

COLLEGE *of* EDUCATION

Report on Strengthening the Research Base of Education Policy



PENNSTATE



COLLEGE *of* EDUCATION

DEDICATION



Just as this report was going to press, we received word that **Dr. William L. Boyd**, Batschelet Chair Professor of Educational Leadership and a major figure in education policy-making circles, passed away following a courageous battle with a long illness. Bill Boyd was a towering figure in policy analysis, an inspiring colleague, and above all a gentleman. We are a much stronger College and University because of his presence among us. We must now share him more broadly, and it is with profound gratitude and appreciation that we dedicate this report on policy research in the Penn State College of Education to the enduring memory of Dr. William L. Boyd.

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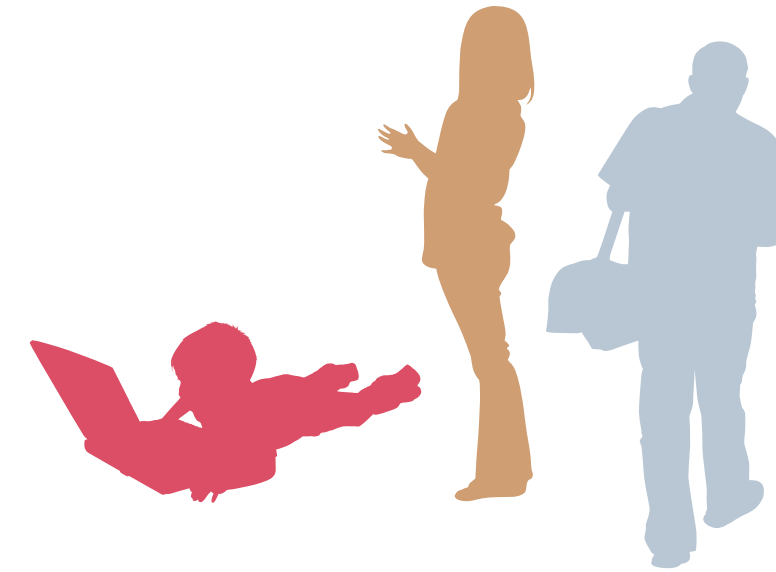
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The “what works best under what circumstance” question is perhaps the single most policy relevant question imaginable.



...there can be important implications for practice, and laws, rules, and regulations may logically follow that are designed to move the field toward the use of practices that are informed by the emerging research.

DEAN'S MESSAGE



Faculty members throughout the College of Education are deeply involved in the development and assessment of education policy in its many manifestations. Some of us, myself included, are interested in the policy-making process as it develops and the complex interplay of interests across levels of decision making within educational systems. The study of education policy making in the United States is particularly interesting given the artful balances that need to be struck and re-struck between the rights of individuals and minority interests and the broader social needs for order and cohesion.

The College also includes faculty members who care not a bit about the policy-making process itself and who instead focus on particular education phenomena such as how six-year-old children can best learn to read. What links a scholar with a focused interest like this to education policy is the potential policy relevance of the resulting findings. The “what works best under what circumstance” question is perhaps the single most policy-relevant question imaginable. If scholars can gain even partial answers to this question, there can be important implications for practice; and laws, rules, and regulations may logically follow that are designed to move the field toward the use of practices that are informed by the emerging research.

We take seriously our responsibility to conduct impartial and nonpartisan analyses, and this can be a challenge given the sometimes highly politically charged context in which the research is conducted. We also work hard to inform the debate and embrace the checks and balances that are such an important part of the policy-making process in this nation.

We are proud of our track record and welcome the collaborative efforts of scholars located in other colleges and campuses at Penn State as well as at other universities. It is enormously gratifying to me as dean to see so many of our faculty members so productively engaged in these issues, and we use the following pages to provide a tour of policy-relevant work being conducted within the College. I think you will be impressed with what we report, and I welcome your comments. We are particularly interested in suggestions about how we can play even more effective roles in the creation of sound education policy at the local, state, and national levels of education governance.

Sincerely,


David H. Monk, DEAN

SUPPORTING THE POLICY-MAKING PROCESS AND Preparing Future Policy Makers

- **Education policy is traditionally understood as the rules and regulations established by federal, state, and local governments regarding the establishment and implementation of public education. It includes nearly every aspect of the public education enterprise, from the education and certification of teachers, to the development of curriculum, to the management of resources and funds that support the education enterprise.**

On a broader level, education policy can include the policies established on a district, school, or even classroom level by superintendents, principals, and teachers. The guidelines may not be legally binding, but they could have a direct impact on individual students.

Regardless of who is setting the policy, it is imperative that policy makers understand both the reasons for and the desired consequences of their policy decisions. There is a continually growing need for research data to support policy makers as they investigate and make policy decisions.



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Policy-Relevant Research

In passing the No Child Left Behind legislation, Congress recognized the need for quality research data, and created the Institute of Education Sciences (IES) as an arm of the Department of Education to support educational research.

In 2006, the Penn State College of Education and its partners* were awarded a five-year, \$34 million contract from IES to operate the **Regional Education Laboratory—Mid-Atlantic (REL Mid-Atlantic)** and coordinate the efforts of the nine other regional education labs across the country.

The U.S. Department of Education's Regional Educational Laboratory Program consists of a network of 10 laboratories that serve the educational needs of a designated region by conducting high-quality, scientifically based research and providing access to valid data through applied research and development projects, studies, and other related technical assistance activities.

To best serve schools and educators, REL Mid-Atlantic has focused on two types of projects: fast-response projects and long-term randomized control trials (RCTs).

