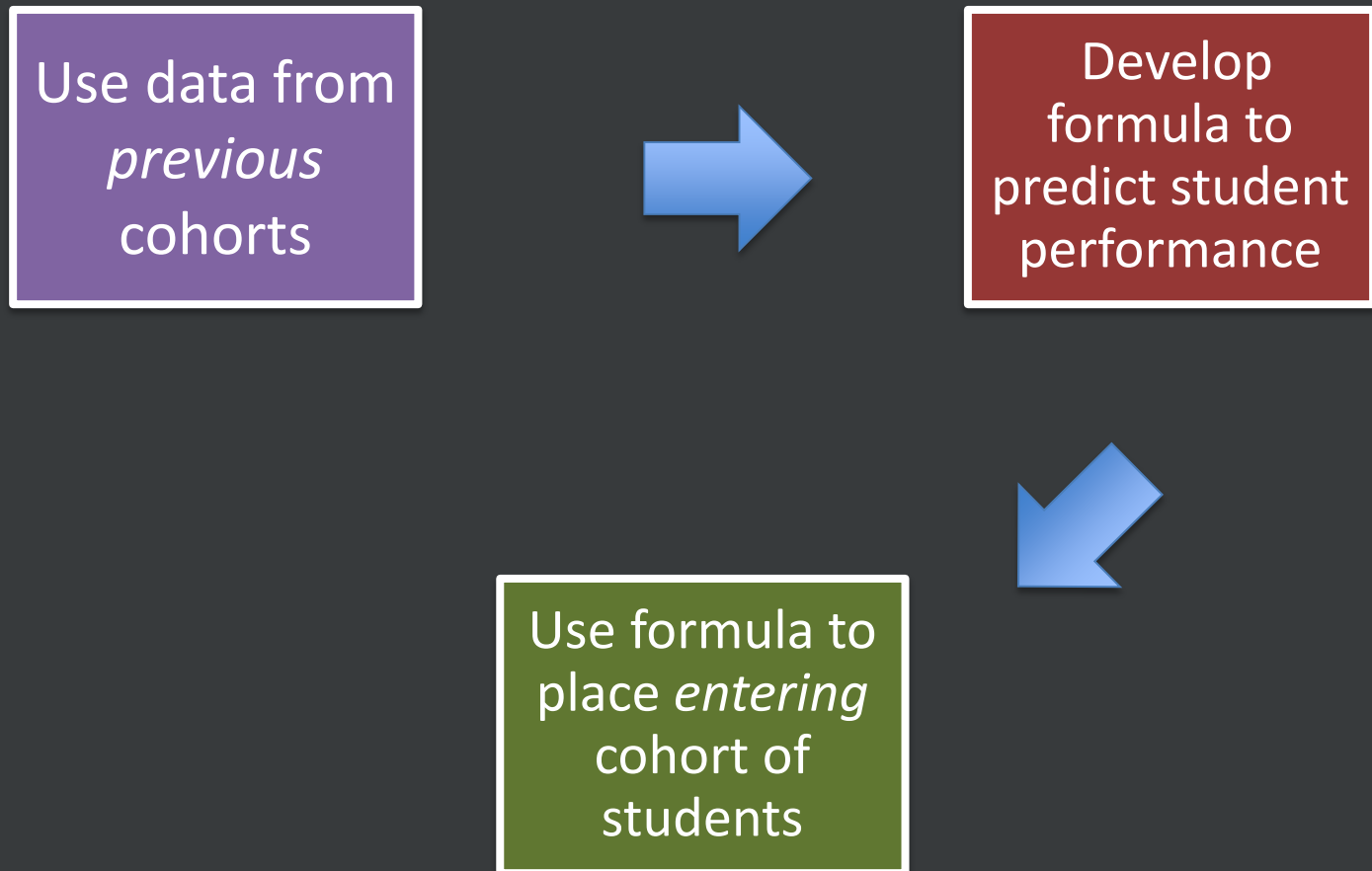5. Monitor implementation of study and transition to MM system.

