The University of Kansas Center for Research on Learning • August 2010 • Volume 18, Issue 9

Disciplinary Literacy

Julie Tollefson KU-CRL

The Common Core State Standards—adopted by 37 states as of August 19—are a game changer, according to Tim Shanahan, keynote speaker during the 2010 International SIM Conference in Lawrence, Kan.

Shanahan, professor of urban education at the University of Illinois at Chicago, says the move toward common standards will have significant implications for how teachers teach, and he believes disciplinary literacy, his area of expertise, can play a large role in how schools meet the new challenges.

Shanahan defined disciplinary literacy as specialized ways of knowing and communicating in different disciplines. Mathematicians, scientists, historians, and other experts all approach the world differently, and students must be taught their specialized routines to successfully learn the content.

Shanahan used a pyramid to illustrate increasingly specialized levels of literacy. At its base, basic literacy represents general skills and abilities that underlie all reading. These include such things as basic decod-

ing and simple punctuation. The middle layer of the pyramid, intermediate literacy, encompasses more complicated rules of decoding and punctuation, increased fluency, and general comprehension strategies, among others. The narrowest part of the pyramid represents disciplinary literacy, with its highly specialized routines, demands, and language.

Imagine, he said, leaving a group of 14-year-olds from the Midwest in Thailand for a couple of days with no preparation or language study. Then imagine moving them to Japan for a couple of days, then China.

"How many of you would think kids would do great in that situation?" he asked. "You'd never do such a foolish thing, except we do it every day in high schools."

High school students visit the "country" of mathematics for 42 minutes every day, then the country of history, then literature. Students are expected to figure out for themselves the language and culture of each content country. This situation is especially troubling for low-achieving students who struggle with basic literacy skills. The adoption of Common Core State Standards, with



Tim Shanahan

their specific reading and writing standards for each content area, compound the challenges for educators and students.

"Are we going to have to teach disciplinary literacy? We have no choice, because in fact the nation is buying into this as something that has to happen," Shanahan says.

Shanahan's keynote address, "You Don't Have to be a Vulcan to Know about Disciplinary Literacy," explored the differences between dis-

CONTENTS

- SIMtrek: Voyage to school change, 3 SIM® Leadership Award profiles, 4-7
- Conference DVD order forms, 8 New SIM Professional Developers, 9



ciplinary literacy and a well-known approach to improving adolescent literacy called content area reading.

In content area reading, a concept that has been around since the 1920s and that has grown increasingly popular since the 1940s, all teachers learn general methods for teaching reading using content area instructional materials.

Disciplinary literacy differs from content area reading in a number of ways, including the nature of skills addressed, its focus, targeted students, types of texts used, and the role of graphics.

Nature of skills. Content area reading focuses on reading skills that can apply to any reading assignment in any content area. Disciplinary literacy promotes specialized skills and activities targeted to specific content areas. A set of literacy skills that helps students learn chemistry, for example, might not be useful in literature or history studies.

Focus. Content area reading promotes the use of reading and writing to study and learn. Disciplinary literacy focuses on how literacy is used to make meaning within a discipline.

Targeted students. Shanahan says content area reading—despite being promoted as a solution for all students—tends to be used in more remedial settings. The strategies taught in content area reading work best with younger students and lower-achieving readers. Though dis-

CRL & SIM on Twitter

@kucrl

Center for Research on Learning

@StrateTweets

Strategic Instruction Model®

@Stratepedia

Stratepedia Technology Group



ciplinary literacy has not been tested yet, Shanahan believes the strategies associated with it will apply to a broader range of students.

"Our theory on it is this, that for these kids who are struggling to pay attention, it shouldn't matter very much whether they're learning a general strategy or a highly specific strategy that's good, as long as they understand when it's going to be useful and under what circumstances," Shanahan says.

Shanahan believes teaching struggling readers the literacy secrets of belonging in the science, math, or literature communities might be as beneficial as teaching them general strategies. In addition, average- and high-achieving students will benefit from disciplinary literacy strategies, making teaching such strategies more appealing to general education teachers.

"What that would mean is our kids would have full days of dealing with text, not just one remedial period," he says.

Types of texts. Content area reading often promotes reading plays, poems, novels, or short stories in content classes such as math, science, and history. Disciplinary literacy focuses

only on disciplinary text, where use of language and grammar may differ dramatically from discipline to discipline. Disciplinary literacy strategies help students understand the language of chemistry when reading chemistry texts or the language of math in math textbooks.