The “fast-response” projects provide quick answers to real questions from educators. Lab researchers review the existing research based on a need expressed by schools in the region and provide a summary of findings fairly quickly. These findings are aggregated on a national Web site with similar reports from the other regional education laboratories (See ies.ed.gov/ncee/edlabs/projects/). REL Mid-Atlantic has coordinated public forums to distribute the reports within Pennsylvania.

The Lab undertakes larger randomized control trials of different programs and curricula that are very similar to clinical trials that might be used in medical research.



The Lab's two current long-term studies are focused on mathematics. One is investigating the effects of Odyssey Mathematics, a CompassLearning mathematics supplemental software program, on students' achievement at the fourth-grade level. The other RCT is focused on Connected Mathematics Project 2 (CMP2), a complete mathematics curriculum for grades 6–8 that was developed by Michigan State University with grants from the National Science Foundation.

Through the REL Mid-Atlantic and similar initiatives, the College of Education is playing an important role in the creation of quality research data. Likewise, we are dedicated to publicizing the results of our research in an effort to share this data with all persons involved in education.

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*The five core partners in the REL Mid-Atlantic are the Penn State College of Education; the Center for Effective School Practices at the Rutgers Graduate School of Education; ICF International, a D.C. consulting firm experienced in supporting large government initiatives; the Metiri Group, a California-based consulting group with expertise in the evaluation of technology-based educational innovations; and ANALYTICA, a consulting group that designs and conducts large-scale research studies.

William Hartman, professor of education in educational leadership and director of the Center for Total Quality Schools, is developing ways to share data with district and school administrators and other funding decision makers to make informed choices regarding the allotment of funds.

Hartman has served as the principal investigator for a \$1.1 million, three-year research grant from the National Center for Educational Research designed to improve student performance. In this recently concluded project, Hartman and his collaborators have developed a school-level resource-management model to provide relevant information for administrators to track and allocate their resources effectively. Four Pennsylvania school districts participated as pilot districts for the project.

The new reports provide a picture of actual resource allocation practices and tie them to student outcomes. Both the equity and effectiveness of resource-allocation choices can be examined for individual schools and across a district, which can indicate adjustments to improve student outcomes.

Separate models were created for elementary, middle, and high schools to recognize differences in school organization and operation. Additionally, a district-wide comparison report of each individual school with all other schools in the district was developed to allow administrators and board members to compare student, staffing, and expenditure patterns across all schools in a district in conjunction with the student-performance measures for each school.

A key feature of this report is a “school share” analysis that compares percentage of students by type in each school with their percentage share of resources (teachers, other staff, and expenditures) with the same measures for other schools and district averages. This report also includes staff indicators (student/teacher ratios, average teacher salary, average years of service) and spending measures (instructional, support, and total school expenditure per student).

Importantly, the project has established that relevant and sufficient school-level data are currently available in both the state and district data system levels to develop highly useful management reports for school-level resource allocation information and decision making. It is not necessary to mandate new accounting systems or accounts.

These reports encourage district-wide discussion about current resource allocation practices and patterns among principals, central office administrators, and school board members. It is now possible to see clearly if resources are allocated evenly, or if some budget adjustments have been made to recognize student characteristics or targeted to improving lower student performance in some schools.

A similar effort has been completed with the New York State Education Department to create a school-level data gathering, model building, and reporting process in three pilot districts in New York State. The state’s accounting system, data-collection procedures, and availability of school-level data are substantially different from Pennsylvania’s, but the model has been successfully modified to accommodate the differences. Hartman plans to add another set of pilot districts in one other state to test the models with another data-and-accounting system.



Preparing Future Policy Makers and Researchers

The education of future policy researchers and leaders is one of the primary ways we as a College support the formation of good education policy. In 2004, the Penn State College of Education and World Campus partnered to establish an online **Certificate in Institutional Research (IR)** for students earning a doctorate.

The certificate was originally created with a start-up grant from the Association for Institutional Research (AIR) and the National Center for Education Statistics (NCES) for the purpose of increasing the national pool of trained analysts at the campus, state, and national levels.

Last year NCES and AIR shifted from funding programs to funding student fellowships, and Penn State now fully funds and manages the program. Many of our own doctoral students are enrolled in the program, but a number of the certificate students are enrolled in doctoral programs at other institutions.

In 2007 and 2008, AIR used the NCES funds to award 57 multiyear fellowships for graduate study and professional development. In the national competition, Penn State online and resident stu-

dents have won 24 of the 57 awards granted. This is a huge acknowledgement of the strength of the IR program, which includes training in all the major areas of institutional research and analysis.

The IR certificate program was initiated and continues to be led by **J. Fredericks Volkwein**, professor emeritus of education in higher education. Volkwein states, “It is a direct result of national education policy aimed at enhancing the national pool of talented researchers. Although this is a young program, some of the certificate participants have received promotions and completed policy studies as a result of the program.”

Most American universities study and teach about American educational policy, but education is an endeavor of every organized government in the world. Recognizing that we can learn much by studying international education policy, Penn State offers a dual-title degree (master’s and doctoral) program in **Comparative and International Education (CI ED)**. Comparative and international education is a field devoted to the systematic analysis of the operation and effects of the world’s education systems.

This program grew out of a national, and later, international movement, begun in the 1950s, to identify the reasons for differences, and the consequences of those differences for students and schools around the world. Recently, globalization and international competition have framed both the research and the curriculum. There is also a component of tension between global and local/indigenous sources of authority and control. This program, like others around the world, has responded to these changing orientations and contributed research and teaching to illuminate the unanswered questions.

