Results of a Multi-Site Evaluation of Team-Based Learning

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Abstract

This paper describes preliminary results from a fall 2019 multi-site evaluation of the effectiveness of the team-based learning (TBL) pedagogy in introductory economics courses. The evaluation is designed as a multi-site randomized controlled trial in which all sites incorporate a common set of TBL modules into their course syllabi. The use of random assignment to either the treatment or control group for each module, combined with a fixed effects econometric model, enables measurement of the treatment effect on student learning while controlling for both student demographic and behavioral (e.g. attendance, study effort) characteristics using student fixed effects.

1. Introduction

Team-Based Learning (TBL) is a pedagogical strategy in which a course is restructured to take advantage of the potential power of intentionally structured learning groups (Michaelson, Knight, and Fink, 2002). The typical elements of a course that implements the TBL pedagogy are:

(1) Permanent, intentionally structured teams of 5-7 students
(2) The Readiness Assurance Process (RAP) – typically consisting of pre-module preparation outside of class, an individual quiz, a group quiz, and a challenge process
(3) Application exercises
(4) Individual and team accountability
(5) Peer assessment

Maier, Simkins, and Ruder (2020) elaborate on the design of a typical TBL-based course, with examples of what such a course in economics might look like.

Although TBL has been much studied, Haidet, Kubitz, and McCormack (2014, p. 303), in their analysis of 40 studies of team-based learning note that, "…the TBL literature is at an important turning point, where more rigorous testing and study of additional questions related to the literature are needed, as well as more accurate reporting of TBL implementation." Table 1 reports of summary of the key features of studies that compare outcomes from TBL-based courses to courses employing more traditional pedagogies. Most of these studies employ a design in which outcomes from a single offering of a course using the team-based learning pedagogy are compared to a course employing an alternative pedagogy, such a lecture. Very few studies control for observable characteristics of the students that could affect outcomes in either the treatment (TBL) or control offerings of the course, and all assume that observations from individual students are independent, even if students clustered into sections are subject to the same random shocks.

Wozny, Balser, and Ives (2018, pp. 115-116) argue that there are two problems with this approach to studying pedagogical outcomes. First, quasi-experimental studies involving one treatment and one control section may confound teaching method with other factors outside the researcher's control. Although studies that randomly assign multiple sections to either the treatment or control version of a pedagogy can successfully address this problem, correct statistical inference requires that standard errors be adjusted for the fact that observations from students assigned to the same section are unlikely to be statistically independent, due to the fact that all students in a section are subject to the same shocks, such as disruption of a class due to a fire drill or some other random event. Although

it is possible to design clustered experimental designs to evaluate pedagogical outcomes, the number of clusters required to generate adequate statistical power is often quite large, making these studies infeasible in many situations.

Wozny, Balser, and Ives (2018) propose that a solution to these problems is to randomize assignment to treatment and control at the individual lesson level, rather than at the section level. By assigning treatment at the section and lesson level, each student is exposed to both the treatment and the control versions of the course and serves as his or her own control. The effects of individual student characteristics, instructor characteristics, and other possible confounding variables can be controlled for via an appropriate set of fixed effects.

When considering the difference between team-based learning and other pedagogies, it is clear why many researchers have chosen the quasi-experimental one-treatment-section vs. one-control-section approach to evaluating outcomes. TBL is characterized as a pedagogical *strategy*, meaning that implementing it requires re-design of the entire structure of a course. Contrast this with other pedagogical techniques, such as other types of collaborative learning, which are more tactical in nature. These techniques can be sprinkled here and there into an existing course format without completely redesigning the entire structure of a course.

Although the only way to evaluate team-based learning as a whole would be with a large-scale randomized clustered design, elements of the TBL pedagogy can be studied using the approach of Wozny, Balser, and Ives (2018). There are at least two advantages to this approach. First, although the proponents of team-based learning argue that the entire pedagogy must be employed as a strategy in order to reap its benefits, it is useful to know the marginal benefits of each element of the pedagogy, and whether each element of the pedagogy is truly necessary for generating improved outcomes. Second, team-based learning as a pedagogy has very high start-up costs. Thus, it also is useful to know whether certain elements of the TBL approach can generate benefits when implemented in a tactical manner without fundamentally altering the basic structure of a course. For this study, we examine the first question, by asking what is the marginal value of 4-S application exercises (defined below) in an existing team-based learning course. This paper reports the results of a multi-site, randomized controlled trial to examine the effect of incorporating application exercises that employ the 4-S structure advocated by Michaelsen, Knight, and Fink (2002) versus more traditional application exercises, such as those that might be found at the end of a chapter in a typical principles of microeconomics textbook. As such, this study can be seen as an examination of the marginal benefit of using 4-S application exercises in an existing team-based learning course. Because 4-S application

