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Ethical Decision-Making in e-Learning: A Socio-technical Analysis of Informal Security Controls

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ABSTRACT

E-learning is emerging as a way of using technology to re-create a one-on-one learning environment for numerous participants at a time and has become prevalent in the higher education arena. In addition to traditional forms of cheating, many universities currently deal with issues of students in traditional classrooms who engage in technology-facilitated cheating. This paper recognizes the socio-technical dimension of security breaches in e-learning. E-learning fraud occurs in the social context of the class, virtual or traditional, and may involve influences by groups, teachers, other students, and the context of the overall university. Research states that when placed in a moral situation, individual behavior can be influenced by factors that are specific to the individual and factors that vary by situation. The focus of this paper is to develop propositions to help understand these behaviors and describe the results of an exploratory qualitative study to examine the perceptions of students in this context. We provide an analysis of this data and examine its utility in the development of future research in e-learning.

Keywords

Ethical decision-making behavior, e-learning, informal security controls, socio-technical

INTRODUCTION

It is important for education institutions to foster and maintain the integrity of the online degree as a viable and credible alternative to traditional face-to-face degrees. The role of a college education is to produce ethical professionals. However, as higher education institutions increasingly use technology to administer education, there may also be an increase in the use of technology to defraud the institution. In addition to traditional forms of cheating, many universities currently deal with issues of students in traditional classrooms who engage in technology-facilitated cheating, with the aid of cell phones, PDAs and internet-connected laptops (Read, 2004). This phenomenon of identity fraud in e-learning systems potentially undermines the value of online education at the course, program, and university level.

Prior research on e-learning has centered on the effectiveness of e-learning as a teaching or training tool (Sulcic and Lesjak, 2009; Johnson, Gueutal, Falbe 2009; Suzuki, Tada 2009). There has also been research on measuring the performance of e-learning systems as determined by the knowledge learned by an individual (Sulcic, Lesjak 2009; Zhang, Zhao, Zhou, Nunamaker, Jr. 2010). However, examining the manifestation of fraudulent behavior in e-learning systems has not been researched. Examining user fraudulent behavior is significantly important and critically needed due to the expected increase in enrollment in online courses and the prevalence of technology-aided cheating in education environments (Read, 2004; Simonson, 2003). As more students take online classes and receive online degrees, it is vital that the governing bodies, more specifically the institutions administering the online classes and degrees, have a clear understanding of how users are interacting with the e-learning system. Also, there may be varying degrees of fraudulent behavior occurring within the classroom depending on the level of "virtualness," more specifically from an in-person class, to a hybrid class, or in an online class. In order to provide a refined view of user behavior in an online learning environment within the various levels of classroom "virtualness," research is needed to develop additional knowledge on how fraudulent behavior is manifested in e-learning systems.

Little research examines security issues, such as identity fraud and the unauthorized access to resources in an e-learning environment. It is important to recognize the socio-technical dimension of security breaches in e-learning. E-learning fraud occurs within the social context of the class, virtual or traditional, and may involve influences by groups, teachers, other students, and the context of the overall university. The moral judgments and rationalization processes involved in e-learning can be viewed as an ethical decision-making process (Trevino, 1986). Examining user's behaviors through an ethical decision-making lens is particularly useful when the issue being evaluated does not fit within the normal parameters of ethical behavior. It is important to understand the moral decision-making processes and situational factors that contribute to e-learning fraud in order to inform the systematic development of effective strategies for its mitigation. Dhillon and

Backhouse (2001) analyzed current directions in IS security research using a conceptual framework of four paradigms including the functionalist, interpretive, radical humanist, and radical structuralist paradigms. They found that while most IS security research focuses on formalized rule structures in designing security, IS researchers are moving towards a socio-organizational perspective to develop a more holistic view of IS security to inform the design of secure information systems.

In this paper, we explore the socio-technical dimensions of e-learning fraud and its ramifications in higher education. We adapt prior research on the examination of cheating behaviors using traditional and digital forms of cheating (Stephens, Young, and Calabrese, 2007) and examine the moral judgments involved in the adoption of these behaviors. We develop propositions to help understand these behaviors and describe the results of an exploratory qualitative study to examine the perceptions of students in this context. We provide an analysis of this data and examine its utility in the development of future research in e-learning.

