

EDU A-845  
**THE ECONOMICS OF EDUCATION IN LOW- AND MIDDLE-INCOME COUNTRIES**  
Harvard Graduate School of Education

Tuesdays and Thursdays, 9:00 to 10:15am  
Larsen 106

**Instructor:**

Alejandro J. Ganimian  
Visiting Associate Professor of Education  
Gutman 455  
[alejandro\\_ganimian@gse.harvard.edu](mailto:alejandro_ganimian@gse.harvard.edu)  
Office hours: <https://calendly.com/alejandro-ganimian>

**Teaching Fellows:**

Jostin Kitmang  
Doctoral Student in Education Policy and  
Program Evaluation  
[jkitmang@g.harvard.edu](mailto:jkitmang@g.harvard.edu)  
Office hours:  
<https://calendly.com/jostinkitmang/edu-a845>

Rony Rodrigo Maximiliano  
Rodriguez-Ramirez  
Doctoral Student in Education Policy and  
Program Evaluation  
[rrodriguezramirez@g.harvard.edu](mailto:rrodriguezramirez@g.harvard.edu)  
Office hours:  
<https://calendly.com/rrmaximiliano/edu-a845>

**1. Objectives**

This course examines how key theories and concepts from economics may be leveraged to understand the frontier challenges in education in low- and middle-income countries (LMICs) and the circumstances under which policy changes may effectively address them. It seeks to provide you with an approach to diagnose the underlying reasons for existing challenges in education in LMICs and assess the promise and potential pitfalls of proposed solutions. It is intended for master's and doctoral students seeking to apply insights from economics to policy design and analysis. It draws on theory and evidence from labor, development, and behavioral economics, focusing on pre-primary to secondary education—the levels in which enrollments have expanded most rapidly in LMICs.

**2. Prerequisites**

You are expected to have taken EVI-101 (“Evidence”) and S-040 (“Introduction to Applied Data Analysis”) or equivalent courses that introduce students to regression analysis. You

should be comfortable interpreting regression coefficients, standard errors, p-values, and confidence intervals. (You will not be required to perform statistical analysis in R or Stata).

If you have taken more advanced statistics courses, such as S-052 (“Intermediate and Advanced Statistical Methods for Applied Educational Research”) or S-290 (“Quantitative Methods for Improving Causal Inference in Educational Research”), you may understand the readings at a deeper level. Yet, this level of statistical proficiency is not necessary to participate in class and complete the course assignments.

If you are unsure as to whether you meet these prerequisites, please make an appointment with me in the first two weeks of the semester (see link on the first page).

### **3. Auditing**

Unfortunately, I cannot take on auditors this semester. Last time I taught the course, a considerable amount of time and effort went into engaging with possible auditors, meeting with them to discuss the conditions upon which I would consider allowing them into the class, and then making sure that they completed all required assignments for the course. I would like to dedicate this time and effort into the students who are enrolled in this class.

### **4. Readings**

There is no textbook for this course. I will post each week’s readings on our Canvas site.

The readings are meant to illustrate the theories/models and empirical strategies we will discuss in class (e.g., if we plan to discuss how costs affect parents’ decisions to send their children to school, I may assign you a study that reduces such costs and measures its impact on enrollment). I have selected readings that I believe are best suited for this purpose. I will only assign you one paper per class, so you can read it carefully, and I will only assign you the most relevant portions, so you can focus on what matters most. But you should expect to encounter concepts, notation, or analyses with which you may be unfamiliar. You will only be expected to make a good-faith effort to develop an initial understanding. The activities you will complete before, during, and after class are meant to help you deepen this understanding. But you may not understand everything that you read as you are reading it. In fact, an important objective of this course is to help you consume research from economics, even when there are parts of it that you may not understand.

### **5. Grading**

Each student’s grade in the course will be determined as follows:

- a) pre-class reading checks (30%);
- b) class attendance and punctuality (10%);

- c) post-class weekly practices (20%); and
- d) policy memos (40%).

Pre-class reading checks: Before each class, I will ask you to complete 10 multiple-choice questions on the readings through the course site. Their objective is twofold: to focus your attention on the most relevant parts of the readings for our class discussions and to encourage you to develop an initial understanding. All checks will be due the night before class, but you are welcome to complete them before if you prefer. You will receive immediate feedback right after submitting your responses, including the correct answers and the rationale for each one of them. We will only grade checks for timely completion, not for performance. I will also use responses to decide what to clarify or reinforce in class.