Role of graphics. Content area reading often promotes general interpretive skills for gaining meaning from graphics or ignores graphics altogether, Shanahan says. Disciplinary literacy identifies what's special about the role of graphics in different disciplines and aims to help students understand the kinds of information that can be obtained from different types of graphics. In some content areas, such as chemistry, graphics and text are of equal importance in understanding and learning the material.

Shanahan expects disciplinary literacy to be a solution for the future.

"If you want kids to be workplace ready, if you want kids to be able to do what you want them to do, you're going to have to teach some of the kinds of things that I've been talking about," Shanahan says. "Our kids need this. It is their chance to take part and participate."

SIMTREK

Voyage to School Change

Highlights of the 2010 International SIM® Conference:

- New this year: an orientation for first-time attendees the evening before the official start of the conference. Patty Graner led 20 new participants through the schedule and structure for the week. Those in attendance appreciated the opportunity to ask questions and plan for the week of learning ahead. Another addition to this year's line up was a special researcher "meet and greet," in which CRL researchers met informally with conference attendees after sessions ended Thursday. Other special events included the annual certification ceremony, social, and awards program (see pages 4-7 for profiles of this year's SIM® Leadership Award recipients).
- The conference featured the *EDIT Strategy*, a new offering in the SIM Learning Strategies Curriculum. If you are not yet familiar with this strategy, see the *EDIT Strategy* commercials on our YouTube channel: http://www.youtube.com/kucrl. Scroll through the list of available videos on the right.
- The *Listening and Notetaking Strategy,* another new but not yet published strategy, also was featured.
- Tim Shanahan's keynote kicked off Wednesday morning. Read about it

- on page 1 and watch the video on our web site.
- Participants spent the rest of Wednesday in strands, opportunities to delve deeply into important topics. This year's strands were Crafting an Integrated Response to Student Needs with Learning Strategies; SIM and Literacy; SIM as a Change Agent: CLC, RTI, and Tiered Instructional Support; and Strengthen Your SIM Core. On Thursday, we returned to a more traditional conference format in which participants picked from nearly 20 sessions to strengthen their knowledge in targeted areas. DVDs of many of the sessions are available for you to purchase. See the order form on page 8.
- On Friday morning, Patty Graner and Janis Bulgren provided glimpses into current research projects using a pecha-kucha format (very brief, timed presentations in which PowerPoint slides are set to advance automatically—whether the presenter is ready or not!).
- Friday morning also saw the return

of affinity groups, a popular feature in 2009 in which small groups spent time discussing specific topics of interest to group members. This year's groups included Fusion ReadingTM for professional developers, the integration of games into instruction, the research projects of several CRL doctoral fellows, and planning professional development with sets of integrated Content Enhancement devices. See video summaries of affinity group discussions on the conference web site, http:// sim2010.kucrl.org/2010/affinitygroups.

The conference web site contains a wealth of information about this year's event. Visit http://sim2010. kucrl.org to read descriptions of sessions and strands and to browse presenter bios. More video will be added in the next few weeks.

Also, we have begun planning for the 2011 International SIM® Conference. Keep on eye on *Stratenotes* and our Twitter account, @StrateTweets, for news as plans develop.

Watch the keynote: The video of Tim Shanahan's keynote address is available in the Multimedia section of our web site. Direct link: http://media.kucrl.org/archives/577

Also, be sure to visit Shanahan's blog, www.shanahanonliteracy.com

The University of Kansas Center for Research on Learning Joseph R. Pearson Hall 1122 West Campus Road, Room 521 Lawrence, KS 66045-3101 Main Office: 785.864.4780 Order Desk: 785.864.0617 Fax: 785.864.5728 E-mail: simpd@ku.edu

Contributors: Donald D. Deshler | Patricia Graner | Mona Tipton

Communications Director: Julie Tollefson Art Director: David Gnoiek

STRATENOTES is published eight times from September through May and once every summer by the University of Kansas Center for Research on Learning as part of Strateworks for the International Professional Development Network. Publication period 2009-2010; cost \$35.00. Permission to reproduce any or all parts of Stratenotes to support professional development activities is hereby given.