LITERATURE REVIEW AND PROPOSITION DEVELOPMENT

Ethical decision-making theory has successfully been used in research that examines user behavior with information communication technologies (Conger, Loch, Helft, 1995; Johnson, 1989; Loch, Conger, 1996; Thong, Yap, 1998). Thus, it provides a foundation for understanding user behaviors of identity fraud in an e-learning environment. Ethical decision-making literature summarizes that there are individual factors and situational factors that affect an individual's ethical behavior (Ford, Richardson, 1994; Loe, Ferrell, Mansfield, 2000).

Informal Security Controls in E-Learning Systems

Information systems literature provides a framework for security controls in the form of three levels: technical, formal, and informal. In the context of an e-learning system, the technical level refers to the physical security of the connection between the student's computer and the e-learning system; the formal level refers to the policies and rules that are directed at the intersection of the technical and informal level; and the informal level refers to the security beliefs and norms that are associated with the individual user of the e-learning system. These three levels overlap in nature, with informal security effectively implemented with the support of formal and technical levels (Åhlfeldt, Spagnoletti, Sindre, 2007). The primary focus of our research is to provide an explanatory view of the informal level security controls in an e-learning system, which can inform the development of normative guidance that can lead to more effective security control in e-learning. The secondary focus is to investigate an extent of the formal level control, more specifically how effective the policies and rules are in deterring security breaches in the informal level. Both of these focal points will provide clarification on the impact that the interaction between the informal and the formal levels of security have on the individual user.

To further evaluate issues with informal security controls in an e-learning system, we must first identify their appearance in and the difference between traditional, or "face-to-face," classrooms and online classrooms. Breaches in informal security controls in a learning environment manifest as various forms of cheating. The main differentiation between the breaches in traditional classroom as compared to the breaches in online classroom relies upon the lack of confirmation of the student user's identity at various stages of learning. For example, as a semester progresses, face-to-face teacher/student interaction can provide the teacher with additional information on the student's level of understanding in the subject taught, as evidenced through classroom participation and discussion. Conversely, in an online classroom, there can be little to no teacher/student interaction outside of teacher assigned activities and student submitted assignments. Table 1, adapted from Stephens et al.'s (2007) comparison of conventional and digital forms of cheating behavior, details examples of breaches in informal security controls in the traditional and in the online classroom environment. Whereas Stephens et al. (2007) examined cheating behaviors using traditional and digital forms of cheating, this study examines cheating in an online classroom environment.

Informal Security Control Breaches	Forms of Cheating Behavior	Classroom Environment	
		Traditional	Online
Unauthorized access to individuals	Impersonation on an assignment	Copying (by hand or in person) another student's homework	Having another person complete class work for you
	Impersonation on a test	Copied from another student's paper during a test with his or her knowledge	Having another person complete a test for you
	Unpermitted collaboration	Working on an assignment with others (in person) when the instructor asked for individual work	Working with another student (physically present) when the instructor asked for individual work
Unauthorized access to resources	Plagiarized a few sentences or an entire paper	Submitting a paper that was developed by someone else or a paper that paraphrases without proper citation	Submitting a paper that was developed by someone else or a paper that paraphrases without proper citation
	Used unpermitted notes during a test	Using unpermitted handwritten crib notes (or cheat sheets) during a test or exam	Accesses outside websites or reference materials during an online test

**Table1. Informal Security Control Breaches in Traditional vs. Online Classroom Environment
(Adapted from Stephen's et al., 2007)**

Technology can be considered a facilitator for various forms of cheating behaviors, such as impersonation and plagiarism (Stephens et al., 2007). It has made various forms of cheating behaviors, such as impersonation and plagiarism, a great deal easier to engage in. Alternatively, technology has also provided additional avenues of detecting some of the traditional forms of cheating. For example, technological solutions such as BlackBoard's SafeAssign feature provides tools to significantly improve instructor detection of plagiarism (Scherbinin, Butakov, 2008). However, greater understanding is needed on the new manifestations of cheating behaviors detailed in Table 1 and the opportunities that technology provides in detecting these behaviors. Stevens et al. (2007) examined forms of cheating in the digital and traditional class room environments. These types of cheating behaviors are essentially breaches of informal security controls. They predominantly center on issues of unauthorized access to resources – where the resource in question can be an *individual or group* of people; or access to *information* resources that are available in electronic or traditional formats. Forms of cheating behaviors represent an ethical decision that students make in both traditional and online learning environments. We adopt an ethical decision-making theoretical approach to better understand cheating behaviors in e-learning systems.