Your pre-class reading checks score will be calculated as follows. You will receive a score of 1 for completing each check the night before (by 11:59pm) each class, a score of 0.5 for completing it after they are due, and a score of 0 for not completing the check before class. Your total reading check score will be the sum of all the individual scores over the total number of classes, multiplied by 100. For example, if you completed 23 of 25 checks on time, your score will be  $(23/25)*100$  or 92. The maximum score is 100.

Class attendance and punctuality: I expect you to attend all classes, arriving before the start time so that we can start on time. The purpose of each class will be to introduce you to a model or theory from economics to make sense of the evidence you have read before class. You will be allowed up to 2 absences during the semester, regardless of the reason. You do not need to disclose the reason or provide documentation. I only ask that you let your teaching fellow know before or after your absence so that we know you are okay. Every absence and late arrivals above your 2 allowed absences will be deducted from your attendance and punctuality score for the course. Even if you miss a class, I still expect you to complete the reading check for that class.

Your attendance and punctuality score will be calculated as follows. You will receive a score of 1 for attending each class before the official start time, a score of 0.5 for arriving after the official start time, and a score of 0 for any absence beyond your 2 allowed absences. Your total attendance and punctuality score will be the sum of all the individual scores over the total number of classes, multiplied by 100. For example, if you attended 24 of 26 classes, but you are allowed 2 absences, your score will be  $(24/24)*100$  or 100. The maximum score is 100.

Post-class weekly practices: At the end of each week of class (on Thursdays), I will ask you to complete 1 open-ended question asking you to practice applying the models/theories, analytical strategies, or concepts from the readings and class. Their objective is to check your understanding of each week's material before moving on to the next and to address any misconceptions that may emerge. All practices will be due on the night of each week's

last class, but you are welcome to complete them before if you prefer. We will grade responses complete or ask you to “revise and resubmit” it the following day. I will also use responses to decide what to clarify or reinforce in class.

Your post-class weekly practices score will be calculated as follows. You will receive a score of 1 for completing each practice by 11:59pm (either on first attempt or after a revise and resubmit), a score of 0.5 for completing it after they are due, and a score of 0 for not completing it before the following class. Your total weekly practices score will be the sum of all the individual scores over the total number of weeks, multiplied by 100. For example, if you completed 12 of 14 practices on time, your score will be  $(12/14)*100$  or 86. The maximum score is 100.

Policy memos: I will ask you to write four policy memos throughout the semester; one at the end of each part of the course. The purpose of these memos will be to encourage you to leverage the theory from class and the evidence from the readings to different contexts. In the first memo, you will be asked to leverage information on students’ academic and social-emotional skills, and the private and social returns to education, to make the case for improving learning outcomes. In the second one, you will choose among alternative strategies to increase student retention in school. In the third one, you will propose a strategy to improve learning outcomes. And in the fourth and final one, you will outline how you would evaluate and monitor the implementation of a proposed education policy. You may discuss your memos with your peers and even seek their feedback, but you must write them individually. (I will provide detailed instructions for each memo).

Your policy memos score will be calculated as follows. You will receive a score of 0 to 100 on each memo that you submit by the established deadline, and a score of 0 to 90 for submitting it after the deadline. Your total memo score will be the average of the 3 highest memo scores (i.e., your lowest memo score will not count). This provision is meant to account for the fact that you may find some of the memos more difficult than others, and to prevent one low memo score from playing a large role in your overall grade. It is also meant to allow you to “drop” (i.e., choose not to complete) one memo during the semester (e.g., if you cannot complete the memo on time due to unforeseen circumstances). For example, if you obtained scores of 90, 70, 80, and 100, your score will be  $(90+80+100)/3$  or 90. The maximum score is 100.

Overall course grade: Your overall numeric score will be calculated as the weighted average of your attendance and punctuality, pre-class reading checks, post-class weekly practices, and policy memos. The weights correspond to the percentages allotted to each score above. For example, if you obtained an 92 for reading checks, a 100 for attendance and punctuality, an 86 for post-class weekly practices, and a 90 for policy memos, your overall numeric score will be  $(92*0.3)+(100*0.1)+(86*0.2)+(90*0.4)$  or 91.

Your overall letter grades will be determined based on the distribution of numeric scores for all students in the course. This is meant to account for the fact that some cohorts may find the material more/less difficult than others. I will assign letter grades as follows:

If you have a numeric score that is...	...you will earn a/an...
...0.5 standard deviation (SD) above the mean...	...A
...above the mean by less than 0.5 SD...	...A-
...below the mean by less than 0.5 SD...	...B+
...between 0.5 and 1 SD below the mean...	...B
...between 1 and 1.5 SD below the mean...	...B- or lower

I will provide all students with a mid-term letter that informs you of your relative standing in the course, and provide you with tips on how to improve, halfway through the semester. I will be available to discuss the letter during office hours.

