



DIKW (continued)

all know that we are in the middle of an information explosion (especially in science). What we have today is a Niagara that pours out bits and bytes of data and sometimes facts. What we often lack is any sense of how the data combine to form factual assertions (instead of trivia) and especially how the facts relate to one another. Concepts are the ideas (abstractions) with which a learner relates isolated facts and thinks about them. Concepts are the stuff of knowledge about a discipline. Thinking cannot be done without concepts; and the clearer the concepts, the clearer the thinking.

T.S. Eliot in a stanza from *Choruses from the Rock* is often credited with inventing the notion of DIKW:

Where is the Life we have lost in living?

Where is the wisdom we have lost in knowledge?

Where is the knowledge we have lost in information?

Reflection tells us that we live in a society enamored with DI and run by experts who are full of knowledge (DIK) but short on wisdom. In SITS we aim to develop faculty who are biblically wise about their academic disciplines (DIKW). Biblically wise faculty know how to use the concepts of their discipline on a higher level to formulate what we in SITS call principles. These principles are the overarching truths of the discipline. Principles are powerful truths that allow learners who grasp them to operate with insight and make wise choices. Principles tie to the wisdom of the Creator, Who is quite willing to give wisdom to those who seek for it as for hid treasure. It is out of His mouth that knowledge and understanding come. To mine another part of T.S. Eliot's *Choruses from the Rock*: We want our students to know words and to also know the Word Who made all things and by Whom all things consist.

SITS 2008 will cost about \$95,000 and will involve 12 science faculty. Three of these faculty will be first-timers. God has been so gracious in using you, our friends, to provide these funds. SITS is funded by the interest from the Science & Engineering Endowment. The interest for SITS 2008 was made available in February just before the economy began to falter. Please consider a generous gift now to assure the future of SITS in 2009 and beyond!

Michael Gray, Ph.D.

Director,
Summer Institute in Teaching Science

For information on how you can be part of the S&E Endowment Fund, please call 800-340-2048 or visit www.scienceendowment.org.

Cancer Research at BJU

If your reaction to that phrase is “when elephants fly,” you are in for a surprise. The BJU Division of Natural Science has long recognized the importance of research in developing the problem-solving skills of a scientist. We have endeavored to integrate small research projects throughout our course offerings. Some of our academic majors have also required or encouraged participation in research studies directed by science faculty in their “spare time.” Realistically these steps are as far as we could move toward an undergraduate emphasis on research. Now, through the generosity of Rebecca Spragins in memory of her late husband, George, a full-time director of research position has been funded at BJU. The director of research will

coordinate all research efforts within the Division of Natural Science. The director's personal research will focus on cancer-related projects. Through the generosity of Rachel Diorio ('86 business administration grad) in memory of her father, Rowan Burdette, renovation of space at Barge Hospital to allow that research has also been funded.

I am very pleased to announce that Dr. Amy Tuck has been hired as Interim Director of Research and will begin her duties in August with the start of the 2008-2009 academic year. She will serve part-time during this next academic year planning and supervising the renovations at Barge Hospital. She will also develop other aspects of the infrastructure needed for our

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Enrollment

Teaching would not be possible without students! At Bob Jones University alone, there are 17 majors that are science-related (see below), and 583 students are currently enrolled in those majors. Take a look at the enrollment as of spring semester 2008.

Biology Education—8	Electrical Engineering—22
Biology—67	Engineering Science—30
Biophysics—7	Information Systems Management—4
Chemistry—22	Information Technology—26
Composite Science Education—5	Nursing—214
Computer Engineering—	Physics—7
Computer Science—33	Premed/Preudent—83
Electronics and Computer Technology—18	Pre-Physical Therapy—26
	Pre-Veterinary Medicine—5

Faculty Corner Dr. David Boyd



Growing up as a southerner, Dr. David Boyd enjoyed his elementary years in Sumter, S.C., and his junior

high and high school years in Valdosta, Ga. The effect his high school science teachers had on his life was strong; however, he entered Bob Jones University in 1991 as a math major. Stephen Dersch (now Dr. Stephen Dersch, a family practice physician) was his freshman-year roommate, and he helped pique his interest in science. As a math major he was required to take biological science; and his teacher, Dr. Margene Ranieri, also encouraged him to pursue science. He eventually switched to biology education.

Professor Mike Gray thought entomology would be necessary in order to teach high school biology. But when he advised him to take the course, David tried as hard as possible to avoid registering for it ... what Dr. Gray didn't know was that he had been trying to avoid Dr. Henson at all costs! Reluctantly he signed up for the class, and it wasn't long before

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Chemistry Department Gets NMR Spectrometer



Nuclear magnetic resonance (NMR) is the technology that underlies magnetic resonance imaging (MRI) in medicine. It also forms the basis of NMR spectrometry, one of the most powerful and versatile techniques used to determine the structures of molecules. For example, NMR spectrometry is used to study pharmaceuticals, inorganic complexes, and many biochemicals, such as enzymes and DNA. It is also used to study the time dependence of chemical reactions, protein folding, and other biologically significant processes.

