

What Makes Education Research "Educational"?

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Two propositions

1. That there is research that is quintessentially educational
2. That there is a distinct educational perspective that can be used to study phenomena are not within "education" settings

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Why ask this question?

- The proliferation of unsolved and critical educational problems and the role that research could play
- The ever-present skepticism about education research
- The frequent trumping of commonsense over disciplined knowledge in education policy and practice
- The frustrating failure of some research to get to the core, or to explain ("proofs that prove vs. proofs that explain", Hanna)
- Many more phenomena are "education" than is acknowledged; the potential of the "educational perspective"

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The missing identity of education research

- Much debate about its quality
- Arguments and recommendations about standards of evidence, methods, rigor (e.g., NRC report on *Scientific Research in Education*)
- But almost no attention to its scope or content, the central questions and problems that define the domain and its subdomains; seems limitless, without boundaries and myriad subfields
- A brief excursion through faculty webpages describing their research interests yields a list that is difficult to categorize or structure
- Although AERA has 12 divisions, it also has over 150 special interest groups (SIGs)

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What does it mean to know something in education?

- Distinguishing between research and advocacy
- Distinguishing between descriptions and explanations
- Distinguishing between proofs that prove and proofs that explain, between studies that inform or predict and studies that explain

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Is 412,736,985 odd or even?

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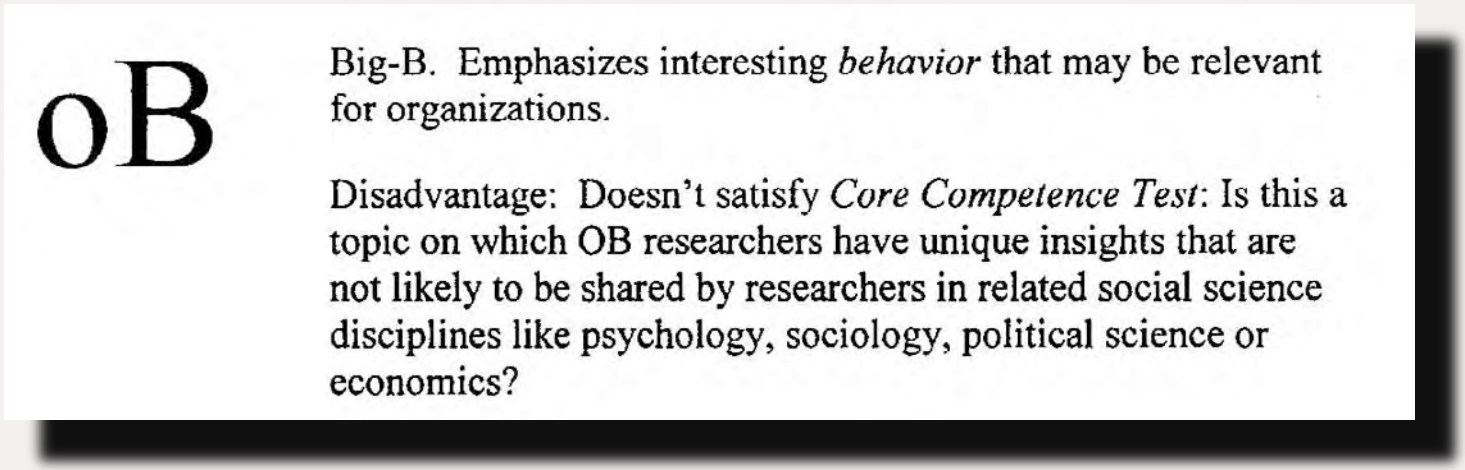
What is quintessentially *educational* about education research?

- What is special about an *educational* focus and expertise?
- What are the domains that we uniquely know how to study? What are the *educational* lenses we bring?

What makes education research "educational"?

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"Big-B versus Big-O: What is *organizational* about organizational behavior?"

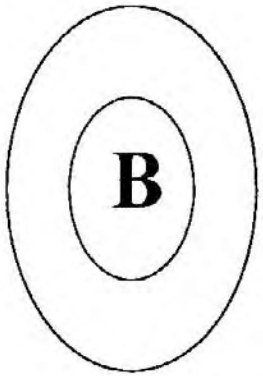


- Studies interesting behavior that may be important in organizations, but
- Topics often fail the "Core Competence Test" ("Is this a topic about which OB researchers have unique insights not likely to be shared by researchers in other disciplines?"

(Heath & Sitkin, 2001)

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Contextualized in organizations, but . . .



Contextualized-B. Emphasizes behavior that occurs *in an organizational context*.

Disadvantage: Doesn't satisfy *Organizational Centrality Test*: How much would we understand about organizations if we understood everything there was to know about _____? Many behaviors that occur in organizational contexts are relatively peripheral.

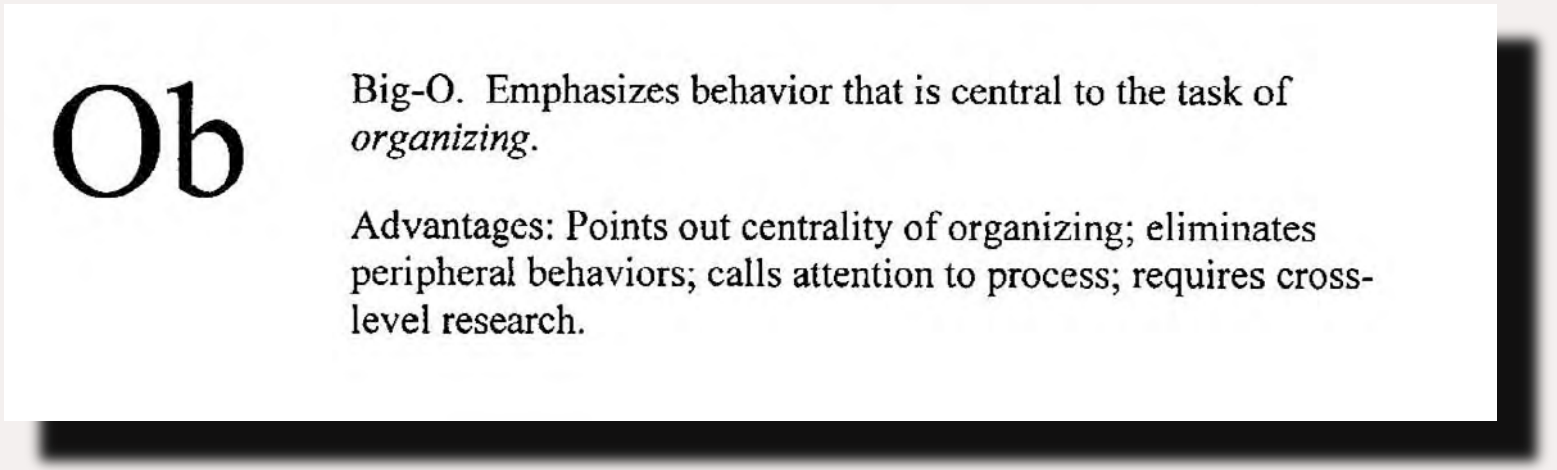
- Topics are often the same as those studied in other fields, but relabelled
  - "Borrowed"; producing a "trade deficit"
- Topics studied are sometimes peripheral

  "Organizational Centrality Test": What would we understand about organizations if we understood everything there was to know about ___?"

