ETHICS IN THE CLASSROOM: A TEN-YEAR RETROSPECTIVE

E. Susanna Cahn, Pace University

ABSTRACT

The influence of classroom context on the probability of being caught cheating is compared between face-to-face classes and online classes. A decision tree model assigned in the context of a management science class presents alternatives, including unethical choices, risks and rewards, and a decision facing a potential ethical dilemma. Part of the student response to the assignment is estimation of the subjective probability of being caught copying on homework. Student-estimated probabilities of being caught for both "real" (face-to-face) and "virtual" classrooms are compared. The same information was collected from students at points in time ten years apart to study the change in technological context on the probability of being caught. Broadly speaking, student respondents felt that only about one third of cheaters get caught, leading to a dilemma where sometimes grades can be improved by cheating. More specifically, the probability of being caught was higher in a face-to-face classroom than a virtual classroom. That difference was significant in the earlier time period but was no longer significant ten years later.

Keywords: business ethics, dilemma, subjective probability, decision tree, cheating

INTRODUCTION

A more ethical choice is sometimes, but not always, the more profitable choice. In an academic setting, better grades are the payoff for better academic behavior. Sometimes, however, someone's grades can be improved by cheating (and not getting caught at it). Here the influence of classroom context on the probability of being caught cheating is explored. This research covers a decade during which there was a rapid expansion in online course offerings and the use of technologies in the classroom. The focus of this study is how different classroom contexts, face-to-face versus online, influence student perception of the probability of being caught cheating and how that probability has changed over the ten-year period.

Ethical Decisions As Dilemmas

The definition of ethical decision alternative is a right choice. In business, ethical choices are sometimes more profitable than morally questionable alternatives. But sometimes a decision-maker is faced with a dilemma where there is a cost for a choice that is not offset by higher profits, as when a manufacturer has the technical knowledge to make its product safer but customers are not willing to pay extra for a safer product, or where investment in a safer workplace does not raise productivity.

The corresponding academic decision dilemma involves grades and honesty. Sometimes honest work results in the highest grade, but sometimes a higher grade can be earned by cheating (if the cheating is not caught or heavily punished). Fendler & Godbey (2016) emphasize the importance of the probability of being caught and the severity of punishment if caught on the decision-making processes of both students and teachers.

Both personal and contextual factors have been studied as possible influences on how decisions are made to resolve dilemmas between higher payoff and more adherence to ethical values (Craft, 2013).

The present paper examines how context influences decision-making by comparing the average probability of being caught cheating in virtual as compared to face-to-face classes.

Context

Reviewing the recent history of academic cheating, McCabe, Treviño, and Butterfield (2001) conclude that while individual factors influence cheating, context matters more. Contextual variables include students' perceptions of peers' behavior, as well as institutional integrity policies such as honor codes, faculty responses to cheating, surveillance, and sanctions. Missing from the early literature on context is the effect of virtual classrooms and the array of new technological tools that are changing the contexts of learning.

Electronic tools have become part of the academic landscape. There is "a new technological frontier, characterized by social media, increases in online courses, unprecedented access to information on the internet, changes in labs and educational technologies, and algorithms which detect academically dishonest behavior" (Deranek & Parnther, 2015, p. 14). Turnitin.com launched in 2000 and introduced their electronic plagiarism prevention service (Turintin.com, n.d.). In 2002 MIT began offering lectures and course materials online through its OpenCourseWare project (Hickey, 2014). Blackboard was granted a patent in 2006 for "Internet-based education support systems" providing for a series of educational courses stored on a server to be accessible by different users from different computers. The first-generation iPhone was released on June 29, 2007. There are internet-enabled opportunities to copy and paste information as well as electronic tools for detecting copying. Classes may be delivered entirely virtually without human contact or visible proctors.

Studies exploring whether cheating is more prevalent online have had mixed results (Grijalva, Kerkvliet, & Nowell, 2006; King, Guyette, & Piotrowski, 2009; Lanier, 2006; Stuber-McEwen, Wiseley, & Hoggatt, 2009). Fask, Englander, & Wang (2014) found that although performance on ungraded online exams was poorer than on in-class exams, graded unproctored online exams showed better performance than in-class exam performance. They attributed the difference to the greater opportunity to cheat online. Watson & Sottile (2010) found that students reported a higher likelihood of being caught in a face-to-face class. Context can change over time, especially technological context; cheating behavior, to the extent that it is influenced by context, may also change over time.

