

Why do Some Teachers Trust Digital Technologies and Others Don't?

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Digital technologies have the potential to provide educators with new ways of instructing and learning. However, some educators still choose not to integrate such technologies in their classes. We suggest that differing levels of teacher trust in digital technologies are one potential reason for this division. If teachers do not trust the digital technology they are using, they will not use it in the same way as someone who does trust the digital technology. Using a modified version of Tschannon-Moran and Hoy's (2000) relational model of trust, we propose a framework for studying and measuring teacher trust in digital technology. Future work in the area is briefly proposed and discussed.

Liverpool Central School District in New York City recently decided to phase out laptops a year before they were supposed to end the grant. One reason for dropping the laptop program was that the teachers were frustrated with the unreliability of the computers. Indeed, a room that was once used for the yearbook club became an on-site repair shop for the 80 to 100 machines that broke each month. Additionally, some teachers felt that the computer actually inhibited students' thinking processes. For example, a *New York Times* article recently quoted an 11th-grade history teacher as saying, "The art of thinking is being lost . . . because people can type in a word and find a source and think that's the be all end all" (May, 2006).

Why do some teachers choose to use digital technologies whereas others do not? Some reasons for the exclusion of digital technologies include external factors such as a lack of social and institutional support or funding and a lack of adequate training for the task; Psychological factors include a fear of using digital technologies and the inability to overcome "functional fixedness," or a bias that limits a person to using objects only in the traditional way they are used (Koehler and Mishra, 2007). We suggest that another reason why teachers do not employ digital technology in the classroom is that they do not trust digital technologies. In this paper we discuss how trust can be conceptualized with relation to digital technologies. Further, we suggest the development of a survey that measures both generalized and intimate trust in digital technology.

Defining Digital Technologies in Education

Educational technology is referred here to the sum of tools, techniques, and collective knowledge applicable to education (Koehler and Mishra, 2007). There are two distinct types of technologies found in educational settings: analog and digital. Analog technologies are those older technologies, such as the chalkboard and the pencil, whereas digital technologies are those newer technologies that use digital pulses, signals, or values to represent data in computer graphics, telecommunications systems, and word processing (like the computer, the Internet, cell phones, etc.). For the purposes of this study, I am only concerned with digital technologies. It is important to note, though, that digital technologies can be used in many ways. For example, digital technologies in classrooms can be used as tools that can search and find patterns in huge sets of data (database software), mediators for communication (e-mail), tools for design and manipulation (drawing or drafting software), tools for artistic expression (movie and image software), and a way to fill various social roles, such as opponents or partners (video games) or tutors (computer assisted learning).

Because of the protean nature of digital technologies, it becomes important to understand the different levels in which a person could trust or distrust the technology. For instance, there are elements related to the hardware, software, and other users of digital technologies. First, there is the immediate hardware and the people behind the hardware (such as IBM being a designer of the computer). Second, there is the content of the software and the creator of such software. Finally, there are the other users that are involved in web-based communities, like social networking sites. A person could trust or distrust any or all of the above elements of digital technologies, but I

am primarily interested in trust in the hardware and software rather than in other users. It is important that we diagnose where the distrust occurs if we are to encourage teachers to use various digital technologies.

Defining Teacher Trust in Digital Technologies

Trust can be viewed in multiple ways such as a three-part relation involving properties of a truster, attributes of a trustee, and the specific context or domain over which trust is bestowed (Hardin, 2002), a moral decision (Hosmer, 1995), a rational choice decision (Coleman, 1990), a complex psychological state that is dependent on emotional and social influences (Kramer, 1999), an expectation derived from community roles and habits (Cummings and Bromily, 1996; Fukuyama, 1995), but I have chosen to use Tschannen-Moran and Hoy's (2000) relational model of trust in developing a framework for understanding teacher trust in digital technology. Tschannen-Moran and Hoy (2000) suggest that trust is one party's willingness to be vulnerable to another party based on the confidence that the other party is a) benevolent, b) reliable, c) competent, d) honest, and e) open. Benevolence is the confidence that one's well-being or something one cares about will be protected by the trustee. According to Tschannen-Moran (2004), reliability is made up of a combination of predictability and caring. She argues that while we may expect a person to act in a consistently malicious way, we do not actually trust this person. The trustee could be thought of as predictable, but not reliable, and therefore, not trustworthy. Competence is the ability of the trustee to perform a task as expected. Honesty is related to the integrity of the trustee. Openness deals with how open a trustee is to new information.