exercises can be challenging and time-consuming to create, knowing the value-added of these tools can indicate whether incorporating this aspect of the pedagogy into a team-based learning course passes the benefit-cost test. To examine this question, we randomly assign courses at seven different sites for four different modules of a TBL-based course to either 4-S application exercises (the treatment) or more standard textbook application exercises (the control). Because assignment to treatment and control occurs at the site and module level, each student in the study serves as his or her own control. Incorporating individual student and module fixed effects allows us to net out potential confounds from unobservable student, instructor, and site variables. The remainder of this paper is organized as follows: The next section presents the design of the randomized controlled trial. Section 3 reports preliminary results using data from four of seven study sites. Discussion and concluding remarks are in Section 4.

2. Study Design

This evaluation is part of a larger project designed to facilitate the use of team-based learning in economics. As argued by Maier, Simkins and Ruder (2020), incorporating TBL is one way that economics instructors can integrate the lessons from research findings about how students learn into their courses. Ultimately, moving away from passive lecture-based pedagogies to more active-learning approaches may have benefits in terms of attracting more students from a wider range of backgrounds to the discipline. Because the majority of TBL class meetings are spent with students engaged in a series of application exercises, a major obstacle to converting a course to TBL is coming up with a sufficient number of quality exercises to fill a semester. Thus, one goal of this project was to create a set of "off-the-shelf," peer-reviewed and tested exercises that instructors could use to more easily convert a course to the TBL format. The full library of these exercises is available at https://serc.carleton.edu/econ/tbl-econ/activities.html, and includes application exercises for both principles of microeconomics and macroeconomics courses. This study employs a subset of these exercises to evaluate the marginal value of 4-S exercises in a TBL-based principles of microeconomics course. Table 2 reports the modules and exercises that were incorporated into the trial, and Table 3 reports the student learning objectives for each of the study modules.

A. Study Procedures

Ultimately, seven sites participated in this evaluation. At each site, the study began with the consent process, which occurred approximately on the third lesson (after most adds/drops for the semester were likely to have been completed). Instructors used the following script to introduce the study to the students:

> This semester's class will be part of a study on Team-Based Learning. The study concerns whether certain types of in-class exercises are better than others at helping you learn economics. We would like to be able to use the data about how you did on the post-module assessments to examine whether the different types of exercises were beneficial to your learning. What I am handing out to you now is a consent form that provides you with the details about the study. Please take this form home, read it, and consider whether you are comfortable releasing your data to the study. Whatever you decide, I will not know what you decided until after the semester is over and grades have been turned in. Does anyone have any questions? Next class, I can answer any more questions that come up and at that time, you can submit the consent form in a sealed envelope that will not be opened until after final grades are submitted.

On the fourth day of class, each instructor proceeded with the consent process by again reading from a script. Students were given the opportunity to ask questions, and then privately chose whether or not to release their data to the study and to complete a short demographic questionnaire, which is provided in the Appendix. Students then placed their consent forms and their questionnaires into an envelope, sealed the envelope, and handed it to their instructor. Instructors securely stored all sealed envelopes until after the semester had concluded and their grades were submitted. Instructors then opened the envelope to determine which students had consented to release their data to the study. All study procedures were reviewed and approved by the primary study site's Institutional Review Board (IRB) as well as by the IRB for one secondary site.[1] The study design and analysis plan are registered at the American Economic Association's Randomized Controlled Trial Registry.

During the course of the semester, instructors taught their Principles of Microeconomics courses as planned, except that for the four study modules (Basic Supply and Demand, Firm Costs and Competitive Market Analysis, Imperfect Competition, and Externalities) they used either the 4-S Application Exercises listed in Table 2 if assigned to the treatment group for that module, or the standard application exercises if assigned to the control group for that module. At the end of the module, but before any culminating summative assessment such as an exam was given, instructors administered the assessment for that module. Assessments were graded in order to provide students with some incentive to do well but were relatively low stakes. Instructors had discretion regarding the fraction of a student's grade the assessments comprised.

[1] Pacific University IRB approval number: 1421839-1. University of Richmond IRB approval number: URIRB190802.