Currently headed up by **Ladislaus Semali**, professor of education in language and literacy and adult education, the CI ED program trains scholars who advance our basic knowledge about schooling and education around the globe and is designed to create opportunities for a range of people—administrators and policy makers in social welfare, health education, and development; school leaders; and scholars of education.

Similarly, the **American Indian Leadership Program (AILP)** seeks to create opportunities for American Indians and Alaska Natives who face unique educational challenges, including the challenges associated with the federal policy of Tribal Self-Determination and its impact on

education. The central mission of AILP is to prepare American Indians and Alaska Natives to assume leadership positions at the local, tribal, state, and national levels. One program objective is to provide training in educational research and evaluation in Indian education with an emphasis on community development and policy analysis. Founded in 1970, AILP is one of the oldest and most successful programs of its kind. Nearly 220 American Indian/Alaska Native students have earned their master's and doctoral degrees in Educational Administration/Leadership or Special Education through the program and have gone on to assume leadership positions in schools, higher education institutions, professional organizations, and at all levels of government.

A unique mix of location, quality of academic programs, commitment of faculty, proximity to the nation's capital, and focused discussion and study in an Indian education seminar have combined to foster participants' leadership skills.

In 2008, the AILP received a four-year, \$960,000 grant from the Office of Indian Education in the U.S. Department of Education to prepare American Indians /Alaska Natives to be school principals.



John Tippeconnic, professor of education in educational leadership, and **Susan Faircloth**, assistant professor of education in educational leadership, are co-directors of AILP. They are also co-directors of the **Center for the Study of Leadership in American Indian Education**, which was recently established to conduct research and outreach that helps improve education at all levels. Some of the goals of the Center are to conduct research designed to improve Indian education policy and practice and then to disseminate research findings to policy makers.

The College has a number of other programs to empower educators to be more involved in policy. For example, the College of Education and the Dickinson School of Law have initiated a joint degree program whereby students can obtain a juris doctor (J.D.) and a master's or doctoral degree in one of four College programs: College Student Affairs, Educational Leadership, Educational Theory and Policy, or Higher Education.

Education and law are disparate fields, but there is common ground. Since so much educational policy is established through laws, school superintendents and principals, as well as attorneys who represent educational institutions, need keen insight that cuts across both fields.

“For school administrators, a great deal of their work is legal in nature,” notes **Preston Green**, associate professor of education and law. “It is essential for educational institutions to have persons in leadership roles who have an understanding of both law and education.”

By the same token, educational attorneys need to know how school systems work. “They must understand the context of educational institutions in order to effectively advise their clients, make legal arguments in court, and develop effective educational statutes or regulations,” says Green.

The melding of law and education brings about a demand for a strong interdisciplinary study program that offers advanced degrees in both fields.

Since the law and education degrees are earned concurrently, a student can finish the dual program in five years or less. Traditional separate pathways of study normally require six or more years. “It took me three years to attain a law degree, and another three years to attain my doctorate in educational administration,” states Green.

A recent four-day institute at Penn State, another collaboration between the College of Education and the Dickinson School of Law, helped increase the legal literacy of teachers and administrators. **The Pennsylvania State University Law and Education Institute**, first held in 2008, features workshops on a variety of legal issues that often arise. Topics include student rights, the First Amendment, charter schools, accountability, discrimination, personnel/employment, school liability, and special education.

Most teachers believe school administrators are driven by a desire to avoid legal liability, according to *Harvard Education Review*. In addition, a majority of teachers report that the potential for legal liability impairs their ability to do their own job.

“They practice preventive law,” suggests Green. “Most teachers and administrators are so fearful of the law that they tend to engage in conservative practices.”

And so often, softened practices compromise a school's academic, social, and disciplinary aspects. “If teachers and administrators don't fully grasp the implications of policy or have a reasonable understanding of law, their good intentions could go up in smoke,” notes Green.

As an example, Green points to the way schools are struggling to provide security to students without violating their constitutional rights. “Changing laws related to education and policies have given rise to a great deal of litigation,” he says.

The participants came away from the 2008 institute with a sense of empowerment to create educational environments that optimize learning.

“If administrators and teachers become more comfortable with legal issues,” says Green, “then they will be able to focus more on educating students.”

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POLICY RELEVANT WORK : PreK-I2 Education

- In the general media, education policy is most often thought to refer specifically to preK-12 education, and indeed, varying institutions provide a great deal of regulatory oversight to the process of educating our children. Traditionally, school districts with elected boards set policy on a local level, and state legislation regulated curriculum, allocation of funds, teacher certification, and other aspects of the education enterprise. The NCLB act passed early this decade by the federal government has strong policy implications for K-12 education in particular and provides a third level of oversight.



We purposively use technology to deepen a focus on learning so our students become highly capable beginning educators.



Child Development



According to a study released in 2007 by the Centers for Disease Control, autism spectrum disorders may affect up to 1 in 150 children. Autism awareness is continuing to grow, as more families are affected by this disease. Schools and educators are seeking to have a greater understanding of how autistic students can be included in traditional classrooms.

For ten consecutive years, Penn State has hosted the **National Autism Conference***. This conference acts as a clearinghouse of information for parents, teachers, doctors, and others who serve autistic students. The conference's mission is to provide comprehensive, evidence-based information to assist educators, professionals, and families in developing effective educational programming for all students with autism spectrum disorders.

* The National Autism Conference is sponsored by the Pennsylvania Department of Education, Bureau of Special Education; the Pennsylvania Training and Technical Assistance Network; Penn State's College of Education, Continuing Education Office and Office of Statewide Programs; and the Pennsylvania Department of Public Welfare.

