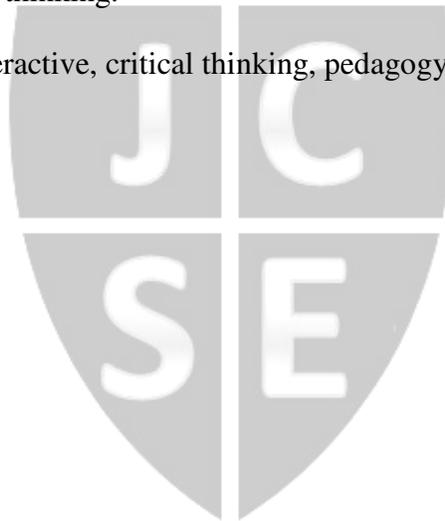# Learning from exam results: A unique classroom experiment that stimulates critical thinking

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Seldom are students in a more heightened level of anticipation than when they are awaiting their scores on an exam, and it is that very anticipation that creates an excellent opportunity for experiential learning. For example, what do libertarianism, distributive justice, standards of fairness, the tax code, the marketplace, and government intervention have in common? All are topics that can be examined quite effectively in conjunction with the mere act of providing exam results to students. This paper will detail a powerful interactive class experience to present at such a time that is sure to capitalize on students' heightened level of attention and stimulate critical thinking.

Keywords: class, exercise, interactive, critical thinking, pedagogy.

INTRODUCTION

What exactly is an "interactive classroom experience?" It is a form of experiential learning. No doubt the most famous model of experiential learning was created by David Kolb and Ron Fry in the early 1970's when they developed "The Experiential Learning Model" composed of four elements (Kolb, & Fry, 1975):

1) Concrete Experience (CE);
2) Reflection on and Observation of that experience (RO);
3) Formation of Abstract Concepts based upon the reflection (AC); and
4) Active Experimentation (testing the new concepts) (AE).

The four elements identified by Kolb and Fry are the essence of a spiral of learning that can begin with any one of the four elements (though it typically begins with a concrete experience). Kolb, a Harvard Ph.D. and now a professor at the Weatherhead School of Management, named the model to emphasize its links to ideas from John Dewey, Jean Piaget, Kurt Lewin, and other writers of the experiential learning paradigm ("David A. Kolb," 2009).

According to Kolb, learners "must be able to involve themselves fully, openly, and without bias in new experiences (CE). They must be able to reflect on and observe their experiences from many perspectives (RO). They must be able to create concepts that integrate their observations into logically sound theories (AC), and they must be able to use theories to make decisions and solve problems (AE) (Kolb, 1984)."

In indirect (i.e., non-experiential) learning, student opinions are sought in the context of an already conceived situation rather than seeking a direct request of the learner's values in situations real to the learner (Gosen, & Werner, 2006). In one school of thought, teaching ethics either by lecture or by requiring participation in an exercise about ethics is ineffective because students will do as their instructor has encouraged them and act ethically, thereby internalizing nothing. There is research that indicates that lecturing on ethics has little effect on changing student attitudes when confronted with an ethical dilemma (Gosen, & Werner, 2006).

In the direct approach, students are encouraged to articulate their personal values (Gosen, & Werner, 2006). By putting the students into a situation where their grade and the grades of their fellow students and friends are impacted, the student's core values are exposed . (Gosen, & Werner, 2006). The exercise we are about to describe uses the direct approach to encourage articulation of personal views and values.

An Overview of the Interactive Classroom Experience

"Is it going to be on the exam?"Sound familiar? Anyone who has spent any time teaching has heard that question repeatedly. And why do students ask it? For better or for worse – and perhaps inevitably in our hyper-competitive and metric-maniacal society – students are deeply concerned about their grades. As for another common teaching experience, on the day students are expecting to their exam scores back, have you ever tried to cover other material prior to returning the exams? Good luck! The students make it clear they want to know how they did on the exam – and they want to know now!

