

# Technology Assessments as Teachers' Decisions: Evaluating Learning Outcome Probabilities

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## Abstract:

This article presents a self-assessment strategy suggested for teachers' use to decide whether to go forward with particular technology-enhanced lessons, projects, or unit ideas. This strategy – nicknamed “Is it worth it?” (Harris, 1998) – is not a blanket decision to be made about all possible technology integrations. Rather, it is an activity-by-activity design assessment to be made by individual teachers, during which they decide whether a particular learning activity idea is worth pursuing – in additional planning and preparation, and in eventual classroom implementation. “Is it worth it?” refers to a teacher's logistical decision about whether the time, effort, and any additional resources needed to bring a particular learning activity idea to fruition will be “worth” the predicted curriculum-based learning outcomes that students will probably demonstrate after participating in the particular activity being considered. Though this type of assessment is the result of a teacher's informed predictions based upon curriculum standards requirements, past classroom experience, and knowledge of students' learning needs and preferences, in this article, a three-part self-assessment test is shared that can help teachers to answer (and to remember to ask) the “is it worth it?” question systematically as part of planning for effective and efficient instructional technology integration.

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*“A pinch of probability is worth a pound of perhaps.”*

- James Thurber (<http://creativequotations.com/one/223b.htm>)

I begin this article with Thurber’s wisdom – and a warning of sorts. At the risk of dating myself, I warn you that I plan to “tell it like it is” with reference to regular, classroom-based use (that is, “integration”) of digital educational technologies—specifically, how educators can decide which curriculum-based instructional activities to attempt, with which students, and when to do so. In making these suggestions, I will speak more from “what is” (at least as I see it) than “what could be.” Acknowledging, accepting, and clearly articulating situations as they are is a necessary – and often overlooked – first step to well-reasoned and reasonable change. How can we decide which uses of educational technologies are most worth the additional time, effort, and expense that their implementation will require? Following Thurber’s advice, we must deduce the new strategies’ learning outcome probabilities, balanced against the success of existing pedagogical techniques. In doing so, we decide, on a case-by-case basis, and continually over time, whether each new learning activity possibility is “worth it.” (Harris, 1998)

### **Who decides?**

*i.e.*’s pages are filled with promising ideas for and implementations of educational technologies. Yet no matter what the imagined potential is for any new implement or idea, whether or not it truly gets *used*—that is, regularly applied as a normal part of classroom activity—in support of students’ learning is largely a result of teachers’ professional decisions (Rogers, 2003). Curriculum mandates, personnel evaluation procedures, standardized testing schedules, peer influence, and community pressure can appear to “force” educators into implementing change before they are willing to choose it themselves, but frankly, we all know that once supervisors and concerned community members are at least temporarily appeased, teachers are still left with a good measure of academic freedom—even if they feel at times as if they have to exercise it covertly. Once teachers close the doors to their classrooms, what happens (and what doesn’t happen) inside are still largely results of instructors’ pedagogical decisions. As educated professionals functioning in democratic societies, that is, in my opinion, the most appropriate and respectful arrangement.

So if *any* new tools will become everyday implements in the learning and teaching that occur in our classrooms, they will do so only as a result of teachers' conscious choices to make this happen, and only to the extent that they deem suitable for students and themselves. Whether or not any new tool is appropriated in a permanent way depends upon this decision-making process, whether it is conscious or unconscious; well-informed or ill-informed; emotional or logical; capricious or long-considered.

Upon what are these decisions based? In a phrase, whether the educators who will implement a new learning activity think it is *worthwhile*. In other words, is a particular use of digital tool or resource in a particular situation for a particular group of students and teachers worth the time, effort, and expense required to use the tool or resource in the particular way being considered? Is there a good probability that helping students to learn in this particular way will increase the quality, amount, and/or depth of their learning? If this is perceived to be probable, teachers will try to use the tool or technique at least once. If not—at least for the time being—use of the innovation will be resisted.