"The conference provides a forum for researchers, practitioners, and parents to interact and learn more about autism," says David L. Lee, associate professor of education in special education. "Every year we expect the numbers to plateau, but the number of people attending keeps growing. The impact of the conference cannot be understated. Practitioners and parents take home a great deal of information that continues to help folks long after the conference has concluded."

To support family participation in the conference, planners provide the Children's Institute, which is sponsored by the Pennsylvania Department of Education. This institute is an on-site, structured, and fun environment for children and youth (ages 2 to 21) with autism and their siblings.

A 1-credit graduate-level course is offered to teachers and other professionals attending the conference.

The National Autism Conference is a tremendous resource for families facing the challenge of autism spectrum disorders. Other faculty in the College are investigating different family issues that are known to affect the education of children, for example, the all-too-common problem of child maltreatment.



More than 3 million allegations of child abuse and neglect involving some 6 million children are reported to child protection service agencies each year, according to the Administration for Children and Families, an arm of the U.S. Department of Health and Human Services. That's one case every 10 seconds.

According to the National Institute of Mental Health (NIMH), people who were abused or neglected as children have an increased risk of depression later in life. NIMH hopes to learn more about circumstances in families that lead to child maltreatment.

To address child maltreatment, federal legislators enacted the Child Abuse Prevention and Treatment Act (CAPTA) in 2003. CAPTA has established a number of guidelines aimed at protecting children.

Elizabeth Skowron, associate professor of counseling psychology, is the lead investigator of a five-year, \$1.6 million NIMH grant titled **"Parent-Child Processes: Negative Self-Regulatory and Behavioral Outcomes."** The project aims to improve identification of optimal parenting practices through better understanding of the effects of child maltreating and parenting on child behavioral problems.

"Our goal is to translate our basic research findings into the development of testable child maltreatment interventions that target specific patterns of interactive disruption identified in maltreating families," said Skowron. "We expect our research to lead to the development of more effective treatments designed to reduce the incidence of child abuse and neglect, strengthen and support families, and improve healthy child outcomes."

Another issue facing children is bullying and other aggressive behaviors. The Penn State Prevention Research Center has received a \$3.9 million grant from the Pennsylvania Department of Health to study interventions to build resilience and reduce aggression in young children.

The leaders of the Penn State project include **Tom Farmer**, associate professor of education in special education, along with five other faculty members throughout the University.

The project will focus on gaining a better understanding of factors related to aggressive behavior and social-emotional competence in children when they first enter school. Researchers will develop and evaluate a multicomponent prevention program targeted to help parents and teachers support healthy social and academic development in children who show early signs of aggression.

Researchers also will assess how various neurobiological factors may be related to aggressive behavior and how children's actions are modified by this preventive program. This information can be used to better assess and support children to improve school readiness and mental health.



Teacher Preparation

College faculty are presently designing and revising programs in teacher education that reflect current research and innovations in the field of education. These new programs include integrations with technology, connections with the arts, and coursework and experiences to meet the increasing demands for teachers who will have children with special needs and English language learning needs in their classrooms.

The number of special education students in regular classrooms in Pennsylvania has been increasing steadily over the last few years—currently there are more than 135,000 special education students in regular classrooms most of the day. To address these changes, the Penn State Special Education program has partnered with Continuing and Professional Education, a unit of Penn State Outreach, to produce a postbaccalaureate credit program titled **Evidence-Based Practices for Inclusive Classrooms and Differentiating Instruction (EPIC)**, a five-course, 9-credit series designed to help teachers work with students with special needs.

By learning to use multiple teaching approaches in the classroom, teachers can help students gain more confidence in their own abilities and excel in their education.

Like the push for the integration of special education students into regular classrooms, policies regarding the preparation and certification of new teachers have changed how teacher preparation programs are administered.

For example, Maryland teacher education policy states that all teacher education candidates must have a Professional Development School (PDS) experience. In Pennsylvania, the Governor's Commission on Teacher Education recommended that the state support PDSs as a valuable concept in teacher education and apportion funds so that at least one PDS will be available in each county in the commonwealth.

By learning to use multiple teaching approaches in the classroom, teachers can help students gain more confidence in their own abilities and excel in their education.



The **Penn State–State College Area School District Elementary Professional Development School** was developed 10 years ago as a collaborative program involving preservice and veteran teachers, administrators, and university faculty working together to accomplish three goals:

- 1 **Enhance the educational experiences of all children.**
- 2 **Ensure high-quality field experiences for new teachers.**
- 3 **Provide professional growth for school and university-based teachers and teacher educators.**

The goals are met through the program’s design. Each PDS student commits to an entire year in the same classroom, as an intern of the State College Area School District. He or she begins the internship on the first day of school and completes it on the last day of school. As an employee of the school district, the intern is expected to attend the same professional development events as the district’s first-year teachers.

The classroom teachers who work with PDS interns act as mentors, and engage in professional development training along with University faculty as part of the partnership.

The PDS program has grown to include every elementary and middle school in the State College Area School district, a total of 12 schools. Prospective secondary education English teachers participate in a PDS program at the high school.

The Penn State PDS has received a number of awards, including the 2004 Nancy Zimpher Award from the Holmes Partnership for the most outstanding school university partnership in the country. It was also the winner of the 2002 Distinguished Program in Teacher Education Award from the Association of Teacher Educators.

Jim Nolan, Henry J. Hermanowicz professor of teacher education and former director of the PDS program, reflects on the success of the program over its first decade:

“The quality of our program is attested to by our national awards as well as by the fact that other institutions within the state continually ask us to help them develop their own PDS sites, and we do so willingly. Additionally, Penn State alumni who received their Ph.D.s while working with the PDS program are now leading PDS efforts of their own in West Virginia, Ohio, Maryland, Idaho, New York, and other places.”