To prevent this grading scheme from encouraging students to compete against each other, and to account for the fact that students have varying degrees of exposure to the material in the course, I plan to adjust your final letter grade upwards if I notice that you have worked hard to improve and/or if you have excelled in one or more aspects of the course. (I will not adjust grades downwards). Therefore, the final distribution of scores will not be exclusively determined by the cutoff scores above.

Feedback and exemplars: After each post-class weekly practice and policy memo is graded, we will provide you with comments. I strongly encourage you to read this feedback carefully and to come see us during office hours if you have questions.

We will also post assignments that have received top grades as exemplars. (We will allow you to opt out of having your memos posted, or post them anonymized, if you prefer). I highly recommend that you read through these exemplars for inspiration on how to improve—especially, after the first assignments, to check our expectations are aligned.

## **6. Classroom policies and expectations**

Cell phones: I ask that you do not use your cell phone for either making/receiving calls or sending/receiving text messages. If extraordinary personal or professional circumstances require that you take a call during class time, I ask that you let me know in advance if possible and that you sit next to one of the doors to minimize disruption to class dynamics.

Laptops and tablets: I prefer that students take notes without laptops or tablets. I understand that using such devices is increasingly the norm, but I worry about their potential to distract you and your peers. If you need to request an accommodation to use a laptop or tablet, see the “Accommodations” section below.

Late assignments: I ask that you budget your time wisely to avoid late assignments. Late pre-class reading checks, post-class weekly practices, and policy memos will automatically incur a grade penalty. I understand that, on some occasions, you may have a good reason for missing a deadline. This is why I have a built-in mechanism to deal with such circumstances (I will drop your lowest memo score). I encourage you to use it judiciously (e.g., reserve it for only the circumstances that truly warrant it). I am reluctant to revise late-submission penalties because, in my experience, students from traditionally disadvantaged groups are less likely to seek such revisions, so I worry that granting them to only the students who reach out to me will lead to inequitable grading practices.

Surveys: I will ask you to complete two surveys during the semester: a “background survey” (at the beginning of the semester), which will allow me to get to know you better, and a “feedback survey” (after some classes), which will allow you to provide feedback on what is working well and what could be improved in the course. I take feedback surveys very seriously and I will make a good-faith effort to address the concerns raised by students.

Feedback surveys are optional and there are no repercussions if you choose not to answer them. None of the surveys will be considered in your grades. I will delete all survey responses at the end of the course, and I will not use them for other purposes.

## **7. Writing**

The post-class weekly practices and policy memos will involve a fair amount of writing. You should not take this writing lightly; an important part of succeeding in this course, and of applying what you learn in your next professional stage, is learning to convey arguments clearly and cogently.

I expect you to review policy memos for typos and grammatical errors before submitting them. You should also take full advantage of the various on-campus resources to help you improve their writing, including the HGSE Writing Center and Communications Lab (<https://communicate.gse.harvard.edu/writingcenter>).

## **8. Harvard and HGSE policies**

I expect you to have read and agreed to the policies outlined in HGSE’s student handbook ([https://www.gse.harvard.edu/sites/default/files/2024-05/HGSE\\_Student\\_Handbook%2024-25.pdf](https://www.gse.harvard.edu/sites/default/files/2024-05/HGSE_Student_Handbook%2024-25.pdf)) and to Harvard’s policy on academic integrity (<https://learn.library.harvard.edu/plagiarism>). Please, let me know if you have questions on how these policies may apply to our course in advance of your assignments due dates.

## **9. Accommodations**

If you need an accommodation due to a chronic, psychological, visual, mobility and/or learning disability, or if you are deaf or hard of hearing, please follow the procedure stipulated for accommodations and accessibility (<https://osa.gse.harvard.edu/student-support-services-1>). Let me know if you have questions on how your request for accommodations may apply to our course in advance of your assignment due dates. Please share your accommodation letter once you receive it (those letters do not automatically get forwarded to me).

## 10. Calendar

Below, I include a draft calendar for the course. Note, however, that I typically adjust this draft based on how students respond to the material. I ask that you check the course site before each class to make sure you are working with the most up-to-date version.

Next to each citation below, I specify the pages I need you to read carefully. If I do not specify a page range, I am asking you to complete the entire reading. You can skim the pages I did not assign, but you are not expected to do so.

