

INSTITUTIONALIZATION OF TECHNOLOGY IN SCHOOLS CHECKLIST¹

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This checklist, based on both field experience and relevant literature, provides a conceptual framework to help evaluators assess the extent to which technology is institutionalized in schools. Institutionalization of technology is defined as the extent to which technology is integrated into the culture and classroom practice of a school, rather than being viewed as an add-on program, and the extent to which school personnel take ownership of the technology and its use. The checklist is grounded in the principle that in order for technology to become institutionalized in a school, the school must develop the appropriate human capital to use and manage it effectively in pursuit of the school's core goals. The checklist is organized around three sequential learning curves that school personnel climb as they develop the capacity to use technology effectively: (1) Maintaining the technology infrastructure, (2) Building teacher technology application skills, and (3) Integrating technology into teaching and learning. The three learning curves overlap temporally but are sequential in the sense that progress on one facilitates growth on the next. We anticipate that this checklist will be useful to both school personnel and evaluators conducting needs assessments, program planning, and evaluation of school-based technology programs, especially where the emphasis is on the capacity of the school to use technology in educationally effective ways.²

(1) MAINTAINING THE TECHNOLOGY INFRASTRUCTURE

☐ Comfort with routine glitches	School personnel have achieved autonomy in handling common technical problems (e.g., frozen screen, jammed printer) in their own classrooms.
☐ Dissemination of technical expertise	Through appropriate training and support materials, all school personnel have acquired basic technical expertise. Technical support is not viewed as "someone else's job." The technical support function avoids overreliance on a few individuals, and thus is less vulnerable to their burn-out.
☐ Specialization of roles	A broad base of school personnel have attained in-depth expertise in particular technical areas, making it clear whom to go to with which questions and lightening the load on each individual.
☐ Flexible time	Schedules are configured so that personnel with responsibility for technical support have the flexibility to respond to problems when they happen without compromising their own instructional responsibilities.
☐ Routinized policies, practices, and responsibilities	Technical support is organized to provide preventative maintenance, not ad hoc solutions to crises.
☐ Strategic use of student expertise	Teachers are comfortable drawing on the technical expertise of their students and may give them formal roles in managing the technology.
☐ Standardized configurations and platforms	Standardized infrastructure within the school allows teachers to work together easily to solve technical problems.

¹ The term "technology" in this checklist refers to computer hardware, software, and connectivity.

² For a fuller treatment of the content of each checkpoint, as well as the overall framework of the learning curves, see the article by the same authors, "Evaluating Educational Technology Implementation: A Two-Part Framework for Assessing the Institutionalization of Technology in Schools and Classrooms," in the *International Handbook of Educational Evaluation* (Kluwer, 2002).



☐ Adequate supply budget	Investments in hardware and software are supported by adequate budgets for the replenishable supplies (e.g., disks, printer cartridges) needed to keep them operating.
☐ Stable funding	Initial technology investment is supported by a realistic, ongoing financial commitment to the training, upgrades, and support time needed to keep the machines functioning.
(2) BUILDING TEACHER TECHNOLOGY APPLICATION SKILLS	
☐ Broad training	Mandates or strong incentives are in place to ensure that all teachers, not just technology enthusiasts, receive appropriate training in the use of computer software/applications.
☐ Quality of training	Training reflects research-based best practices for staff development, is geared to the needs of adult learners, addresses teachers' fears and concerns, and emphasizes the application of technology to core instructional tasks.
☐ Flexibility and appropriateness of training materials	Training addresses the full range of technology experience, comfort, and development needs across the staff as assessed by a formal diagnostic tool.
☐ Follow-up from training	Teachers have the opportunity to receive additional assistance, instruction, or clarification after initial training, particularly in one-on-one settings.
☐ Incentives to apply training	School provides formal and/or informal recognition and rewards to teachers who apply technology training in their professional practice.
☐ Plan for dealing with personnel turnover	New teachers receive training in the specific technology available in the school.
☐ Plan for refresher and update training	Teachers receive ongoing training to reflect updated technology and to reinforce and deepen their skills.
☐ Environment that is safe for experimentation	School culture supports innovation and risk-taking, making teachers comfortable and motivated to deepen their skills through "playing" with technology.
(3) INTEGRATING TECHNOLOGY INTO TEACHING AND LEARNING	
☐ Curriculum-specific training	Training goes beyond skill development to address the specifics of how technology can be applied to the substance of the curriculum.
☐ Mentoring/instructional support	Individualized, classroom-based coaching is used to help teachers make the link between the functionality of new technology and the learning objectives of their curriculum.
☐ Attention to how technology changes classroom dynamics	Teachers have training and experience in how technology can enhance engagement, blur traditional teacher/student role boundaries, and foster more inquiry-based and collaborative work and are not fearful of losing control if they use technology to create nontraditional instructional situations.
☐ Longer instructional periods	Instructional periods are sufficiently long so that the logistics of technology use do not compromise the substance of the lesson and so that technology can be used for authentic and exploratory tasks rather than rote learning.
☐ Teacher-student ratio	The teacher-student ratio for technology-based lessons is sufficiently low to provide adequate technical and classroom management support while engaging students in complex learning tasks.

☐ Instructional accessibility of technology	Hardware, software, and connectivity are physically located where it is convenient for teachers to integrate them into the flow of teaching and learning.
☐ Teacher comfort level with basic skills	Teachers have sufficient hardware and software skills to (a) see opportunities to use the technology as a tool to reach instructional objectives and (b) be willing to use the technology with students without fear of a lesson-derailing glitch.
☐ Student skill levels	Students have sufficient hardware and software skills to avoid instructional time being consumed by technical issues rather than the content of the lesson.
☐ Planning time to develop lessons	Teachers have adequate planning time to rethink lesson design to take advantage of technology's potential to deepen student understanding.
☐ Collaborative planning time/ opportunities to observe and share lessons	Teachers have structured opportunities to collaborate with and learn from peers as they work to integrate technology into their curriculum.
☐ Network of contacts beyond school	School staff have access to peers in other schools and/or outside experts to help them develop curriculum integration.
☐ Access to concrete lesson ideas	Strategies and structures exist to facilitate the sharing of relevant, high quality model lessons that can be applied to the school's specific curriculum.
☐ Link to curriculum standards	Training and materials model how technology can be used to reach curriculum standards, making the push for technology and the push for standards complementary rather than competing mandates on teachers.
☐ Content-rich applications aligned with curriculum	In addition to content-free productivity software (word processors, spreadsheets, etc.) that can be adapted to instructional tasks, schools invest in technology with built-in content directly linked to their curriculum.
☐ Student and parent demand	Students and parents are computer literate and aware of the value of technology and encourage teachers to utilize it.
☐ Student technology use standards and evaluation criteria	School has explicit expectations for student technology use woven into curriculum standards.
☐ Alignment of teacher evaluation system with goals for technology integration	Goals and incentives for substantive, curriculum-linked technology use are built into teacher evaluation criteria.
☐ Administrative priorities	Administrators demonstrate commitment to technology integration through the allocations given to technology in schedules and budgets, leadership through modeling technology use, and the creation of incentive systems that reward instructional technology use.
☐ Cooperation between district-level technology and curriculum staff	Messages, activities, and incentives regarding technology and curriculum are coordinated at the district level to reinforce that technology is a tool for learning, not an end in itself.

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