Each elementary PDS intern receives an Apple eBook to use throughout his or her internship. Interns use the computer to create lesson plans, organize notes, and create multimedia presentations that support the curriculum.

The use of notebook computers by PDS interns has been so successful that the College has expanded it to include all elementary education and secondary education teacher preparation students. Juniors in these programs are required to have a notebook computer and software for use in their courses and classrooms, as part of an initiative titled **Exploring Directions in Ubiquitous Computing and Teacher Education** or EDUCATE. This program is designed to incorporate technology into our teacher preparation programs. It is built on research that suggests that a portable digital tool set—available anytime and anywhere—can significantly enhance a student’s preparation for teaching and provide an important early-career foundation.

Says **Orrin Murray**, assistant professor of education and director of the EDUCATE project, “We purposively use technology to deepen a focus on learning so our students become highly capable beginning educators.”

The College is sharing this emphasis on technology as a learning and teaching aid with current teachers as well. Mentor teachers in the PDS are learning about new technologies along with their student interns, and the College hosts a One-to-One Computing conference every year.

The Penn State PDS program has now been expanded to the Isaac A. Sheppard Elementary School in Philadelphia. It is part of Penn State’s multifaceted **Urban Teaching Collaborative**, established three years ago for the improvement of education at Sheppard School.

Sheppard School serves as an oasis within Philadelphia’s Kensington neighborhood, where crime and unemployment are high. Communication between the school and the students’ parents had long been meager. A great many of the parents are Puerto Rican immigrants. Many of them are illiterate in both English and Spanish.





Penn State faculty and student teachers have been assisting with a new initiative to place computers in the homes of Sheppard students. The computer project, titled **“Student Achievement Through Parent Empowerment,”** is a collaboration between Sheppard School, Philadelphia School District, and Penn State’s College of Education. The \$250,000 project is funded by the Office of State Sen. Christine M. Tartaglione (D., Phila.).

The project brings a wealth of learning resources for the children and their parents, many of whom would benefit from access to learning materials related to literacy and workforce preparation. The project is expected to greatly enhance communication between the school and the parents while engaging both parents and children in learning.

The project also opens new possibilities for Penn State’s elementary education majors who are based at the University Park campus, nearly 200 miles away. Tutoring students using the videoconferencing technology available through this initiative has the potential to revolutionize how we prepare future teachers.

Professional development of teachers and school leaders is a fundamental component of the program and is expected to contribute significantly to the long-term success of the initiative.

The use of technology in education has been a focus statewide. The Pennsylvania Department of Education (PDE) has made a bold and progressive step toward reform of the state’s high schools. PDE’s **\$200 million Classrooms for the Future (CFF) project** calls for a notebook computer on every public school student’s desk in the four core subject areas by 2009.

Professional development of teachers and school leaders is a fundamental component of the program and is expected to contribute significantly to the long-term success of the initiative.

PDE has enlisted Penn State’s College of Education to gather and interpret data from participating schools in an effort to assess the CFF initiative. A 38-person research team is interviewing principals, CFF coaches, technical coordinators, and grant administrators on topics related to evidentiary-based policies, and analyzing data from teacher and student surveys as well as classroom observations conducted by trained observers. “We are noticing promising early findings regarding the effectiveness of the CFF program,” says **Robin Clausen**, co-director and senior research assistant with the project.





STEM Education

Recently, we have witnessed a national conversation about the status of science, technology, engineering and mathematics, or STEM, education in the United States. Fewer and fewer high school students are successfully learning the mathematics skills they need by the time they graduate. Likewise, fewer students are pursuing STEM-related subjects in college.

Concern is rising that the workforce as a whole will not maintain the STEM skills necessary for the United States to remain competitive in science, engineering, and in the marketplace.

The College has always been strong in its STEM-related teacher preparation programs. We are seeking to build on that strength to address some of these concerns. Part of our efforts has been on assembling a strong faculty in STEM education.

The College has always been strong in its STEM-related teacher preparation programs. We are seeking to build on that strength...

Leading that effort is **Richard A. Duschl**, who recently joined Penn State as the new Waterbury Chair in Secondary Education. The Waterbury Chair is funded by an endowment contributed by Dr. Kenneth Waterbury. The endowment is designed to fund an outstanding scholar's work in the field of education, with particular emphasis in secondary education.

As Waterbury Chair, Duschl is focusing his research efforts on advancing teacher education programs and on the design of learning environments that seek and promote collaborations in STEM education.

“My long-term goal is to make Penn State a destination for learning sciences and science studies applications to secondary education,” said Duschl.

Duschl's appointment is part of the College's continued focus on STEM education at all levels. Other recent College of Education initiatives include the establishment of the new Gilbert and Donna Kahn Professorship in Education in Recognition of David H. Monk and Graham B. Spanier.

The professorship was endowed with a gift from the late Gilbert Kahn and his wife, Donna Kahn. It is intended to strengthen the College's programs in STEM education. **Carla Zembal-Saul**, associate professor of education has been appointed as the inaugural Kahn Professor.

According to Dean **David H. Monk**, income from the Kahn endowment could support such activities as faculty research, professional development, travel expenses, and graduate assistants.

“The Kahn professorship will support a vitally important area of the field of education in perpetuity,” Monk said. “STEM education is tied directly to the development and utilization of scientific talent for the nation and the world.”

Another College initiative to support STEM education, the **Center for Science and the Schools (CSATS)**, helps connect university-based science and engineering research with K-12 education. CSATS just completed the first of five years of a major contract from NASA to coordinate education programs to K-12 schools throughout the nation.

