

Transitions in Developmental Education: An Interview with Rosemary Karr

By Cristella R. Diaz

Developmental educators must not only be content specialists, but they must also become learning specialists.



Rosemary Karr is a Professor of Developmental Mathematics at Collin College in Plano Texas where she has taught since 1990, subsequent to serving as a faculty member at Eastern Kentucky University. Professor Karr has coauthored three text-

books, written more than 10 solutions manuals, presented numerous papers, and has been an active member in multiple educational associations (previous President of the National Association for Developmental Education and reviewer/editorial panelist for the AMATYC Review). She has been honored as Outstanding Professor four times by Collin College and has received national and state recognitions: U.S. Professor of the Year for Community Colleges (Council for Advancement and Support of Education (CASE) and the Carnegie Foundation for the Advancement of Teaching, 2007), Outstanding Service to Developmental Education Students (NADE, 2007), Innovative Excellence in Teaching and Learning (National Conference for College Teaching and Learning, 1996), and the 2008 Texas Minnie Stevens Piper Professor. Her current research interest involves the impact that reducing mathematics anxiety has on student learning.

Cristella Diaz (C.D.): Dr. Karr, you began teaching developmental mathematics in the early 1980s, just a few years after NADE was founded. During this period, the field was transitioning from trying to remediate student cognitive deficits to a more holistic developmental approach of tapping into learners' talents and strengths by providing support in the affective domains of learning, too. Was this a difficult transition period?

Rosemary Karr (R.K.): As you noted, there have been changes in this field; however, those changes extend beyond even the ones you mention. As characterized by NADE, developmental education (DE) has a holistic definition that is much more than references to the coursework alone. It encompasses all of the varied forms of learning assistance which are critical for student success. In general, DE attempts to empower students to be responsible for their own learning,

to bolster their self-confidence, to alleviate their fears (of mathematics specifically or of college in general), and to provide the strong foundation that they are going to need for success in their subsequent classes. Effective DE interventions respond to different student learning styles and previous academic experiences, and they provide the appropriate instruction necessary for the achievement of the student's goals.

To address that holistic approach within the classroom, many professionals have moved from the role of "instructor as lecturer" to "instructor as facilitator" in order to actively engage students' cognitive, affective, and psychomotor abilities. Personally, I have found the transition from lecturer to facilitator to be a welcome one, as it enables me to better reach a diverse population of students who possess a genuine fear of failure. I can alleviate that fear of failure while instilling and/or cultivating their desire to achieve. It is important to accept students where they are, not from where we want them to be; the next step is to support them on the road to success in subsequent classes. DE classrooms are designed not only to improve a student's basic competencies but also to help the student to develop critical thinking skills. Quite often, this requires an attitudinal change in the student, beginning with a belief that a college degree is indeed a possibility.

To fully implement this transformation, developmental educators must not only be content specialists, but they must also become learning specialists. For example, exciting work is being done in brain-compatible education; neuroscientists are working with practitioners to better understand what is happening in the brain when learning occurs. This work extends beyond the affective domain of learning and will inform new strategies for teaching and learning that will increase the frequency of firing those neurons!

Going forward, educators will continue to make additional transitions, especially with the increased focus on developmental education. Recent funding has been provided by various foundations for research in DE. I suspect that this is, in large part, due to President Obama's goal to increase college graduation numbers. The opportunity to critically examine the DE

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field makes this an exciting time, as it is providing the data which is necessary to begin to explain what is happening in the classroom and how various instructional interventions—as well as support systems beyond instruction—affected student learning outcomes.

C.D.: Critics still argue that we are not doing enough to help transition students from developmental courses and programs to college-level courses. For example, one major study reported that almost 40% of developmental math students never take a subsequent math course, and those who do are less likely to succeed than nondevelopmental students (Bettinger & Long, 2005). What can be done to increase developmental mathematics students' retention, matriculation, and success?