Academy-Professional Correlation

Apart from the importance of academic integrity in its own right, there is an established relationship between academic integrity and professional integrity. Indeed, it is hard to imagine that ethical behavior would be limited to one role and absent in other roles. Ogilby (1995) found that academic behavior is related to business behavior. Dishonesty has increased over time in both academic and professional arenas, which adds urgency to scholarship aimed at understanding how decisions are made in the face of ethical dilemmas (Sims, 1993). In a review paper, Crown & Spiller (1998) make the case for there being a parallel between cheating in college and decisions to engage in unethical workplace behaviors by noting a self-report bias when surveying students about their own experiences with cheating.

Measurement Issues

Research on ethical behavior is hindered by the difficulties inherent in measuring decision-making ethics. A comprehensive definition of ethical behavior is doing the right thing, while multiple considerations may be included as measurements such as considering the consequences of that behavior to others, one's principles and duties, and the idea of justice. Thus. Some judge a decision to be ethical if the consequences of the decision are ethical (Elm & Radin, 2012). The decision process for ethical decisions, like all decision processes, is largely in someone's mind and hidden from the view of others, which further hinders measurement. Measurement difficulties apply to both academic and professional settings. Proxy measures have been used because direct measurement is generally not possible.

Surveys asking respondents about their history of engaging in ethical/unethical choices is one approach (e.g., Davis, Grover, Becker, & McGregor, 1992; Haines, Diekhoff, LaBeff, & Clark, 1986; McCabe & Treviño, 1993). Surveys are subject to self-reporting bias because an individual may be reluctant to report having behaved unethically.
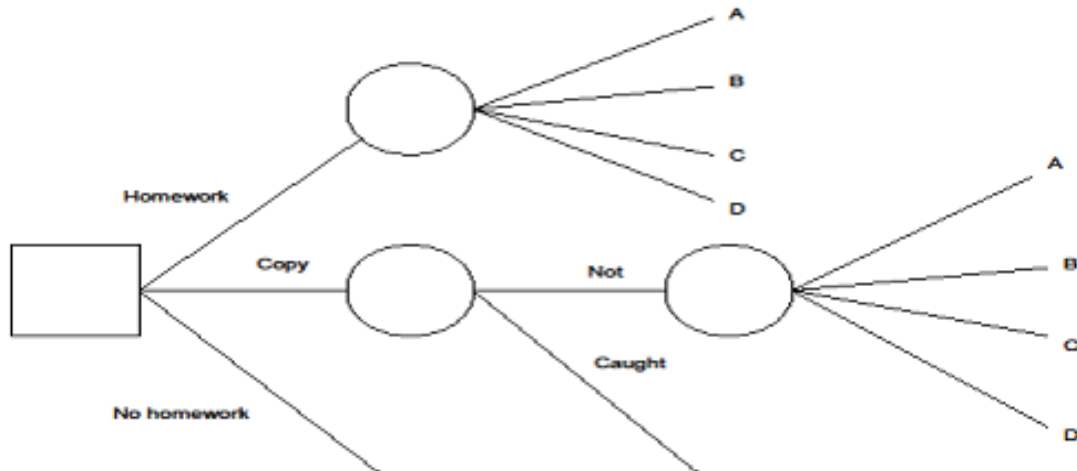
Figure 1. Student's Ethical Dilemma Decision Tree. From Cahn & Pastore, 2003, p. 334. Reprinted with Permission.

This is particularly true of electronic surveys, which are often confidential rather than anonymous. It may also be that in surveys of behavior respondents have different perceptions than researchers, or than each other, about which behaviors are inappropriate.

How one responds to different scenarios is another approach (e.g., Perryer & Scott-Ladd, 2014). As scenarios are hypothetical rather than the experiences of the respondents, responses are also necessarily hypothetical and may be different from what respondents would actually do.

Experiments that are simulations of opportunities to cheat (e.g., Gino, Ayal, & Ariely, 2009) are still another approach. Simpson & Yu (2012) used online activity to examine how often students consulted online information sources during unproctored quizzes. For their sample, they observed a self-report bias when the online activity was compared with a follow up survey.