The Aerospace Education Services Project (AESP) is funded for up to \$27.3 million. **William Carlsen**, professor of science education and CSATS director, is the project's principal investigator.

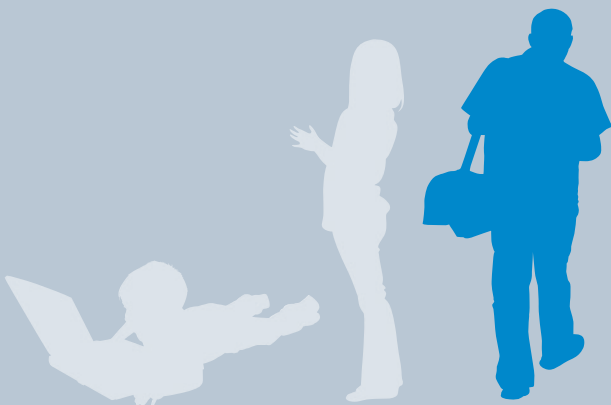
Nearly all 50 states have adopted regulations requiring teachers to pursue continuing education credits to retain licensing. AESP is developing space-themed instructional materials and inservice programming for teacher professional development and, through a subcontract with the National Space Grant Foundation, is supporting the development of courses for teachers at a number of U.S. colleges and universities. The first set of courses are organized around the general theme of lunar science and exploration.

AESP Education specialists work out of each of NASA's 10 major centers around the country, and visit schools and other educational settings in all 50 states and U.S. territories. In addition, AESP is launching a new initiative in fall 2008, “Robots on the Road,” that will deliver short format, hands-on programs to middle schools. Using the theme of exploring the Moon, Robots on the Road engages middle school students in hands-on problem solving, and is intended to serve as an introduction to other robotics programs sponsored by NASA.



POLICY-RELEVANT WORK: Postsecondary Education

- The College of Education is committed to exploring all areas of human education, not just the traditional K–12 education enterprise. We have strong research and academic programs in adult education, workforce education, and higher education.



...federal and state governments can enforce specific policies and practices in higher education through the control of student aid funds and, in the case of public universities, state appropriations.

Adult and Workforce Education

There are a number of policy decisions that especially affect adult literacy and workforce education initiatives. In Pennsylvania, for example, there are ongoing discussions as to the more effective use of state and federal funds for adult education. There is great need for both adult literacy programs and workforce education and retraining programs, both of which help adults acquire skills needed for success in the workplace.

The College of Education is home to several centers and institutes focused on adult education and workforce development, which uniquely positions it to participate in these conversations. Recently, the College has offered to work with state leaders in Pennsylvania as they revisit current policy in these areas.

Established in 1985, the **Institute for the Study of Adult Literacy's (ISAL)** mission is to advance the field of literacy through collaborative research, development, outreach, and leadership to improve practice, expand access to high-quality education, and enrich the lives of individuals and families.

ISAL works closely with the Pennsylvania Department of Education's Bureau of Adult and Basic Literacy Education (ABLE). The Bureau of ABLE has awarded ISAL grants for work on statewide initiatives, such as the Pennsylvania Literacy Corps, Adult Diploma Program, and the Workforce Education Research Center (WERC). Other statewide projects include evaluating Pennsylvania's family literacy programs, and providing data system technical assistance to the Bureau and its statewide network of providers.

Says ISAL co-director **Barbara Van Horn**, "Through WERC, we provide professional development and technical assistance for ABLE-funded agencies across the state to help them develop the capacity to provide work-focused basic skills and instruction to adults looking for jobs as well as those in the workforce."

Information about changes in the amount and kind of employment opportunities created by economic changes provides direction for workforce education and development policy in the Commonwealth by indicating promising education and training opportunities as well as potential issues and problems that need to be faced by the workforce education and development system.



Due, in part, to their ongoing work with the Bureau, ISAL staff also are involved in discussions about and decisions involving policy, particularly in the area of workforce development and the role of ABLE services within Pennsylvania's workforce development system.

While ISAL's work has continued to focus on adults, it has expanded to include children within a family literacy context and adolescents facing literacy challenges. Since 2001, ISAL has worked collaboratively with the **Goodling Institute for Research in Family Literacy**, also in the College of Education.

The Goodling Institute was established with a one-time federal appropriation of \$6 million. Its mission is to improve family literacy education through research and its application to practice and professional development. The Institute provides national leadership to support and maintain high-quality, integrated programs for families with educational needs. Family literacy programs help families in poverty where one or both parents have limited literacy or English language skills, and where these barriers impact their young children's language and literacy development and their success in school.

To address the need for multidisciplinary research and development, the Goodling Institute has established a research agenda for family literacy to help policy makers make research-based decisions about these programs. Effective dissemination of Goodling Institute research findings also helps practitioners to develop professionally and apply research to improve practice at the local level.

Further, the Institute works collaboratively with the National Center for Family Literacy (NCFL) in Louisville, Ky., to offer an online certificate in family literacy to build teachers' knowledge about family literacy. These two organizations also collaborate to provide legislators with research-based information about family literacy, advocating for state and federal support of these programs as an effective educational approach to ensuring that no child—and no parent—is left behind. Through this partnership, a certificate in family literacy was established through Penn State's World Campus.

Van Horn and **Esther Prins**, assistant professor of education in adult education, are co-directors of both ISAL and the Goodling Institute.