After the semester concluded and grades were submitted, instructors opened the sealed envelopes to determine which students had consented to participate in the study by releasing their data, and used this information to create a deidentified data file containing unique site, student, section, and group numbers (used to create a unique identifier for each student in the study), students' responses to the demographic questionnaire, and their answers to the questions on each module assessment. These data were securely provided to the main study site for analysis.

B. Random Assignment

Sites were randomly assigned to be either a treatment or a control site for each of the four study modules. Assignment to either a treatment or control module was conditionally random, and was subject to the following constraints:

(1) At each site, all sections at that site were assigned to the same condition (treatment or control) for each module.

(2) Each site is assigned two treatment modules and two control modules.

(3) Overall, assignment of students to treatment and control is balanced.

In addition, sites were assigned to treatment and control conditions with the goal of keeping the number of students assigned to treatment and control in each module as balanced as possible. The binding constraint of assigning each site two treatment and two control modules drove the randomization process. With four modules, there are six possible ways in which sites can be assigned two treatment and two control modules: TTCC, CCTT, TCTC, CTCT, CTTC, and TCCT. Thus, random assignment of sites boils down to assigning each site one of these six patterns. To accomplish this, sites were matched so that the expected number of enrolled students at matching sites were approximately balanced. For example, suppose that site 3 was expected to have approximately 70 students, site 6 was expected to have approximately 35 students, and site 7 was expected to have approximately 37 students. Therefore, a possible pairing would be to match site 3 with sites 6 and 7. Site 3 is then randomly assigned a pattern (e.g. CTTC) using a computerized random number generator that simulates the roll of a six-sided fair die. Sites 6 and 7 are then assigned the opposing pattern (TCCT). In this way, the assignment of sites and modules to treatment and control conditions is conditionally random, because once the pattern for one site is selected, the pattern for the matched site(s) is pre-determined. Tables 5 and 6 report the results of the random assignment process, and the expected number of students assigned to treatment and control conditions for each module.[2]

[2] Note that actual numbers may vary from expected numbers due to (1) students dropping the course prior to the end of the semester and (2) students declining to release their data to the study. The original randomization plan

C. Minimum Detectable Effect Size

To analyze the potential benefits of the 4-S application exercises over standard application exercises, the dependent variable is each student's standardized score on each module assessment. Thus, effects of the 4-S application exercises, if any exist, are measured in units of standard deviations. Assuming that students in the same section might be subject to the same (potentially) random shocks, and thus that the data are clustered at the section level, the minimum detectable effect size depends on the average number of students in a section (the size of each cluster), the R-squared, and the size of the inter-cluster correlation. Table 7 reports the minimum detectable effect size for low (R^2 = 0.20) and high (R^2 = 0.60) assumed values of R-squared, and low (ρ = 0.10), moderate (ρ = 0.50) and high (ρ = 0.80) assumed values of the inter-cluster correlation. As noted in Table 7, the minimum detectable effect size ranges from 0.14 to 0.63, with standard errors ranging from 0.05 to 0.23.

3. Preliminary Results

As of this writing, data from four of seven sites have been submitted. These sites constitute data from seven sections and 184 students, for a total of 736 student-module observations, equally split between treatment and control conditions. Table 8 reports the distribution of currently available data across the treatment and control conditions for each module. Table 9 reports mean scores for each module assessment and overall for the treatment and control conditions. Although it appears that there is little difference overall in mean scores in the treatment and control groups, there are some differences by module. In Module 1, scores for students in the treatment group are significantly larger than those for the control group (one-tailed p = 0.0006). The reverse is true for Module 4 (one-tailed p = 0.0000). There are no significant differences between the treatment and control group scores in Modules 2 and 3.

Overall, students in the control module scored slightly worse on assessments than students in the treatment module. This difference is moderately significant (one-tailed p = 0.08). However, this difference disappears when controls for student and module fixed effects are added. Table 10 reports the results of the following regression:

$$Y_{ism} = \beta_0 + \beta_1 T_{sm} + \alpha_i + \gamma_m + u_{ism}$$

was accomplished with 8 sites, but one site left the study before its semester started, but after the randomization plan was completed and other sites' semesters had begun. Although the number of students in treatment and control conditions in each module is slightly unbalanced, overall, the number of students assigned to treatment and control conditions across all four modules remains balanced.

where Y_{ism} is the assessment score for student *i* at site *s* in module *m*. T_{sm} is an indicator variable for whether module *m* at site *s* is a treatment module or not, α_i are student fixed effects, γ_m are module fixed effects, and u_{ism} is the error term. Thus, the coefficient of interest is β_1, which captures the marginal effect of participation in a treatment module on assessment score. Being in a treatment module increases a student's score by approximately 1.4 percentage points, an amount which corresponds to getting much less than one additional question correct. Thus, based upon these preliminary data, completing 4-S application exercises as opposed to more standard application exercises does not appear to improve student learning as measured by a short-term assessment of learning outcomes. Although there may be medium or longer term effects, these data do not enable us to identify such effects.