### Class 1. **Welcome to the class** (Tue, Jan 27)

- **Big idea:** Economics is a framework to decide how to allocate resources, evaluating tradeoffs among choices in terms of costs and benefits
- **Goals:**
  - Meet the teaching team
  - Understand economics as a framework for allocation of scarce resources
  - Learn about the course content, assignments, and policies
- **Reading:** Course syllabus and course website materials
- **Assignments:**
  - Background survey (due Tue, Jan 27 at 11:59pm ET)

### Class 2. **How much are children in low- and middle-income countries learning at school?** (Thu, Jan 29)

- **Big idea:** Students in low- and middle-income countries perform poorly and vary widely in international assessments of academic skills.
- **Goals:**
  - Learn how academic skills are measured on international assessments
  - Understand how students in low- and middle-income countries perform on these assessments
  - Practice interpreting descriptive evidence
- **Reading:** OECD. (2023). Chapter 2: How did countries perform in PISA? PISA 2022 results (volume I): The state of learning and equity in education. Paris, France: Organization for Economic Cooperation and Development (OECD).

- Keywords: mean, standard deviation, percentile, confidence interval, statistical significance, effect size
- Assignments:
  - Reading check (due Wed, Jan 28 at 11:59pm ET)
  - Weekly practice (due Thu, Jan 29 at 11:59pm ET)

**Class 3. What should children learn at school beyond academics?** (Tue, Feb 3)

- Big idea: There is a growing consensus on the importance of social-emotional skills, but their measurement is less established.
- Goals:
  - Learn how social-emotional skills are measured on international surveys
  - Understand how students in low- and middle-income countries perform on these assessments
  - Practice interpreting descriptive evidence
- Reading: OECD. (2024). Chapter 2: Social and emotional skills across socio-demographic groups. Social and emotional skills for better lives: Findings from the OECD survey on social and emotional skills 2023. Paris, France: Organization for Economic Cooperation and Development (OECD).
- Keywords: mean, standard deviation, percentile, confidence interval, statistical significance, effect size
- Assignments:
  - Reading check (due Mon, Feb 2 at 11:59pm ET)

**Class 4. If children are in school, why aren't they learning?** (Thu, Feb 5)

- Big idea: Low- and middle-income countries face some common challenges, but their relevance varies both between and within countries.
- Goals:
  - Become familiar with candidate explanations for low learning outcomes in low- and middle-income countries
  - Understand the limitations of such claims, both in terms of causation and generalizability
  - Practice interpreting correlational evidence
- Reading: World Bank. (2017). Overview: Learning to realize education's promise. World development report 2018: Learning to realize education's promise. Washington, DC: The World Bank.
- Keywords: percentile, median, inter-quartile range, confidence interval, distribution, histogram, correlation, causation
- Assignments:
  - Reading check (due Wed, Feb 4 at 11:59pm ET)
  - Weekly practice (due Thu, Feb 5 at 11:59pm ET)

**Class 5. How does education benefit individuals and families?** (Tue, Feb 10)

- **Big idea:** Education is believed to improve skills; the positive relationship between schooling and earnings is consistent with this view.
- **Goals:**
  - Build intuition for human capital theory and its main critiques
  - Learn how returns to education are estimated
  - Practice interpreting returns to education
- **Reading:** Psacharopoulos, G. & Patrinos, H. A. (2018). Returns to investment in education: A decennial review of the global literature. *Education Economics*. 26(5), 445-458.
- **Keywords:** costs and benefits, human capital and signaling theory, return to education/schooling, private and social returns, discount rate, present value, Mincerian earnings function, full discounting method
- **Assignments:**
  - Reading check (due Mon, Feb 9 at 11:59pm ET)

#### Class 6. **How does education benefit society as a whole?** (Thu, Feb 12)

- **Big idea:** Education may have broader societal benefits; the relationship between learning and growth points in that direction.
- **Goals:**
  - Extend the human capital model to include societal outcomes
  - Understand how learning and schooling are related to economic growth
  - Practice interpreting correlational evidence and recognize its limitations
- **Reading:** Hanushek, E. A. & Woessmann, L. (2007). Education quality and economic growth. Washington, DC: The World Bank. [Read pp. 1-12 until “Where does the developing world stand today?”]
- **Keywords:** externalities, spillovers, social returns, cross-country regressions, omitted variables, reverse causality
- **Assignments:**
  - Reading check (due Wed, Feb 11 at 11:59pm ET)
  - Weekly practice (due Thu, Feb 12 at 11:59pm ET)
  - Memo 1 (due Thu, Feb 19 at 11:59pm ET)