R.K.: Many institutions have mandatory assessment in an effort to increase retention. It is important that students be placed in the most appropriate course so that they will have the optimal opportunity for success. Current research is questioning the impact that the procedure for establishing a cut-off score has on proper placement. Is the student who scores " x " different than the student who scores " $x+1$ "? Is there less chance for student success when the score varies by 1 point AND the process of selecting the cut-off value is somewhat arbitrary? At the National Center for Postsecondary Research Developmental Education Conference, many attendees discussed additional alternative measures for assessment using factors such as high school grade point average. Administrators must also ask whether the students who DO place into college-level courses are truly college-ready. College readiness encompasses far more than a cognitive assessment!

To improve student retention, it is critical that the professor obtain preinstruction information on student expectations, in addition to the post-instruction information obtained from the student evaluations. An instructor can begin to accomplish this by asking students, "What can I do to help you be successful in this course?" Greater student involvement in their own assessment can lead to the "aha" moment that is sought by many instructors. Students should be encouraged to engage in realistic goal setting. Students need to believe that what they are trying to do is achievable. The "aha" may come from realizing a goal might not be achievable under their current circumstances. For example, is it realistic for a student to work 40-hours-per-week while maintaining a full course-load?

It is naive to think that quantitative analysis alone is going to identify what is going on in the developmental education classroom. What is also needed is to answer "Why is it happening?"

through, perhaps, qualitative research methods. For example, if giving more tests results in student improvement, is this because practice makes perfect, due to teaching to the exam, or because the students woke up and realized they had to work harder to do better? Is it due to the fact that if students are given enough tests, they will eventually get lucky and perform well? Ask what the research and the data mean and how the result affects practice. It is incumbent upon educators not only to promote holistic teaching processes that account for the enormous inherent learning variations among students but also to document the outcome of those processes in order to inform practice.

Some institutions are collecting relevant data. For example, a college in Texas has found that if a student enrolls in college algebra immediately after completing developmental mathematics, there is a 70% chance of success. If there is even a 1-semester delay, the rate falls to 50%. Although

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this is not surprising, it is useful data for advisement, with the potential to reduce costs and improve the program design.

I want to respond to the success part of the question as well. To improve success rates, most colleges have been working with high schools to transition students more effectively into college courses (e.g., Summer Bridge programs, ISD testing synchronized with college entrance testing, and curriculum alignment review). States have strengthened high school requirements, especially in mathematics, in an attempt to improve college graduation rates.

Nationally, there is a search for new teaching formats that improve success rates and maintain rigor of the learning outcomes while reducing costs through innovative teaching techniques. Best teaching practices emphasize not just the importance of placing students in the right course but also placing them in the right course format. There is no "one size fits all" educational format. Many colleges, including Collin College, are using varied learning formats such as: lecture, Passport, computerized learning pods, online, express, summer bridge programs, and learning communities. Be innovative in pedagogy, but realize that student motivation is one of the most important factors affecting success and retention.

In its 2010 *Education Criteria for Performance Excellence*, the Malcolm Baldrige Na-

tional Quality Award Program calls for a focus on student learning outcomes. It specifies that student learning should reflect holistic and measurable results of what the students have learned as a consequence of the instruction. It also notes that determining the correspondence between the measures of instructional quality and student learning outcomes is a critical instructional design tool for defining and focusing on key educational requirements and provides a framework to design methods to improve instruction..

C.D.: Two of many recent awards you have received—"U.S. Professor of the Year" and NADE's "Outstanding Service to Developmental Education Students"—were certainly, in part, in response to the "Passport Mathematics" program you created at Collin College. Please describe why that program has been successful.

R.K.: Passport is an individualized, flexible, and responsive mathematics program in which learning is self-paced but NOT self-taught. It allows students to receive instruction in the specific segments of mathematics required to advance to their next level by allowing them to focus on the topic(s) they need. The students begin the program from their current individual mathematical competence point, rather than beginning at a common predetermined point as in a traditional course. With multiple minilectures available each day, motivated students have the opportunity to complete one or more course levels during a semester. Although the opportunity to accelerate is available, a student, in consultation with the instructor, may opt to explore the material more thoroughly by completing only one course in the semester.

