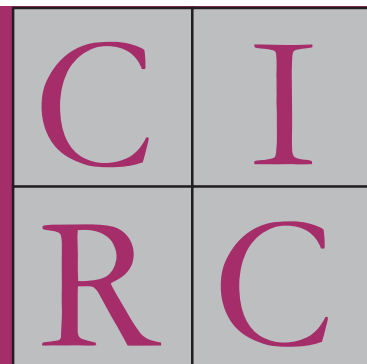


Statewide Exit Exams: Worthwhile, Or Just A Pain In The Neck?



Source: Bishop, J. H. (2000). Curriculum-based external exit exam systems: Do students learn more? How? *Psychology, Public Policy, and Law*, 6, 199-215.

Goals:

Teach the importance of using evidence to make decisions.

Teach the importance of understanding equivalent comparisons.

Show that people in numerous careers use science to help make decisions.

Basic Idea:

Do state or national exams taken at the end of the year cause students to learn more? This lesson explores the scientific study of exit exams and their effects.

Gain Attention/Interest:

You take a lot of tests in school. Usually, they are in your regular classes, but sometimes all the students in one grade, or students from several classes, take a test. I know tests aren't fun. But as I'm sure you've been told most of your life, they aren't meant to be fun, they are meant to make sure you are learning. In some places (such as the state of New York), to graduate from high school with a special kind of diploma, students take tests called exit exams. In the state of New York these tests are called Regents Exams; high school students take tests at the end of the year based on the information they have learned (or were supposed to have learned!). New York has had its Regents Exams since 1878. Many New York high school students take these exams in several different areas (e.g., Math, Biology, English, Foreign Language) throughout their high school career.

This sounds like a lot of tests and a lot of time both for the students and the school. What exactly is the point? Do these tests make students work harder? Learn more? Do these tests make them smarter? Or are they a waste of time and just a big hassle?

Obviously you would get different answers to these questions depending on the person you asked. But how can we find out the truth? These questions (working harder, learning more, etc.) can be answered through science.



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Think & Write #1

Have students write their thoughts about exit exams. Are they worthwhile? What are the pros and cons of having exit exams?

Ask: What is Science?

On a basic level, science answers questions. Most scientists are trying to answer questions that have never been answered before. Scientists don't just answer questions about DNA, diseases, and dinosaurs. Scientists also answer questions that relate to our everyday lives, such as "do exit exams make students learn more?" Scientists go about answering these everyday questions in a way that is not typical: They use the method of **proof by disproof**.

If you had a question and thought you knew the answer, but wanted to check, what would you do? Most people would respond that they try to find support for their answer. If you thought it was warm outside, looked out the window, and saw a person wearing shorts and a t-shirt, this could be support to help convince you that it is warm outside. Seem fair enough to you?

Scientists, however, go about things in a slightly different way. Rather than looking for support for their answers, they try as hard as possible to find ways to disprove their answers. Why would they do this, you ask? They do

PROOF BY DISPROOF

Using the method of proof by disproof may take more effort, time, and energy, but it yields answers of which scientists can be more confident.

this to help show that their answers are, in fact, correct. How can this be? Think of it this way: If you think it's warm outside and look out the window and see someone wearing shorts and a t-shirt, that person could be freezing because it is in fact cold outside! But you don't know for sure whether it is really warm or cold. In order to avoid making this mistake, scientists look to disprove their

hypotheses (or expected answers). If they can find people wearing warm coats, people who are shivering, or if they can look at a thermometer to see that it's 30 degrees, then scientists know it is NOT warm outside.

Only after trying every possible way to disprove their hypothesis, do scientists begin to consider that their answer might be right. It's important to know that just because they fail to disprove it, does not mean they have proved their answer. If they can eliminate other potential right answers, then they conclude it might be true, but they haven't proven it true.

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Ask: What is Science?

Define the Problem: See Many Sides

Although it may seem strange, some of the most important steps in science need to happen before any experiment is conducted or information is collected. These steps may seem simple to some people, but they are quite important and can influence the answer found. These steps are defining the problem and the terms involved in expressing the problem. Let's take these one at a time.