(Heath & Sitkin, 2001)

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Special is the research that is quintessentially about "organizing"



- Asks questions that are central to *organizing*
- Requires the core competence of researchers in this field

(Heath & Sitkin, 2001)

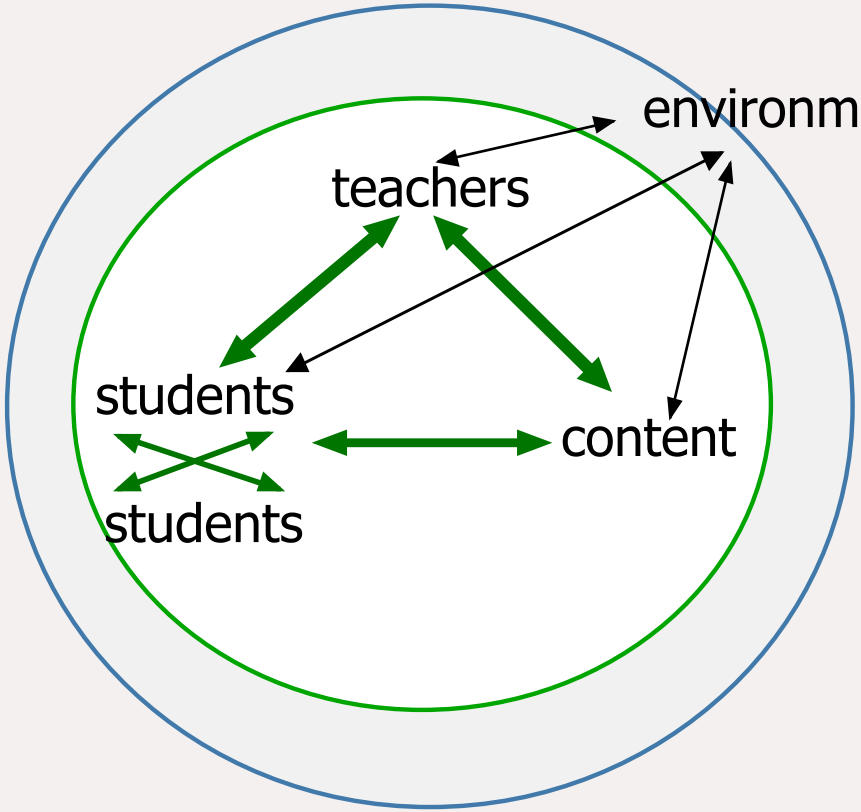
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Our argument, part 1: Research **in** education

- What is "research in education"?
- Studies inside **education**
  - Core competence test: That draw on the unique insights and skills of education researchers
  - Educational centrality test: That are fundamental to understanding and improving education

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Research **in** education



- Studies that probe the *insides*
- The dynamic of "instruction", or policy implementation; "inside the black box"
- This is the part that is often invisible and overlooked
- Often more work is done on the corners and edges and contexts — research that **informs** education

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Four cases of research **in** education

Study	Grade level, subject, context	Research focus	Method
Misconceptions in science (Anderson, Smith, Roth)	Upper elementary science, suburban	Interactions among students' beliefs about photosynthesis, teachers' beliefs about students, instruction, and instructional texts	Mixed (heavily qualitative)
Cultural Modeling Project (Lee)	High school English/ literary response, urban	Interactions among teachers' knowledge of students' language and culture, teaching practices, students' language skills, students' activities, and literary texts	qualitative
Instructional Dimensions Study (Leinhardt & Cooley)	Elementary reading and math, urban	Interactions among students' classroom activities, instructional processes, and student achievement	Mixed (heavily quantitative)
Pathways to Teaching (Boyd, Grossman, Lankford, Loeb, Wyckoff)	Teacher education; grades 4-8, math and reading, urban	Interactions among TE program content and features, teacher placement and longevity, and students' reading and math scores	Mixed (heavily quantitative)

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Case #1: Research on children's scientific misconceptions (1980s-)

1. Important scientific theory and explanation about phenomena in the everyday world
2. Young people develop ideas through experience
3. These ideas turn out to be resistant to simple "correction" or telling (important discovery)
4. Can instruction help?

Anderson, Smith, Roth; Driver and others at the University of Leeds, Hewson, Minstrell

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First, scientific knowledge: Plants make their own food

- Green plants are the only living things which can make their own food.
- This process is called *photosynthesis*.
- Leaves are green in colour because they contain *chlorophyll*, which is used in photosynthesis.

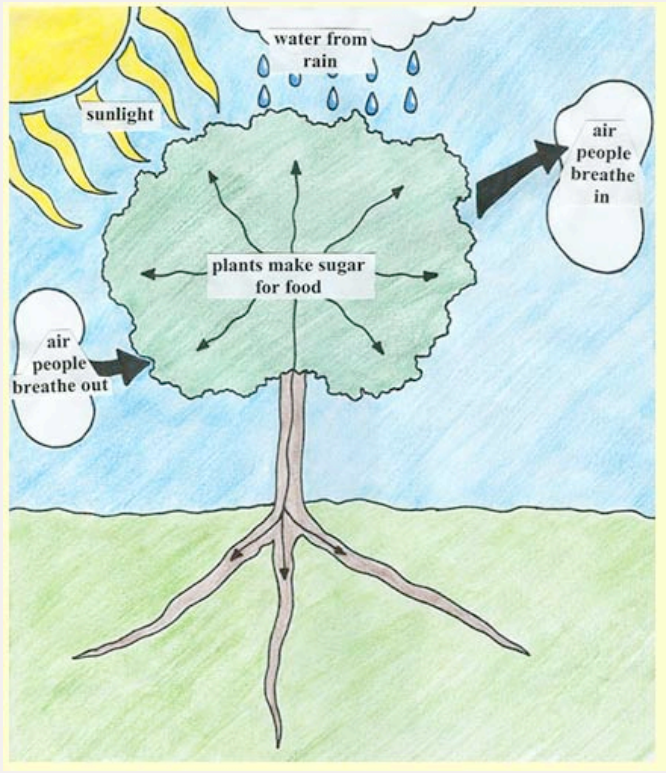


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What does a plant need to make food?