It's important to note that this is not a definitive decision about all uses of all digital tools and resources for all time. Instead, this “worthwhileness test” is applied by teachers — consciously or unconsciously — *each time* the use of an unfamiliar technology or technique is considered in an educational situation. That implies that answers to the “Is it worth it?” question will change as people and resources change. Access to digital tools and resources in schools and classrooms will continue to change. What is possible, available, and expected instructionally will continue to change. As teachers, students, and educational leaders learn more about and do more with new educational technologies, *they* will continue to change, also, as they engage in professional learning that is applied to professional practice. Therefore, their decisions about which new tools and techniques to try will change over time and within different contexts.

## How to Decide

*“Nothing is more difficult, and therefore more precious, than to be able to decide.”*

- Napoleon Bonaparte (<http://creativequotations.com/one/21.htm>)

How can teachers best make these decisions each of the many times that they will do so? Keeping in mind a specific educational use of digital tools or resources, and in standards-based terms of both content and processes that students need to learn, I suggest that teachers apply a three-part instructional activity assessment, comprised of three self-administered tests, each in the form of an activity assessment question. The purpose of these tests is to provide a structured and reliable way for an instructor to decide whether an activity, project, or unit is worth the time, energy, and resources necessary to implement it successfully in a particular classroom and school, with a particular group of students, at a particular time in the school year, and given the contextual facilitators and inhibitors of successful implementation. The three parts of this assessment—each in the form of a question for teachers to consider—are:

- *The Feasibility Test: Will this* learning activity/project/unit idea **work**, given the technological, interpersonal, logistical, and contextual factors currently operating in this particular learning environment?
- *The Appropriateness Test: Is this* learning activity **appropriate** both for this student/these students, given what we know about their learning needs and preferences, and for teaching the particular curriculum content and processes targeted?
- *The Relative Advantage Test: Can the same learning outcomes be accomplished* just as well or better **using more readily available and easy-to-use tools and resources**? If so, then this particular activity idea might not have the requisite relative advantage (Rogers, 2003) to be successfully implemented.

Though there are six mathematically possible permutations of teachers’ responses to these questions, only one combination should suggest implementation of the learning activity being assessed.

- If the response to the Feasibility Test question is “no” — even if responses to the other two questions are affirmative—then the activity should probably not be attempted, since its

implementation would probably be unsuccessful – at least at the present time, given the contextual conditions that prevail.

- Similarly, if the response to the Appropriateness Test question is “no,” then there is no reason for this particular learning activity to be attempted.
- If teachers’ honest answers to all three questions are “yes,” there is probably no (good) reason to use the particular educational technologies in the way being considered. Teachers’ and students’ time, effort, and resources probably would be better used in other ways. In any particular instance, if students can learn just as well or better with already-mastered tools and approaches than they can with new ones, it doesn’t make sense to use new tools in old ways. It isn’t “worth it” to do so, for students *or* for teachers.
- Only if teachers deem a learning activity under consideration to be feasible, appropriate, and to have relative advantage – that is, if answers to the first two questions as stated above are “yes” and the response to the third question is “no” – should the activity be attempted at the time that it is being considered.

Regarding such decision-making (if not, perhaps, about other matters), Napoleon was correct: nothing is more challenging, yet more precious and important, than the ability to choose wisely.

### **Example Decisions**

This implies that it will be “worth it” usually for teachers and students to use new tools and approaches only if the technologies and accompanying techniques can be applied in innovative ways to help new and worthwhile things to happen in classrooms. “That’s obvious,” you might be thinking. Perhaps. Yet, whenever educators are offered unfamiliar tools, something interesting happens. Most of what we do at first with the new tools looks very similar to what we did with older tools that seem functionally similar to the innovations.