RAPS – Partner Sites

A – CAPR/CCRC/MDRC
B – Cayuga CC
C – Jefferson CC
D – Niagara County CC
E – Onondaga CC
F – Rockland CC
G – Schenectady County CC
H – Westchester CC
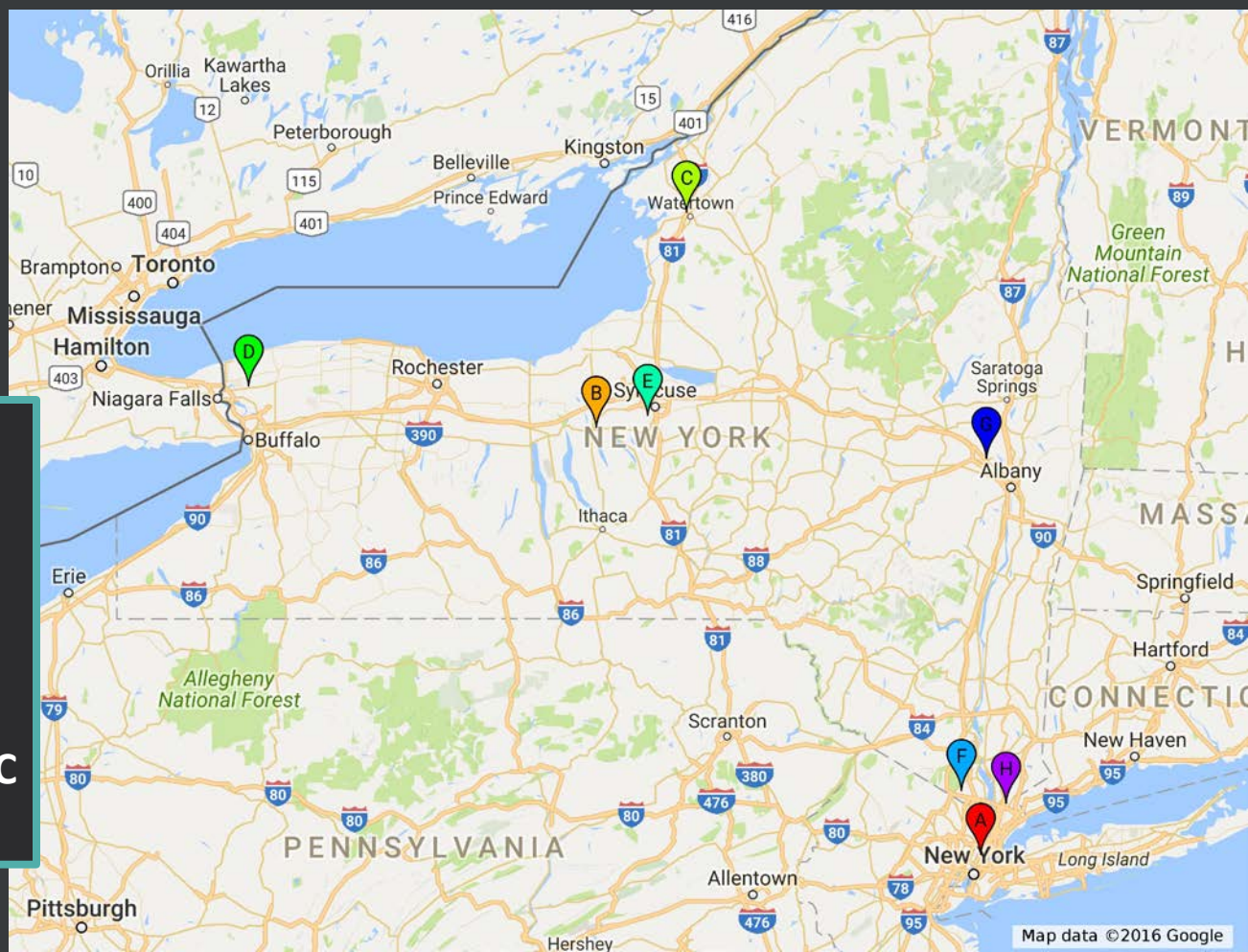
RAPS – Study Timeline

- Five year study – July, 2014 – June 2019
- Years 1-2
    - Analysis of historical data
    - Create requisite systems on campuses
- **Years 3-4**
    - **Randomly assign students to be placed using algorithm or pre-existing system.**
    - **3 Semesters – Fall 2016, Spring 2017, Fall 2017**
- Years 4-5
    - Collect and analyze outcomes data.
    - Final data transfer from colleges – July, 2018

How Does the Algorithm Work?

Use data from *previous* cohorts

Develop formula to predict student performance

Use formula to place *entering* cohort of students

Creating the algorithm

- Three cohorts of students

- Select students who:

  – Took a placement test

  – Took a college-level course first

- Use their outcome in the initial college-level course to gauge how well certain factors predict success (Passing the course with a C or better)

- Establish minimum acceptable probability for success in college-level course

Explaining variation in outcomes.