SIM® Leadership Award Janet Atallah

Janet Atallah is calm in the midst of chaos and a strong mentor who puts others at ease as she supports and guides them. Her knowledge of the Strategic Instruction Model®, professional development, and other education topics inspires awe and respect among her colleagues.

"Janet Atallah's deep understanding of the foundations of SIM, understanding how to work with people, her understanding about professional learning, are all attributes that she brings to bear in her work locally and nationally," says Patty Graner, director of professional development at the University of Kansas Center for Research on Learning.

Janet generously shares her knowledge, mentoring dozens of individuals on their journeys to become certified SIM Professional Developers.

"It meant so much to me to have someone that I looked up to and someone who was so responsive," says Sharon Bittle, who became certified under Janet's guidance. "It never was about her. It was always about the network. That's part of her leadership style—always trying to help others grow as much as they can."

Janet believes fostering growth of the International Professional Development Network is an integral part of being a member.

"The mentoring is what keeps the network together and keeps the network growing," Janet says. She and her colleagues reinforce that philosophy in their work with new members of the network. "We make sure that their responsibility—and it is kind of a responsibility—as professional developers is to grow the network and even as they're finishing their apprenticeship to start mentoring others."

In addition to mentoring, Janet has served on the SIM Advisory Board in Florida, helped organize the annual Florida SIM Update, and conducted or assisted with Potential Professional Developer Institutes in Florida, Arkansas, and Kansas. In 2003, she



received the Jane Langenbach Award for Leadership from the Florida SIM Network.

Janet's leadership played a crucial role in the success of two very large projects in Florida in recent years. Though the projects were conducted within the state's boundaries, the results are significant for all members of the International Professional Development Network and for the future direction of research conducted by the Center.

In one, she worked with Sally Rozanski, Palm Beach County district

The SIM® Leadership Award recognizes individuals who have shown exceptional leadership and excellent service to the Strategic Instruction Model® by helping educators become strategic teachers and, as a result, students become strategic learners. Recipients are standout leaders in the SIM International Professional Development Network, sharing their energy and knowledge and inspiring their colleagues to greater achievements. We recognize their achievements, their courage despite adversity, and their unwavering belief in the power of individuals to join together to make a difference in the lives of students.

social studies program planner, to bring cohesiveness to social studies instruction at all levels in the school district. Janet and Sally brought together more than 30 teachers department heads, school leadersand mapped the social studies curriculum using Course Organizer and *Unit Organizer* for every subject area. They conducted professional development and follow-up support for every social studies teacher in the district, adding the Framing Routine later in the year and then allowing teachers to choose from other Content Enhancement offerings. They then went a step further and collected data, analyzing student outcomes.

"I think the most telling piece that came out of that research is there were gains, but the gains that we saw were the students with disabilities did as well as or better than students without disabilities on district exams" and on mandatory Florida state tests, Janet says.

The second project tested Janet's leadership skills in different ways. Through a Just Read Florida! grant, a research team introduced Fusion Reading™ in six secondary schools in Palm Beach County. Janet was responsible for coordinating professional development, setting up and collecting data, monitoring grant activities, and providing coaching to teachers.

"It was the biggest challenge of my career," Janet says, "and it was



Janet presents a success story during the 2008 International SIM® Conference.

when I realized how difficult it is to do research."

Don Deshler, director of the Center, credits Janet with helping teachers in the project successfully implement the SIM reading program.

"We really value her expertise," he says.

Janet's passion for SIM and professional development are legendary among her colleagues. Bobbie Lariscey, who also became a SIM Professional Developer under Janet's mentoring, tells a story that illustrates the point: The two of them were traveling home together after a Florida

SIM Update. They packed Janet's car full of projectors, cameras, manuals, and boxes of materials, then hit the road. Only after they arrived home did Janet realize that she had left her suitcase in the lobby of the hotel.

"This goes to show you how dedicated this person is to professional development. She doesn't even think of her own needs," says Bobbie. "Janet is one of the kindest, most considerate, knowledgeable, professional, caring people I know. And she never expects anything in return."

It's time to renew Strateworks for 2010-2011!