The Lord graciously provided the funds for the chemistry department to acquire a much-needed Fourier Transform NMR (FT-NMR) spectrometer in October 2007. Most modern NMR spectrometers are so complex that many university chemistry departments have full-time employees dedicated to processing samples and performing maintenance. In those settings students

often have little if any opportunity to gain hands-on experience. In contrast, the spectrometer in the BJU chemistry department is easy to use and simple to maintain. Students in the laboratory sections of organic chemistry, chemical spectroscopy, and research in chemistry have already used our new FT-NMR and have gained significantly in both experience and learning as a result. Maintenance is straightforward and is being performed by one of the departmental lab assistants—this takes some pressure off the faculty member responsible for the instrument.

Our new spectrometer will be used in other ways, too. For example, a minimum of two NMR-based experiments will be used in physical chemistry laboratory during the 2008–09 school year. We rejoice over the goodness of God in providing what we need in order to properly prepare our students for lives of service to Him.

DIKW

If you have been reading this newsletter at all the past five years, you probably know that SITS is the Summer Institute in Teaching Science. SITS is the major focus for the development of the faculty and the curriculum in the BJU Division of Natural Science. 2008 will mark the fifth year of SITS. If you have been an adult for any length of time, you know that \$\$—while not the focus of life—are absolutely essential! You can probably infer that SITS requires \$\$\$. But what in the world is DIKW, and how does it connect with SITS and \$\$\$?

DIKW is an acronym that stands for Data, Information, Knowledge and Wisdom. DIKW is a nice compact way to talk about how the SITS approach to learning differs from most learning experiences. Most learning, even in Christian circles, centers on DIK or frightfully, just on DI. These approaches assume that W (wisdom) is not something that can be taught and represents a goal that some students will reach on their own.

In SITS we approach learning as tri-partite. The elements of learning are facts, concepts and principles. Facts are the nuts and bolts of an academic discipline; they are the DI (data and information) characteristic of the discipline. We

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Dr. David Boyd (continued)

he fell in love with the subject and drastically changed his attitude toward Dr. Henson. He not only tolerated the teacher, but he grew to appreciate him very much and now considers him a dear friend.

During his time at Bob Jones University, he changed his major from math to elementary education, to biology education, and eventually to biology. He was just three credits shy of a double-minor (he minored in chemistry and almost in coaching). After his graduation in 1996 he went on to earn an MS and a PhD in entomology from Clemson University.

Following his education, David was a research entomologist at the USDA ARS Southern Horticultural Laboratory in Poplarville, Miss., for five years. He returned to BJU in the fall of 2007. Currently he teaches General Biology labs, Invertebrate Zoology, Parasitology and a directed study class in Forensic Entomology. He is also responsible for the new Student Medical Internship class.

In his spare time, Dr. Boyd enjoys reading, although his five children keep him quite busy! He and his wife, Jennifer (Hatchett), enjoy spending

time with Jesse (8), Donna, (6), Abigail (3), Gregory (1) and Michaela (newborn), their goldfish, a crawdad (that tries to eat the goldfish), a leopard gecko, a salamander and a guinea pig. They are active members at Mount Calvary Baptist Church in Greenville.

Last summer he attended the Summer Institute in Teaching Science and is looking forward to attending it again this summer!

If you would like to contact Dr. Boyd, you may e-mail him at dboyd@bju.edu.

Cancer Research (continued)

research program. We hope to launch our initial cancer research project in the fall of 2009 and then begin working toward cooperative projects with cancer researchers at other research centers.

Amy comes to us with great credentials for this effort. She graduated from BJU in 1994 with a BS in composite science education and from Clemson University in 1999 with a PhD in microbiology and a specialization in cell and molecular biology. She also did post-doctoral research at Clemson for an additional year. Amy's research was centered on chronic lymphocytic leukemia and was done in cooperation with the Greenville Hospital System. She has been granted

two patents for using UVC radiation therapy to treat chronic lymphocytic leukemia. She has published her research in two journals: *Photochemistry and Photobiology and Leukemia and Lymphoma*.

The purpose of our research efforts will not be to make a name for BJU. We envision our research program as training the next generation of scientists by providing an extraordinarily rich undergraduate learning experience. We aim to give them the best balanced education available to science undergraduates anywhere by combining the highest quality research opportunities with our already strong emphasis on learning in the classroom setting.

It is beginning to look like elephants can fly.

Michael Gray, Ph.D.
Chairman, Department of Biology



Amy Tuck, Ph.D.