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Short Article

The Role of Technology in Technology Integration: It's not what "They (IT Departments) Think"

Technology "integration into the curriculum" has been thrust upon teachers for the past dozen years or so. But, what does the integration of technology mean, and why should teachers care? In fact, few teachers care as much as they should; and few teachers take sufficient advantage of the opportunities that using various technologies present. The reason: School districts approach the "technology integration" process "backwards." What's Wrong with the Technology Integration Process? Issues with the integrating technology into the curriculum go beyond the ordinary culprits, i.e. … Teachers often don't have up-to-date, reliable, working equipment

Teachers are expected to purchase their own equipment (and software) so that they can work at home without pay Training is often after school or on weekends without compensation, release time or some system to make up for the teacher's investment

Subsidized personal computer purchase plans and employer-sponsored deep discounts are generally unavailable

There is a lot of stress in managing the logistics of cycling access for all students for the use of the limited equipment

Non-teachers purchase the technology without understanding curriculum and learning needs

Taking advantage of the "spur of the moment" student interest as it blossoms (or erupts) is difficult when you can't get to the equipment "on demand"

Teachers are "under the high-stakes-test-score microscope", and can't risk being labeled by their supervisors as anything other than being "test-score-power-productive" not computer power users

Teacher observations are "dog-and-pony-shows" where the variable of "unpredictable" equipment cannot be left to the "chance that it will be working" What is Backwards What is backwards is that the technology integration efforts start outside of teaching (such as in IT Departments or state departments of education., of from the "Purveyors of Pork and Unfunded Mandates" in DC Fantasy Land) … Sidebar Has anyone else noticed that "Pork Barrel Projects" never seem earmarked for local, public education?

Perhaps this is because … Teachers don't have sufficient disposable income to contribute to political campaigns, and teachers' political action committees either lack sufficient "influence-bidding-lucre", or, they support the other party Teachers express disdain for alcohol, gambling, tobacco, cattle grazing, timber cutting and oil drilling (on public lands), price supports for pharmaceutical companies and a myriad of other lucrative sources of campaign funding for our politicians

The politicians are saving your money until they can pass a solid "Voucher System" that will engineer a "spirit of competition" against our lackluster public schools and force those lazy, no-account teachers to get off their collective back bumpers and teach (for a change)

There is the tradition of "local control of schools" which means that politicians will find local officials "weaseling" them out of credit for any inadvertent benefits that ensue from the pork project

The "Beltway Bunglers" fear that they may actually achieve a level of influence in our schools, and then be "tagged" and held accountable for their inept performance

Note: Just look at all the damage that only a nine percent federal "contribution-with-strings-attached" stake has upon public education (as evidenced by the NCLB mess). Imagine the catastrophe for public education if federal meddling increased. We would fare better turning public education over to the officers of the Titanic than we would by allowing our politicians to pilot our public schools.

These technology integration efforts are replete with … Non-instructional goals

Minimal assessment of what students and teachers really need

The belief that it is the teachers job to "do whatever it takes" to make these initiative successful

Minimal training, and sometimes minimal access to the software

No (legal) access to the software at home (where they do most of their planning work)

No budget to make this happen

Little concern for providing the equipment, software or training that is required

Limited (if any) financial incentives (expect, possibly negative ones such as threats)

Limited understanding of what it takes to change habits of instruction Worse, the proponents of integrating technology failed to "do their homework" and cannot point to any definitive connection between technology and Students' learning Test-score improvement

Any other observable, measurable, countable connection

Curriculum goals for student performance The vague goal for the integration of technology, at least for teachers, seems to be to appease employers who complain that high school graduates fail to live up to the "requirements of employability."

Sidebar See our article, Workforce Readiness: The Tripe Behind the Hype A Vision for Curriculum If technology

integration initiatives are to be successful, they must be build upon a vision for curriculum, teaching and learning, first and foremost.

The logic of: Students will graduate, sooner or later (maybe later, or maybe they'll drop out)

Most jobs (except maybe teaching) require the use of computer technology Therefore:

Teachers must integrate technology into classroom instruction (or students will be less employable than they are now) & fails to hold water. And by buying into arguments such as, "We don't know the technology, so we better let the 'experts' (technologists) decide", teachers have been complicit in allowing this backwards process to proliferate.

What every project manager knows is that the goals and objectives for successful projects must be framed, visioned, written, designed in business (or in our case) educational terms.

This means that "All educational technology projects need educational, instructional, student outcome goals

All goals and objectives must have student outcome measures

All educational technology projects must start from the needs of teachers and students

Technology considerations are secondary to instructional considerations

All equipment projects require: A software component

A training component

A programming infrastructure component

A guarantee of uptime and reliability
Sidebar In technology jargon, this guarantee of uptime is referred to as a "Service Level Agreement" (SLA)

Note: Meeting the requirement of a service level agreement is evaluated by the end user, never by technology. (Letting a technology department evaluate a service level agreement would be like allowing the fox to maintain an inventory of the chickens in the hen house.)
The True "Balance of Power"

Since successful technology integration initiatives in education need to substantiate an "educational case for launching the project," the place that these projects must start is with teachers.

It is the job of teachers to develop the requirements and specifications for instructional outcomes. Teachers should never prescribe technology, and the district's IT Department should never prescribe instructional outcomes.