Using a relational model of trust, one can then ask what the role of digital technology is in education. As noted earlier, digital technologies range from taking the role of a teacher (as in a tutorial program) to acting as neutral mediator (as through email or Instant Messaging) or as a simple data compilation device (spreadsheet database). One could argue that the nature of trust is different in each case, since in the former the digital technology acts as the co-respondent while in the latter it is simply a conduit. Depending on how the technology is viewed – as a social actor or not, trust in that technology can contain elements of competence and reliability or just reliability. We suggest that competence concerns the software, the information, and how it is presented whereas reliability concerns the dependability of the hardware and software not to stop running. Therefore, beliefs of competence come into play when the computer is viewed as a teacher or social actor.

If the above program crashed, the teacher (or learner) may have actually felt that the computer had betrayed them in some way. There is a sense that the trustee (computer or computer designer) was not reliable when it stopped working. Even when the computer is simply acting as a conduit, it can be viewed as being unreliable and thus untrustworthy. For example, if a computer crashed in the middle of sending an e-mail a person might feel that the computer is not reliable. Perhaps one incident of such a failure or betrayal leads that person to distrust, not just that computer, but all computers. I suggest that reliability with reference to digital technology is the belief that hardware will perform as expected in repeated trials.

Benevolence, honesty, and openness are far more difficult to stretch to being attributes of computers. Certainly the designers behind the hardware or software can be thought of as benevolent, honest, or open. Indeed in some case we blame computer designers or mobile phone providers when our digital technology is not reliable. But this does not imply that we consider them to be mean, dishonest, or not open to our ideas. Trust in computers involves one party's willingness to be vulnerable to another party based on the confidence that the digital technology is competent and reliable. Reliability concerns the dependability of the hardware and software not to stop running. Competence concerns the software, the information, and how it is presented. Teachers must feel the digital technologies are competent and reliable (trust in digital technologies) to take advantage of digital technologies available.

Developing an Instrument to Measure Trust in Digital Technology

Relational models tend to use surveys to measure a person's beliefs about another entity's trustworthiness. Surveys of general trust look at how much people trust a variety of social actors, including media, parents, and people in general. A measure of trust in intimate relationships would ask participants to make judgments about the trustworthiness of a specific intimate partner (Rempel, Holmes, & Zanna, 1985). Organizational trust surveys focus on more on trust in an organization as a whole, rather than a specific individual. For example, Hoy and Tschannen-Moran (2003) developed what they call The Omnibus T-Scale. They assessed faculty trust in colleagues, in principal, and in clients (parents and students) by asking them how much they agree with statements like "Teachers in this school generally look out for each other," and "The principal in this school typically acts in the best interest of the teachers."

Based on previous surveys and the reviewed literature, we are constructing a survey that includes five parts. The first part includes demographic information as these are factors that are related in some way to how much a person trusts digital technology. The second part includes questions about computer use in general. Perhaps people who have more experience with computers tend to trust them more. Or perhaps people that have the most experience with computers actually trust them less. The third section includes questions about pre-service teachers' areas of interest and level that they plan to teach. Perhaps secondary pre-service teachers trust technology more than elementary pre-service teachers. The fourth section is an organizational trust survey asking about an individual's trust in technology in general. The last section is a more intimate survey that asks questions about people's personal computer. The fourth and fifth sections include statements related specifically to reliability, competence, and honesty. A focus group will be used to assess validity of the survey statements prior to administration.

Concluding Remarks

Trust is an essential element in any productive society. In an increasingly virtual world, we must now trust that every time we use an Automated Teller Machine (ATM) to deposit our paycheck, the machine is going to somehow know what to do with our check. Digital technologies have changed our approach to knowledge and it is essential that we understand more precisely why some teachers choose to take advantage of this powerful instructional medium. We have proposed the creation and testing of a survey that assesses people's general and intimate trust in technology. We hope that such a survey will not only be useful in and of itself but can later be used to explore the intersection of trust, technology, and learning.

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