Decision Models In The Classroom

Earlier researchers emphasized the importance of both normative ethics instruction and incorporating ethics into functional business instruction. McPhail (2001) suggested that teaching professional ethics has the goal of rehumanizing a technical curriculum and balancing the emphasis on business analytics. In addition to normative ethics instruction, it is important to incorporate

ethics within functional business courses (Dunfee & Robertson, 1988). Decision models incorporating ethical values among other criteria can be part of this process. "If it is important to improve ethical decision making in business, then it seems reasonable to place the goals of ethics education in a business school within the context of models of ethical decision making" (Herndon, 1996, p. 508).

An example of a decision model that incorporates ethical values within a functional business course is the decision tree model of Cahn & Pastore (2003). Their decision model serves two purposes: to teach decision tree analysis in a quantitative methods course and to introduce ethics into a functional business course. Their example is described in detail in the Method section below. This paper uses that model to explore the influence of different classroom contexts on an ethical decision dilemma by comparing face-to-face and virtual classrooms.

METHOD

The decision tree model (adapted from Cahn & Pastore, 2003) was introduced as a student exercise in a management science course. The course is part of the core curriculum for undergraduate business students at a midsize northeastern university and has students from all business majors. The model presents a student's ethical decision dilemma in decision tree format (see figure 1).

The student's ethical dilemma decision tree

begins with a choice among three alternatives: (1) do the homework independently and honestly, (2) copy the homework from another student and turn it in dishonestly, or (3) not do the homework. The decision tree represents these three alternatives as three branches emanating from a square node. Decision tree analysis differentiates between decisions and chance events. Any set of alternatives/choices primarily under the control of the tree's decision-maker is represented as a decision. Square nodes are the graphic device used to represent decisions. In this decision tree example, whether or not to do homework is such a decision.

Any set of outcomes not primarily under the control of the tree's decision-maker is treated as a chance event. Examples of such chance events might be competitors' choices or states of nature, like the weather. The tree's decision-maker is at risk because the decision-maker cannot choose which chance outcome will occur. Circular nodes are the graphic device that decision tree models use to represent chance events. The branch on the student's ethical decision tree representing the "copy" alternative is followed by a circular node. Here the risk is that the copier may or may not get caught; that is not under the student's control.

Both the "not caught" branch and the honest "homework" branch result in assignments that are graded; the ends of those branches are marked with grades A, B, C, D, which are the payoffs in the student decision model. The grade distributions (that is, percent of grades that are As, percent that are Bs, and so on, totaling 100%) are also represented as chance events, since grades are assigned by the teacher and therefore not the student's choice.

Payoffs are given at the ends of the branches in the form of grades. Their numerical equivalent will be needed to solve the tree. The end of the "no homework" branch is blank in the exercise, where the grade for "no homework" is left for the student respondents to assign. For the "copy" branch, the end of the "caught" branch is blank; there will be a grade/penalty filled in by the students doing the exercise.

The student decision tree model is a way of illustrating a dilemma with an array of choices where a choice with a high payoff may not be the most ethical choice. It is an example of an ethical dilemma in school that serves as a parallel to a business ethics dilemma. Like any quantitative model, the decision tree is a simplified view of reality that misses the nuances of the homework dilemmas of real students, but it still captures an array of choices and the risk of doing a behavior that the teacher/authority figure deems unacceptable.

Students are asked to fill in the missing information and solve the decision tree as follows:

- Students estimate probabilities for the chance events. One of these chance events is the chance of getting caught copying. The others are the sets of probabilities that reflect the grade distributions for the graded homework, both copied and honestly done. As students are responding to the exercise with subjective probabilities, this measurement scheme is similar to a survey, although it is not a self-report as such because the probabilities represent information for the peer group with which the responding student is familiar. The student responding is not asked whether he/she has been caught copying; rather the respondents are being asked what is their subjective estimate for students in the school with which they are familiar. The probabilities of grades A, B, C, and D represent the distribution of grades for the class rather than one student's grade. Students similarly assign the penalty/grade for "No homework" and the penalty/grade for copied homework that is "Caught."

- Using their estimated probabilities, students go on to solve their decision trees following the standard procedure for decision tree analysis. The letter grades are replaced by numerical values: A = 4, B =3, C = 2, D = 1, F = 0. At each circle/chance event node, the expected value is computed using the branches following on the right; at each square/decision node, the following branch with the best expected value is chosen.

- To summarize the perspective of maximizing the expected grade, students are asked to rank the three decision alternatives: "Homework," "Copy," and "No homework" based on their solved decision tree.