#### Class 7. **How do schooling costs affect families’ schooling decisions?** (Tue, Feb 17)

- **Big idea:** Schooling costs discourage parents from keeping children in school; experiments show how enrollment changes when costs change.
- **Goals:**
  - Understand how schooling costs affect families’ decisions to keep children in school
  - Distinguish between different types of schooling costs faced by families
  - Practice interpreting intent-to-treat (ITT) effect in randomized experiments with one treatment arm

- **Reading:** Kremer, M., Miguel, E., & Thornton, R. (2009). Incentives to learn. *The Review of Economics and Statistics*. 91, 437-456.
- **Keywords:** consumer demand theory, budget constraint, direct costs, costs of complements, demand curve, substitution effect, own-price elasticity, randomized experiments/randomized controlled trials, counterfactual, intent-to-treat
- **Assignments:**
  - Reading check (due Mon, Feb 16 at 11:59pm ET)

**Class 8. How do changes in household income affect schooling decisions?** (Thu, Feb 19)

- **Big idea:** When families have more resources, they can afford to keep their children in school; experiments show how schooling changes when income changes.
- **Goals:**
  - Understand how household income shapes families' schooling decisions
  - Distinguish changes in schooling costs from changes in income
  - Practice interpreting the results of randomized experiments with multiple treatment arms
- **Reading:** Baird, S., McIntosh, C., & Ozler, B. (2011). Cash or condition? Evidence from a cash transfer experiment. *The Quarterly Journal of Economics*. 126, 1709-1753.
- **Keywords:** consumer demand theory, income effect, income elasticity, randomized experiments/randomized controlled trials
- **Assignments:**
  - Reading check (due Wed, Feb 18 at 11:59pm ET)
  - Weekly practice (due Thu, Feb 19 at 11:59pm ET)

**Class 9. How do families decide how children spend their time?** (Tue, Feb 24)

- **Big idea:** When parents decide whether to enroll their children in school, they also consider the cost of not employing their child.
- **Goals:**
  - Understand how parents decide on how to allocate their children's time
  - Build intuition about opportunity costs using child labor as an example
  - Practice interpreting local average treatment effects (LATE) in randomized experiments
- **Reading:** Edmonds, E. V. & Schady, N. (2012). Poverty alleviation and child labor. *American Economic Journal: Economic Policy*. 4(4), 100-124.
- **Keywords:** household production model, time allocation, opportunity costs, crowd-out, randomized experiments/randomized controlled trials, local average treatment effect
- **Assignments:**
  - Reading check (due Mon, Feb 23 at 11:59pm ET)

**Class 10. Why don't families invest in education, even when they intend to do so?** (Thu, Feb 26)

- **Big idea:** Even when parents want to invest in their children's education, they struggle to set money aside, resulting in lower-than-expected schooling.
- **Goals:**
  - Understand how competing priorities may divert funds intended for education in low-income families
  - Distinguish intertemporal financial constraints from costs of schooling
  - Practice interpreting results of randomized experiments
- **Reading:** Karlan, D. & Linden, L. L. (2025). Loose knots: Strong versus weak commitments to save for education in Uganda. *American Economic Journal: Applied Economics*. 174, 103444.
- **Keywords:** intertemporal choice, commitment device, savings constraints, randomized experiments/randomized controlled trials
- **Assignments:**
  - Reading check (due Wed, Feb 25 at 11:59pm ET)
  - Weekly practice (due Thu, Feb 26 at 11:59pm ET)

**Class 11. Why might families underestimate the benefits of education?** (Tue, Mar 3)

- **Big idea:** Parents may underestimate the returns to schooling, leading them to pull their children out of school too soon.
- **Goals:**
  - Understand how underestimations of the returns to schooling may lead families to underinvest in education
  - Build intuition for when information about returns will increase schooling
  - Practice interpreting local average treatment effects (LATE) in randomized experiments
- **Reading:** Jensen, R. T. (2010). The (perceived) returns to education and the demand for schooling. *The Quarterly Journal of Economics*. 125, 515-548.
- **Keywords:** information frictions, updating, randomized experiments/randomized controlled trials, local average treatment effect
- **Assignments:**
  - Reading check (due Mon, Mar 2 at 11:59pm ET)

**Class 12. Why might parents misallocate resources among their children?** (Thu, Mar 5)

- **Big idea:** Parents may underestimate their children's potential to learn, leading them to misallocate resources among their children.
- **Goals:**
  - Understand how underestimations of children's potential to learn may lead parents to underinvest in education
  - Build intuition for what information about children's potential will optimize resource allocation among children