RESEARCH METHODOLOGY AND DATA COLLECTION

Methodology

We pursued a qualitative methodology to develop propositions presented in this paper. Quantitative methods are based on the assumption that the world has an objective reality, which can be captured and translated into testable hypotheses, usually in the form of statistical or other numerical analyses (Kaplan and Duchon, 1988). When the researcher studies phenomenon that have rich extant theory, quantitative methods are more appropriate. As mentioned earlier, little extant theory specifically examines the ethical decision-making dilemmas in e-learning. Thus, the purpose of this research is to explore the ethical decision-making environment in e-learning. Qualitative mechanisms are appropriate for such exploratory research where the

treatment of the phenomenon under observation is novel and the purpose is to understand the impact of the interaction of individual, situational and environmental factors, including informal controls, in ethical decision-making.

Qualitative researchers view the world as a social construction that will demonstrate large variance depending on the observer and the interpreter of the phenomenon (Lee, 1991). Reality is typically viewed as highly subjective and can be accessed through language, consciousness and shared meanings (Lee, 1991). Qualitative methods are conducive for understanding people and the environment within which they live (Kaplan and Maxwell, 1994). These are feasible for developing an in-depth understanding of human behavior and the reasons that govern this behavior. Qualitative data sources include direct observation, participant observation, in-depth interviews, and documents and texts (Myers, 1997). According to Kaplan and Maxwell (1994), the objective of understanding a phenomenon from the perspective of a subject and his environment is most feasible with a qualitative approach. Thus, qualitative methods are suitable for our research.

This research is exploratory in nature. The purpose is to investigate propositions and understand the perceptions and the interaction of situational and individual factors that impact the moral judgments and ethical decision-making processes. The purpose of this research is to better understand student behavior in dealing with the moral judgments in e-learning environments. The e-learning environment, as well as the social environment of other students and classmates, impacts an individual's decision-making behavior. This paper reports on the perceptions and experiences of students as they face moral judgments in e-learning environments.

Data Collection

In order to explore the efficacy of informal controls in influencing the ethical decision-making behavior of students in e-learning, we conducted a qualitative pilot field study with structured interviews of students enrolled in e-learning classes. We conducted face-to-face interviews with students from a large regional university in a group setting. The sample included students from a typical undergraduate class at a large public university. Students were of various background, gender and ethnicity. Students were assured the responses would be anonymous, even though the conversation was recorded. Additionally, to remove student concerns of self-implication, the questions surrounding the cheating and unethical behavior were asked using 3rd person scenarios. We used structured question stems which were centered on the literature-informed conceptualization of cheating in e-learning systems as described above. In addition, we reviewed the policies and procedures that impact students' ethical decision-making in the e-learning environment and studied the informal controls in the e-learning. The purpose was to develop a complete picture of the e-learning in terms of the learning environment that is created for the students, beyond the e-learning system represented by the content management and the learning management system. Thus, we used a narrative field study to develop an ethnographic design which could be used for interpretive analysis of the qualitative data collected. By discussing the phenomenon with individuals that are directly involved, we were able to explore the boundaries and intricacies of ethical decision-making behavior in e-learning systems.

ANALYSIS AND DISCUSSION

Interpretive research is useful to understand human thought processes and behaviors in social contexts (Klein and Myers, 1999). It can produce insight to inform and guide the development and design of information systems and systems policy. The purpose of this research, in keeping with the interpretive tradition, is to develop a social construction of the perceptions of informal controls and their impact on ethical decision-making and e-learning.

Technological Detachment and Ethical Decision-Making

While technology has provided additional avenues of detecting some of the traditional forms of cheating, greater understanding is needed on the new manifestations of cheating behaviors detailed in Table 1. Thus, it extends that additional extensive research is required in order to fully understand the implications of these modernized behaviors. There are significant differences between the informal security control breaches in traditional and online classrooms, excluding plagiarism which is exhibited in a similar fashion in both environments. Online classrooms lack the physical presence of an authoritative figure, such as the instructor, to deter blatant cheating. Thus, there may be an increased probability of cheating in this environment. Particularly, the aspect of cheating that involves another person may be present in online classrooms and can be paralleled to "identity fraud" in criminal activities. There is also a need to specifically understand the behaviors that are associated with cheating on a test versus cheating on an assignment. This is due to the increase in the severity of consequences for cheating on a test as compared to cheating on an assignment. One participant positioned cheating as the "easy way out" of completing an assignment or test for an online class of a particularly complex topic, especially if the topic is complex and they feel they cannot get help from the instructor. Interview participants described online assessments as being done in an environment similar to "being in a room with the door closed." This lack of others place students in a place