- Then students are asked to rank the three decision alternatives again using ethics as a goal rather than expected grade.

Finally, students are asked to compare their two

rankings and provide comments.

This paper uses a variation on the decision tree model (adapted from Cahn & Pastore, 2003) to study the influence of context on academic ethics. Teams of students were given two versions of the decision tree: one for a face-to-face classroom, the other for a virtual classroom. Each response was by a team of two or three students who reached consensus on subjective probabilities. Each team turned in two decision trees: one to represent the situation in a traditional face-to-face ("real") classroom, the other to represent the situation in a "virtual" classroom where assignments and teacher-student interactions are online. Thus within a given class the "real" and "virtual" responses were paired.

Responses were collected from different classes at points in time ten years apart. There were 31 student teams responding in the 2001-2002 academic year. In the 2012-2013 academic year there were 41 teams of students responding who were approximately ten years younger than the students in the 2001-2002 classes.

A t-test was used to compare responses for the subjective probability of being caught copying in a "real" classroom with the subjective probability of being caught copying in a "virtual" classroom. Responses from the two time periods, 2002 and 2013, were tested independently. Within each period, the subjective probabilities of getting caught copying in "real" and "virtual" classrooms estimated by an individual respondent team were paired.

RESULTS

As the average student-estimated chance of being caught copying is the focus of the present paper, results will focus on differences in the estimated probabilities of being "Caught." Therefore, typical results are reported for the other estimates that are provided by student teams responding to the decision tree exercise. Thus, all values in figures 2 through 5 are the same, other than the probability of being caught and those calculations that incorporate the probability of being caught.

Reported values that are the same in figures 2 through 5 include probabilities for the distributions of grades and the grades for "No homework" and for "Caught" copying. Calculations to solve the tree illustrated in figure 2 are:

Expected value of Homework = .3(4) + .4(3) + .2(2) + .1(1) = 2.9

Expected value of Copied homework if Not caught = .3(4) + .4(3) + .2(2) + .1(1) = 2.9

Expected value of Copied homework = .55(2.9) + .45(0) = 1.6

Best of {Homework (2.9); Copy (1.6); No homework (0)} = Homework (2.9)

Probabilities reported for grades on "Homework" give the most common estimate representing the distribution of grades by respondents; they result in an expected value (weighted average) of graded homework of 2.9 on a 4-point scale. The student-estimated expected value of graded copied homework (which was not caught) varied, some suggesting that copiers seek out better students to copy from, some suggesting that students who copy are clueless and copy from other poor students, and some suggesting that copied homework is random and has the same average grade if the teacher is unaware that it is copied. Here the case treated is where the expected grade is the same, 2.9, to isolate the influence of the chance of being caught. Penalties assigned by students for "No homework" and for "Caught" copying typically were both F (0 points). Reported differences in the estimated probabilities of being caught copying follow.

Students in 2002 responding to the exercise estimated the average probability of being caught if an assignment was copied to be 45% in a "real," face-to-face classroom and 32% in a "virtual" classroom. Not every team had the same perspective. Seven teams (23%) thought the probability of being caught was higher in a "virtual" classroom, 22 teams (71%) thought it was lower, 2 teams (6%) thought it was the same (see figure 2 and figure 3). A paired t-test was used to test whether the subjective probabilities for "real" and "virtual" classrooms in 2002 were significantly different. The t-test ($t(30) = 3.3067$, $p = .0025$, two-tailed) showed a significant difference at the 5% level.