Ah, such an opportunity, for this is a time – perhaps like no other – when you have the students' rapt attention. Pedagogical studies indicate that students are much more interested in

material that they can relate to (Gross Davis, 1999). Accordingly, what better way could there be to introduce or reinforce various abstract concepts than linking them to something as concrete and relevant as their grades? This is a moment when you can – and should – turn their anticipation into an educational advantage.

How to Begin the Exam Results Experiment

The exams administered by the authors of this paper, according to student folklore, are notoriously challenging and, thus, require a lot of studying. As a point of interest, in all the many years of teaching, neither author has ever had a student receive a perfect score on a full-length exam. For illustrative purposes, let's assume a 100 point possible exam administered to 30 students; with a raw score distribution among the 30 students as follows (see Table 1, "Class Distribution of Grades").

In, for example, a Legal and Social Environment of Business class, one might present the results shown in Table 1 (with no names associated) to the class, with a dialogue that goes something like this:

Professor: Is there a known market-like scale for grades? You know what I mean, a fairly standard understanding of what the percentage range is for an A, for a B, etc.?
Random Student: Sure, 90% to 100% is an A; 80% to 89% is a B; 70% to 79% is a C; 60% to 69% is a D; and anything below 60% is an F.
Professor: Well, as a class, would you like for me to apply market rates, or might you be interested in a curve?
Most Students: Curve! Curve! We want a curve!!!
Professor: I thought you might want a curve and, given how hard my exams are, what I will do in terms of a curve is take the highest raw score, which in this case is a 90, and add ten points to it, so the 90 becomes 100. I will then add 10 points to each score, all the way down to the lowest raw score, which is a 57, and that now becomes a 67. Is everyone okay with this?
 [There are, of course, many ways of constructing a curve. In this case the curve selected is by no means meant to be prescriptive, but rather it was chosen for its simplicity and clarity in making the point, i.e., the specific type is curve is not what is significant, but rather the fact of students wanting one].
Most Students: Woo-hoo! Sure! I'm down with that!
Professor: There's one more thing. When I was working at my desk, I opened my desk drawer, and lo and behold, 60 extra points fell out! [NOTE: The use of 60 points for illustrative purposes is arrived at by simply multiplying 30 students x 2.] The thing is – I don't know what to do with them! Accordingly, I'm going to offer you, as a class, three options – A, B, or C – and I want you to cast an advisory vote on what to do with these extra points. Do know that prior to voting you are prohibited from discussing your thoughts or preference with anyone else and that the vote will be done by secret ballot. Okay, here are your three options:
[The professor may write the following options on the board.]

Option A: Top third – each student receives 3 extra points
               Middle third – each student receives 2 extra points
               Bottom third – each student receives 1 extra point
Option B: Top third – each student receives 2 extra points

Middle third – each student receives 2 extra points
Bottom third – each receives 2 extra points

Option C: Top third – each student receives 1 extra point
Middle third – each student receives 2 extra points
Bottom third – each student receives 3 extra points

Professor: Again, you may not discuss your vote with anyone, and you must now cast your secret ballot for one of the three options.

So, reader, if you were in the class, if you knew only the raw scores, and if you did not know how you did on the exam, how would you cast your vote? How do you think the students cast their votes? (Please feel free to pause for a moment, be honest with yourself, assume you have no idea how you performed on the exam, and then vote.)

Empirically, no class has ever come close to selecting Option A. If the students really have no sense of how they did on the exam, most vote for Option C, with Option B usually coming in a respectable second. Students who sense they are at least in the middle range – or even possibly the top third, however, are more inclined to vote for option B. If enough of the students feel this way, Option B will prevail over Option C. A small percentage of students who are confident they are in the top third usually comprise the few students who vote for Option A.