Remember, you must maintain a current *Strateworks* membership to be considered an active member of the International Professional Development Network. Your membership also entitles you to access to Stratedirectory Online (http://directory.kucrl.org), *Stratenotes*, SIMville, and Stratepubs. Membership forms are available online:

http://kucrl.org/sim/forms/strateworks

SIM® Leadership Award **Sheri Fiskum**

Sheri Fiskum's passion for and dedication to the Strategic Instruction Model® know no boundaries. Sheri, based at the Florida Diagnostic and Learning Resources System center in Orlando, willingly travels out of her official service area to work with teachers who lack access to professional development she can provide. Even economic roadblocks rarely slow her down for long. When she knows SIM professional development can meet teachers' or students' needs, but the district is unable to afford it, she's tenacious in seeking the funds to cover costs of travel or materials.

"Sheri is a wonderful ambassador for the SIM program," says Stacey Christophel, FDLRS project director. "It doesn't matter where the teachers are, what kind of constraints they might encounter. Sheri is just very generous about trying to grow SIM and helping teachers."

Sheri's efforts have touched the lives of hundreds of teachers and thousands of students within the state of Florida, but her influence also has been felt across the country. Since its inception, Sheri has helped organize and present the annual Southeast SIM Update in Charleston, S.C. She's presented numerous times at the International SIM Conference and the Florida SIM Update, and she's mentored new SIM Professional Developers for many years.

"A couple of years ago, we asked Sheri if she would be one of the lead mentors in the Xtreme Reading™ national study, and she did a fabulous job in helping us launch that program," says Don Deshler, director of the University of Kansas Center for Research on Learning.

Sheri's SIM beginnings date back to her years as an elementary and middle school teacher, when she used some SIM Learning Strategies in her classroom. But the relationship really took off when she accepted a job with FDLRS and found herself sharing an office with Jerri Neduchal. Before long, Jerri convinced her to pursue professional developer certification,



and Sheri attended a Potential Professional Developer Institute in the mid-1990s under the leadership of Patty Graner.

"Sheri's knowledge of staff development and professional learning coalesced with her fun personality to help us to realize that she was going to be a great professional developer and just perfect in her community," says Patty, who is now director of professional development for the Center.

Colleagues have high praise for Sheri's reputation for getting the job

Watch award stories on YouTube!

Video profiles of all 2010 award recipients can be found on our YouTube channel, http://www.youtube.com/kucrl. Scroll through the options on the right side of the screen to see what you've been missing.

done, for continual learning, and for collaboration and organization.

"Sheri is a leader in everything that she does," says Roxie Cohen, SIM Professional Developer who works closely with Sheri on several district-level projects in Orange County Public Schools. "She's wonderful in terms of listening to teachers and their needs and then being able to process that information."

She also commands the respect of those with whom she works.

"There are people that you meet and you automatically trust them and know what they're saying is genuine. That's Sheri Fiskum," says Debbie Cooke, SIM Professional Developer.

As renowned as she is for her ability to accomplish the really serious work toward improving student achievement, Sheri is just as well known for how much fun she makes learning about SIM.

"Sheri can bring a lightness to really tough situations," says Patty. "We ask teachers to change how they teach. She understands that bringing fun to the process can make all the difference in how people will enjoy and will learn what she has to share with them."

Sheri applies a powerful positive outlook to her life and work, a legacy from her dad, who taught her not to waste her time being negative.

"It didn't mean that you ignored some of the negativity or some of the harsh realities of life and politics and the world around us," Sheri says. "It meant that you looked for something



Sheri plays her part during the talent show at the 2008 International SIM® Conference.

good, something positive that gave you a little skip in your step."

That philosophy shapes the work she does to keep the SIM Network growing and thriving.

"I think it's important that any time you have someone new in the business—and education is all about business and so is professional development—that we need to nurture those folks. We need to continue to provide support and mentoring," she says.

She gives her time and energy to mentor those who are just learning, to travel to areas where SIM Professional Developers aren't found (yet!), and to encourage inactive SIM Professional Developers to return to duty.

"All of us within the SIM Network believe very strongly in its strength," Sheri says. "I like to say the SIM Network is a living, breathing instrument of good education."