For photosynthesis to take place a plant needs :

- Carbon dioxide from the air
- Light from the sun
- Water from the rain
- Chlorophyll from the leaves



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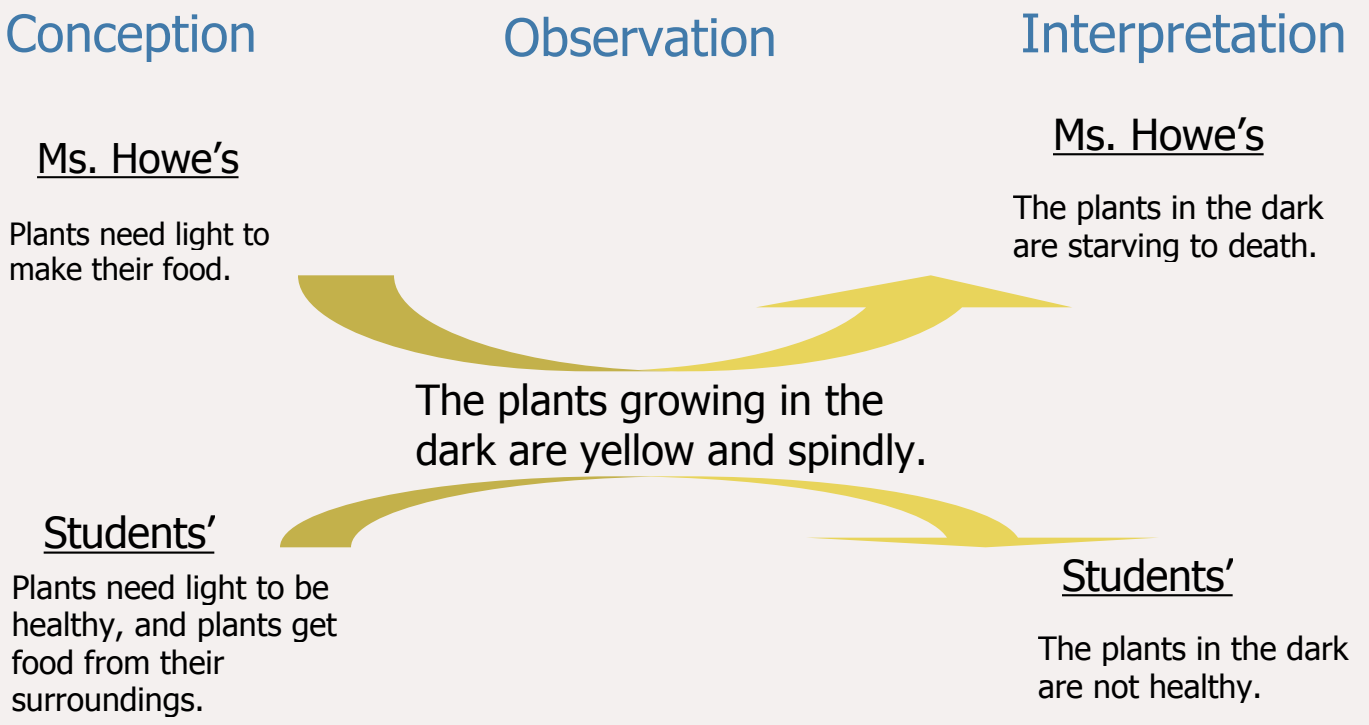
Children's ideas about how plants make food

- Fertilizer is "plant food."
- Plants "eat" plant food and "drink" water.
- Plants get their food from the soil.
- Despite systematic curriculum — experiments with growing seeds and plants both in light and dark, students persisted in believing that plants get food from ingesting materials around them. Light just makes plants "healthier."

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The "failure" of "good teaching"

- Ms. Howe, 5th grade
- Used SCIS curriculum, well-structured to help students develop understanding of photosynthesis



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Experimental intervention

- Designed experimental text, students were randomly assigned to read typical text material or the experimental text
- Matched in terms of difficulty
- Clinical interviews probed their explanations of how plants get food and their reading strategies

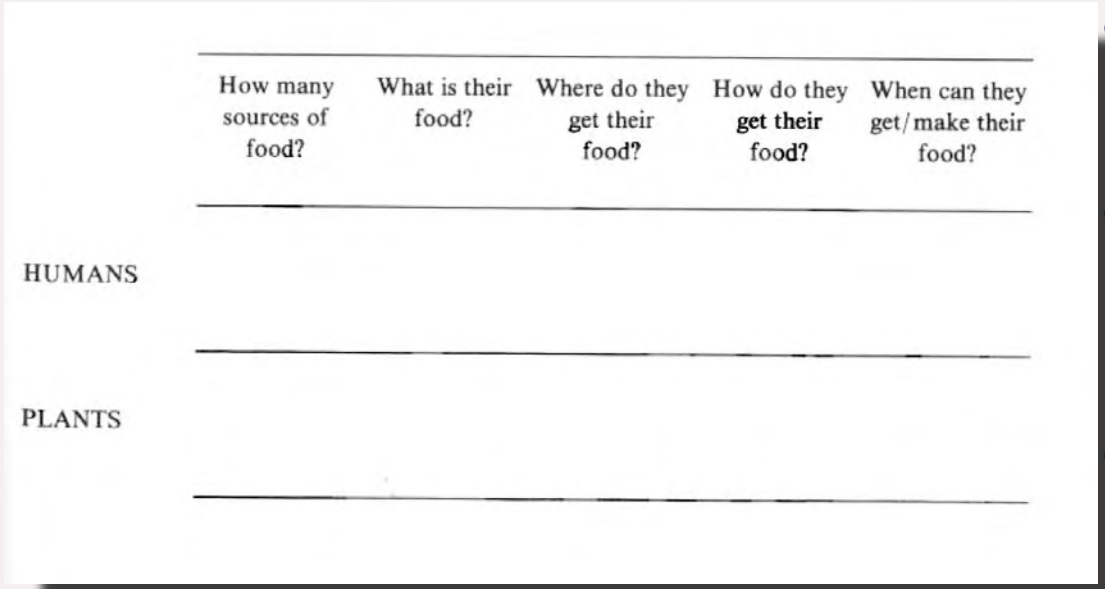
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Design and study of instructional interventions aimed at conceptual change

	# of classrooms per group		% of students understanding goal conceptions	
	Experimental	Control	Commercial materials	Experimental materials
Light and vision (grade 5) 1984, 1986	6	5	18	58
Photosynthesis (grade 5) 1984, 1985	1	1	5	57
Photosynthesis (middle school) 1987	8	5	28	60
Respiration (middle school) 1987	4	9	12	23.5

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Designing explicitly directed tasks and dialogue



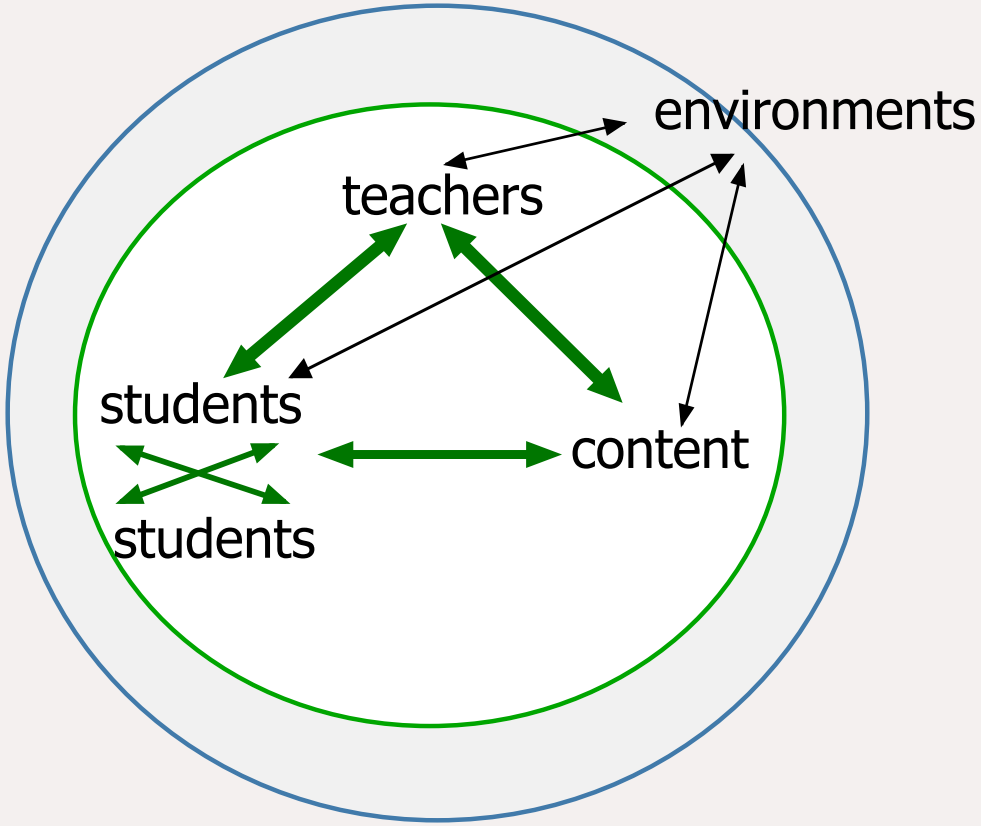
	How many sources of food?	What is their food?	Where do they get their food?	How do they get their food?	When can they get/make their food?
HUMANS					
PLANTS					