One noteworthy feature of the options presented above is that the middle third gets two points no matter what the outcome of the election is, i.e., regardless of whether Option A, B, or C wins, two points go to the middle third. As an alternative and to avoid this situation, the options could be presented as follows:

Option A: Top third – each student receives 4 extra points
Middle third – each student receives 1 extra point
Bottom third – each student receives 1 extra point

Option B: Top third – each student receives 2 extra points
Middle third – each student receives 2 extra points
Bottom third – each receives 2 extra points

Option C: Top third – each student receives 1 extra point
Middle third – each student receives 1 extra point
Bottom third – each student receives 4 extra points

Finally, an approach that creates an even more dramatic difference between the top third and the bottom third is the following:

Option A: Top third – each student receives 5 extra points
Middle third – each student receives 1 extra point
Bottom third – each student receives 0 extra points

Option B: Top third – each student receives 2 extra points
Middle third – each student receives 2 extra points
Bottom third – each receives 2 extra points

Option C: Top third – each student receives 0 extra points
Middle third – each student receives 1 extra point
Bottom third – each student receives 5 extra points

Regardless of the options precise options offered, however, the most important thing is that in Option A the top third gets the most points, in Option B everyone gets equal treatment, and in Option C the bottom third gets the most points.

Critical Thinking

Now the fun begins. The foregoing exercise follows a section of the class wherein the Distributive Justice theory of John Rawls is introduced. Rawls, a Harvard philosopher, believed that society should maximize justice (Freeman, 2008). In his view, this implied an equitable distribution of goods and services. Rawls seeks to identity how society would be ordered if people were placed behind a "veil of ignorance" that prevented them from knowing their status in society (e.g., wealth, physical or mental health, intelligence, appearance). He argued that society would choose a system in which benefits, such as income, are distributed unequally only when doing so would benefit everyone, and particularly the least advantaged.

To contrast Rawls' theory, Robert Nozick's prescription of Libertarianism is introduced at the same time ("Robert Nozick"). According to Nozick, morality results from maximizing personal freedom. Moreover, justice and fairness and right and wrong are measured by ensuring equal opportunity, not equal results (e.g. wealth). Colloquially speaking, this is sometimes regarded as a free market theory of ethics where merit and superior performance should be and is rewarded.

At the time the concepts of Distributive Justice and Libertarianism are introduced, a classroom discussion is opened and students are invited to indicate whether they have a preference for one view over the other. The mock dialogue that follows is fairly representative of how the discussion goes:

Professor: While this is certainly something of a simplification, Rawls' focus is more on equality of outcome or results, while Nozick's focus is more on equality of opportunity. With respect to how you think society should be ordered or organized, do you prefer one view over the other? If so, why?

[Typical] Random Student: I like Nozick. The most important thing is a level playing field. Society should provide an equal opportunity for everyone and after that what people do with it and make of it is up to them.

Professor: Is it your point of view that superior performance should be rewarded – that those who excel should reap greater benefits?

[For obvious reasons, posing a question along these lines, which is almost certain to evoke a positive response, is an important predicate to the post-exam exercise].

[Typical] Random Student: Absolutely! If you can do the job better than anyone else, you oughta reap the rewards! That's what capitalism is all about.

Professor: So, to the victor go the spoils? Is that what you're saying?

[Typical] Random Student: You betcha! What's Rawls' problem, anyway? Sounds like communism to me!

Professor: Any thoughts on what your classmates have said so far? Do any of you have a different response or reaction?

Yet Another [Typical] Random Student: Yeah, I'm having a problem with this. The way you posed the question implies a false dichotomy. It's not necessarily one or the other. I can see both

points of view. It depends on the situation.

[Yes, we know that it would be nice if in the real world students would more frequently use such terminology!]

Professor: Fair enough, I understand that it's not necessarily an either/or perspective, but given that, do you lean toward one view or another?

The Same "Yet Another [Typical] Random Student:" Sure, for the most part I agree with Nozick. Rawls sort of does sound like a commie.