SIM & CRL Online Resources

www.kucrl.org

Strategic Instruction Model

http://kucrl.org/sim

Content Literacy Continuum

http://clc.kucrl.org

Stratepedia

http://stratepedia.org

SIM Workshops and Updates

http://www.kucrl.org/classes

SIMville Sign-On

User name: Network Password: strategic

CRL News

http://www.kucrl.org/news

CRL Learns

http://crllearns.kucrl.org

CRL Project Profiles

http://www.kucrl.org/profiles

CRL Multimedia Archives

http://media.kucrl.org

CRL Publication List

http://www.kucrl.org/research

CRL Divisions

Advanced Learning Technologies

http://www.altec.org

Division of Adult Studies

http://das.kucrl.org

e-Learning Design Lab

http://elearndesign.org

Institute for Research on Adolescent Learning

http://iral.kucrl.org

Kansas Coaching Project

http://instructionalcoach.org

Professional Development Research Institute

http://pdri.kucrl.org

2010 Conference Session DVD Order Form

DVDs of several of this year's conference sessions are available for purchase at a **cost of \$15 per session**. Please use this form to order.

	Name:			
	Address:			
	E-mail:	Phone:		
	VISA/Mastercard #:	Expiration 1	Date:	
	□ Personal Card □ Business Card			
,	If business, name of institution:	f business, name of institution:		
- OTOTAL - AOTALIO - AOTALIO - A - AAGAS ZOTO	Signature authorization:	Phone #:		
	Wednesday □ Keynote Address: You Don't Need to be a Vulcan to Know about Disciplinary Literacy— Timothy Shanahan Thursday □ CLC Facilitates Literacy Instruction in a Feeder Pattern: A Story of School Change—Jeff Crook, Frances Warnick, Cathy Guillena, Donald Latham, Kendall Hunt, Janie Brown □ Content Enhancement Guidebooks from Starbase SLC— Bev Colombo, Suzanne Robinson, Leslie Herod □ Deep Space Exploration of Teacher Quality—Mike Hock, Jim Knight □ Edit Strategy—Charlie Hughes □ Energize Your Content	□ Level 2 of the CLC: Teaching Fusion Reading™ Strategies in the General Education Classroom for Vocabulary and Reading—Mike Hock and Irma Brasseur-Hock □ Level 3 of the CLC: Fusion Reading™ as a Supplemental Reading Class—Mike Hock and Irma Brasseur-Hock □ Listening and Notetaking Strategy—Gwen Berry □ Mini Mind Meld Belinda Mitchell, facilitator): Pecha Kucha Book Reports—Cyndi Gibson, Leslie Novosel, Shari Schindele, Rebecca Shankland; Teaching Tools—Jean Schumaker; The Implementation Fidelity Matrix—Ed Ellis; Strategic Tutoring Goes Electronic—Paula Lancaster □ Resistance is Futile: SIM in Higher Education—Dee Berlinghoff	□ Set a Course for Success: Using Content Enhancement to Support Writing—Jan Bulgren □ SIM and State Standards— Candace Bixler and Latricia Bronger □ Taking us into Warp Drive with GIST 2.0 – Keith Lenz, Peter Lenz, Sherri Wagner □ The Writing Enterprise: CDs for Students—Jean Schumaker □ The Final Frontier: Language Patterns in Academic Texts— Frances Ihle □ Unexplored Galaxies: Paragraph Writing and Theme Writing Strategies—Jean Schumaker	
	Enhancement Neural Pathways by Looking Beyond this Galaxy—Jan Bulgren and Keith Lenz		Number of sessions selected @ \$15 each: Total for Order: \$	

Welcome!

SIM® Professional Developers certified between August 1, 2009, and July 31, 2010, by state (certification type, name, and professional development leader)

Arkansas

Content Enhancement: Kevin Floyd, Jerome Harper, Brenda Pennington (PD Leader: Jerri Neduchal); Linda Watt (PD Leader: Irma Brasseur-Hock)

Content Enhancement-Preservice: John N. Trice (PD Leaders: Patty Graner and Gail Cheever)

Learning Strategies: Becky Brown, Sylvia Hiatt, Natasha Rowe (PD Leader: Debbie Cooke)

California

Content Enhancement: John Nolan (PD Leader: Cathy Spriggs); Chris Schnieders (PD Leaders: Candace Bixler and Gail Cheever); Carla Spyksma (PD Leader: Peggy Graving-Reyes)

Learning Strategies: Kathy Briggs, Yolanda Vera (PD Leader: Bev Colombo); Kim Kelly (PD Leader: Cathy Spriggs)

Florida

Content Enhancement: Amy Collins, Laura Hannan, Cristal Kimrey, Michael Phillips, Terry Schultz-Nourse, Jennifer Wood (PD Leader: Jerri Neduchal)