- Requiring students to confront key ideas and contrasts
- Cues for teachers to ask strategic questions hear and notice what students are saying
- Guidance for noticing what students are (and are not) saying

(Anderson & Roth, 1989)

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Instruction as interaction



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Contrasting cases: Research that **informs** science education

- Studies of 10-year-olds' ability to produce logical explanations
- Research on teachers' beliefs about science
- Studies of attitudes toward science among girls and minority students
- Studies analyzing the content of state curriculum frameworks

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Case #2: Research on the teaching of literature to African American urban youth

- Tackling the problem of academic instruction for poor and minority learners in urban schools
- How might urban youth be engaged in learning to read and interpret literature?
- Develops an approach called "cultural modeling"

(Lee, 2007)

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Cultural modeling as an approach to teaching and learning

- Many African-American youth routinely engage in language play and use strategies for interpreting metaphors, symbols, irony, and satire in their daily speech
- Academic literary analysis requires the same strategies and appreciation for language
- Cultural modeling treats African-American English Vernacular as bridge to sophisticated literary analysis, rather than as deficit
- Students taught to make public and explicit their problem-solving knowledge, and to connect what they already do with what they are expected to do in academic literary analysis
- Participants in the Cultural Modeling Project were more engaged and achieved greater competence in English literary analysis

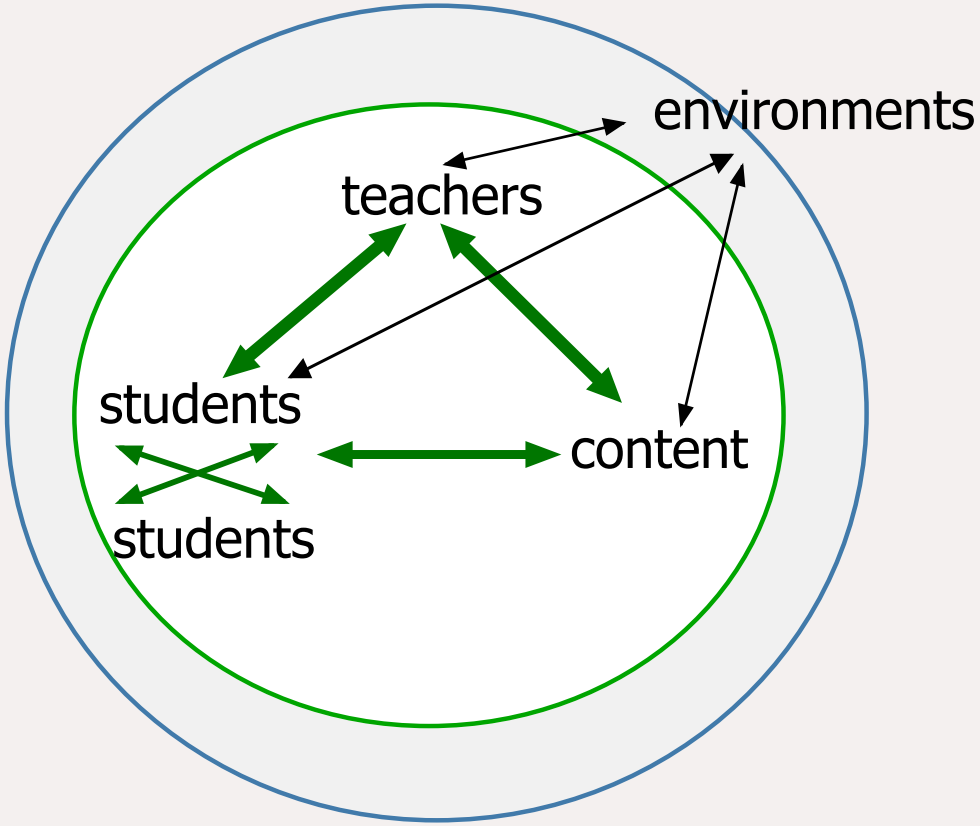
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Contrasting cases: Research that **informs** the education of under-achieving students

- Studies of African-American youth culture
- Studies of racial segregation between peer groups in middle schools
- Studies of the effects of high school graduation exit exams on student dropout rates
- Studies of teachers' beliefs about low-income and racial-minority students
- Studies of language use in rural Appalachian communities

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Case #3:
Reading instruction and its effects

Questions:

1. What is the nature of reading activities in LD classes?
2. What types of student activities lead to the greatest improvement in reading?
3. What types of instructional situations generate these student activities?

(Leinhardt, Zigmond, & Cooley, 1981)

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Measures of reading instruction

- Observations of reading instruction, including fine-grained data on students' activities and teachers' moves, time and pacing
- High density and extensiveness of observations to ensure stable estimates
- Assumptions:
  - Student's performance = f(pretest, overlap, reading behaviors)
  - Reading behaviors = f(pretest, teacher instruction, teacher affective contacts, pacing)