For example, when teachers first began to use electronic mail and electronic bulletin boards in elementary, middle-level, and secondary classrooms in the early 1980s, what kinds of projects were most prevalent? *Keypal* (online penpal) projects. This pattern makes sense if we realize that electronic mail was first seen with reference to its similar predecessor, surface mail. Penpal projects, in which students used paper, envelopes, and stamps, were successful educational activities in classrooms long before networked computers appeared in schools. At first, electronic

mail was seen as faster surface mail. Later, as users continued to experiment with and exploit this global communications tool, educators' visions of how e-mail could be used for educational purposes expanded. Now there are at least ten different types of learning activities involving interpersonal exchange online (of which keypals is just one) that can assist students' curriculum-based learning. (For more information about these and 18 more curriculum-based learning activity types that help students to make powerful use of online tools and resources, please see the author's upcoming second edition of *Virtual Architecture: Designing and Directing Curriculum-Based Telecomputing*, due to be released in 2008.)

Examples of curriculum-based learning activities that would surely pass the three-part self-assessment described above abound. We can learn about these worthwhile efforts that are being implemented in classrooms nationally and internationally by perusing articles and project descriptions offered in resources such as:

- Edutopia (<http://www.edutopia.org/index.php>), published monthly online by The George Lucas Educational Foundation,
- *Learning and Leading With Technology* (<http://www.iste.org/>, then choose "Publications"), published monthly in paper format by ISTE, the International Society for Technology in Education,
- The Global Schoolhouse (<http://www.globalschoolnet.org/GSH/index.html>), provided by the Global Schoolnet Foundation,
- CIESE's K-12 Education Projects (<http://njnie.dl.stevens-tech.edu/currichome.html>), supported by the Center for Innovation and Engineering in Science Education at the Stevens Institute of Technology,
- The WebQuest Portal (<http://www.webquest.org/>, then choose "Find WebQuests"), maintained by Dr. Bernie Dodge at San Diego State University.
- and Virtual Architecture's Web Home (<http://virtual-architecture.wm.edu>), maintained by the author.

### **Influencing Decisions**

"But," I hear you thinking, "what if teachers decide that a particular digitally-enhanced learning activity is *not* worthwhile, and that decision is based upon a lack of knowledge or understanding of

the true instructional potential of the activity?” Good question – but as I warned you at the beginning of this article, I intend to “tell it like it is.” The hard truth is that teachers’ perceptions of the “worthwhileness” of a new teaching tool or technique are what determines whether, when, how well, and for how long it will be implemented – whether or not other teachers or teacher educators would agree with that perception-based assessment.

So if – as I’m stating here – teachers are the ultimate arbiters of instructional decision-making with regard to which tools and techniques are to be used by students for curriculum-based learning in classrooms, it becomes critically important to help teachers and administrators to stay abreast of emerging technology integration models, examples, and techniques – but only those that are directly relevant to their current instructional assignments, and therefore directly related to their imminent instructional decision-making. This type of professional development is not something that is “done to” teachers and principals; it is a “just in time,” collegial sharing of specific and practical instructional tools and techniques, done with and by professionals, intended to persuade decision-making with classroom-based evidence and relevant, practical instructional examples.

Unfortunately, many district- and university-based professional development personnel assume that teachers will *not* choose to change their practice unless forced to do so by their supervisors. Yet more than two decades of educational technology implementation experience in schools have taught us well: though top-down mandates can be fulfilled superficially, lasting pedagogical change associated with technology integration happens only when teachers are successfully persuaded by direct or vicarious experience that a new technique is more worthwhile – that it is adequately feasible, specifically appropriate, and especially more advantageous in terms of students’ learning outcomes – than a familiar one. This process of professional persuasion – done best teacher-to-teacher – is not a simple task. Yet – like the process itself of integrating use of educational technologies into curriculum-based learning and teaching in worthwhile ways – the process of influencing teachers’ pedagogical decision-making about new tools and techniques is a challenging, yet worthwhile, and ultimately achievable endeavor. As physicist Edward Teller reminds us,

*“No endeavor that is worthwhile is simple in prospect; if it is right, it will be simple in retrospect.”*

- Edward Teller (<http://creativequotations.com/one/2584.htm>)

*An earlier version of the “Is it worth it?” material appeared in Harris’ Virtual Architecture (1998).*

## **References**

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Rogers, E.M. (2003). *Diffusion of innovations* (5<sup>th</sup> ed.). New York: The Free Press.