Once instructional outcomes (as measured in observable student improvement targets) are developed, the instructional requirements and specifications are turned over to the IT Department for & Equipment, Software, Training, Infrastructure and Back-End Programming Specifications

The cost of the Equipment, Software, Training, Infrastructure and Back-End Programming for the project

A feasibility study and timeline

A detailed project plan

An estimate of the increased IT staff that are required to support the project
Note: "Service Level Agreements" and "Back-End Programming" are two "secrets" that most IT Departments "shield" from the eyes of & Teachers and Instructional Staff

Curriculum Staff

Training Staff

School District Administration
The reason given is that: Teachers and Curriculum Staff would not be able to understand the "complexities" of the technical issues

Administrators (even if they were "in the know") would never fund the project because "doing it right" would be too expensive and the project would never be approved
Of course, "doing the project right" is what has been missing from technology integration projects all along.
Sidebar Back-End programming and adequate technical support is crucial to the success of any technology integration project, but probably these required components are part of less than one percent of a typical IT project

The reason, (hidden from the view of Instruction and Curriculum), that Back-End Programming is not even suggested in most school district IT projects is that & The programmers with the skills required to convert Instructional and Curricular goals into "one click", usable packages are expensive. These programmers earn more than school principals, and even more than the superintendents of small school districts.

Almost all school district IT Departments are under staffed. And, this "under staffing" is in the range of a 50% to 66% shortfall at the technician levels, 80% shortfall at the levels of software and infrastructure engineers and database administrators, and at the 95% to 100% level for application and database programmers. It is more "convenient" for IT Departments to leave the complexity of the integration project "unstated" than to suggest that the district employ someone whose salary costs (is worth more) than the superintendent earns.

It is politically more expedient to claim that the failure of technology integration projects is caused by teachers (and maybe Curriculum staff) because they didn't fully support the technology; than to reveal that only, hardware and software; the easy parts of the project, were funded. What is left unstated in the project plan is that the parts of the project that would have "made it work" (and made it workable) were too expensive to garner administrative approval and backing.

Note: Since school districts will not or cannot fund technology integration projects at the appropriate level to guarantee instructional success, technology integration should probably not be done. Or, at any rate, responsibility for success should not be strapped (like targets) to the backs of teachers until the funding is available to do the project right.
School district administrator should just explain their constituents that they don't want to continue & Launching under

funded projects

Spinning "straw" results into "gilded, sounds like we administrators did a great job" tapestries of fantasy and self-importance

Blaming teachers (who are "innocent bystanders") in the failure of technology integration process
SidebarNote: The problem was created because teachers were only bystanders, not drivers of these technology integration projects. National Recognition (Of Sorts) of the Failed Technology Integration Problem Our federal, executive branch seems to recognize, although they don't come out and say it, that technology integration in public schools is "doomed." Evidence of this is the fact that, for the last several years, budgets sent to Congress have "gutted Ed Tech" funding. Congress, on the other hand, restored Ed Tech funding, but only to the level of "demonstration projects" that support state grants.

SidebarDoing Ed Tech "right" would require hundreds of billions of dollars each year instead of the "paltry" hundreds of millions that actually get appropriated and authorized. Strategic Technology Integration The biggest and most important focus of technology integration should be on the management and delivery of instruction. Other efforts in the education arena should be toward streamlining of business processes and support services so that all the materials, equipment and support that teachers need is delivered on time, set up immediately, is tested and operational. [Business and support services often forget that their mission (while important and crucial) is secondary to the support that they must deliver to teachers.] Students, teachers and instruction define education…budgets, business processes and administrative overhead exist only to support students, teachers and instruction.

A technology integration project begins with instruction (teachers), principals, curriculum leaders…rather with the IT Department ordering the "best" computers that the budget allows.

These groups (teachers, principals, curriculum leaders) must create the requirements and specifications as measured in terms of receiving ample instructional and administrative support, and in terms of receiving ample funding

In fact, we might consider any technology integration project a failure if the IT Departments expects that just dropping some computers into a school is all that is required.

In fact, we can say that most technology integration projects have been "failures."

Here are the facts that "prove" that the integration of technology has been a "failure?" Most of these "efforts:" Were under funded

Originated from outside Instruction and Curriculum

Failed to contain the Back-End programming required to make implementation "One Click Easy"

Contained a training component as an after thought, if a training component was addressed at all

Were expected to operate by employing one third to one half of the technology support staff that were needed to keep the equipment upgraded, updated and working

Explanations for the integration projects' failures focused upon a lack of teacher "commitment" to the initiatives instead of asking why teachers were not driving the initiative with goals and students' instructional outcomes in the first place. What this dismal record and lack of an educational case for technology integration really means is that those technology integration efforts failed to achieve critical mass and teacher "buy in." The Technology Integration "Movement" focused upon technology reasons for making instructional changes. This is backwards because instructional goals drive need to drive technology projects and change.

What any project manager will tell you is that you must create a "Business Case" (or in our arena, an "Educational Case") for a project. This is a major reason that the integration of technology achieved such a dismal track record when compared to the amount of funding that was authorized. And, this is a major reason that technology was such an easy target for budget cutting as school district revenues contracted. Technology failed to provide a clear, measurable, educational connection…from technology spending to student achievement outcomes.

And, don't fall for the ploy that technology will save money by moving to Open Source (free) software projects.

School districts are in business to spend the money to educate children. School districts have never been commissioned to educate children "halfway, on-the-cheap, with as little cost as we can get away with"; so the Open Source argument doesn't hold water.

The next time that someone suggests that schools can save money by converting to Open Source software, ask this question, "What educational goals and what instructional objectives are driving this project proposal?"

All these are indicators demonstrate that Technology failed to do the job of delivering benefits for students and teachers, particularly in direct, measurable gains in student performance outcomes. Technology integration projects will succeed when technology departments can deliver on educational goals and when technology departments can provide educational mission critical applications.

"One Click" ease of use is not too much to ask. "One Click" applications, made possible by backend programming, is an instructional requirement, not a wished-for luxury.

Be sure that "One Click" requirements are in the specifications that drive your next technology integration project. And be sure that teachers are proposing that project.