# *ELECTRONIC DATA AND THE E-LEARNER Privacy, Ownership, Lifespan, Accessibility, and Other Challenges*

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Throughout the history of education there has been the unstated assumption that the vast majority of learning artifacts created as part of a learning sequence were to be seen only by the instructor or, at most, by the limited set of individuals who were also a part of an instructional setting. This truism was typically unstated because it was so patently obvious that no formal declaration was necessary; a student completed work assigned by an instructor, the instructor reviewed the submitted work, and the work was then returned to the student with feedback and/or a grade. The cycle of a student's work was therefore solely comprised of these two individuals, and once the instructional requirements of a learning sequence were met, those materials permanently remained in the hands of the student.

There are multiple reasons why a student's work was essentially considered "private" (to employ a somewhat undefined and problematic term), some obvious, but some obscure. Historically, content created by a student typically was developed by students to demonstrate aptitude and ability, not necessarily for practical application outside the learning setting. Having achieved that goal, it became the instructor's and/or the educational intuition's responsibility to issue validation of a student's achievements via a grade, certificate, or diploma that would then assume the referential point between the student and the outside world. A student's work products therefore often became less inherently valuable over time and after evaluation by an instructor, as the grade and/or diploma replaces the work product, taking on the implicit valuation indication of the student's academic accomplishments. This is the reason why that the vast majority of all student work products are lost to history.

Besides the limited outside utility accorded to student work products, another somewhat abstruse reason that a student's work products

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were considered "private" was that, until the point at which computer technology became the norm (in other words, the very recent past), student work products were hand manufactured with pencil, pen, quill and paper, or parchment. This not only conferred upon such products the quality of uniqueness, but also—in a pre-computing world—made copying and distribution of these learning artifacts difficult and costly. This phenomenon was not only evident in education, but in society at large. We can see an extreme case of it among medieval monks, who dedicated their entire lives to working in scriptoria, copying and illuminating manuscripts; a process that entailed institutional backing, high levels of skill, and significant financial investment. (Take for example, the development of *The Book of Kells*, which likely took decades to produce, was worked upon by untold numbers of individuals, and is likely among the costliest documents ever produced.) The cost and difficulty of duplicating documents was a major part of the impetus in the late medieval period of the then-novel idea of "lending libraries," documents and books that existed in a single copy and could be used for study by masters and scholars. Even the copying of a typical pencil-written document from as recently as, say, the early 1900s, was a long and drawn-out affair, carried out manually and on an individual basis, applied only to student work products which held some high, intrinsic value to a larger audience, typically a rare occurrence.

We also may cite an assumed "psychology" surrounding the learning process that has traditionally assumed student work products as private. When a student enrolled in a course or a program, there was both an explicit and implicit understanding that it was an *instructor alone* who would be the recipient of work products for purposes of assessing the extent to which a student demonstrated mastery: this expectation could often be viewed as sacrosanct, similar in nature to the relationship between a medical doctor and a patient, or a lawyer and a client. Information contained within the work product was regarded as privileged information, not available for either public review or consumption.

There were, and are, exceptions to this rule, of course. In ancient Greece and Rome, students spoke in the public forum to a relatively wide audience. In medieval times, when the European university was first initiated as the premier educational institution, students participated in public, formalized disputations called *quodlibetales,* where a student's work (in this case, the student's ability to engage in public debate against a master, or some other authority) was open for all to see and judge. But even in such cases, although the setting was public, the "reach" of the student's work (i.e., the speech or disputation event) was constrained to those present at the event, or in cases where a quodlibetal was recorded for posterity in writing, available only to those with access to these arcane, specialist documents. Further, such documents were not even the student's own work, but that of an assigned note taker.

Grade schools, too, have generally provided some exceptions to this rule. Who has not walked the hall of a primary school during Thanksgiving in the United States and seen student-drawn pictures of "Tommy the Turkey," scenes of pumpkins and falling leaves, and even dioramas from older students, sometimes entered into school contests, openly displayed for parents, families, and friends, and often bearing ribbons for "First Place," "Winner," or "Runner Up." Indeed, such public display of student work could be a source of stress and worry for some students who did not feel comfortable with such public display of their skill levels. And moving from this primary school example all the way to the higher education context, another key exception to the assumed rule of privacy of student work is the dissertation, which, by definition, is a work product made available to the public via publication, or, at the very least, made available to a community of scholarly authorities.

Nevertheless, when we consider the small number of such exceptions to the assumption of privacy of student work products, it truly is

the exception that proves the rule. Outside of the case of drawings of "Tommy the Turkey" and dissertation theses, student work products have remained almost wholly (when looking at the overall number of work products created by all students at all age levels) within a highly constrained circulation area of student→teacher→student, and the student has assumed that work he or she produced would not be viewed by anyone beyond the instructor. Further, most students assumed such work was their personal property.

In 2015, the *Quarterly Review of Distance Education*, Volume 16, Issue 2, presented a special issue on the subject of "technology transience," which we defined at that time as the speed at which technologies appear, morph into different technologies, and then often entirely disappear, replaced by some newer technology. In that issue, we, along with a series of experts in distance education, examined some of the implications of technology transience for technology-enabled distance learning. Our emphasis was on the wide-ranging impact such technological transience holds for e-learning, and covered the subject from a number of different vantage points and settings.