As indicated, the preceding mock dialogue is merely representative. Classes have distinct personalities and, on any given topic, there of course may be as many varying points of view as there are students in the class. That said, our experience in teaching business students reveals a strong preference for the views of Nozick over those of Rawls.

Now, back to the post-exam exercise and, once again (as a reminder and for ease of reference), here in the initial example of the three voting options the students have:

Option A: Top third – each student receives 3 extra points
              Middle third – each student receives 2 extra points
              Bottom third – each student receives 1 extra point
Option B: Top third – each student receives 2 extra points
              Middle third – each student receives 2 extra points
              Bottom third – each receives 2 extra points
Option C: Top third – each student receives 1 extra point
              Middle third – each student receives 2 extra points
              Bottom third – each student receives 3 extra points

As stated previously, Option A has never prevailed and, at most, it receives very few votes. Option C often wins, with Option B being more or less competitive – and in some cases actually prevailing, depending on the class. In the event Option C wins the secret ballot:

Professor: So, explain the vote to me. Why did Option C get the most votes?

[Option B, on some occasions, does eke out Option C, but for purposes of this article we are proceeding with Option C in this mock dialogue. There are factors that can tilt the vote more toward Option B, and those will be discussed later].

Random Student: Duh! Because the bottom third NEEDS the points more!

Professor: So, that's why so many of you voted that way? Is that fair?

Random Student: Sure, it's fair. What wouldn't be fair is to give the most extra points to the top third. They certainly don't need them!

Professor: Well, I'm glad to hear that you're all concerned about being fair. That's important to you, is it? So, let me ask you something: Is everyone in here fair? In other words, do all of you treat people fairly? By a show hands, raise your hand if you are not a fair person.

[Usually no one raises a hand, but the occasional class clown does it for a laugh.]

Professor: Okay, so all [or most] of you are "fair" people. Glad to hear it! I don't mind telling you that when I pose this question to audiences, virtually everyone identifies himself or herself as a "fair" person. That's nice to know. Alright, given that just about everyone I meet is a "fair" person and that the world seems to be full of self-identified "fair" people, that means that no one in this class has ever been treated unfairly, right?

[Laughter :-D LOL]

Professor: Ah, apparently you HAVE been treated unfairly? Hmm, how can that be when

everyone regards himself or herself as a "fair" person? But indeed you're right – in fact, a common lament is what? That's right: "Life's not fair!" As to why people find themselves so often treated unfairly in a world full of fair people is a topic we'll set aside for now, but return to later. Right now, I want to stay focused on the vote we just took. Does what just happened remind you of anything else?

Random Student: Our tax system?

Another Random Student: Welfare?

Professor: Okay, those are good responses, and we'll take them up later. But let me be more specific: Can you think of any ethical theories we've talked about that might explain the why the vote turned out the way it did?

[Are you beginning to get a sense of how many interesting and controversial topics this exercise triggers? And, yes, discussion of tax policy and welfare are forthcoming. Of course if students don't offer such responses at this juncture and instead go right to Rawls, that's fine. Later on in the class discussion you can – and should – on your own introduce such topics as standards of fairness, taxes, and the welfare system].

Random Student: Yeah, that guy – what's his name? R…something?

Another Random Student: Rawls!

Professor: That's right, Rawls. You may recall that Rawls was the proponent of Distributive Justice. How does that apply to the vote we took?

Random Student: You put us behind that curtain thing Rawls talked about.

Professor: True. Does anyone remember what that "curtain thing" is called?

Another Random Student: The "curtain of cluelessness?"

Professor: Not exactly...but close – you're on the right track…

Another Random Student: The "veil of ignorance!"

Professor: Excellent! So, how were you behind Rawls' "veil of ignorance?"

Random Student: Well, none of us knew our own individual grade, or where we stood overall. And a lot of us are worried that we might be in that bottom third and, if that's the case, we wanted as much help as we could get.