4. Conclusion

This evaluation of the effect of "4-S" application exercises on student learning is the first randomized controlled trial of an element of the team-based learning pedagogy of which we are aware. It also is the first multi-site implementation of the methodology of assigning treatment and control at the section-lesson (or in this case, site-module) level developed by Wozny, Balser, and Ives (2018). As such, this study should be considered, at least in part, a proof-of-concept, to show the benefits of thinking beyond the quasi-experimental approach to studying the effectiveness of alternative pedagogies.

The preliminary results of this evaluation show no additional benefits of using 4-S application exercises in a class that is designed around the team-based learning pedagogy. There are several possible explanations for this result. One is that the use of 4-S application exercises are not as critical to successful implementation of TBL as its creators argue. It is possible that most of the benefits of team-based learning come from the "flipped" nature of the pedagogy, and the incentives it creates for pre-class preparation and attendance (Jakobsen 2014). It may be the case that requiring students to actively and repeatedly engage with the material during class time has learning benefits, regardless of whether students are engaged in 4-S exercises, or some other type of in-class exercise. A second possibility is that the tool that we used to assess student learning is flawed. Other studies, particularly Wozny, Balser, and Ives (2018), have found no effects of a flipped classroom pedagogy on student learning assessed in the short-term. However, these authors do find effects in the medium term (e.g. on exams). They argue that the reason for this result is that a key part of students' learning process occurs after the

flipped class, such as when students use the flipped classroom tools (such as videos) to study for higher-stakes assessments that occur later in the semester.

Although these data do not show any effects of the use of 4-S application exercises on student performance on short-term assessments, the fact that these exercises can generate a lot of discussion and be very engaging might generate additional benefits, such as an increased interest in pursuing economics as a program of study. Given the preliminary nature of this analysis, we cannot speak to these possible effects at this early date.

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Table 1. Summary of TBL Effectiveness Studies

Study	Discipline	TBL vs.	Elements of TBL Included			Study Design	Outcome Measure(s)	Result(s)	Control for Observables ? Clustering?
			RATs	AEs	PA				
Bleske et al. (2014)	PharmD	Lecture	X	X		1 T group, 1 C group	Common Exam	TBL better on applications Control better on recall and overall	No No
Carmichael (2009)	Biology	Lecture	X			1 T group, 1 C group	Common Exam, Ungraded Assessment	TBL better, effect diminishes over time on exams	No No
Dinan (1995)	Chemistry	Lecture	X		X	1 T, previous year is C	Final Exam, Attitudes	TBL better, depending on C used for comparison	No No
Hernandez (2002)	Marketing	None	X	X	X	T only	Attitudes	Good attitudes	No No
Hettler (2015)	Econ, MBA courses	Lecture, standard online	X	X	?	10 T vs. 2 C sections	Exam grades	TBL results in 3 PP higher grades (out of 100)	Yes No
Huggins & Stamatel (2015)	Sociology	Lecture	X	X		2 T sections 2 C sections	Exam grades (blind grader), attitudes	No difference. TBL students thought they worked harder.	No No
Hunt et al (2002)	Medicine	No C	X	X	X	T sections only	Exam & homework scores, external observer, attitudes	High degree of engagement in classroom, students devalued method	No No
Imazeki (2015)	Economics	No C	X	X	X	T only	Attitudes	Generally positive	No No