where they "make up their own rules" and the decision to behave unethically becomes "very tempting." Interviewees said that since they don't know how the professor could monitor their behavior, there is no way to sanction their unethical behavior. Further, they state that in a traditional face-to-face class they are more likely to get caught and therefore less likely to try to cheat. However, the temptation to cheat would be higher in an online class since sanctions for cheating can only be applied if the cheating behavior can be detected.

> *Proposition 1: The perception of <u>technological detachment,</u> due to the "virtualness" of the technology impacts the perceived distance from the source of online learning. This difference in perceptions between the online and traditional forms of instruction impacts the moral judgment and ethical decision-making of students in e-learning.*

Situational Factors

The less researched situational factors that affect an individual's ethical decision-making include factors that are not individually specific, but are perceived as important by the individual in the ethical decision-making process. Examples of situational factors in an e-learning environment include deterrents imposed, perceived pressures, peer and authority influences, and perceived moral intensity. As such, it raises the question of whether previously studied antecedents of ethical decision-making hold in an online learning environment (Trevino, 1986).

All the students interviewed agreed that the university academic policies would have minimal to no effect on an individual's behavior in an online class. One participant stated that the presence of a proctor or an authority figure would ensure ethical behavior. Further, this understanding shows that currently in e-learning systems, there is a loss of the most effective deterrent – the instructor. Pressure can increase the occurrence of unethical behavior; and the online learning environment can add to that increase due to the lack of physical oversight by authority. One student described a dislike for online classes. However, having to take a mandatory class in an online format created pressure and the need to "think of other ways" to do well in the class. The physical presence of the authority figure, the fear of embarrassment, and the proximity of the victim are all factors that affect the intensity of the authority influence (Kelman, Hamilton, 1989), and the relevance of these factors may dissipate in an online learning environment. One participant described a situation where there were groups of students in the same online class worked together on individual assessments, such as assignments and tests. This type of behavior could result in a reconceptualization of what the "norms" are for ethical behavior in an online class.

Individual decisions follow cognitive or rational decision-making processes where the individual uses their cognition or follows a rational process to arrive at moral judgments in the ethical decision-making processes. Much of the cognition involved in the ethical decision-making process is typically formed prior to the decision-making scenario – thus the decision-making process is a reflection of the combination of the beliefs, attitudes, and values of the individual. Ethical decision-making theories point to the influence of situational factors as affecting these decisions. Trevino (1986) developed an interaction model to explain ethical decision-making. She developed multiple propositions where the interaction of situational and individual factors explains ethical decision-making behavior better than the individual or situational factors do by themselves. We follow this approach in this paper.

> *Proposition 2: The interaction of situational and individual factors better explain ethical decision-making in online e-learning than individual or social factors by themselves, in e-learning environments.*

Moral Intensity

Moral intensity is a relatively new situational factor that focuses on the "nature of the ethical issue" (Loe et al., 2000, p. 186), more specifically the "extent of issue-related moral imperative in a situation" (Jones, 1991, p. 372). Jones (1991) details six characteristics of moral intensity – "magnitude of consequences, social consensus, probability of effect, temporal immediacy, proximity, and concentration of effect" (p.372). These characteristics are of particular importance in an e-learning system because the degree to which they are perceived by the individual may be significantly altered by the physical presence of peers and authority figures. For example, the virtual nature of online learning may affect the individual's perception of their proximity to sanctions of unethical behavior.

