Infusion of Technology into the P–16 Environment

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INTRODUCTION

The infusion of technology into the P-16 environment requires a commitment to changing school culture. I see two major barriers to creating cultures that support the infusion of technology into the P-16 environment.

Barrier #1

• The lack of adequate understanding of the complex nature of substantive change and how to accomplish it.

The change literature describes change as a process, a journey, not an event. You cannot mandate what matters. Intrinsic to substantive change is anxiety and fear of the unknown. Fullan (1998, 1982) describes how change is inevitable, but that our reaction to change can be one that either embraces or fights it. To successfully infuse technology into P-16 environments, it is essential to understand the complex nature of change, and first establish a culture that encourages individuals to embrace change and see themselves as change agents. For an organization, the first step in establishing a culture embracing educational change is articulating its current norms, values, and beliefs, especially as they relate to the mission and understanding of teaching and learning. Inherent in this process is identifying how the proposed infusion of technology supports and/or conflicts with the current culture. Making explicit the current culture puts one on the road to considering new paradigms.

Barrier #2

• Acknowledging that the nature and use of technology conflicts with current paradigms many schools operate under and requires the development of new paradigms.

The core culture of teaching and learning is extremely difficult to change. The essential tools of teaching and learning have remained stable for the last 100 years. Paradigms governing the behavior of teacher and learner are also deeply embedded and supported by individuals' values and beliefs. Technology is a rapidly evolving tool that requires new paradigms, for example: changing the paradigm of professional development from one or two days per year to development that is ongoing over the course of a career, or changing the culture and paradigm of isolation prevalent in schools to one of collaboration that includes actively working with the world outside of K-16 education. Without the adoption of new paradigms, the infusion of technology will simply not occur throughout the organization.

POSITIVE ACTIONS

1. New criteria for assessing grant proposals: (a) include criteria for assessing an organization's understanding, previous experience, and capacity for complex change; (b) modify needs assessment criteria to include analysis of the current culture, a description of what needs to take place to enhance and/or create one that embraces change; and (c) include criteria for assessing the quality of the professional development based on the effective professional development literature.

2. Value the importance of culture in the change process by developing short-term funding initiatives (18 months) to analyze the current culture and support organizations in developing cultures that embrace change. These initiatives should include small amounts of funding for equipment to initiate pilot projects. The experience gained by individuals working on small projects creates the conditions necessary

for developing a larger vision and strategic plan. *Only* schools that can document the presence of a "change culture" become eligible for larger initiatives that include significant funding for purchasing technology equipment.

3. No funding for the purchase of equipment without funding for quality professional development. In my opinion, the ideal ratio is 80% professional development, 20% equipment.

4. Fund the development of distributed learning environments targeted at infusing technology into the teaching reading, writing, mathematics, and science.

KEY TERMS

Change Culture: A change culture recognizes the multidimensional nature of complex change and actively works to create conditions where it can thrive. These conditions include but are not limited to understanding the nature of complex change, providing research-based support for making complex change, and allowing sufficient time for complex change to occur. A fundamental assumption of a change culture is that its members must think conditionally about their current knowledge structures, behaviors, and values. Thinking conditional requires that individuals consistently seek new information that prompts the emergence or enhancement of cognitive structures that enable rethinking of prior ideas and actions.

Change Process: The change process is where an individual or group of individuals works over time and with continual adjustments in attitudes, skills, and resources to do something significant differently. In general for the process to be successful it must address a priority need, the essential features of the change must be defined and practical, and the plan for making the change must be based on a realistic assessment of what is needed to accomplish it.

Technology: Any electronic tool (digital cameras, computer, scanners, laboratory probes, etc.) and/or software (database, spreadsheet, word processing, etc.)

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