In Passport, the student's learning is predicated on the comprehension of concepts, NOT on a linearly mandated trek through a textbook. After the initial class meeting, the student may progress immediately to the material they need to study. Also, the program is designed for all students to receive instruction on topics "missing" from their understanding of a previous course. It is the flexibility of the program, in concert with the students' realization that they are ultimately responsible for their own learning, which makes this program successful.

C.D.: Portions of your Passport Mathematics program are designed to alleviate students' fears and anxiety about mathematics. What kind of experiences do you think have led students to struggle with and be fearful of mathematics?

R.K.: The list may be long on this one! Let me begin with society's attitude toward mathematics. I cannot count the times that I have heard people state that they were "never good in math." Why do many parents accept that their children

are not successful in mathematics with such comments as "I could never do mathematics either," usually followed by a nervous giggle? If I were to tell you that I cannot read or write, are you going to be laughing? I suspect not. In fact, the latter is so unacceptable that many programs have been created and now exist specifically to address adult literacy. Why is it still socially acceptable to say, "I cannot do mathematics"? So, in a very real sense, students "inherit" some of their fear of mathematics directly from the society in which they live. Hence, society's views need to change in order to help THEM!

Attitude and previous negative experiences also contribute to many students being fearful of mathematics. There may have been a previous bad experience with a teacher that did only drill and practice. Lack of success in a student's formative years can contribute to a negative attitude and eventually to emotional impediments to learning. A student who does not do well on a mathematics assignment may foster a negative attitude toward the subject, which in turn leads to poor performance, and the cycle perpetuates itself. Often I have students who will initially lament "Where will I ever use this?" It is a legitimate question which the instruction and the instructor should address. How often do professors take the time to show relevance? If the answer is not "always" then it can feed students' fears. Tell them when mathematical principles will be used in "real life" situations!

C.D.: Distance learning and the reliance on instructional technology is becoming more prevalent in postsecondary education. In fact, over 65% of community colleges now offer distance education courses (NCES, 2009). However, some findings report that dropout rates are higher for online courses than for traditional courses (Winograd & Moore, 2003). What is your opinion on the use of distance education and specifically on online instruction for developmental students?

R.K.: There are some students, both developmental and college level, who learn well via the Internet and should have the opportunity to use this educational option. These students may require very little direction and can produce remarkable work independently. This is not surprising because everyone has varied learning preferences. Some students not only have the ability to succeed online but to excel in this learning environment. Each generation seems to become increasingly more comfortable with technology and is more adept at finding resources when needed.

Withdrawal rates, though, are typically higher and success rates are typically lower for students taking online courses. Instructors are

implementing different strategies to see which ones work best for their students in order to consistently deliver effective distance learning. Just as different styles of teaching are applied in the classroom, this should carry through to facilitating online learning. Not all courses are currently suited for a cost-effective online format (e.g., science major labs which require students to learn how to use special instrumentation or learn how to dissect organisms). We have come a long way in a short period of time, but we still have quite a journey ahead.

Several research questions need to be pursued. For example, are students who take online classes trying to avoid the classroom, especially in a subject such as mathematics? Sometimes the negative attitude toward the subject or its presentation format may lead to avoidance. Another is whether significant differences exist between home and on-campus test results. Also, the longitudinal success of students who move

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from online instruction to onsite instruction for subsequent courses should be investigated.

C.D.: Current studies have found that students in other countries (e.g., China, Korea, and Singapore) are far more successful than students in the U.S. in studying mathematics (NCES, 2007). Why do you believe there is such an inequity in mathematics educational attainment among nations? Do the criteria for measuring success and the students who are measured vary between nations?

R.K.: The inequity is not just in mathematics but also in the number of those actually achieving a degree. It is not the criteria for measuring success that account for this disparity as much as it is the population of students who are measured. First, and foremost, there are cultural differences in the manner and the degree to which the populations value education, not just the attainment of a degree or certificate but the underlying knowledge which culminates in the attainment of a degree or certificate.

If the mission of the U.S. educational system is to offer equal educational opportunity for all citizens, then inequity of results is inevitable. Some nations restrict educational opportunities, allowing only the highest achievers the access to college. Community colleges in the United States, typically, are known for their open enrollment. Thus, the data will be significantly dif-

ferent in the other countries (and institutions) that do not have open enrollment. Do we expect U.S. universities and colleges with selective admissions to have the same results as community colleges with open enrollment?