First, what is the question we want to ask? For example, are we asking if exit exams take away time that could be devoted to learning new material? Are we asking if they cost too much money? Are we asking if they motivate students to study and learn? It is important to clearly state the purpose and goal we are trying to achieve. If we aren't clear, then people (including ourselves!) may not understand what we are trying to do, and they might not understand the answer we end up finding. There are many ways to study exit exams and see whether or not they are useful. Today we will focus on the following question:

Do exit exams help students learn more?

Second, we also need to define the terms we are going to use. What do we mean by the term "exit exam"? An example of a working definition for our terms could be:

Exit exam: A test taken at the end of the year that is based on an external standard (e.g., state/national curriculum; specific percentage of correct answers to pass) and that has real significance to students' outcomes.

Even after all this, several questions remain. Is an exit exam the same thing as a final exam? How are we going to measure whether or not students learn more? What one person considers an "exit exam" might be quite different from what someone else thinks. Because of this, we need to be clear from the very beginning about the definitions we are choosing to use. The definitions we choose to work with have a specific name. They are called **working definitions**. Our working definition may differ from what another group uses, but as long as we are clear about which one we have chosen, it's OK.

When scientists approach a question, they want to know what groups are interested in the topic. If no one cares about a question, is it worth scientists' time and effort (and money!)? Or, put another way, if a lot of

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Define
the
Problem:

See
Many
Sides.

people care about it, should we put a lot of time and effort (and money!) into answering it? What groups of people might be interested in school testing, and how do you think they feel about it? What are their beliefs? **To foster potential interest, a description of job duties and education requirements is also included here.**

Students. Students are the people who are taking the tests. A lot of the time they don't want to be taking tests, even if tests are important.

Parents. Parents want their kids to learn as much as possible. If taking tests can help, then parents want to know this and they want their kids to have access to the best education possible.

Teachers. It's the job of teachers to educate students as effectively and efficiently as possible and to make sure their students are learning. Teachers are responsible both for sharing information and for measuring how much of that information students have learned. Teachers attend four-year colleges and often obtain a master's degree as well.

School Administrators. School administrators decide how to spend the school's budget. If extra tests help students learn, then they want to consider giving them. If extra tests don't help students learn, then administrators probably don't want to waste the money.

Demographer. Demographers study population trends sometimes focusing on test scores. They frequently work for the government or for universities. Demographers attend four-year colleges and earn graduate degrees.

Lobbyist. Lobbyists advocate specific positions to government officials. Lobbyists typically attend four-year colleges.

Policy Analyst. Policy analysts are concerned with things that influence the law, government, and life in our society. Policy analysts attend four-year colleges and typically study political science or law.

Psychologist. Psychologists study and conduct research on human behavior. They attend four-year colleges and graduate school.

Sociologist. Sociologists study society or large groups of people such as cultural groups. Sociologists attend four-year colleges and graduate school.

Statistician. Statisticians use numbers to calculate the likelihood that specific events will occur. They can help determine how well students are learning material. They attend four-year colleges and graduate school.

Test Developer. Major corporations in the U.S. create and market national tests. People in these companies write and evaluate test questions. Other people work to promote their company's products. All these individuals earn college degrees and attend graduate school as well.

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Fact Versus Opinion: What Constitutes Evidence?

Distinguish Fact From Opinion: Learn What Constitutes Scientific Evidence

Now that we have our question, the next step is to figure out how to answer it. Scientists don't want just any answer, they want the correct answer. To arrive at this answer, scientists gather facts. In many other professions, people can gather opinions while seeking the answer to their question. Scientists don't want opinions, they want facts.

It's like asking someone, "How long is that piece of wood?" For some, an estimate might be satisfactory. However, scientists want an exact measurement with a precise ruler. But what is an "exact measurement" of student learning that we can compare for students across the entire country? In returning to our question, we discover that what we really need to know is whether or not students are learning more.