- Practice interpreting the results of randomized experiments with multiple treatment arms
- **Reading:** Dizon-Ross, R. (2019). Parents' beliefs about their children's academic ability: Implications for educational investments. *American Economic Review*. 109(8), 2728–2765.
- **Keywords:** information frictions, updating, randomized experiments/randomized controlled trials
- **Assignments:**
  - Reading check (due Wed, Mar 4 at 11:59pm ET)
  - Weekly practice (due Thu, Mar 5 at 11:59pm ET)
  - Memo 2 (due Thu, Mar 12 at 11:59pm ET)

**Class 13. How do early differences in parenting practices have long-term consequences for children?** (Tue, Mar 10)

- **Big idea:** Skills accumulate over time, with earlier skills increasing the payoff of later skills, so early advantages or disadvantages can compound.
- **Goals:**
  - Understand how early skills increase the productivity of later investments
  - Apply this framework to appreciate the consequences of early advantage and disadvantage
  - Practice interpreting the long-run impacts of randomized experiments
- **Reading:** Attanasio, O. P., Fernández, C., Fitzsimons, E. O. A., Grantham-McGregor, S. M., Meghir, C., & Rubio-Codina, M. (2014). Using the infrastructure of a conditional cash transfer program to deliver a scalable integrated early child development program in Colombia: Cluster randomized controlled trial. *BMJ*. 349, g5785.
- **Keywords:** dynamic skill formation, dynamic complementarities, randomized experiments/randomized controlled trials
- **Assignments:**
  - Reading check (due Mon, Mar 9 at 11:59pm ET)

**Class 14. How might school instruction exacerbate differences in student achievement?** (Thu, Mar 12)

- **Big idea:** Teaching is crucial to developing children's skills; if teachers teach to the top of the ability distribution, low achievers may not benefit from instruction.
- **Goals:**
  - Understand that education is the product of children's prior skills and teachers' instructional practices
  - Apply this framework to appreciate the implications of mismatch between the level of students' preparation and that at which instruction is provided
  - Discussion of randomized experiments designed to test theoretical predictions

- **Reading:** Duflo, E., Dupas, P., & Kremer, M. (2011). Peer effects, teacher incentives, and the impact of tracking: Evidence from a randomized evaluation in Kenya. *American Economic Review*. 101(5), 1739-1774.
- **Keywords:** education production, heterogeneous effects, randomized experiments/randomized controlled trials
- **Assignments:**
  - Reading check (due Wed, Mar 11 at 11:59pm ET)
  - Weekly practice (due Thu, Mar 12 at 11:59pm ET)

*[Spring recess: Mar 16-20]*

**Class 15. Does increasing school resources improve learning?** (Tue, Mar 24)

- **Big idea:** School resources improve learning only when they address a constraint that is limiting students' ability to learn; otherwise, they have little effect.
- **Goals:**
  - Understand that the extent to which school resources improve learning depends partly on the pre-existing level of such resources
  - Apply this logic to understand how additional teachers may impact learning (by reducing class sizes)
  - Practice interpreting the results of regression discontinuities
- **Reading:** Angrist, J. D. & Lavy, V. (1999). Using Maimonides' rule to estimate the effect of class size on scholastic achievement. *The Quarterly Journal of Economics*. 114(2), 533-575.
- **Keywords:** inputs, outputs, marginal benefit, marginal cost, diminishing returns, regression discontinuity
- **Assignments:**
  - Reading check (due Mon, Mar 23 at 11:59pm ET)

**Class 16. Does increasing school funds improve learning?** (Thu, Mar 26)

- **Big idea:** Extra school funding improves learning if it changes how students are taught; when funds replace other inputs, learning may not increase.
- **Goals:**
  - Understand that funding can change how resources are used, not just how much is spent
  - Apply this logic to understand how increases in funding may affect how schools and families allocate pre-existing funds
  - Practice interpreting null results of randomized experiments
- **Reading:** Das, J., Dercon, S., Habyarimana, J., Krishnan, P., Muralidharan, K., & Sundararaman, V. (2013). School inputs, household substitution, and test scores. *American Economic Journal: Applied Economics*. 5, 29-57.
- **Keywords:** inputs, substitution, crowd-out, value-added, randomized experiments/randomized controlled trials

- Assignments:
  - Reading check (due Wed, Mar 25 at 11:59pm ET)
  - Weekly practice (due Thu, Mar 26 at 11:59pm ET)