Professor: Exactly! And what outcome would Rawls have predicted? Just as you voted, correct? But as I recall, when we talked about Rawls and Nozick prior to the exam, most of you were big fans of Nozick and quite dismissive of Rawls? What's going on here? Have you turned into a bunch of – how did you put it? – Communists? Do you remember what you said when I asked: "Is it your point of view that superior performance should be rewarded – that those who excel should reap greater benefits?" You were quite emphatic that indeed that should be the case. If so, don't you think the greater number of points should go to the top third, to those whose performance was superior?"

Something important happens at this juncture – a real learning moment. It does not even matter whether students acknowledge the inconsistency (thus a moment of self-revelation) or whether they contest the implications of the exercise. The point is they are engaged, and they are as engaged as they are because of the heightened anticipation and interest they possess at the time exams are being returned.

As indicated, Option B sometimes prevails over Option C. A bit of probing by the professor often reveals why this is the case – students may game the exercise. Those students who perceive themselves to be in at least the top two-thirds may select Option B so those below them (in the bottom third) will not get more points than either the top third or middle third. Conversely, those students who perceive themselves to be in the bottom two-thirds may also

select Option B so those above them (in the top third) will not get more points than either the middle third or bottom third [Yes, some students vote for Option B for the reason that an across the board equal distribution seems to be the most "fair"]. If Option B does win and such gaming is called out by the professor, students often smile and concede that is what occurred. Regardless of whether Option C or Option B prevails, however, opportunities for a robust dialogue abound. Remember, although it theoretically possible, Option A has never won in all the many years and classes in which this exercise has been conducted by the authors.

Option A (where the most points go to the top third performers) typically garners a handful of votes. Who votes for Option A? Those who perceive themselves to be in the top third of course! This too is a form of gaming the exercise. So, what does all of this suggest? That to the extent students had some perception of how they performed relative to their classmates the "veil of ignorance" was merely translucent, not opaque – but that becomes a discussion point as well. In other words, people are not really behind a "veil of ignorance" and they in fact do all they can to assess the fairness of a situation relative to their own perceived standing – all of which goes toward validating Rawls' contention. Despite the students straining to see through the veil a bit, the vote nevertheless turns out just as Rawls would have predicted, in that Outcome C (where the neediest are most protected) or Outcome B (where the distribution is equal) are supported over Outcome A (where the best performers would get the highest reward).

As for student attempts to game the exercise, a few observations are in order. When running the exercise, it is important to emphasize that no comments be made, no questions be asked, and no opinions be offered prior to or during the vote. For example, a few students may pick up on the parallel to Rawls and Nozick and it is preferable that any such an observation is not shared publicly with the rest of the class. If during the debrief it does come out that some students did in fact try to game the exercise based on their own perception of where they likely stood in terms of class rank, well, that just reinforces Rawls' point all the more with respect to notions of confirmation bias and self-serving courses of action. Confirmation bias is the tendency for people to see what they want to see when evaluating their own performance. It leads individuals to selectively seek information that confirms what they believe is true. While it may seem harmless, it results in a myopic view of reality and can hinder learning (Thompson, 2009).

How to Incorporate Standards of Fairness

Especially relevant at this juncture is a discussion on standards of fairness with respect to the extra 60 points. What distribution is fair? The first thing to do is to invite students to define what they mean by fair. When it comes to distributing resources, three prominent standards are to distribute such resources 1) equally, 2) based on merit, and 3) based on need. To illustrate this point, ask to students to consider a business organization with needs that outnumber resources – in other words, virtually every business – that nevertheless must figure out how best to distribute the limited resources it has. Then ask the students to imagine that they are in charge of a division within a business that is vying for resources. The dialogue might go something like this:

Professor: Okay, let's say your division – one of many in the company -- is operating somewhere in the middle of pack. It's budget time and all the divisions are competing for limited resources. Under such circumstances, what would you likely argue a fair distribution of the resources would be?
Random Student: To divide the resources equally – of course!