Think & Write #2

Hypothesis formation

How could we measure student learning? Have students create a hypothesis that scientists could use as a basis for measuring student learning. Below are some scenarios that can be used as examples. You may also want to consider using some of the hypotheses your students write.

Scenario 1: Would comparing scores on exit exams help?

Scenario 2: Would looking at the number of students who graduate from high school with a Regents diploma help?

Scenario 3: What about comparing grade point averages? Should New York students have higher GPA's than students who are not required to take these exit exams?

Scenario 4: How about comparing Advanced Placement (AP) and SAT scores between New York students and other states in which there are no exit exams?

Potential faults:

Scenario 1: This would not work since our goal is to see whether or not exit exams improve student learning. We would have to compare the scores of students who take the exam to those who don't, and we obviously can't do that.

Scenario 2: Different communities have varying requirements to graduate. A person graduating from high school in Washington D.C. may have different requirements to fulfill than someone graduating in Hawaii.

Scenario 3: We could compare the grade point averages of students who attend schools that give exit exams with those of students who do not attend such schools.

However, as I'm sure you know from the experience of taking classes with different teachers, a B in one class/subject can sometimes be easier to get than a B in another class/subject. If things are this way in your school, imagine what it would be like comparing different schools! It would be awfully hard to find a good way to compare grades across different schools.

UNDERSTANDING COMPARISONS

Not all comparisons are the same. On the surface, comparing different people, groups, or sets of data may appear to be appropriate. But appearances can be deceiving. Scientists strive to make clear, accurate comparisons.

Scenario 4: Each year thousands and thousands of high school students from across the country all take the same (or similar) AP and SAT tests. Passing AP tests can help students earn college credit while in high school, and doing well on the SAT can help them get into college. No matter what school they attend, or what their grades are, students take the same test. A possible way to compare whether or not students who take exit exams are learning more would be to compare their AP and SAT scores with the AP and SAT scores of students who do not take exit exams.

Weigh Evidence and Make Decisions

A scientist compared the state of New York with other states across the U.S. in a variety of areas including AP and SAT scores. Let's look at what he found. First, he warned that the state of New York has more minority, foreign-born, and poor students than most other states.

Why does this matter? It is noteworthy because, for various reasons, these three groups of students historically have not performed well in school. This does NOT mean that these groups can't do as well as others. It means that, in the past, they have not. If New York has more students from groups that typically don't do as well in school, it would be expected that, in general, New York students wouldn't perform as well as students from other states.

For example, literacy levels among adults in New York are below the national average. If, on average, adults in New York do not read as well as adults in other states, what does this mean for student performance? Does it have no bearing whatsoever, or would you expect that adults who cannot read as well would have kids who also cannot read as well? What about the fact that New York has a lot of foreign-born students? Could this play a role in adult literacy? In order to balance these things out, scientists frequently hold equal other factors that might influence the outcome, in order to focus on the effect of the specific factor in which they are interested. Scientists do this so they know whether differences in outcomes (e.g., SAT scores) are explained by the specific factor that they are measuring or by something else. For example, scientists would compare the SAT scores of groups with the following characteristics:

For example, scientists would compare the SAT scores of:

Hispanic students from New York
Parents graduated high school
Took Regents Exams

TO

Hispanic students from outside
New York
Parents graduated high school
Did not take Regents Exams

Black students from New York
Parents graduated high school
Took Regents Exams

TO

Black students from outside
New York
Parents graduate high school
Did not take Regents Exams

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Weigh Evidence and Make Decisions.

By holding other factors equal, scientists are able to measure the difference they are interested in –whether or not taking an exit exam makes students learn more. Holding other factors equal is called **control**. By controlling for other factors, scientists are able to measure the impact of individual factors, in this case, exit exams.

Here is what scientists found:

A larger proportion of New York 11th and 12th grade students take and pass AP exams than students in any other state except Utah.

Comparing students of the same ethnic group/race and social background, students from New York score 46 points higher on the SAT than students from other states (the maximum score is 1600).