To reach the current goals stated by President Obama the system must include, and college-educate, more historically disadvantaged groups. This includes returning adult students who may also lack adequate skills to be successful. How do we educate these students in a timely manner? Many measure success by graduation within 6 years. Is a 6-year college graduation possible without compromising standards? Students who begin in college-level courses still take 5 to 6 years to complete a degree, so is this a reasonable expectation for disadvantaged groups who typically do need additional coursework to bring them to college level? Many of these underprepared students have grown up in environments not conducive to successful educational achievement...or even valuing the attainment of a degree. Appropriate support systems that allow motivated students the means to earn a degree are essential. More citizens believing they can earn a degree is one reason for the increase in the number of DE students. The current political goals of more college-educated citizens are hampered by the very real state of the targeted population in terms of student preparedness, individual mind-set, an often intrinsic lack of value in education, and insufficient familial support.

More efforts are needed toward eliminating the underlying problems, instead of addressing the symptoms which the problems create. Instead of building multimillion-dollar bridges over, or super highways around, a large hole in the ground, it is more cost-effective and resource-efficient to simply fill the hole. It might be far more cost-effective in terms of resource and time expenditures, to address root-causes, many of which have already been identified but are difficult to remedy. Every student deserves the opportunity to pursue an educational goal and to acquire the necessary knowledge and skills for a successful life. Still, not all students measure success by a college degree. The change could be in an attitude—to a belief that a college education is achievable—that will be passed to the next generation.

C.D.: As president of NADE, what changes were you—or organizational efforts—able to influence at the national or state level?

R.K.: At the start of my presidency, the board created a 3-year strategic plan that has been a

CONTINUED ON PAGE 24

guide for the two subsequent boards to review, revise, and implement. It is difficult to change policy on a short-term basis, so the idea was to create a plan to extend for more than the current year. The plan has two primary goals: to strengthen the internal units (committees, SPINs, and councils) and to strengthen the external units (reciprocal organizations, consultants). With regard to the external units, the NADE Board is continuing efforts to increase public awareness of developmental education and its knowledgeable members, especially at the state and federal levels, along with private foundations interested in educational improvements. It is important for DE professionals to be physically present and actively engaged in the discussions involving developmental education. NADE members are at the table for discussions that inform policy with National Family Literacy, Texas Higher Education Coordinating Board, Statway Project, and the AMATYC New Life Project in Developmental Mathematics. NADE has a Political Liaison Committee, and the NADE Conference in 2011 is in Washington, DC.

At the state level, the Texas Higher Education Coordinating Board has worked with the NADE Certification Council to discuss program assessment and evaluation policy in Texas higher education institutions. The organization has worked with the National Institute for Staff and Organizational Development (NISOD) which provided an opportunity to cosponsor a webinar on developmental education. We continue to work with other reciprocal organizations to promote understanding and joint efforts in the field and are committed to improving retention, matriculation, and success, but it's essential to maintain the academic rigor so that a college education means something!

C.D.: A common ground between NADE and AMATYC (American Mathematical Association of Two-Year Colleges) would be the area of developmental mathematics. Do you see the two organizations joining forces in the near future to develop new standards?

R.K.: There is a growing number of alliances between the organizations. Besides the opportunity to learn from each other, there is a perception that larger numbers will increase the political clout of the organizations. NADE has several reciprocal relationships with national and international organizations. Internationally, NADE works closely with the Forum for Advancement of Continuing Education. The Japanese Association for Developmental Education was modeled after NADE.

Formally, AMATYC and NADE have a re-

ciprocal relationship, including collaboration on a "New Life" project for developmental mathematics. AMATYC's Developmental Mathematics Committee chair Jack Rotman and I copresented on the results of subcommittee discussions regarding a New Life course curriculum for the future that would better serve the needs of developmental mathematics students regardless of their career goals; a subsequent workshop allowed individuals the opportunity to design individual plans for implementation.