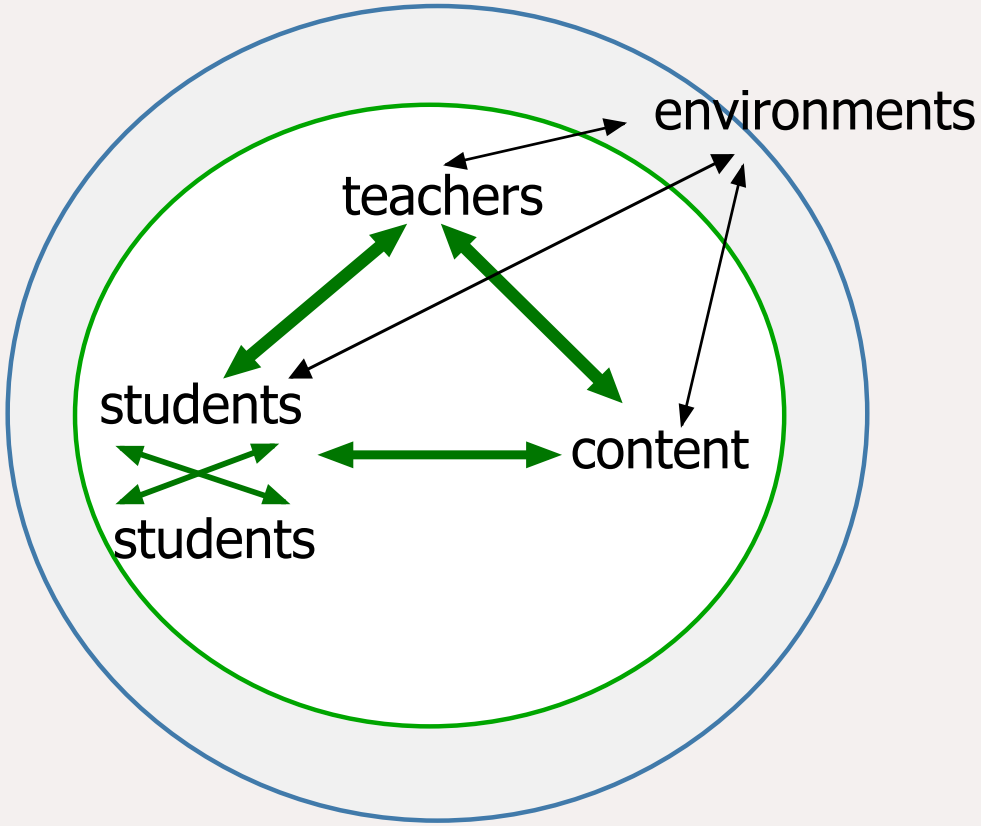
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Analyzing instruction

- "After decades of effort, . . . [the field has] reached a point where classroom processes can be measured with reliability and validity . . ."
  - Improved strategies for sampling the instructional domain
  - Precision of observational measures and good sense of what to measure
- Student behaviors during instruction influence student learning, and teacher behaviors influence student behaviors
- Close analyses pointed to specific areas for rearranging and refocusing teachers' and students' engagements
- Teachers must help students know *how* to learn from activities

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Case #4: Research on alternative pathways into teaching

- Examining different pathways into teaching in NYC schools (over 100 programs in 18 institutions!)
  - Structural features
  - Selection and enrollment
  - Instructors
  - Characteristics of different preparation programs
- How do features of programs affect teachers' influence on student achievement? Teacher retention?

Boyd, Grossman, Lankford, Loeb, Wyckoff

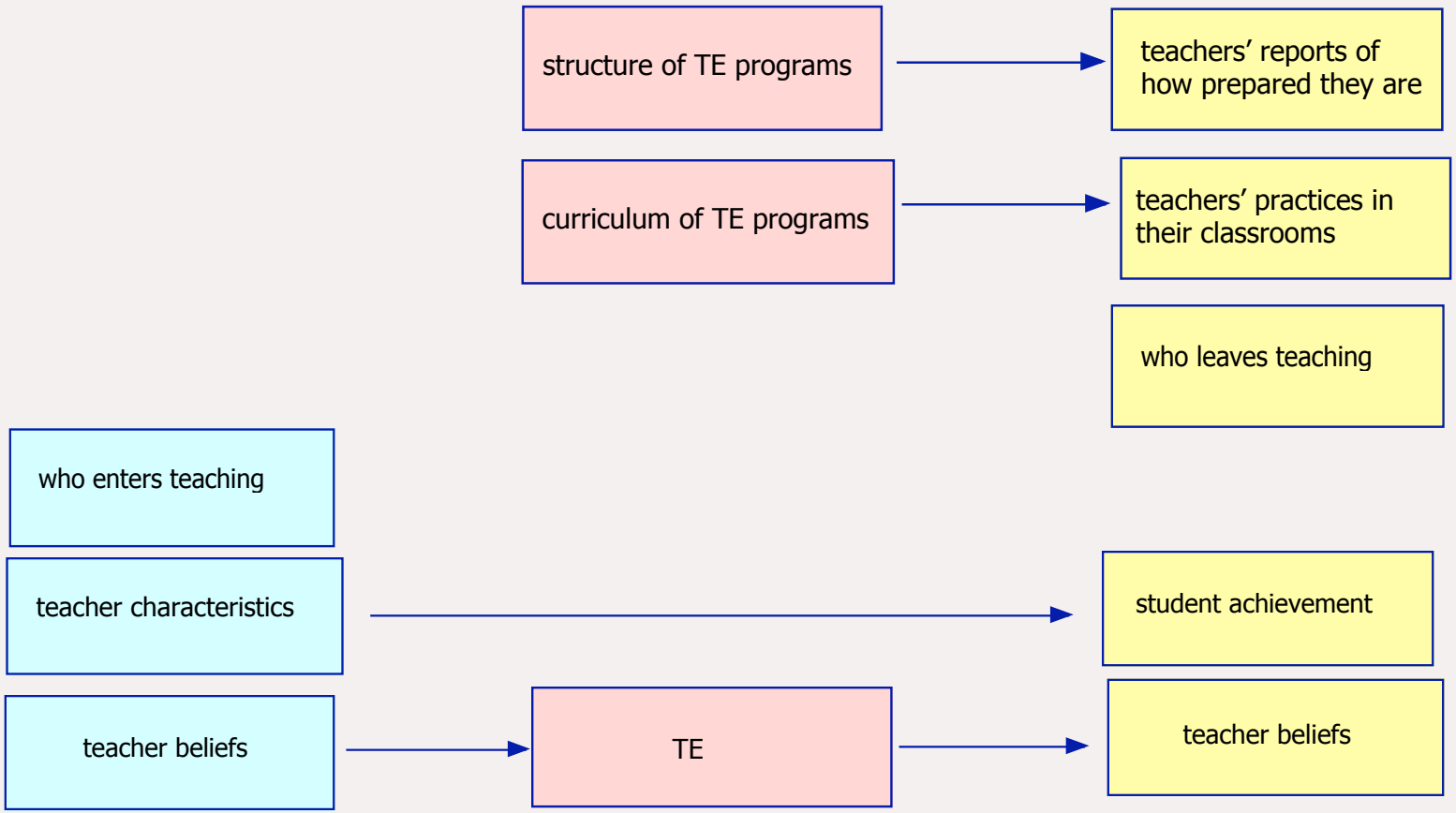
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What is important to examine?

- Administrative data on students, teachers, programs
- Longitudinal survey data from cohort of teachers who began in 2004
- Program data from 18 institutions that prepare the majority of teachers for NYC
    - Interviews with program faculty; state documents, program documents, NCATE documents; institutional websites; faculty survey; methods syllabi