Professor: And if you're division was among the top-performing divisions in the company?
Random Student: That's easy. We should get more resources.
Professor: Why?
Random Student: Because we EARNED them – excellence should be rewarded!
Professor: I see. And if you were among the lowest performing divisions? What then? What share of the resources should you get then?
Different Random Student: Well…if we're there, we should get the most resources!
Professor: Really? And why is that?
Different Random Student: Because we NEED them! Obviously, if the division is struggling it needs MORE resources! After all, that would be the only fair thing to do under the circumstances.
Professor: Thank you…and welcome to the world of management and the concept of "fair." You're all right, of course. Those in the middle are likely to argue for equal distribution, those at the top will likely make a merit-based claim, and those at the bottom will likely make a needs-based claim – and they will all insist the distribution they're arguing for is indeed the most…fair. Chances are many of you have been on one of both side of all of such claims. No doubt, depending on your circumstances, you have at various point in your life said "fair" would an equal distribution, "fair" would be to reward you if you had performed better than others, and "fair" would be some type of extra benefit because you needed help. Conversely, everyone has almost certainly had each of those arguments directed at them. Now you may have a better understanding why all of you regard yourselves as such "fair" people, yet the cliché "Life's not fair" is so often invoked.

The manner in which the foregoing is explored is of course a function of pedagogic preference; nevertheless, regardless of how once chooses to juxtapose Nozick's libertarianism (merit-based fairness) and Rawls' distributive justice (equality-based or needs-based fairness) against the results of how – and why – the students voted the way they did to distribute the extra points, the discussion should prove to be a lively and instructive one. Moreover, the students are very much vested in the distribution of the extra exam points because, as we all know, they tend to be extremely interested in how well they did on the exam. Accordingly, even though in the abstract business students tend to identify with Nozick's merit-based libertarianism, once placed behind Rawls' "veil of ignorance" notions of distributive justice take on a whole new level of appeal – just as Rawls' predicted it would.

Understanding the Relationship between Standards of Fairness & Public Policy

Once the foundation is laid on equality-based, merit-based, and needs-based standards of fairness, one can easily explore a variety of public policy issues. One interesting approach might be to ask who in the class understands our tax system and just how "fair" they think it is. Once the howl of laughter dies down, the issue can be pressed by asking, by a show of hands, who can explain how income tax works and what type of tax it is? If someone correctly identifies the income system as a progressive tax, you might also ask – again by a show of hands – who in the class knows and can explain what a "progressive' tax is. A popular technique among the authors is to pose questions just this way, i.e. asking students "by a show of hands, who knows…etc,?" This question is posed with the understanding that any student who raises his or her hand is subject to being called on – thus discouraging pretenders in class who might otherwise raise their

hands. Such an inquiry may reveal how many students do not have a good grasp on what is meant by "progressive" or "regressive" taxes.

Upon clarifying how our income tax system is a progressive tax, the next inquiry is to ask why do we have such a tax and what is the rationale behind it. The answer provided by students may be that people "need" the first dollars they earn in order to pay for various living essentials, i.e., food, clothing, and shelter. Thus, in the view of some a progressive is the most "fair."

Conversely, some students may argue in favor of a flat tax or a flat across-the-board national sales tax, thus making equality-based arguments with respect to fairness, i.e., all taxes should be equal. This in turn can lead to a discussion on how a flat across-the-board national sales tax, though equal in application, has a "regressive" impact in that those with a lower income are more likely to spend a higher percentage of their income, thus causing those at the lower end of the economic spectrum to pay taxes on an higher percentage of their income. Speaking of regressive taxes, consider asking students about social security taxes. Do they know where they show up on their paystub? Do they know the total percentage paid? Do they know who pays what percentage of the tax? Do they know the income level at which FICA withholding stops? Can they identify the public policy rationale behind the various specifics, along with what standards of fairness are being applied?