In this special issue, we focus in on one very specific area resulting from technology transience: the creation of digital work products by students studying at a distance, rather than the traditional, limited-distribution, physical products historically created by students. What justifies the effort in examining this issue?

When education moved into a digitally enabled online modality, the work products that students created became vastly more accessible than the limited, traditional student→teacher→student circuit, perhaps to the point where the "path" of these products can never be fully known or controlled. But perhaps more broadly, a wide range of issues has now been opened for debate regarding student-developed digital work products. These include: ownership of the digital work product; the storage location of the digital work product; the lifespan of the digital work product, both in terms of recognized file formats and the time frame which digital data is archived; the right to access digital student work products; and the metadata generated when students create digital work products, to name but a few of the salient issues. Numerous other related questions have arisen that have never before been a factor in the traditional learning setting. We have titled this special issue *"e-Learners and Their Data,"* because digital student work products created in and for the online setting are no longer idiosyncratic, physical products under the control of a single person (the creator). These products not only experience wider distribution solely as student work, but they can now be—and this factor is critically important to recognize—viewed as *data*. Indeed, these digital work products *must* exist as data (and therefore, *information*) compliant with the online, computer-enabled learning setting in which they were generated, a factor that creates a clean "break" with nearly all historically held assumptions about student work, privacy, and ownership of content.

The educational community must acknowledge that its foray into digital online education has forced the educational world into a debate replete with epistemological connotations presenting psychological, legal, and institutional factors not easily understood or agreed to. But much like the current geopolitical issues that occupy today's news, moving ahead in such an environment without a clear understanding and without formal agreements (and perhaps, regulations) on such issues will "set the trap" for magnified and increasingly complex challenges in the future.

Take, for example, the relatively straightforward case of ownership of digital work products. One can easily envision how an absence of a common set of agreements (and potentially, regulations) regarding ownership can result in a byzantine, Escher-like situation of conflicting positions, with no clear outcomes for the student, the educational institution, or the corporation holding the data.

It is our contention that the first step required to arrive at clear agreements and policies regarding student digital learning artifacts and products is to *generate awareness of the numerous factors surrounding the problem*. This special issue is therefore dedicated to establishing both an enriched understanding of the topic, as well as an ongoing dialogue surrounding the topics many manifestations. In doing so, we have assembled a group of notable scholars from a wide variety of educational backgrounds to examine this issue and help us establish this necessary "platform base" on which further discussion can be built.

Due to the breadth and width of this topic, we have chosen to release this *QRDE* special issue in two parts, each of which contain both conceptual and applied content. Part 1, *"e-Learners and Their Data, Part 1: Conceptual, Research, and Exploratory Perspectives"* (the issue you are currently reading), begins with a conceptual and epistemological look at learning analytics (Swan), setting the tone for the entire special issue. Building on this notion, we look at a specific case of how student digital data can be used to determine student preferences in learning via learning analytics prediction models (Nguyen, Templaar, Rientes, & Giesbers). Next, we extend examination of another specific case of the analysis of student digital data, specifically, social construction of online knowledge, via means of interaction analysis, learning analytics, and social network analysis (Gunawardena, Flor, Gomez, & Sánchez). The use of small-scale Bayesian networks to evaluate teaching competency in 3D e-learning environments (Xu, Ke, & Lee) follows, and provides a glimpse of how online digital data affects not only students, but instructors, as well. Part 1 is concluded with a presentation on the use of data dashboards to facilitate online problem-based learning (Hogoboam, Chen, Hmelo-Silver, Lajoie, Bodnar, Kazemitabar, Wiseman, & Chan). Taken in sum, these works assist us in assembling a more fully informed understanding of student-generated digital work products generated in the online learning context.

The next issue of *QRDE* will contain Part 2 of this special issue, which is titled *"e-Learners and Their Data, Part 2: Application Perspectives.*" Like Part 1, Part 2 will also contain both conceptual and applied articles concerning student digital work products, and is based on a wide variety of learning settings to examine these themes. More specially, Part 2 will commence with an orientation article covering the ownership of digital artifacts in the online higher education classroom (Dennen), the use of "big data" in the organizational workplace (Giacumo & Breman), student data collected in online professional development settings (O'Brian), the use of data in the community college online setting to improve student retention (Travers), and a practical exploration of big data in 21st century teaching and learning (Percell). The special issue is concluded with a review and summary of all the articles comprising both parts of the special issue (Visser & Spector).

It is our hope that the discussions and arguments developed by our esteemed group of authors will serve as a renewed focal point for an increased understanding of this highly important topic. We also hope this special issue will stir in each reader a desire to become more actively involved in issues surrounding e-learning data so that we might play an active, engaged role and have a "voice" in how such student data can and cannot be used, rather than leaving this important issue to be worked out with no say from the educational community. By laying this groundwork and examining it from a variety of different perspectives, we hope to bring more online educators into active engagement in what may very well turn out to be one of the most important 21st century distance education issues to be solved.