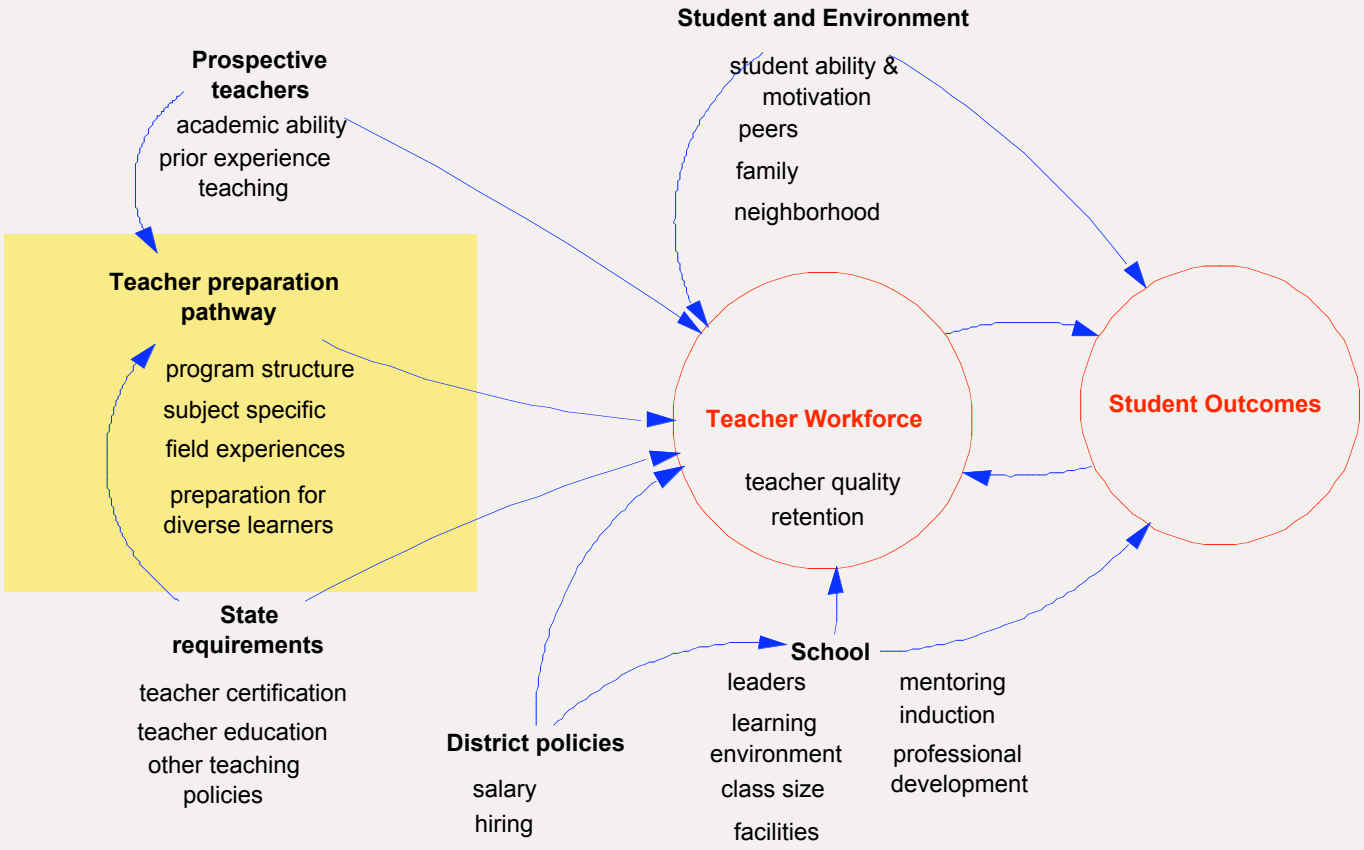
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Contrasting cases: Research that **informs** teacher preparation



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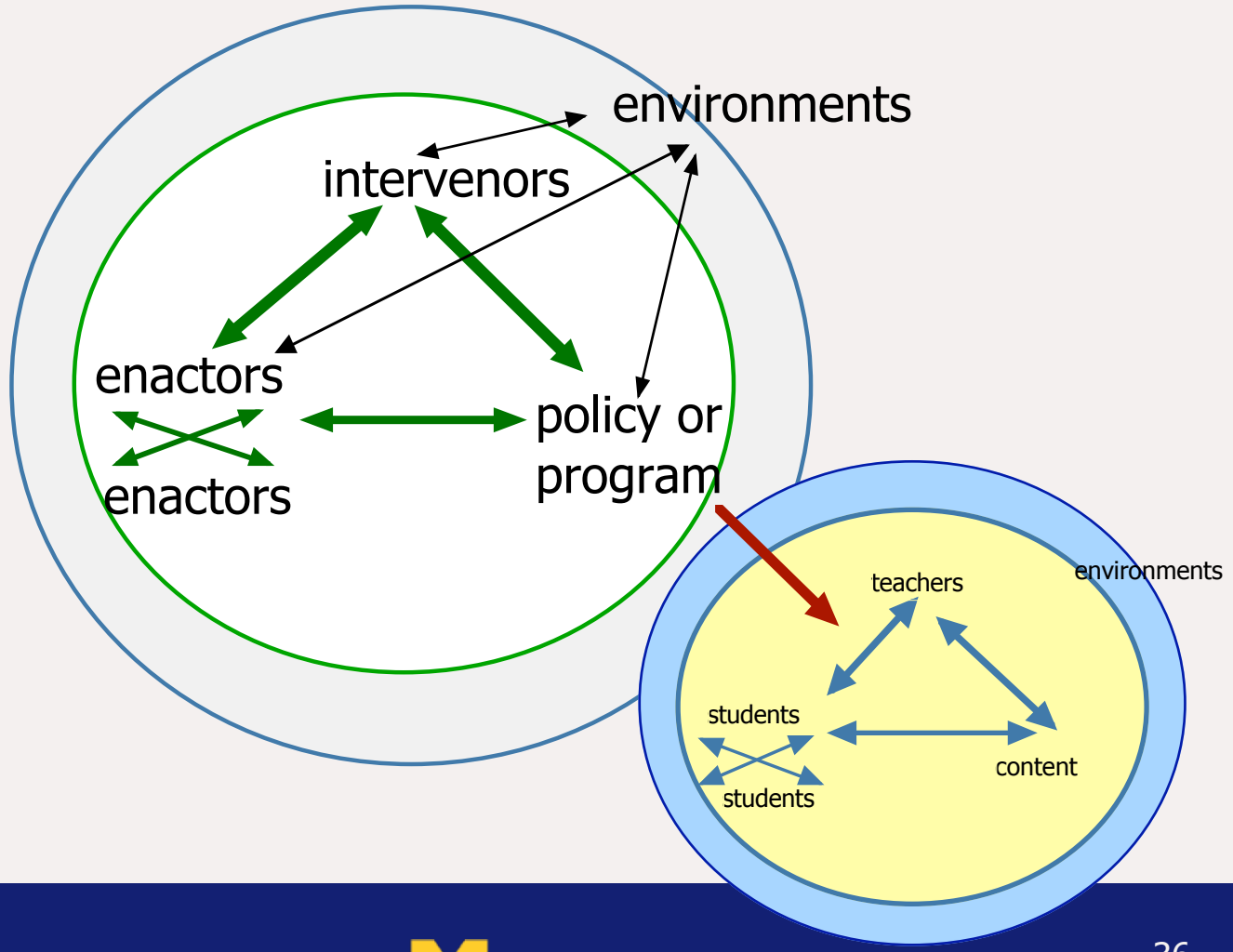
The Pathways study: Pressing into the black box, and weighing a range of inputs and outputs and their interaction



Source: Boyd, Grossman, Lankford, Loeb, Wyckoff, 2006

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Intervention and policy: Same lens



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Our argument, part 2: Studies that take an **educational perspective**

- What does it mean to take an "educational perspective"?
- Education more than an applied science, but also a theoretical frame