**Class 17. Does increasing teacher monitoring improve student learning?** (Tue, Mar 31)

- Big idea: School systems want to increase learning, but they must rely on teachers to deliver appropriate instruction, and doing so is costly for them; monitoring can align system and teacher incentives.
- Goals:
  - Understand that the school system and teachers may have different priorities
  - Apply this logic to understand why teacher effort may be below what system leaders may want
  - Practice interpreting local average treatment effects (LATE) in randomized experiments
- Reading: Duflo, E., Hanna, R., & Ryan, S. P. (2012). Incentives work: Getting teachers to come to school. *The American Economic Review*. 102, 1241-1278.
- Keywords: incentives, effort, principal-agent, randomized experiments/randomized controlled trials, local average treatment effect (LATE)
- Assignments:
  - Reading check (due Mon, Mar 30 at 11:59pm ET)

**Class 18. Does paying teachers based on their students' test scores improve learning?** (Thu, Apr 2)

- Big idea: If school systems and teachers have different priorities, rewarding teachers for the system's priorities can align behavior—but may also shift attention away from other tasks.
- Goals:
  - Understand how linking pay to outcomes can change teachers' incentives and behavior
  - Apply this logic to understand why performance pay may improve some outcomes while distorting others
  - Practice interpreting results of randomized experiments that involve trade-offs across multiple outcomes
- Reading: Muralidharan, K. & Sundararaman, V. (2011). Teacher performance pay: Experimental evidence from India. *Journal of Political Economy*. 119, 39-77.
- Assignments:
  - Reading check (due Wed, Apr 1 at 11:59pm ET)
  - Weekly practice (due Thu, Apr 2 at 11:59pm ET)
  - Memo 3 (due Thu, Apr 14 at 11:59pm ET)

Class 19. **Does informing families of their schools' test scores improve learning?** (Tue, Apr 7)

- **Big idea:** When families lack information about school quality, schools face weak pressure to improve; providing information may raise learning by changing how schools compete for students.
- **Goals:**
  - Understand how information given to families may change schools' pricing, enrollment, and instructional effort
  - Distinguish learning gains driven by families' choices from those driven by schools' responses
  - Practice interpreting results of randomized experiments when interventions affect outcomes through market reactions
- **Reading:** Andrabi, T., Das, J., & Khwaja, A. I. (2017). Report cards: The impact of providing school and child test scores on educational markets. *American Economic Review*. 107(6), 1535-1563.
- **Keywords:** information frictions, market discipline, provider response, randomized experiments/randomized controlled trials
- **Assignments:**
  - Reading check (due Mon, Apr 6 at 11:59pm ET)

Class 20. **Does encouraging schools to compete for students improve learning?** (Thu, Apr 9)

- **Big idea:** Allowing families to choose schools can change how schools behave, but the effects on learning depend on how schools respond to competition.
- **Goals:**
  - Examine how increased competition affects school quality, enrollment, and pricing
  - Distinguish improvements driven by better matching from those driven by changes in schools' behavior
  - Practice interpreting results of randomized experiments with two-stage randomization
- **Reading:** Muralidharan, K. & Sundararaman, V. (2015). The aggregate effect of school choice: Evidence from a two-stage experiment in India. *The Quarterly Journal of Economics*. 130(3), 1011-1066.
- **Keywords:** competition, school choice, partial and general equilibrium effects, randomized experiments/randomized controlled trials, two-stage randomization
- **Assignments:**
  - Reading check (due Wed, Apr 8 at 11:59pm ET)
  - Weekly practice (due Thu, Apr 9 at 11:59pm ET)

Class 21. **Does traditional teacher professional development improve learning?** (Tue, Apr 14)

- **Big idea:** Improving teachers' skills through training does not automatically improve learning, especially when new knowledge fades or is difficult to apply.
- **Goals:**
  - Examine why teacher training may change knowledge more than practice
  - Distinguish short-lived gains in teacher knowledge from sustained changes in instruction and learning
  - Practice interpreting reduced form results randomized experiments
- **Reading:** Loyalka, P., Popova, A., Li, G., & Shi, Z. (2019). Does teacher training actually work? Evidence from a large-scale randomized evaluation of a national teacher training program. *American Economic Journal: Applied Economics*. 11(3), 128–154.
- **Keywords:** information transmission, decay, randomized experiments/randomized controlled trials, reduced form
- **Assignments:**
  - Reading check (due Mon, Apr 13 at 11:59pm ET)