The Lesson of Government Intervention

Consider yet another lesson that the return of exam scores can provide with respect to the issue of government intervention. As a general rule, business students have a fondness for market forces and skepticism with respect to government intervention. On one occasion when exam results were being returned, the raw scores of a 100 point exam were multiplied by 1000 and assigned as fees earned by the students. The highest raw score was a 91, so that score was converted to fees earned of $9,100, the second highest raw score was a 9, so that score was converted to fees earned of $9,000, and so on down line. That semester the "market rates" in the course syllabus had been set as 92% – 100% for an A, 80% – 91% for a B, 70% – 79% for a C, and 60% – 69% for a D. Accordingly, with the highest raw score being a 91 (converted to $9,100 in fees as described above) no one in the class was going to get an A, and many were going get D's and F's (See Table 2, "Fees Earned for Exam One").

In light of these results, the students were told that a government program (i.e., in this case the professor) was available to readjust the rate and treat and readjust the percentages with $9,100 in fees being set equal to 100%, i.e., create a curve. The following table represents the fees available without government assistance and the fees available with the program. Upon being provided with this information the students were asked to vote whether or not they wanted the government assistance. The table that follows shows in parentheses how many A's, B's, C's, D's, and F's would be earned under schedule A (Market Rates) and how many A's, B's, C's, D's, and F's would be earned under schedule B (Government Assistance) (See Table 3, "Government Intervention").

As a matter of protocol, each student was asked to sign a form specifically indicating whether he or she wanted to accept the government assistance. Of course, acceptance was unanimous, which is not the least bit surprising. The point was not to prove such an obvious voting result, but rather to force the students to examine what in many case was their own hostility, cynicism, and even hypocrisy toward government assistance. For example, there were students in the class, who despite their self-professed contempt for government intervention into

the marketplace, were nonetheless beneficiaries of government grants or loan programs, thus making their education possible.

Another Variation

Although it is difficult to imagine in this era of record deficits, there was a brief period not that long ago where, according to the Congressional Budget Office ("CBO") and the accounting methods the CBO was using, the government was actually running a budget surplus and was expected to continue to do so well into the foreseeable future. Much debate surrounded what to do with the prospective surplus, including the idea of providing a tax refund. Of course, the debate also included who would get the tax refund and how much that tax refund should be. Accordingly, during that time period the authors decided to run the exercise with one variation – an additional option was provided and set forth as Option One. (This particular class had 28 students, so 56 total points were being offered as a total refund amount of $5,600.00). Again, instead of simply having the three options set forth at the beginning of this article, students were provided with the four options, with Option One being the new one (See Table 4, "$5,600.00 Tax Refund for Exam One").

As you might imagine, Option One did not win – Option Four did. Nevertheless, Option One was not shut out; it did receive one vote. Any guesses who voted for it? If you thought it was someone who believed he received the highest great in the class, thus being the only one receive to nearly 25 additional points, while everyone in the class received only one additional point, you would be right.

For those of you with an interest in politics, you may recognize how Option One correlates closely to a certain presidential candidate (who later won the general election) who proposed distributing the propective budget surplus as described.

Conclusion

Students frequently make fairness (or perhaps more accurately, unfairness) arguments to their professors with respect to exam results they dislike. Students often seem stunningly unaware of how transparent and self-serving their complaints of "unfairness" tend to be. In essence, the thinking seems to be "I did poorly, therefore the exam was unfair." True, they will sometimes meet resistance from their better performing classmates whose thinking sometimes seems to run along the line of "I did well, therefore the exam was fair." Given students' heightened level of interest at the time exams are returned, what a good time it is to explore their own self-serving concepts of fairness. As Thompson states with respect to why people are self-serving in their judgments of fairness:

> In short, our preferences are more primary, or immediate, than our social concerns. People are more in touch with their own preferences than with the concerns of others. We have immediate access to our preferences; fairness is a secondary judgment. For this reason, fairness judgments are likely to be tainted by preferences. Because preferences are primary and immediate, they often color a person's evaluation of fairness in a self-serving fashion. In a sense, our preferences act as a self-serving primer on our judgments of fairness (Thompson, 2009).

