INTEGRATED INSTRUCTION: WHAT IT IS, WHY IT IS IMPORTANT AND HOW IT WORKS!

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What do you as an administrator, teacher, student or parent want from your public education system? Do you want a classroom environment that encourages students to achieve high academic standards, one that enables them to think critically and creatively and ensures they are ready to move to the next level of a career pathway? In some schools throughout our nation, this may be the case, but frequently it is not.

A report of the National Center on Education and the Economy, *Tough Choices or Tough Times,* proposes that our educational system was designed in the 1900s for people to do routine work, and the system has not changed significantly. Marc Tucker, President and founder of NCEE, commented in a *New York Times* article by Thomas Friedman that refocusing the educational system on producing people who can imagine things that have never been available before will be a necessity. Tucker also noted this can't be done without higher levels of reading, writing, speaking, math, science, literature and the arts … and the constant ability to learn how to learn (Friedman, 2006).

Integrated instruction starts with a big idea, an essential question or a problem that is real and has meaning for students.

There is much concern that our current education system is not prepared to produce the skilled and creative workforce required for us to maintain our standard of living in a globally integrated economy. In response, policy makers have begun to promote a more integrated approach to teaching in programs that depend on a variety of different funding sources. As an example, the Carl D. Perkins Act of 2006 places major emphasis on the development of services and activities that **"integrate** rigorous and challenging academic and career and technical instruction." This may be the booster of an idea that has been with us throughout the 20th Century, but it now may best suit our needs to survive in the 21st Century.

The federal Perkins language tells us that career and technical educators and academic educators need to work together, but it does not tell us what **"integrate"** means instructionally, why it is important and how it works. The intent of this paper is to do just that.

What It Is

Integrated instruction starts with a big idea, an essential question or a problem that is real and has meaning for students. Students use skills and knowledge from several different subject areas in the context of the situation in order to answer the question or solve the problem. Integrated instruction was an idea born in the early 20th century through the work of Piaget, Dewey, Bruner and others who held a holistic view of learning.

Integrated instruction is a framework for understanding a particular topic or idea.

Integrated instruction is often called **interdisciplinary (thematic) teaching.** Holistic instruction by any name – contextual teaching and learning, problem-based learning and others – begins with core concepts that encourage learners to look for relationships and make connections. As they make those connections, they begin to appreciate the need for basic skills that cross the boundaries between academic disciplines. The components of integrated instruction include:

- A combination of subjects
- An emphasis on projects
- Sources that go beyond textbooks
- Relationships among concepts
- Thematic units as organizing principles

Why It Is Important

Integrated instruction makes learning meaningful. It mirrors how the brain works. It engages multiple learning styles. It encourages breadth and depth in learning. It makes connections. It makes sense. Situations from life outside of school help students to think and solve problems that are real. Students of all ages are more likely to invest mental energy in academic applications that have meaning for them. That extra effort produces positive results. This is not a surprise. Most students would rather work with a writing assignment or a math equation that is set in the context of a major issue and asks a question such as: "Is global warming real?"

How It Works

Let's look at some **real** examples of integrated (thematic) instruction at the K-5, middle school and high school levels. Each example integrates technology as it brings rich resources, new tools and powerful learning environments to the learning process.

K5: Tribal Technology

Integrating math, science and tribal culture, fifth-graders use technology to document their learning.

This teacher, who is not a Native American, teaches a fifth grade class at a small K-5 school near a tribal reservation. He is always looking for ways to make his teaching more culturally relevant, as many of the students are Native American. The teacher learned about a curriculum designed to meet state standards in math and science that was developed as a collaborative effort by teachers and researchers. The curriculum teaches core concepts at the elementary level. What grabbed his attention was the theme of canoes. Hands-on activities involving canoes would interest all his students, especially native learners whose families have built and paddled them for generations. He also saw how technology could be integrated into the unit.

Middle School: Choreographing Math

Physically modeling concepts related to the geometry of polygons builds understanding in an arts-infused middle school.

This teacher teaches math at a large, urban middle school. Three years ago the school adopted a school reform model that infused the arts into the curriculum. Teachers took part in professional development activities that helped them understand how the arts can be used to teach across subject areas. After seeing an increase in learning when using this approach, the math teacher wanted to collaborate with colleagues on an interdisciplinary project to boost student learning. He decided to incorporate a new activity into a unit on the geometry of polygons. He wanted students to be able to apply the concepts of angle measurements, understand regular and semiregular polygons, show how polygons tessellate and see how geometry connects to the real world. He knew his students would acquire a better understanding by physically modeling these concepts. He worked with the performing arts teacher to plan a three-day activity combining geometry with choreography.

Integrated instruction makes learning meaningful.

High School: Tsunami Science

A natural disaster provides a rare opportunity for modeling global systems.

This teacher teaches 10th-grade physical science in a high school with a population of nearly 3,000 students. Classes as large as 40 students make it difficult to schedule activities for small cooperative groups. She must spend so much time managing the class that she rarely gets to engage students in interactive lessons. In the fall, she spent a considerable amount of time trying different small-group activities, but nothing seemed to engage the students.

After returning from winter break, the students were concerned and sympathetic with the plight of those affected by the tsunami. That was when she learned that most of her students possessed a very limited understanding of the causes of a tsunami. The unfortunate events in Southeast Asia would serve as a catalyst for an exciting and positive learning opportunity. To maximize student learning, she wanted students to go beyond the verbal mode of acquiring information. She did some research to learn more about effective strategies for nonlinguistic representations, probably the most underused instructional activity to help students understand content in a whole new way.

The teacher focused on two research recommendations: the process of creating graphic representations and the best ways of modeling data. She was convinced that the best approach would employ a process organizer that focuses on cause-and-effect patterns.

First, she used the news imagery and reports of the tragedy as a resource for students. Students used this material to create a process organizer focusing on the causes and effects of tsunamis. Second, she had students create a presentation that modeled the dire effects of the tragedy.

Here are some examples of integrated learning that students experienced in this tsunami study:

- English Language Arts: Reading for information; writing
- Mathematics: Modeling the data
- Science: Weather and its devastating potential
- Social Studies: An in-depth focus on a particular geographic area

These and many other examples are available through The Northwest Educational Technology Consortium (NETC). It has been providing services and products in the Northwest since 1995. The consortium is made up of the state education agencies from Alaska, Idaho, Montana, Oregon and Washington, and the Northwest Regional Educational Laboratory in Portland, Oregon. NETC is one of the networks of 10 Regional Technology in Education Consortia in the United States and receives funding from the U.S. Department of Education. Access to their site, Focus on Effectiveness, can be found at the following link: http://www.netc.org/focus/challenges/instruction.php.

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What Are The Potential Results?

Integrated instruction, also known as interdisciplinary thematic instruction, is an alternative to traditional teaching methodology. It has the potential to move students toward high academic achievement, enhancing their ability to think critically and creatively, and to ready them for the next level of a career pathway.

This is captured eloquently by Humphreys, A.; Post, T.; and Ellis, A. in *Interdisciplinary Methods: A Thematic Approach*. This book explores the how and why of thematic teaching. It includes many examples of interdisciplinary themes that encourage students to discover, explore and experiment. Links are made among the humanities, communication, arts, natural sciences, mathematics and social sciences. Humphreys' comment puts it in context.

> It is taken for granted, apparently, that in time students will see for themselves how things fit together. Unfortunately, the reality of the situation is that they tend to learn what we teach. If we teach connectedness and integration, they learn that. If we teach separation and discontinuity, that is what they learn. To suppose otherwise would be incongruous. (Humphreys 1981, p. xi)

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