Students responding in 2013 estimated the average probability of being caught if an assignment was copied to be 37% in a "real" classroom and 33% in a "virtual" classroom (see figure 4 and figure 5). The difference between "real" and "virtual" was no longer significant ($t(40) = .7834$, $p = .4380$, two-tailed) at the 5% level. These student teams were roughly split with 17 teams (41%) perceiving a higher probability of being caught copying in a
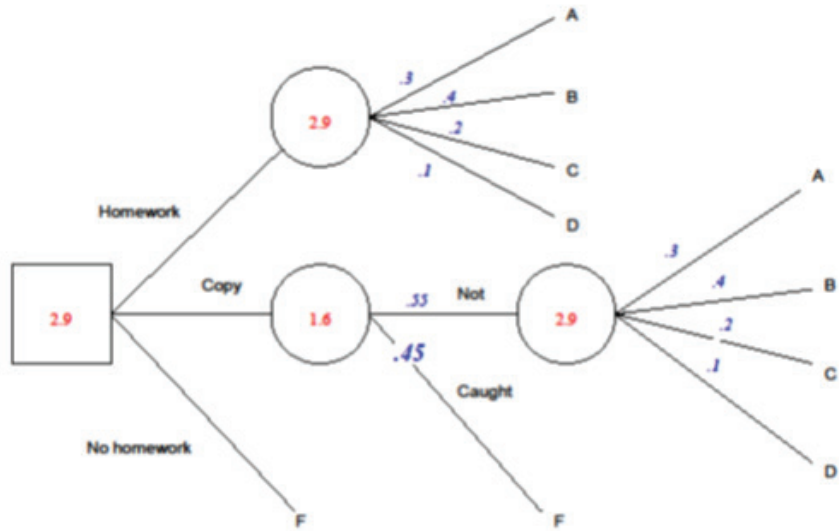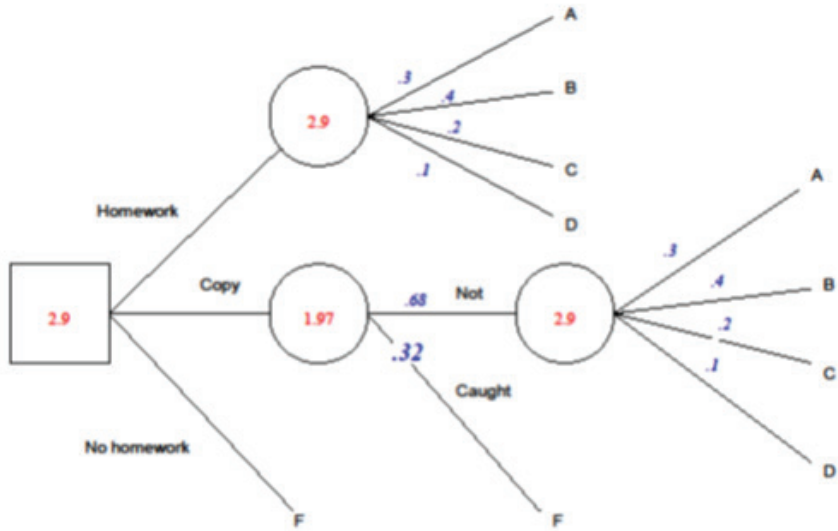
Figure 2. "Real" Classroom 2002
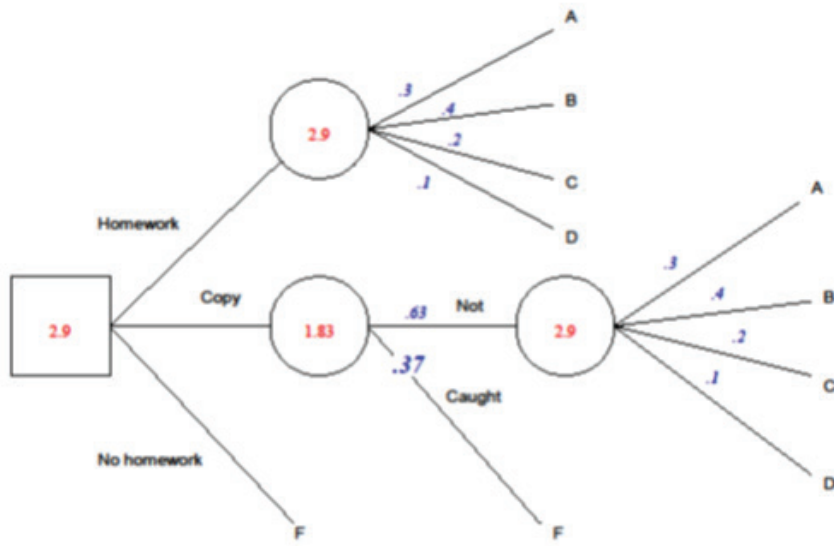