Jakobsen (2014)	Psychology	T vs. C	X	X	?	1 T session 1 C session Same instructor	Individual RAT scores, exams, attendance	Difference in performance goes away once control for attendance	No No
Koles (2005)	Medicine	Case-Based Group Discussion	X	X		Prospective crossover @ group level	Exam performance, Attitudes	No difference in outcome, except students in lowest quartile did better in TBL (for half the modules)	No No
Koles (2010)	Medicine	Various	X	X		Prospective assignment of teams in each cohort over 2 years	Performance on individual exam questions related to TBL modules	6% better performance in TBL modules, students in lower quartile did better	No No
Levine (2004)	Psychiatry	Lecture	X	X		1 T cohort 1 C cohort	Performance on certification exam; Attitudes	TBL Better	No No
McInerney & Fink (2003)	Biology	Lecture	X?	X?		2T vs. C	Final exam score	Adding both quiz and AE improved scores	No
Mennenga (2013)	Nursing	Lecture	X	X	?	1 T vs. 1 C	Exam scores; Engagement	No difference on exams; students in TBL more engaged	Repeated measures ANOVA
Tan et al (2011)	Neurology	Self-reading	X			Modified Crossover	Exam scores	TBL better, especially for lower quartile students	Some No
Vasan (2008, 2009)	Anatomy (Med School)	Lecture	X			Historical controls	NBME scores, Attitudes	TBL Better Attitudes Positive	No No

Zgheib (2010)	Pharmacology	Lecture	X			Historical	Quiz Scores, Attitudes	Scores on repeated questions higher in TBL	No No

Notes: RATs = Readiness Assessment Tests; AEs = Application Exercises; PA = Peer Assessment. T = Treatment (Team-Based Learning in all cases); C = Control.

Table 2. Study Module Topics and Application Exercises

Module 1: Basic Supply and Demand	
Module Content	4-S Application Exercises
Demand, supply, and equilibrium Shifts in demand and supply Event studies in the supply and demand model Policy analysis: price ceilings, taxes Elasticity	Supply and demand in the context of Uber surge pricing Income changes in the supply-demand model Natural disasters, price gouging laws, and essential goods What are effective public policies for the heroin market? Elasticity and tax incidence (Frost) Price of beer and automobile fatalities: using elasticity to determine appropriate public policy
Module 2: Firm Costs and Competitive Market Analysis	
Module Content	4-S Application Exercises
Definitions of different types of costs (implicit, explicit, economic, accounting, fixed, variable) Short-run production function Marginal cost and average cost Competitive firm supply curve Market supply curve Long-run equilibrium in competitive markets Event studies for competitive firm and markets	Competitive market assumptions -- men's ball caps Firm's reaction to news about profits Should your restaurant shut down? Rising firm production costs
Module 3: Imperfect Competition	
Module Content	4-S Application Exercises
Barriers to entry Defining the scope of a particular market Marginal revenue for a firm facing a downward-sloping demand curve Output and price decisions for firm facing downward-sloping demand curve Profit for a firm facing downward-sloping demand curve Efficiency comparison between competitive firms and firms with market power Government policy toward imperfectly competitive markets Sources of monopoly power and policy responses (e.g. natural monopoly, competitive advantage, cornering a market, government policy)	Monopolies and innovation Monopoly Power under Pharmaceutical Patents Potato Market Cartel Examples of Price Discrimination
Module 4: Externalities	
Module Content	4-S Application Exercises
Negative and positive externalities Efficiency loss of market outcome in the presence of externalities Possible policy responses	Introductory environmental economics application Water pollution in the Des Moines and Raccoon Rivers

Command and control vs. incentive-based regulation	Carbon Tax

Table 3. Student Learning Objectives for Common Modules

Module 1: Basic Supply and Demand -Use models to explain and predict how events lead to changes in prices and quantities in affected markets. -Calculate price elasticities of demand and supply and explain how buyer and seller responsiveness to price changes influences the outcomes of economic events and policies. -Compare the effect of price ceilings with alternative policies such as rent subsidies and direct transfers. -Evaluate the effect of sales and excise taxes on prices, quantities, and economic efficiency in competitive markets.
Module 2: Firm Costs and Competitive Market Analysis -Explain how different types of production costs influence production decisions. -Describe the conditions that make possible highly competitive markets. -Analyze the effect of market events on prices and quantities in competitive markets and on output and profits of competitive firms. -Explain and predict the impact of economic policy and events on resource allocation in competitive markets.
Module 3: Imperfect Competition -Discuss the scope of a particular market that is appropriate for antitrust policymakers to consider as antitrust actions are weighed. -Describe the conditions that give rise to monopoly or oligopoly, including technological (set-up costs) and artificial (patents, exclusive ownership of inputs, government licences, etc.) barriers to entry. -Compare market outcomes in competitive and uncompetitive markets. -Evaluate the effect on social well-being of antitrust and price control policy proposals when one or a few firms exist in a market. -Describe the conditions that make it possible for firms to offer different prices for the same good or service to different consumers. -Analyze the effect on firm profits and social well-being of price discrimination.
Module 4: Externalities -Identify situations where important costs and benefits associated market activities fall on people not directly participating in the market. -Analyze the difference between market outcomes and socially desirable quantities in the presence of negative and positive externalities. -Describe the circumstances (i.e. low transactions costs) in which it is possible to eliminate externality issues by establishing clear property rights. -Compare command and control with incentive-based policies in situations where government intervenes to address externality issues.