Learning Strategies: Marilee Amodt, Jude Cepero, Stephen Hanson, Vicki Jenkins, Kate Kramer, Heather Teto (PD Leader: Sharon Bittle)

Illinois

Learning Strategies: Kara Forrest, Cynthia Martin (PD Leader: Sue Woodruff)

Iowa

Content Enhancement:Sandra Bonner, Rebecca Hummer, Marlin Jeffers, Jill Kiger, Robin Larrington, Mary Montgomery, Julie Saul, Sara Youngers (PD Leader: Ann Hoffman)

Learning Strategies: Holly Natvig (PD Leader: Ann Hoffman)

Kansas

Content Enhancement: Samia Guess, Tonya Waller, Rebecca Williams (PD Leader: Jerri Neduchal)

Learning Strategies: Melissa Cupp (PD Leader: Ann Hoffman); LaVonne Holmgren (PD Leaders: Irma Brasseur-Hock and Jim Knight)

Kentucky

Content Enhancement: Angela Cain (PD Leader: Angela Bray)

Massachusetts

Content Enhancement: Ron Gathro, Craig Wisniewski (PD Leader: Sue Woodruff)

Michigan

Content Enhancement: Holly Beemer, Kathleen Lutkus (PD Leader: Sue Woodruff)

Learning Strategies: Lindsay Bredin, Nichole Martin, Angela Nettleton (PD Leader: Sue Woodruff)

Missouri

Content Enhancement: Mary Monika, Beth Nesbit, Mary Swift (PD Leader: Rosemary Tralli); Mindi Crane (PD Leader: Debbie Cooke)

Oregon

Content Enhancement: Kent Anderson, Heather Kelly Siegfried (PD Leader: Shari Schindele); Renee Vineyard-Stahl (PD Leader: Cathy Spriggs)

South Carolina

Learning Strategies: Daria Cronic, Sharon Moss (PD Leader: Jerri Neduchal)

Texas

Content Enhancement: Kathleen Forsell, Bonnie Matticks, M'Liss Moore, Maureen Selman, Lorna Shepherd, Jill Walker (PD Leader: Candace Bixler); Lynette Thomas (PD Leaders: Candace Bixler and Gail Cheever)

Learning Strategies: Nancy Love (PD Leader: Conn Thomas)

Vermont

Content Enhancement: Kristina Hansen, Eileen Zazzaro (PD Leaders: Candace Bixler and Gail Cheever)

Virginia

Content Enhancement: Whitney Miller (PD Leader: Shari Schindele); Jean Wright (PD Leader: Jerri Neduchal)

INSIDE:

- Disciplinary literacy, 1
- SIM Trek: Voyage to school change, 3
- SIM® Leadership Award profiles, 4-7
- Conference DVD order form, 8
- Newly certified SIM® Professional Developers, 9

Get Stratenotes in color!

You can download a full-color version of this newsletter from the *Stratenotes* archives section of SIMville.

CALENDAR 2010-2011

Oct. 4-6, 2010

Instructional Coaching Institute, Level 1, Lawrence, Kan. http://instructionalcoach.org

Oct. 7-9, 2010

Instructional Coaching Institute, Level 2, Lawrence, Kan. http://instructionalcoach.org

Oct. 11-13, 2010

Instructional Coaching
Conference
Lawrence, Kan.
http://instructionalcoach.org

Feb. 3-4, 2011

West Region Update Conference for SIM Professional Developers Las Vegas http://kucrl.org/classes

Feb. 24-26, 2011

Southeast Region Update Conference for SIM Professional Developers Charleston, S.C. http://kucrl.org/classes

May 31-June 3, 2011

SIM® Learning Strategies for Preservice Educators Lawrence, Kan. http://kucrl.org/classes

May 31-June 3, 2011

Teaching Content to All: SIM Content Enhancement Routines for Preservice Educators Lawrence, Kan. http://kucrl.org/classes

Complete calendar of coming events at http://kucrl.org

ADDRESS SERVICE REQUESTED

Joseph R. Pearson Hall IJ22 West Campus Road, Room 517 Lawrence, Kansas 66045-3101

STRATENOTES Volume 18, Issue #9

CENTER FOR RESEARCH ON The University of Kansas

Presorted First Class U.S. Postage PAID Lawrence, KS