Providing support for the development of the workforce in Pennsylvania is the basic mission of Penn State's **Workforce Education and Development (WED) Initiative**, a joint project between two Penn State research groups: the **Institute for Research in Training and Development (IRTD)** in the College of Education and the **Center for Regional Economic and Workforce Analysis** in Penn State Outreach.

"Effective workforce education and development responds to current and anticipated needs for workers," says Professor **David Passmore**, director of IRTD. "The economy—that is, the sale of goods and services to producers and consumers—created these needs. Understanding the links between production, consumption, and employment—and how these affect training needs—is a major policy analysis issue and opportunity."

The WED initiative conducts economic and workforce analyses for employers, industry partnerships, nonprofit organizations, and government entities. The initiative has developed a macroeconomic model for every county in Pennsylvania, allowing it to quickly produce timely reports that spell out the economic consequences of newsworthy occurrences.

"We are able to link changes and trends in the macroeconomy of Pennsylvania and the nation to consequent changes in the employment and income of Pennsylvanians," says **Rose Baker**, director of the Center for Regional Economic and Workforce Analysis.

Changes in the workforce make-up of a region can have a tremendous effect on the production of goods and services, driving the need for state policy changes. “Information about changes in the amount and kind of employment opportunities created by economic changes provides direction for workforce education and development policy in the Commonwealth by indicating promising education and training opportunities as well as potential issues and problems that need to be faced by the workforce education and development system,” explains Baker. “The WED Initiative performs these assessments using the best, world-class economic and demographic analysis and forecasting models available.”

Changes in the workforce make-up of a region can have a tremendous effect on the production of goods and services, driving the need for state policy changes.

Baker and Passmore have completed a large portfolio of studies that span a wide series of issues and topics about commerce in regions throughout Pennsylvania. The breadth and diversity of their work is reflected in the titles of some of their nearly 100 reports:

- **Forecast of the Impact of the Elimination of the Electricity Rate Caps in Pennsylvania**
- **Benchmarks for Pennsylvania Plastics Industry**
- **Forecast of Employment and Job Openings in Pennsylvania Plastics Manufacturing, 2004–2017**
- **Economic, Demographic, and Workforce Impacts of the Closing of the Willow Grove Naval Air Station Joint Reserve Base**

In a similar fashion, **Bill Rothwell**, professor of education, also in workforce education and development, has researched the current challenges facing the U.S. workforce. Rothwell explains, “As the baby boomer generation reaches retirement age, 1 in 5 of all senior executives in the Fortune 500 are eligible to retire; 50 percent of the entire workforce of the U.S. government is retirement eligible; high percentages of school teachers and college professors are over age 50; and many health care workers are over age 50. After years of cost cutting (and staff cuts) in all sectors of the economy, those prepared to take their places are few and far between.”

Nor is the aging workforce an issue limited to the U.S. alone. All the countries involved in World War II face the same challenge. Even China, the most populous nation on earth, faces an aging workforce that may lead to labor shortages in the future. To face this challenge, companies must consider succession planning, in which employers commit to developing employees inside the organization to meet future challenges and responsibilities. It is a systematic process by which people are identified to be developed for the future.

Rothwell states, “The challenges of the future will demand special talent. Organizational leaders can no longer assume that they can meet all labor requirements by ‘going outside’ to hire someone. A day will come soon when there are not enough people trained to meet future challenges in all industries and in most nations.”

Organizational leaders need to develop succession planning policies and programs in which they plan for future talent needs and how to meet them. Rothwell explains, “Many organizations are developing succession planning programs, even as paradoxically the unemployment rate in the U.S. is on the increase. What is needed is a closer match between what employers need and what the available workers can do.”



Higher Education

Colleges and universities do not face quite the same amount of oversight as public K–12 schools. However, federal and state governments can enforce specific policies and practices in higher education through the control of student aid funds and, in the case of public universities, state appropriations. Furthermore, accountability pressures for higher education are rising quite substantially, with calls for greater accountability coming both from accreditation organizations as well as the federal Department of Education.

However, in the day-to-day operations of higher education institutions, policy, more often than not, is established and enforced by individual institutions, accrediting agencies, or professional organizations.

Faculty in the College’s **Center for the Study of Higher Education (CSHE)** research many different aspects of the higher education enterprise. The Center’s director, **Donald Heller**, a professor of education and senior scientist with the center, researches higher education economics, public

policy, and finance, with a primary focus on issues of access, choice, and persistence in postsecondary education. He has presented on numerous occasions to legislative committees at both the state and federal level about the implications of student aid funding legislation.

Another research project from CSHE focuses on accreditation, the quality assurance processes that safeguard standards of institutions and academic programs.

In 1997, the Accreditation Board for Engineering and Technology (ABET) which accredits the vast majority of engineering programs in the United States, introduced a new set of accreditation standards. Shifting from evaluation criteria that focused on resources, *Engineering Change 2000* (EC2000) specified 11 skills and learning outcomes for all undergraduate engineers, and required engineering programs nationwide to demonstrate their graduates’ proficiencies in each area.

Financial aid is a major lever of public policy in providing equal access to higher education.

In 2002, ABET decided to evaluate the impact of the change in accreditation standards. The question ABET posed was, simply, “Are today’s engineering students any better prepared than students who graduated before the introduction of EC2000 criteria?”

ABET commissioned CSHE to conduct a \$1.9 million, multiyear study to evaluate the influence of the new criteria on undergraduate student learning outcomes. Five surveys drew information from more than 5,500 graduates of the Class of 1994 and 4,300 Class of 2004 graduates, 1,200 faculty members, and 140 academic program chairs nationally, as well as more than 1,600 employers across the country. The research team also interviewed the deans of the 39 engineering schools participating in the study.