- The basic four models

  - GPA only

  - ACCUPLACER test scores only

  - GPA + ACCUPLACER

  - GPA + ACCUPLACER + other HS information

- Additional complexity

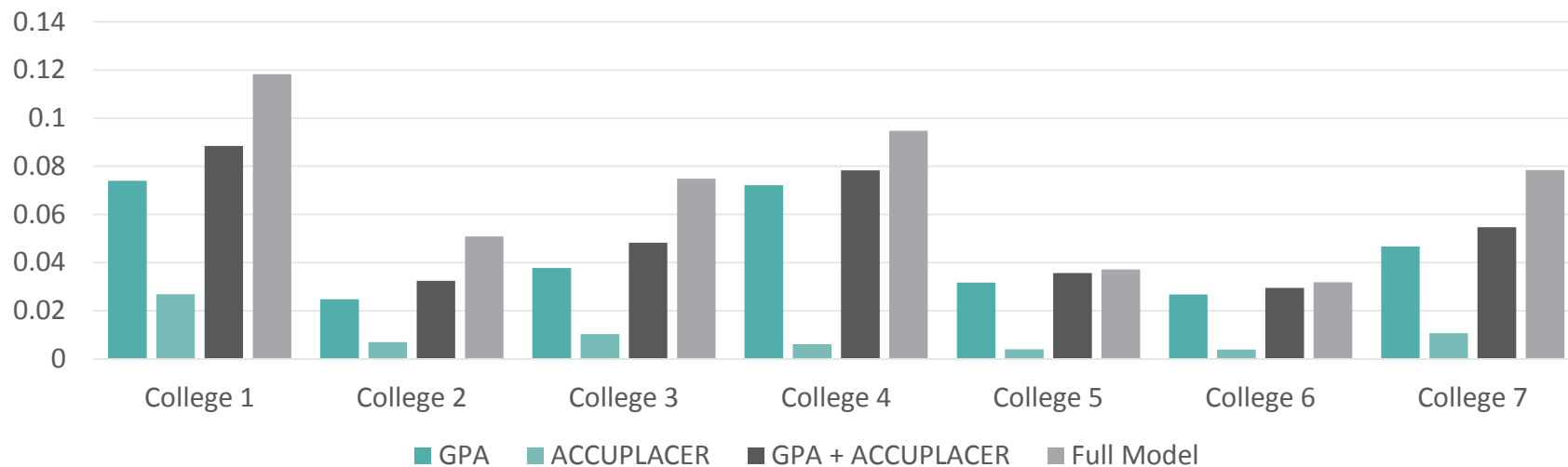 - Interaction terms

  - Higher order terms

Missing Data

- Include dummy indicators for missing data element.

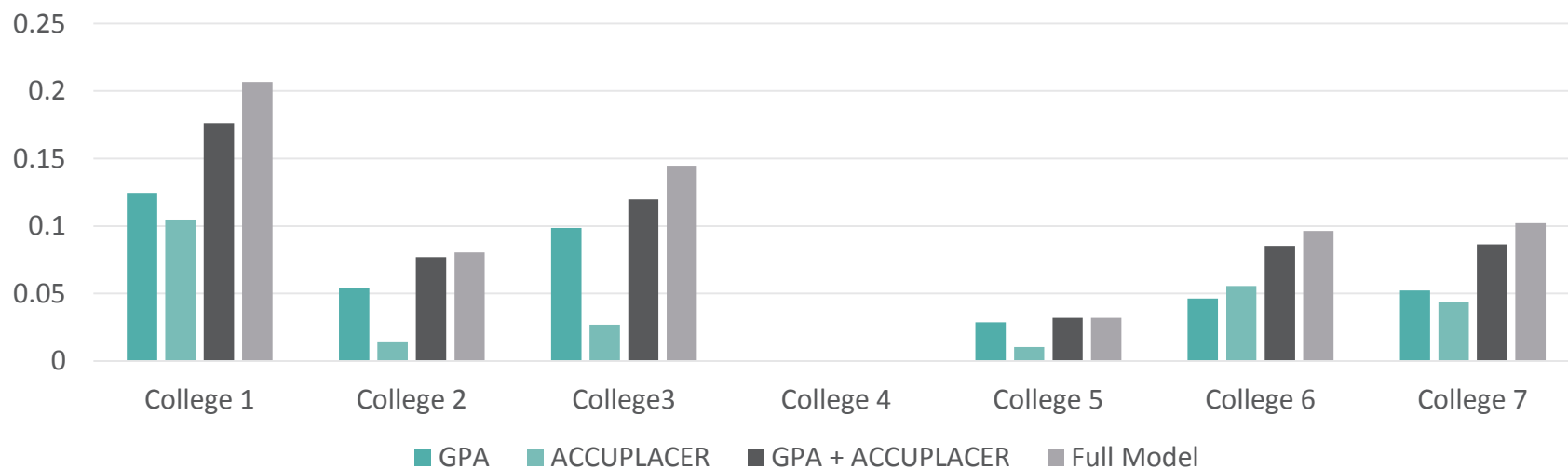- Test interaction terms between missing HS GPA and test scores.