Given the role that notions of fairness play with respect to establishing public policy, any discussion of public policy must necessarily examine the standards of fairness that are being applied. It is the authors' experience that students are too often blithely unaware of how self-servingly their standards of fairness shift to meet their own preferences. Using the exercise prescribed in this article may help students become more aware of this phenomenon and, in turn – one can hope, be more open to the perspectives of others.

By all appearance our society suffers from a profound degree of financial, fiscal and economic illiteracy. Such financial, fiscal and economic illiteracy make people particularly vulnerable to propaganda, scams, and corruption.

An important point should be made at this juncture. There is nothing magical or absolute about how the authors set up the numbers, what options were provided, what kind of curve was used, what topics can or should be integrated, and even what the implications are for the way that students react to the exercise. Countless variations of the exercise are possible and reasonable people may draw different conclusions – and if that happens, terrific! As a general rule, people are very committed to their own sense of what is fair in a given circumstance, but quite uncommitted to any consistency when the circumstances change. People also apply certain standards of fairness to themselves that they are less willing (or even unwilling) to grant others. This exercise, regardless of how one designs it, creates an opportunity for students to become introspective, consider the viewpoints of others, cultivate empathy, explore important and controversial topics, and engage in intense dialogue – all of which is an excellent use of classroom time.

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Appendix

Table 1
CLASS DISTRIBUTION OF GRADES

Top Third	Middle Third	Bottom Third
90	77	67
89	77	67
89	76	66
87	75	66
86	74	65
84	74	64
83	73	64
81	71	61
78	71	58
78	69	57

Table 2
FEES EARNED FOR EXAM ONE

$9,100.00	$8,100.00	$7,500.00	$6,700.00
$9,000.00	$8,000.00	$7,200.00	$6,600.00
$8,600.00	$8,000.00	$7,200.00	$6,600.00
$8,600.00	$7,900.00	$7,100.00	$5,900.00
$8,400.00	$7,900.00	$7,100.00	$5,500.00
$8,200.00	$7,800.00	$7,000.00	$4,900.00
$8,200.00	$7,700.00	$6,900.00	$4,300.00

Table 3
GOVERNMENT INTERVENTION

Schedule A (Market Rate)			Schedule B (Government Assistance)		
$9,200.00 to $10,000	A	(0)	$8,372.00 to $9,100.00	A	(5)
$8,000.00 to $9,199.00	B	(10)	$7,280.00 to $8,371.00	B	(10)
$7,000.000 to $7,999.00	C	(10)	$6,370.00 to $7,279.00	C	(9)
$6,000.00 to $6,999.00	D	(4)	$5,460.00 to $ 6,369.00	D	(2)
Below $6,000.00	F	(4)	Below $5,459.00	F	(2)

Table 4
$5,600.00 TAX REFUND FOR EXAM ONE

Option One Refund			
Top 1%	44%	$2,464.00	Allocated to Top 1%
Bottom 9%	56%	$3,136.00	$115.15 per remaining students
Option Two Refund			

Top 1/3	50%	$8,000 - $9,100.00	$300.00 per student
Middle 1/3	33%	$7,100.00 - $7,900.00	$200.00 per student
Bottom 1/3	17%	$4,300.00 - $7,000.00	$100.00 per student
Option Three Refund			
Top 1/3	33%	$8,000.00 - $9,100.00	$200.00 per student
Middle 1/3	33%	$7,100.00 - $7,900.00	$200.00 per student
Bottom 1/3	33%	$4,300.00 - $7,000.00	$200.00 per student
Option Four Refund			
Top 1/3	17%	$8,000.00 - $9,100.00	$100.00 per student
Middle 1/3	33%	$7,100.00 - $7,900.00	$200.00 per student
Bottom 1/3	50%	$4,300.00 - $7,000.00	$300.00 per student