There has also been extensive research on the role of in-class deterrents in reducing cheating behaviors (Davy et al. 2007; Nonis and Swift, 1998; Smith et al. 2002), including "announcing penalties, … , monitoring students vigilantly during exams, and giving alternate forms of the exam to adjacent students" (Davy et al. 2007, p.286; Smith et al. 2002, p.50). These deterrents can be considerably less effective in an online learning environment. The physical absence of authority, the varying intensity of a penalty that is read on a screen versus expressed by a person, and the impression of sternness by visually experiencing the alternate test selection method are all removed in an e-learning system. For example, the virtual

nature of online learning may affect the individual's perception of their proximity to sanctions of unethical behavior. An interview participant noted that because there is "no one watching" the student, taking an online class is pretty much "open to anything." Some students believe that there is no way for the instructor to detect unethical behavior. Another student did highlight that an effective consequence in online classes is when instructors use plagiarism-detection technology for submissions, along with a specific policy on consequences if a pre-specified ratio of the submission was found to be plagiarized. The temporal immediacy of this sanction seemed to significantly affect the students' perception of the severity of offense

> **Proposition 3:** *The interaction of Moral Intensity and perceived technological distance directly impact the ethical decision-making behavior of individuals in e-learning environments.*

Figure 1 is a visual representation of the aforementioned propositions. Though there are various individual and situational factors that may affect a user's ethical decision-making behavior, we have chosen to focus on primary factors that are germane to the online learning environment. We explicitly defined these factors and will examine their importance and relevance in understanding identity fraud behavior in an e-learning environment.
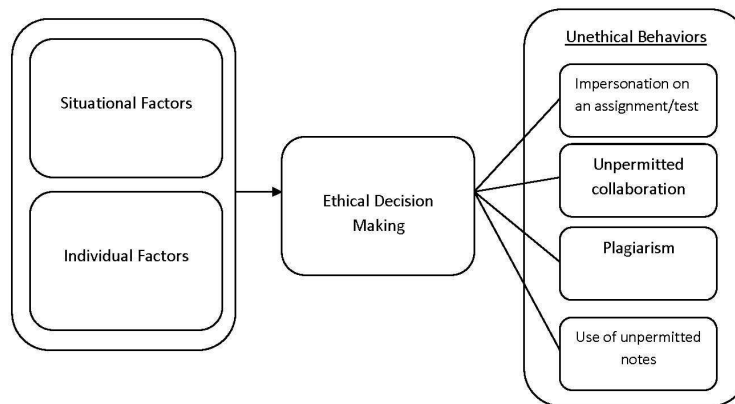

**Figure 1. Theoretical Model of Ethical
Decision-Making in E-Learning Systems**

CONCLUSIONS

In this paper, we have developed an exploratory analysis of a phenomenon that is becoming increasingly prevalent in society and is seldom examined in research. While some work has been done in cheating in traditional classroom education, there is a lack of research that explains this phenomenon in the increasingly prevalent and pervasive e-learning environment. Thus exploratory research is an appropriate approach to develop the foundations for further empirical study. Our approach used ethical decision-making as the rational decision-making context to understand the cheating phenomenon in e-learning. Since ethical decision-making is recognized as a moral judgment (Trevino, 1986), which is a judgment that is made in the cheating approach, ethical decision-making provides an appropriate theoretical foundation to examine moral judgments of cheating in e-learning. We used the extant literature on ethical decision-making in traditional teaching as a foundation to examine how ethical decision-making is different in e-learning. By examining both existing theory and the results of structured interviews, we were able to develop a better understanding of ethical decision-making behavior in e-learning, as well as develop propositions that improve our understanding of the phenomenon and provide rich avenues for further empirical work.

References

1. Åhlfeldt, R., Spagnoletti,P., and Sindre, G. (2007) Improving the Information Security Model by Using TFI, *IFIP International Federation for Information Processing*, 232, 73-84.

2. Conger, S., Loch, K., and Helft, B. (1995) Ethics and Information Technology Use: A Factor Analysis of Attitudes to Computer Use, *Information Systems Journal*, 5, 161-184.

3. Davy, J., Kincaid, J. Smith, K., Trawick, M. (2007) An Examination of the Role of Attitudinal Characteristics and Motivation on the Cheating Behavior of Business Students, *Ethics and Behavior,* 17, 3, 281- 302.

4. Dhillon, G and Backhouse, J. (2001) Current directions in IS security research: towards socio-organizational perspectives*, Information Systems Journal*, 11, 127–153.

1. Ford, R., Richardson,W. (1994) Ethical Decision-making: A Review of the Empirical Literature, *Journal of Business Ethics,*13, 3, 205–221.