**Class 22. Does instructional coaching improve teaching and learning?** (Thu, Apr 16)

- **Big idea:** Teachers are more likely to change how they teach when they receive ongoing, specific feedback tied to their daily practice.
- **Goals:**
  - Understand why some teaching skills are best developed through repeated practice and feedback rather than one-time instruction
  - Apply this logic to compare in-classroom coaching and centralized training
  - Practice interpreting evidence that contrasts different ways
- **Reading:** Cilliers, J., Fleisch, B., Prinsloo, C., & Taylor, S. (2020). How to improve teaching practice? Experimental comparison of centralized training and in-classroom coaching. *Journal of Human Resources*. 55(3), 926-962.
- **Keywords:** task-specific skills, learning-by-doing, randomized experiments/randomized controlled trials
- **Assignments:**
  - Reading check (due Wed, Apr 15 at 11:59pm ET)
  - Weekly practice (due Thu, Apr 16 at 11:59pm ET)

**Class 23. Does rewarding students for effort improve learning?** (Tue, Apr 21)

- **Big idea:** Students may exert less effort than would be useful for them to learn because they bear its cost now, but reap its benefits later; rewarding effort can change that tradeoff.
- **Goals:**
  - Understand why students may underinvest effort when learning requires immediate costs and yields delayed benefits
  - Examine how short-term incentives change students' effort in the short run
  - Practice distinguishing increased effort from lasting gains in learning

- **Reading:** Berry, J. (2015). Child control in education decisions: An evaluation of targeted incentives to learn in India. *The Journal of Human Resources*. 50(4), 1051-1080.
- **Keywords:** discounting, present bias, randomized experiments/randomized controlled trials
- **Assignments:**
  - Reading check (due Mon, Apr 20 at 11:59pm ET)

**Class 24. Does providing low-achieving students with remedial education improve learning?** (Thu, Apr 23)

- **Big idea:** When students start far behind, regular classroom instruction may be too advanced for them to benefit; targeted remediation can improve learning by meeting students at their current level.
- **Goals:**
  - Recognize why students with very low initial skills may not benefit from instruction at grade level
  - Assess how remediation can narrow the gap between students' preparation and the level at which instruction is provided
  - Practice interpreting subgroup-specific treatment effects in randomized experiments
- **Reading:** Banerjee, A. V., Cole, S., Duflo, E., & Linden, L. L. (2007). Remedying education: Evidence from two randomized experiments in India. *The Quarterly Journal of Economics*. 122, 1235-1264.
- **Keywords:** education production, heterogeneous effects, randomized experiments/randomized controlled trials
- **Assignments:**
  - Reading check (due Wed, Apr 22 at 11:59pm ET)
  - Weekly practice (due Thu, Apr 23 at 11:59pm ET)
  - Memo 4 (due Thu, Apr 30 at 11:59pm ET)

**Class 25. Does differentiating instruction by learning level improve learning for all students?** (Tue, Apr 28)

- **Big idea:** When students differ widely in skill, teaching at one level can limit who benefits; differentiation can broaden learning gains
- **Goals:**
  - Identify why uniform instruction can advantage some students while leaving others behind
  - Assess how differentiating instruction by learning level affects outcomes across the skill distribution
  - Practice comparing uniform and targeted instructional approaches in experimental evidence

- Reading: Banerjee, A. V., Banerji, R., Berry, J., Duflo, E., Kannan, H., Mukerji, S., Shotland, M., & Walton, M. (2017). From proof to concept to scalable policies: Challenges and solutions, with an application *Journal of Economic Perspectives*. 31(4), 73-102.
- Keywords: matching, heterogeneous effects, randomized experiments/randomized controlled trials
- Assignments:
  - Reading check (due Mon, Apr 27 at 11:59pm ET)

**Class 26. Can better school management improve learning at scale?** (Thu, Apr 30)

- Big idea: School management can improve learning by aligning what teachers focus on with what school leaders monitor and reinforce.
- Goals:
  - Identify how school leaders' monitoring and follow-up shape teachers' classroom behavior
  - Assess how management practices influence whether teaching improvements translate into learning
  - Practice interpreting evidence from multi-arm randomized experiments
- Reading: Beg, S. A., Fitzpatrick, A. E., & Lucas, A. M. (2024). *Managing to learn*. NBER Working Paper No. 31757. Cambridge, MA: National Bureau of Economic Research (NBER).
- Keywords: principal-agent problem, incentives, randomized experiments/randomized controlled trials
- Assignments:
  - Reading check (due Wed, Apr 29 at 11:59pm ET)
  - Weekly practice (due Thu, Apr 30 at 11:59pm ET)