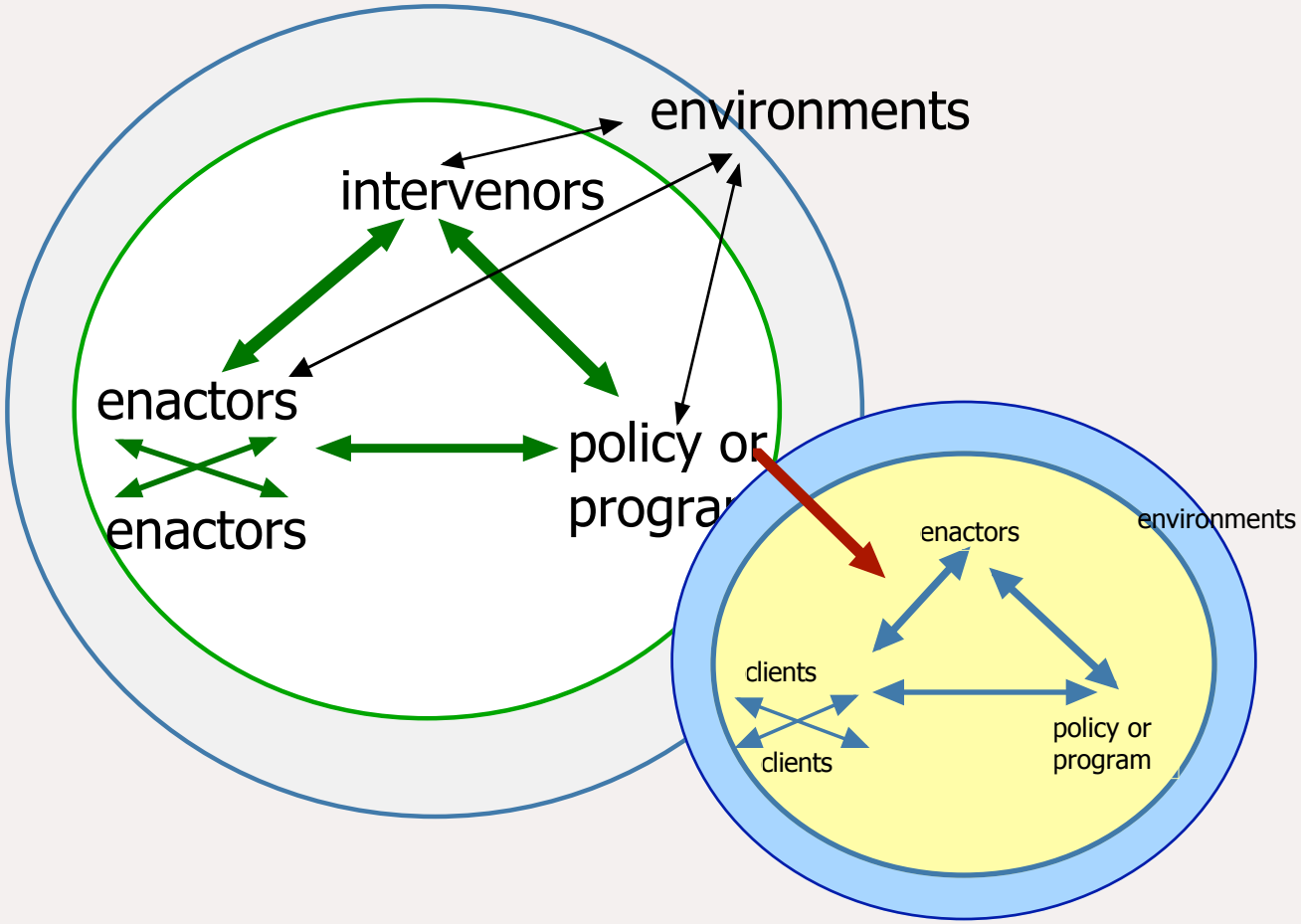
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Research that takes **an educational perspective**

Study	Context	Research focus	Method
Lipsky (1980)	Policy interpretation and implementation	How "street-level bureaucrats" mediate policy and affect its implementation	qualitative
Lin (1990)	Rehabilitation programs in prisons	How program design and prison officials shape the effects of programs	qualitative

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Implementation as "instruction"



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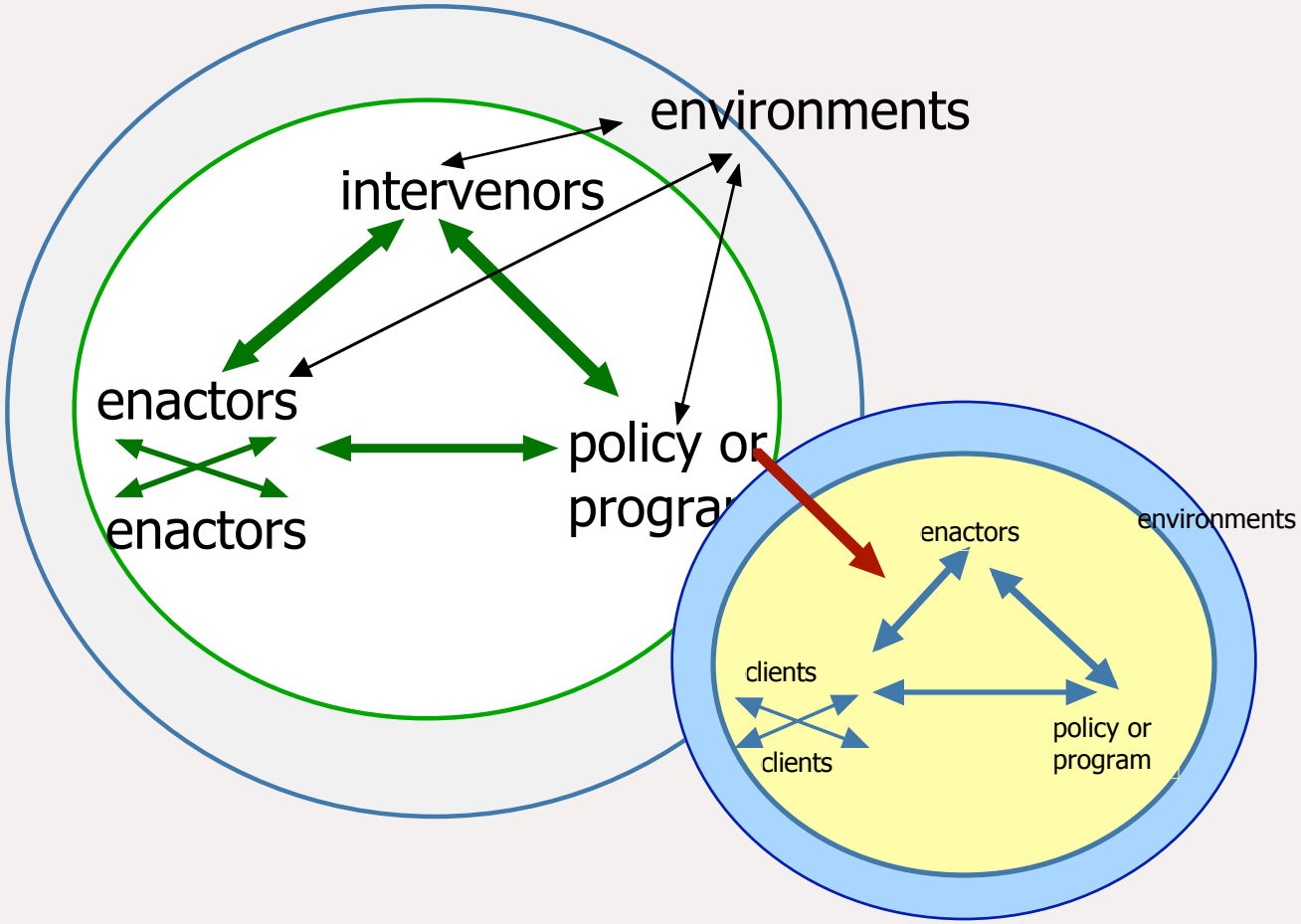
Case #1: How do "street-level bureaucrats" shape policy?