Figure 3. "Virtual" Classroom 2002

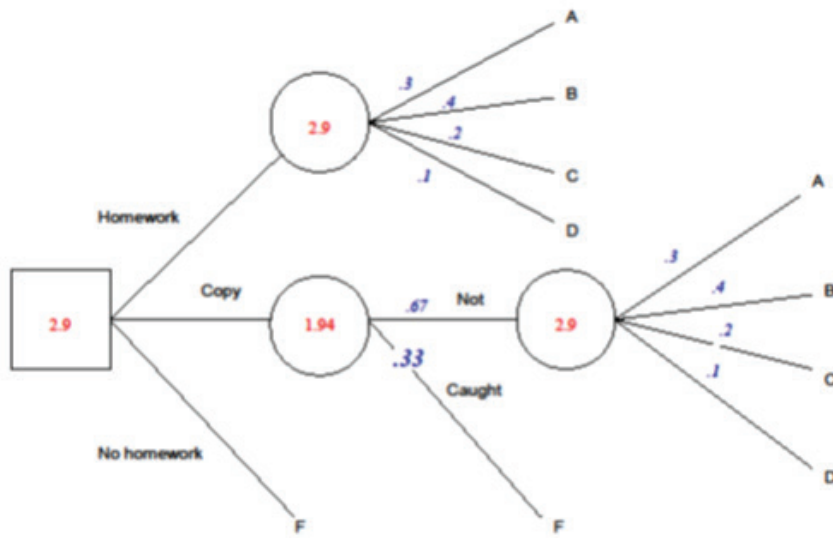*Figure 4.* "Real" Classroom 2013

Figure 5. "Virtual" Classroom 2013

"virtual" classroom and 23 teams (56%) perceiving a lower probability of being caught in a "virtual" classroom. One team (2%) showed no change between them.

The change over time is summarized in Table 1. The subjective probability of being caught copying associated with "real" classrooms went down over the ten-year period, while the subjective probability of being caught copying associated with "virtual" classrooms remained about the same. Student comments from the responses to the 2013 exercise indicate that it is easier to copy electronically but also easier to get caught. The *t*-tests indicate that while students in 2002 perceived the context of "real" and "virtual" classrooms to be significantly different, students in 2013 did not see that difference to be significant.

Table 1. Comparison Over Time

2002		2013	
Real:	45% caught	Real:	37% caught
Virtual:	32% caught	Virtual:	33% caught

In nearly every team's response the expected grade ranking highest to lowest was: (1) "Homework," (2) "Copy," (3) "No homework." In the alternative ranking (see steps 4 and 5 in the Method section above) where students were asked to rank the three decision choices based on ethics as a goal rather than expected grades, the typical ranking was (1) "Homework," (2) "No homework," (3) "Copy." Responses showed a persistent dilemma that while the highest grade payoff is for the most ethical choice, there is a dilemma regarding the second and third ranked choices. The expected grade is higher for copying than for not doing homework (seen in figures 2, 3, 4, 5) although it is less ethical to copy.

CONCLUSION

It appears that evolving electronic tools have extended some features of the context of the "virtual" experience into "real" classrooms over the ten-year period studied. What earlier was perceived as different classroom contexts, later was not perceived as significantly different. On the teacher side there are electronic submissions and electronic tools for detecting plagiarism; on the student side there are smartphones, laptops, and tablets for use as learning devices that can be distractions or tools for cheating. Perhaps innovation in electronic devices has increased the likelihood that cheating even in traditional classrooms can be done without being caught. What once was perceived as two distinct experiences has become less distinguishable. This research did not probe the reasons for that change, which is left for future research.

Even in the 2013 sample, where electronic tools are available to catch the unethical, the estimated probability of being caught copying is lower than the estimated probability of not being caught. In both the 2002 and 2013 samples, the dilemma persists that a more ethical choice is sometimes, but not always, the more profitable (i.e., higher expected grade) choice.

The dilemma is in part a feature of expected value analysis: Where there is a positive probability of not being caught the expected value of the "Copy" grade will be greater than zero. This dilemma can be offset in the decision tree model if the penalty for being caught copying is a negative and considerably more severe than the penalty for "No homework." These student respondents estimated that the same penalty is given for "Caught" copying as for "No homework" (a grade of zero) resulting in a higher expected grade for "Copy" than for "No homework" because some of those who copy do not get caught. Severe enough penalties to eliminate the dilemma of a higher expected value for cheating are unusual both in class and in business. In the business parallel to this model, when all stakeholder relationships go well (parallel to being able to do the homework in the model), it is often most profitable to be virtuous; but when things go wrong (parallel to being unable to do the homework or a crisis with some stakeholder), there may be a dilemma where the unethical choice ("Copy," or perhaps hiding business information) can be more profitable/less costly than the ethical alternative ("No homework," or admitting liability).

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