Table 5. Results of Random Assignment

Site	Expected Number of Students	Pattern
1	22	CTCT
3	70	CTTC
4	77	TCTC
5	55	TTCC
6	35	TCCT
7	35	TCCT
8	54	CCTT

*Note: Site 2 left the study before its semester had started, but after the random assignments had been made and other sites' semesters had begun.

Table 6. Expected Number of Students in Treatment and Control by Module

	Treatment	Control
Module 1: Basic Supply and Demand	204	146
Module 2: Firm Costs and Competitive Market Analysis	147	203
Module 3: Imperfect Competition	201	149
Module 4: Externalities	148	202
Overall	700	700

Table 7. Minimum Detectable Effect Sizes

(Standard Errors in Parentheses)

	$R^2 = 0.20$	$R^2 = 0.60$
$\rho = 0.10$	0.20 (0.07)	0.14 (0.05)
$\rho = 0.50$	0.45 (0.16)	0.32 (0.11)
$\rho = 0.50$	0.63 (0.23)	0.45 (0.16)

Table 8. Distribution of Treatment and Control Assignments Across Modules

	Treatment	Control
Module 1: Basic Supply and Demand	92	92
Module 2: Firm Costs and Competitive Market Analysis	48	136
Module 3: Imperfect Competition	156	28
Module 4: Externalities	72	112
Total	368	368

Table 9. Mean Assessment Scores by Module

(Standard Deviations in Parentheses)

	Observations	Treatment	Control	Overall
Module 1: Basic Supply and Demand	177	43.9% (24.8%)	31.7% (24.6%)	37.7% (25.4%)
Module 2: Firm Costs and Competitive Market Analysis	177	46.8% (23.3%)	46.3% (21.4%)	46.4% (21.9%)
Module 3: Imperfect Competition	174	57.2% (21.2%)	50.8% (24.2%)	56.2% (21.8%)
Module 4: Externalities	178	52.5% (19.1%)	65.9% (25.4%)	60.7% (24.0%)
Total	706	51.5% (22.7%)	49.0% (26.9%)	50.3% (24.9%)

Table 10. Fixed Effect Regression Results

Variable	Coefficient	Standard Error	t-statistic	p-value
Intercept	37.01	1.82	20.39	0.00
Treated = 1	1.42	1.77	0.80	0.42
Module = 2	9.17	2.29	4.01	0.00
Module = 3	17.73	2.35	7.54	0.00
Module = 4	23.27	2.25	10.32	0.00
n = 706, Within R-squared = 0.19				

Appendix

Demographic questionnaire

If you consent to allow your information to be included in the study of effectiveness of different types of TBL application exercises, please answer the questions below. When you are finished, place the completed form in the envelope provided.

If you choose not to allow your information to be included in the study, please put the blank form in the envelope provided.

1. To which gender do you most identify?

- ☐ Female
- ☐ Male
- ☐ Gender Variant/Non-Conforming
- ☐ Prefer Not to Answer

2a. Are you of Hispanic, Latino, or Spanish origin?

- ☐ Yes
- ☐ No
- ☐ Prefer Not to Answer

2b. How would you describe yourself? (Check all that apply?)

- ☐ American Indian or Alaska Native
- ☐ Asian
- ☐ Black or African American
- ☐ Native Hawaiian or Other Pacific Islander
- ☐ White
- ☐ Prefer Not to Answer

3. What is the highest level of formal education obtained by your parents/guardians? (Mark one in each column.)

Education level	**Parent/Guardian 1**	**Parent/Guardian 2**
Junior high/Middle school or less	☐	☐
Some high school	☐	☐
High school graduate/GED	☐	☐
Postsecondary school other than college	☐	☐
Some college	☐	☐
College degree	☐	☐
Some graduate school	☐	☐
Graduate degree	☐	☐

Thank you!