CSHE’s findings were reassuring. The comprehensive study found that in all engineering knowledge and skill areas emphasized by the new standards, the 2004 graduates had significantly, and often substantially, higher skill levels than did their counterparts from a decade earlier, according to **Lisa R. Lattuca**, study director and associate professor of higher education and senior research associate at CSHE.

In addition, the curricular, instructional, and administrative structures and activities needed to respond effectively to the new accreditation standards were well aligned with a number of trends driving improvements in undergraduate engineering education in the U.S. Moreover, many engineering faculty members feared that responding to the new criteria would siphon time and attention away from the emphasis traditionally given to the fundamentals in science, math, and engineering science. The study’s findings indicated, however, that faculty members’ fears were unfounded.

“We found that the new softer skills that EC2000 required—working in groups, awareness of societal and global issues, communication skills—could be developed with no apparent negative consequences for teaching the foundational math, science, and engineering science skills,” said co-investigator **Patrick Terenzini**, distinguished professor of higher education and CSHE senior scientist.

As part of his research in the Center, Terenzini has also focused on policies and practices of individual institutions and how they affect students’ experiences. Some 25 percent of first-year college students don’t return for their sophomore year. Despite efforts over the past three decades by colleges and universities to improve student retention, dropout rates have not changed much.

To gain an understanding of the influences that both promote and impede students’ academic performance and persistence, Terenzini, along with **Robert D. Reason**, associate professor of higher education and CSHE research associate, are heading a \$453,000 project titled “**Parsing the First Year of College.**”

The three-year research project is funded by the Spencer Foundation with additional support from ACT, Inc. and the National Study of Student Engagement at Indiana University.

According to Reason, “Knowing what experiences and dynamics are significantly involved in student learning can promote more informed program review, revision, and development.”

Terenzini, Reason, and their colleagues are gathering information from students, faculty members, and administrators at 34 four-year colleges and universities nationwide. They will analyze the effects of students’ individual experiences, the peer environment, faculty members’ educational values and activities, and internal institutional programs and practices. They plan to identify how these factors affect academic success.



The study’s findings may have implications for policy at college campuses and could influence public funding and regional accreditation.

“At the campus level,” noted Terenzini, “the study will provide administrators and faculty members a currently unavailable, comprehensive map of the educationally significant aspects of the first year over which institutions have some programmatic and policy control.”

Financial aid is a major lever of public policy in providing equal access to higher education. The term “access,” however, can be broadened to include opportunities for students even after they have begun study. “What happens to students after they enroll has been virtually ignored as a public policy matter—at least until [U.S. Secretary of Education] Margaret Spelling’s Commission on the Future of Higher Education focused attention on assessment, student learning gains, and public accountability,” said Terenzini.

“We hope that what we find may promote a broader conception of ‘access’ and ‘success’ in the policy-making arena,” Reason added. “Policy makers’ adoption of such a broad focus might be expected to lead to changes in the current policies and practices in distributing resources, drawing attention to factors other than mere enrollment.”

The study may also have relevance for accrediting agencies. “We hope the study will call the attention of accreditors and others to the interconnectedness and importance of the first year as a particularly significant period in students’ subsequent success in college,” said Terenzini.

Roger L. Geiger, distinguished professor of higher education, is also providing research data that may affect policy makers’ views on higher education. He has done extensive work on the history of American higher education and issues connected with research universities. He has collaborated with **Creso M. Sá**, a graduate of Penn State’s Higher Education program who now is a member of the faculty at the University of Toronto, on several publications that evaluate the impact of university-based scientific research on regional economic development.

Geiger and Sá are co-authors of a new book titled *Tapping the Riches of Science: Universities and the Promise of Economic Growth* (2008, Harvard University Press). The book underscores the importance of academic research in a local economy.

In a paper titled “Beyond Technology Transfer: U.S. State Policies to Harness University Research for Economic Development,” which appeared in the journal *Minerva* (vol. 42, no. 1), Geiger and Sá examine the history of state-level policies that lead to knowledge-based economic development. These policies have resulted in new investments in university research.

State funding for higher education has trended downward in recent years, a reflection of hard economic times and tight state revenues. With less state fiscal support, public colleges and universities must rethink traditional operating strategies.

“Persons in administrative roles are reflecting on policies that are being made or implemented [by state legislators],” said **David H. Monk**, dean of the College of Education.

Monk co-authored a research paper for the 2nd International Conference on Educational Economics, held recently at the University of Athens in Greece. The paper, co-authored with **Michael J. Dooris**, Penn State’s director of planning research & assessment, and **Rodney A. Erickson**, Penn State executive vice president and provost—looks at the economic challenges being faced by higher education institutions, including new considerations about hiring faculty members.

The authors point to the fact that, more and more, research universities are employing contingent faculty—persons who teach by contract over a fixed term—rather than seeking tenure-track faculty, whose combined expectations of instruction and research warrant higher salaries.

The authors see an increasing reliance on contingent faculty, who are emerging as the workhorse in terms of instruction. The employment of contingent faculty allows tenure-track faculty to spend less time in typical classroom instruction and concentrate more on research.

“Tenure-track faculty are teaching a declining share of student credit hours, which is entirely logical as tenure-track faculty represent a declining proportion of all faculty and the pressures to produce scholarship, increase extramural funding, and participate in outreach activities are heightened,” stated the researchers in their Athens presentation.

Reduced state funding produces other fallout effects at public colleges and universities, note the authors. Increased tuition costs force administrators to utilize a marketing strategy aimed at attracting prospective students who might choose less expensive education alternatives, such as community colleges. Additionally, more emphasis is being placed on seeking philanthropic support.

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