AMATYC, in collaboration with NADE and the MAA (and others), is using the New Life for Developmental Mathematics project to reevaluate content and classroom practices. The goal is to achieve fundamental and long-lasting change, developing a new program that addresses student needs in a success-driven model. Building on the work of prior efforts to identify the mathematics needed by today's community college students, with the design of a minimal number

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of courses, the model seeks to allow students to complete their developmental mathematics in a shorter time period while studying content that's most beneficial to their needs. The process focuses on long-term and meaningful problem solving, combined with cooperative efforts and sharing resources.

C.D.: You have been quoted as saying that "mathematics is in my head, but teaching is in my heart." This conveys much about your teaching philosophy. What other words of wisdom could you share to inspire new developmental instructors?

R.K.: I would encourage new instructors to take on challenges or opportunities whenever they present themselves. Say "yes" when asked to work on a project. You never know where that opportunity could lead. Volunteer to serve on committees. Volunteer to serve professional organizations through leadership positions. Attend professional development opportunities. Meet with your colleagues to discuss successful teaching strategies...and collect data on your outcomes! And then, present the results either through a concurrent conference session or by submitting a journal article!

Professionals who choose to work in de-

velopmental education do so to help students achieve their educational goals, to salvage those who might otherwise fall through the cracks, and to help students to succeed even when they do not believe they can.

As William Butler Yeats once stated, "Education is not the filling of a pail, but the lighting of a fire." It's so important to create a passion for learning in students. Embrace the "holistic" view of developmental education, and use your passion for teaching to actively involve students. Help to motivate those who might not initially be intrinsically motivated so they experience the satisfaction that comes from learning. Be a facilitator--a coach--of learning, keeping the focus on THEM. Being a coach mandates making students aware of the positions that they play on the learning team. I recently heard a quote I particularly liked. "Some people dream of success. Others wake up and work for it." Many of the DE students, particularly the returning adults, have experienced that "awakening" and are applying themselves to the learning process. Others are still dreaming about it. Our strategies for the success of the two groups will differ, but we must be prepared to create and execute the strategies for both.

C.D.: The Bill and Melinda Gates Foundation, one of the largest funders of postsecondary initiatives, has established a goal to double the number of low-income students who earn postsecondary degrees or credentials by age 26. To do so, the foundation wants to help strengthen policies and practices at postsecondary institutions that enroll the most low-income and minority students. How does this mission mesh with the daily business practices of community colleges?

R.K.: In a speech given by Gail Mellow (2008), president of LaGuardia Community College, she argued that "there are two distinct forms of American higher education. The first are colleges that select their students and the second group are those that do not." She discussed how the current 1.5 million bachelor's degrees awarded annually in the U.S. would drop by 700,000 if not for community colleges. The logical next step is to question how much it would drop if not for developmental education.


Developmental education is a vital part of higher education, of open access, and of increased opportunities for all students. The field is evolving; where traditional educational methods are not producing the desired results, all resources, including technology, must be applied to support underprepared students. We will continue to investigate and question current practices. College algebra has traditionally been the course most students must pass to achieve a

college degree. Current leaders in the field are asking whether statistics could be considered the new standard for students not entering a STEM field. That decision could have significant effect on developmental mathematics curriculum without altering President Obama's goal for increased STEM numbers.

Emphasis has been given to acceleration programs. The opportunity to accelerate should be available to students, and some students will be able to do so; however it CANNOT be forced acceleration. Underprepared students will not always be able to "learn it faster!" The national trend, though, is to push students through the college curriculum as fast as possible. Some colleges are administering a placement test, giving students a workshop on similar test items, and then testing them again so they may place out of developmental education. Research is needed to see how such students fare without developmental education support. This type of research would require longitudinal data to measure success in subsequent credit courses.

Many other new initiatives are being discussed including the search for a quick fix for students who place into developmental education. These include better and multiple assessment tools with the possibility that students may not need a semester-long intervention. More precise assessment certainly has the potential to increase retention as well as student success, and that is a common goal worthy of continued pursuit.

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CONTINUED FROM PAGE 18

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CONTINUED FROM PAGE 8

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