Model R-Squared Statistics
English

R-Squared Statistics – Graphical Representation

Model R-Squared Statistics
Math

R-Squared Statistics – Graphical Representation

Data Elements

Data Element	Impact
High School GPA	+
Time since high school completion	+
Diploma type (standard diploma vs. GED)	+
High School of Record	
Other Test Data (eg Regents, SAT/ACT, etc.)	
Placement test scores	(+)
Indicators for missing data	+/-

Key: + significant positive predictor   (+) somewhat positive predictor   +/- can be positive or negative predictor

Severe Error Rates
Math

	1	2	3	4	5	6	7
Overplaced	24%	6%	12%	20%	11%	16%	13%
Underplaced	8%	45%	29%	22%	36%	19%	35%
Severe Error Rate	32%	50%	41%	42%	47%	34%	47%

Severe Error Rates
English

	1	2	3	4	5	6	7
Overplaced	12%	15%	14%	17%	8%	11%	17%
Underplaced	31%	30%	34%	25%	44%	40%	29%
Severe Error Rate	43%	45%	47%	42%	52%	51%	46%

RAPS – Initial Data

Outcomes of Interest

- Placement levels

- Outcomes in introductory college-level course

- Persistence/retention

- Credits earned

- Subgroup Analyses

  – Demographics

  – Differentially placed

English

	Projections		Experimental	
	Prior Share in C.L. English	**Projected placed into C.L. English using MM**	**Control Group**	**Program Group**
College 1	47%	48%	25%	32%
College 2	60%	68%	56%	50%
College 3	28%	95%	35%	93%
College 4	50%	100%	26%	100%
College 5	38%	50%	57%	85%

Math

	Projections		Experimental	
	Prior Share in C.L. Math	**Projected placed into C.L. Math using MM**	**Control Group**	**Program Group**
College 1	53%	52%	57%	62%
College 2	29%	39%	13%	21%
College 3	27%	43%	29%	38%
College 4	50%	74%	50%	86%
College 5	44%	40%	40%	32%

Implementation Research

Implementation Research Methodology

- Visited sites in the late spring/early summer 2016
  - Interviews/Focus Groups
    - Members of Research Teams
    - Senior Administrators
    - Admissions
    - Testing
    - Counsellors/Advisors
    - IT
    - IR
  - Transcription over the summer
  - Analysis of transcripts
  - Site visits Round 2 in Spring 2017
    - Interviews and Focus Groups with same set of people *plus faculty*

Implementation
Many Stakeholders, Many Hours

- Many departments and divisions are impacted by these changes.

- Different patterns of involvement
  - Data entry and transfer
    - Admissions and IR
  - Building the systems
    - IT and testing center personnel
  - Enrolling students
    - Admissions, testing, advising, faculty

Implementation
Many Stakeholders, Many Conversations

- Project provided opportunity for colleges to begin the conversation

"It sort of was the right thing at the right time, and it gave us the opportunity to have this conversation, and to fast track the conversation in a way that wouldn't have happened [if we were not participating in the study]. That didn't come without a lot of blow back. I still think it was the right thing to do, but I think that had we gone through the processes of trying to change placement [without the study], we wouldn't be nearly as far along as we are."

- Committee meetings as venue for communication between different divisions and departments

Implementation
Obstacles to Change – Complexity of Systems

"...sitting through the phone calls that you guys sat through, there were a lot of Band-Aids being taken off. Each Band-Aid we pulled off, there was another question or concern, or an unknown [obstacle]."

However, project afforded an opportunity to tackle some of these issues.

Implementation
Obstacles to Change – Skepticism

- Dissonance when advisor sees a placement that does not match the ACCUPLACER score.

  – Some sites have removed score information from kiosk reports.

  – Others are working with advisors to loosen the mindset.

- Buy-in

  – Breadth and depth of communication

    • How aware are different staff?

  – Time – comfort levels go up as people receive more information and have time to become more familiar.

Multiple Measures
Reform Context

- Placement Reforms

  – Exemption policies

  – Changes to scoring procedures

- Curricular reforms

  – Co-req courses

  – Flipped classrooms

Multiple Approaches to Multiple Measures

POSSIBLE MEASURES	SYSTEM /APPROACH	TYPES OF PLACEMENT
Administered by college: 1. Placement test 2. Non-cognitive assessment 3. Career inventory 4. Writing assessment 5. Computer skills assessment Obtained from outside of college: 1. High school GPA 2. Other HS transcript info 3. Standardized test results (ACT, SAT, etc.)	1. Waiver system 2. Decision bands/rules 3. Algorithm 4. Directed self-placement	1. Placement into courses 2. Placement into support services

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