Central premise and questions:

- Teachers, police officers, legal aid lawyers, social workers have broad discretion in interpreting and implementing policy
- How do their decisions and actions affect how clients experience social programs?

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Case #1: Findings

Street-level bureaucrats mediate - "teach" policy:

- Socialize citizens to particular expectations of government and government programs
- Exercise discretion in determining eligibility for government benefits and sanctions
- Oversee clients' treatment in programs

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Case #1: Findings

"In a sense, street-level bureaucrats implicitly mediate aspects of the constitutional relationship of citizens to the state."

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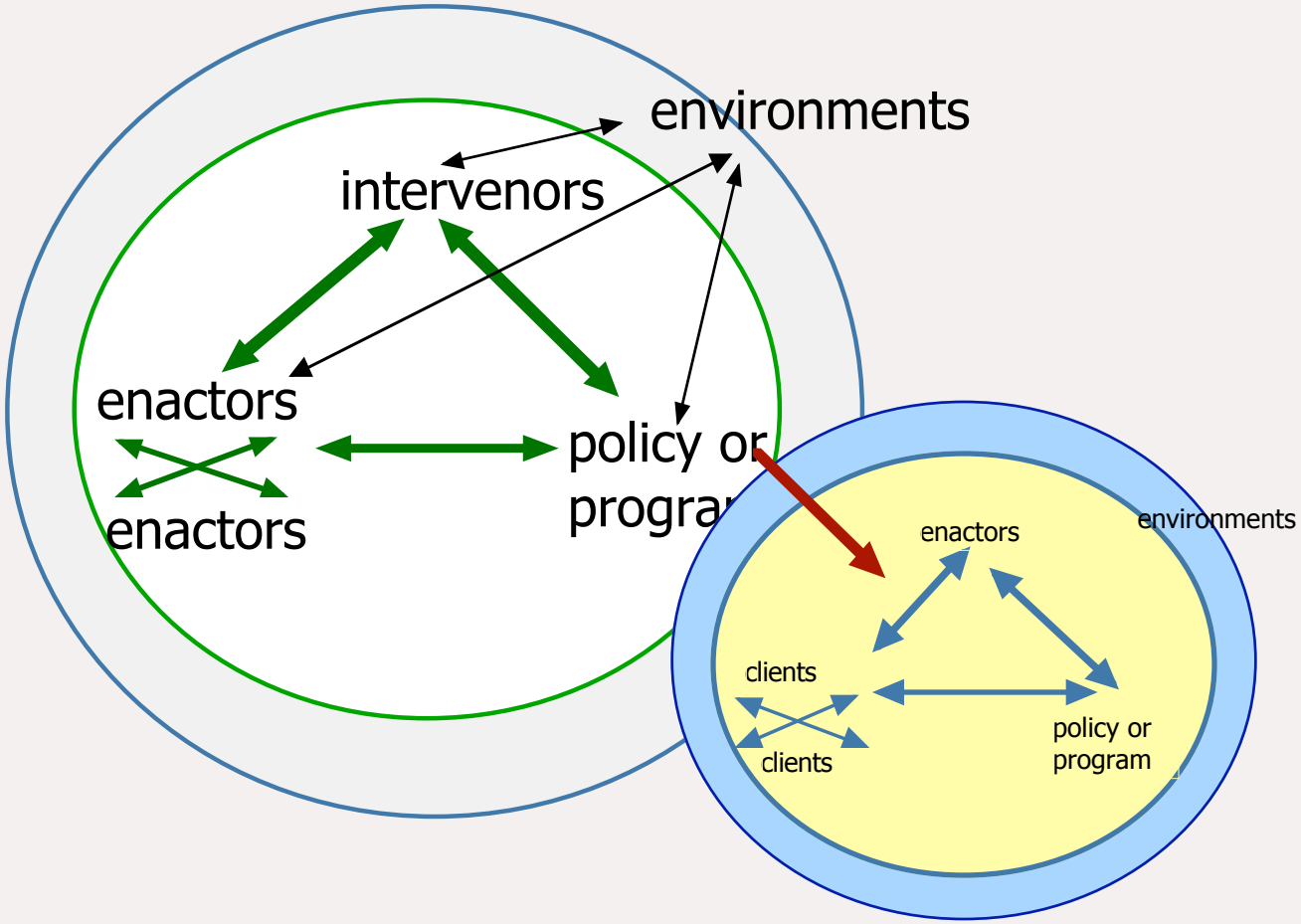
Case #2: Why do only some prison programs reduce recidivism?

Central premise and questions:

- Program design and administration interact in important ways with needs of prisoners and prison staff
- What are the differences in the ways in which prison staff *use* programs, and how do these impact success?

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Case #2: Findings

Staff in more successful programs mediate and use programs carefully:

- Encourage prisoners' participation
- Show commitment to the program
- Tailor activities to individual prisoners
- Refuse to left prisoners "drift"

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Case #2: Findings

Program implementation consists of "the interaction of a program's rules and resources with an environment that filters, interprets, and makes use of those rules and resources in different ways"

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Our argument, Part 3: Studies related to education, with a non-educational lens

- Study corners of the triangle
- Investigate factors related to education, but not interactions among those factors
- Apply disciplinary lens from another social science, e.g. psychology, sociology, anthropology, political science

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Research from a non-educational perspective: Examples

- Studies of factors that affect teacher retention that are inattentive to *why* and *how* factors such as increased salary matter
- Studies of class size and its relationship to student achievement that are inattentive to *why* and *how* class size matters

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What **is** our argument, and what is it **not**?

It is **not** an argument about —

- Methods
- Whose work is "education research" and whose is not
- Disciplinary-trained people not belonging an ed school

It **is** an argument about —

- Attending to the core problem spaces that we have unique expertise to probe
- Framing other problems from a disciplined and identifiable educational perspective
- Bringing educational expertise to bear on questions of measurement and design
- Using tools and ideas from other disciplines in educationally-tailored ways

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The cultivation of expertise in education

- Ed schools would have to be places to
  - House people with knowledge of practice
  - Prepare people with this sort of knowledge and expertise
  - Help others who are interested in education learn about its phenomena and important problems
  - Lead collaborations with other experts to tackle tough problems from an educational perspectives

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What would it take to make this argument and its promise successful?

- Focus research on problems that are central to education
- Communicate more clearly and persuasively about what is at the core, what is the "big E"
- Demonstrate the value of disciplined knowledge over intuition and common sense, across disciplinary boundaries and with the public

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