2. Galagan, P. A. (2000) The e-learning revolution, *Training and Development,* 54, 12, 24–30.

3. Gunasekaran, A., McNeil, R., Shaul, D. (2002) E-learning: research and applications, *Industrial and Commercial Training,* 34, 2, 44 – 53.

4. Johnson, D. (1989). A framework for thinking about computer ethics, In J. Robinett and R. Barqhin (Eds.), *Computer and Ethics: A Sourcebook for Discussions,* Polytechnic Press, NY, 26-31.

5. Johnson, R., Gueutal, H., Falbe, C. (2009) Technology, trainees, metacognitive activity *and e-learning effectiveness, Journal of Managerial Psychology, 24, 6, 545-566.*

6. Jones, T. (1991) Ethical Decision-making by Individuals in Organizations: An Issue-Contingent Model, *The Academy of Management Review*, 16, 2, 366-395.

7. Kaplan, B. and Duchon, D. (1988) Combining Qualitative and Quantitative Methods in Information Systems Research: A Case Study, *MIS Quarterly*, 12, 4, 571-586.

8. Kaplan, B. and Maxwell, J. (1994) Qualitative Research Methods for Evaluating Computer Information Systems, in E*valuating Health Care Information Systems: Methods and Applications,* J. G. Anderson, C. E. Aydin, and S. J. Jay (eds.), Sage, Thousand Oaks, CA, 45–68.

9. Klein, H. K., and Myers, M. D. (1999) A Set Of Principles for Conducting and Evaluating Interpretive Field Studies in Information Systems, *MIS Quarterly*, 23, 1, 67-93.

10. Loch, K., Conger, S. (1996) Evaluating Ethical Decision-making and Computer Use, *Communications of the ACM*, 39, 7, 74-83.

11. Loe, T., Ferrell, L. Mansfield, P. (2000) A Review of Empirical Studies Assessing Ethical Decision-making in Business, *Journal of Business Ethics,* 25, 3, 185-204.

12. Myers, M. (1997) Qualitative Research in Information Systems, *MIS Quarterly*, 21, 2, 241-242.

13. Nonis, S., Swift, C. (1998) Cheating Behavior in the Marketing Classroom: An Analysis of the Effects of Demographics, Attitudes, and In-Class Deterrent Strategies, *Journal of Marketing Education,* 20, 3, 188–199.

14. Read, B. (2004) Wired for Cheating, *Chronicle of Higher Education*, 50, 45.

15. Scherbinin, V. and Butakov, S. (2008) Plagiarism Detection: The Tool and the Case Study, IADIS International Conference e-Learning 2008 Proceedings, 304-310.

16. Simonson, M. (2003) Distance Education: Sizing the Opportunity, *The Quarterly Review of Distance Education,* 4, 4, 370-371.

17. Smith, K., Davy, J., Rosenberg, D., Haight, G. (2002) A structural modeling investigation of the influence of demographic and attitudinal factors and in-class deterrents on cheating behavior among accounting majors, *Journal of Accounting Education,* 20, 1, 45-65.

18. Smith, J., Davy, J., Easterling, D. (2004) An Examination of Cheating and Its Antecedents among Marketing and Management Majors, *Journal of Business Ethics,* 50, 1, 63-80.

19. Sulcic, V. and Lesjak, D. (2009) Elearning and study effectiveness. *Journal of Computer Information Systems,* 49, 3, 40-47.

20. Stephens, J., Young, M., and Calabrese, T. (2007) Does Moral Judgment Go Offline When Students Are Online? A Comparative Analysis of Undergraduates' Beliefs and Behaviors Related to Conventional and Digital Cheating, *Ethics and Behavior*, 17, 3, 233-254.

21. Suzuki, K. and Tada, N. (2009) A Layers-of-Quality Model in Online Course Design: The Five-E Model, *International Journal for Educational Media and Technology*, 3, 1, 92-103.

22. Thong, J., Yap, C. (1998) Testing an ethical decision-making theory: the case of softlifting. *Journal of Management Information Systems,* 15, 1, 213-237.

23. Trevino, L. (1986) Ethical Decision-making in Organizations: A Person-Situation Interactionist Model, *The Academy of Management Review,* 11, 3, 601-617.

24. Zhang, D., Zhao, J., Zhou, L., and Nunamaker, Jr., J. (2010) Can e-learning replace classroom learning?, *Communications of the ACM,* 47, 5, 75-79.