CONTROL

By controlling for other variables, scientists are better able to determine the influence of a single variable.

Think & Write #3

How about now?

Now that we know that New York students do well compared to others, has it changed your opinion about exit exams? Are there new pros and cons? What about the pros and cons from Think & Write 1?

Move From Science to Society

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Move From Science To Society.

When scientists arrive at an answer to their question, they are not done. If they have an answer, but don't do anything about it, what good is having the answer? The next step, after getting an answer, is to decide what to do about it. This is why we move from science to society. What should we do? Should all states be required to change their education systems to be more like New York?

Should all states have exit exams? If exit exams are good, should New York require more of them? Should the use of exit exams begin in school? Should all students be required to take exit exams?

These are all potential questions that are relevant to governmental policy and our lives. These questions couldn't be answered with confidence if science had not first told us that the exit exams increase student achievement.

Revisit, Review, Reflect, and Re-evaluate

Scientists ask and answer questions. They seek precise answers, and their answers can have implications that reach far beyond the original question. But even after she has answered a question, the job of a scientist is far from over. It is also the job of a scientist to revisit questions, review past answers, and reflect on how the ever-changing world might influence how specific questions can be answered. A new government policy on education can drastically change how students are taught, which could then impact how students perform on exit exams. Only by re-evaluating the foundation provided by previous research can scientists form new questions that will help us build the future.

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**Revisit,
Review,
Reflect,
and
Re-evaluate.**

Think & Write #4

What's next?

Have students write their thoughts about the directions they think scientists, policy makers, and educators should take in the future. Should exit exams be the wave of the future? What would be the costs and benefits of making everyone take them?

Discussion Questions

1. Should all states be required to change their education system to be more like New York?
2. If exit exams are good, should New York require more of them? Should they start earlier in students' lives?
3. Should all students be required to take exit exams?
4. Should there be exit exams for college students?

Homework Questions

1. Find three adults and ask them if they think students should take exit exams. Ask them why they feel the way they do.
2. Find more information about one of the careers listed in this lesson. What other issues related to science are dealt with by people in this area?

Quiz Questions

Version A

1. Circle the reasons why we CANNOT say that exit exams cause students to learn more.
 - a. students who take exit exams don't have time to take AP classes.
 - b. only students who take exit exams get into the best colleges.
 - c. measuring learning via grade point average (GPA) may be difficult use in comparisons because different teachers grade students differently.
 - d. defining "learning more" is difficult to do.
2. Suppose a policy maker proposes that all states should be required to change their education systems to be more like New York's and thus require exit exams. Name an important question that the policy maker should research before making a decision.

3. List one pro and one con regarding the use of exit exams.

Pro:

Con:

Quiz Questions

Version B

1. Why can't we say that exit exams cause students to learn more?
2. Which of the following scenarios would be best for assessing whether exit exams improve schools and help students learn more? Explain your answer.

Scenario A: Compare AP and SAT scores between New York students and other states where there are no exit exams.

Scenario B: Compare grade point averages (GPAs) and graduation rates of students who attend schools that give exit exams and students who attend schools that do not give exit exams.

Scenario C: Compare scores on exit exams.

3. Suppose that a policy maker proposes that all states should be required to change their education systems to be more like New York's and require exit exams. Name two important questions that the policy maker should research before making a decision.

Quiz Questions

Version C

1. Do exit exams cause students to learn more? Explain your answer.

2. Which of the following scenarios would be best for assessing whether exit exams improve schools and help students learn more? Explain your answer.

Scenario A: Compare AP and SAT scores between New York students and other states where there are no exit exams.

Scenario B: Compare grade point averages (GPAs) and graduation rates of students who attend schools that give exit exams and students who attend schools that do not give exit exams.

Scenario C: Compare scores on exit exams.

3. How could you improve on the scenario you chose?

4. Suppose that a policy maker proposes that all states should be required to change their education systems to be more like New York's and thus require exit exams. What are some examples of types of information that this policy maker should have to make an informed decision? Include the perspectives from at least two different careers/professions on this question.
