Technology Barriers and Opportunities

John C. Wilkinson
JDL Technologies, USA

TECHNOLOGY EXPERTS AND THE COMMON TECHNOLOGY USER: SHALL THE TWAIN EVER MEET?

It is comforting to know that some things are timeless. The sound of the ocean surf. And now, the gulf between the highly trained networking and technology experts and the inexperienced technology users. Whether in business or education, there is at the very least a "tsk, tsk" uttered in private by the technology experts about the users. Stories abound about such user follies as using the CD-ROM drive bay as a cup holder. At its most extreme, there may be a desire to lock out, bolt down, shut off, and otherwise control the use of networks by the "damn users." In a reflective, albeit impractical moment, a network engineer may be heard to mutter, "If it weren't for the users, our network would never fail."

INTEGRATING INNOVATION INTO THE MAINSTREAM

Most learn that migrating innovation into mainstream practice is a complex task. Geoffrey Moore (*Crossing the Chasm* and *Living on the Fault Line*) points out that technology first has a destabilizing effect. Normal mechanisms for adapting to change tend to behave like antibodies that act to reject change as a possible threat to "life" (Moore, 2001). Educators and technology experts have not had to understand and accommodate each other's needs and requirements quite as closely as is now required by the full integration of networking technologies into teaching and learning. There is no more demanding technology environment than the school and college classroom. There is no more demanding setting in which to use network resources than the instructional setting.

Because of these factors, this discussion focuses on the relationship between Core versus Context. The word "core" refers to the key skill and its application. The word "context" refers to the environment in which this skill is applied. For technology experts and educators, what is core and what is context is vastly different. In some cases what is core for one is context for the other. Herein lies part of the complexity of network support and the source of a key barrier to successful technology implementation.

DISCUSSION OF CORE VERSUS CONTEXT

"I Hate the Sales Force!"

Let's use a hypothetical situation, such as the gulf between the engineers and the sales group in a technology company, to dramatize the definitions of Core and Context. For the senior network engineers, the technology is Core. Customer expectation, the implementation environment, time frames, and so forth are all context. The sales team's Core is the environment, timeframes, customer expectation, and so forth. So the Core for the sales team is the context for the network engineers.

The engineers despise (maybe distrust is a better word?) salesmen because salesmen always overpromise. The sales team is annoyed by the engineers because they are always saying something cannot be done…meaning it cannot be done in that environment, in that timeframe, and to meet the customer's expectations. But the engineers must eventually accommodate the fact that until a sale is made, nothing happens…the engineer cannot install and support an elegant technology solution until a customer has ordered it. The sales person must also understand and accommodate the engineer's core responsibility, and sell something that can actually be implemented and supported by the engineer.

Is there a solution to the salesman/engineer dilemma? How does one side develop empathy for the other's position? Would it help to teach the salespeople more about the technology so they do not overpromise and put the engineers in a conundrum?

Perhaps we could teach the engineers a little about the sales process so they will be able to influence the contract and thereby contribute to the successful implementation.

CORE AND CONTEXT IN THE EDUCATION TECHNOLOGY ENVIRONMENT

The communication gap we find between the network engineer and the salesman also exists in education between what the technology experts in a district know and what the teacher knows about technology. In business, the technology has become mission-critical and cannot be set aside. The educator, unlike the business user, still has alternatives and can step back from using technology if it is not responding as expected. So, even though it is fast becoming mission-critical to integrate technology into the student's learning experience, teachers can choose to avoid trying technology if it is unstable or unreliable.

CORE VS. CONTEXT IN YOUR DISTRICT

Any organization can benefit from understanding what is Core and what is Context for each group. Limited understanding of each other's circumstances and needs can result in a disconnection over technology and technology support.

Limited understanding usually results in limited empathy. The network administrators would benefit from an empathetic user base. The users would benefit from more empathetic network administrators. The bottom line is that each group sees what it sees from its own Context and under the pressures of its own Core. An analysis of the Core and Context for each of the technology support teams is offered below to influence an understanding of the needs and requirements of each group.

CORE AND CONTEXT FOR IT (INFORMATION TECHNOLOGY)

Because networking and its rules and protocols are new to many in education, the user context presented

Figure 1. District IT or networking services

Core	Context
The Core for the District IT or Networking Services team is the science and technology of network electronics, servers, and infrastructure. The IEEE standards, Ethernet rules, and the seven-layer OSI model are Core for the Networking Services team. Handling the scope of the network use, with hundreds or even thousands of students hitting the network at the top of the hour, is Core for these network administrators.	The Context for IT or Networking Services personnel is teacher and student users. "If it weren't for users, the network could be stable" goes the lamentation of network administrators all over the country. The main Context problem facing the network administrators is that users do not understand that their tweaking has network-wide ramifications.

Figure 2. Core and context for building technology coordinator: The building-level technology coordinator or network administrators

Core	Context
The Core for the technology support person at the school is focusing on effective instruction. As with the teacher, instruction is Core, tools and resources are context. However, the local teacher with network support duties has an additional Core duty…keep technology running reliably so it will play its proper role in instruction.	The Context for the teacher with network administration duties includes her teacher colleagues and their frustrations. But the context of their efforts also includes the technical support groups and their frustrations. The teacher's technology needs include being able to count on the technology when the time for the lesson has arrived. Access for every student to a network resource, application, or fast Internet access must be reliable. What if it is not reliable? Teachers will not use it until they are confident it will be reliable.