She guides undergraduates in designing their futures

Media informatics director Renee Human knows games aren’t just for playing around
As our young university moves nearer to completing its first half century, those of us who are its stewards today are obligated to remember why our region and our state invested in the idea of a Northern Kentucky University.

Measured in dollars, the investment was significant, and it remains so. Measured in expectations, the investment was even greater – even bolder. Our predecessors expected NKU to provide the kind of education that would elevate our region economically and intellectually.

To monitor and measure the return on that investment, NKU has a new strategic plan with student success as its paramount goal. As the plan recognizes, no one thing assures student success. We must be inclusive, affordable, innovative, and accessible. But foremost, we must be excellent teachers. To be excellent teachers, we must be devoted to research, because what happens in our laboratories and libraries informs and improves what happens in our classrooms.

With that in mind, I invite you to enjoy this edition of Discover, a magazine devoted to research at NKU. All six of our colleges – Education and Human Services, Health Professions, Arts and Sciences, Law, Business, and Informatics – are devoted to research that advances human knowledge and understanding, as the stories that follow demonstrate.

Whether revisiting Chaucer or evaluating the interactions between gamers and game developers, the research by NKU’s faculty is creative and held in high regard by national and international peers. Our academic team’s research also reflects another value in the new strategic plan: it is transdisciplinary. That is, while steeped in a core discipline, it often connects to other disciplines because big problems aren’t solved within silos. Indeed, big ideas are generated when diverse expertise is joined in a common endeavor.

You’ll also read about our effort to boost student research, an effort consistent with our strategic focus on student success. As our new provost Sue Ott Rowlands observes in her insightful Q&A on pages 10-11, “Being able to define a research question, design a methodology, test theories, and articulate outcomes is an essential part of a quality undergraduate education.”

In the end, that is what our stewardship of the NKU vision is all about: delivering an education of the highest quality to students whose future we are here to empower and whose passion we are here to ignite.

Sincerely,

Geoffrey S. Mearns
President
Chemistry, History, Psychology.

If the question is where to find undergraduate research at Northern Kentucky University, the answer is all of the above, and most other disciplines as well.

Chemistry? Derek Gibbs, who graduated last year, spent time in the lab creating molecules for new materials that might increase the efficiency of solar panels. Panels in use today absorb at best 10 percent of the energy radiated by the sun.

History? Two students, senior Andrew Boehringer and December 2013 graduate Shane Winslow, are writing a book about the history of Cincinnati’s public stairways and how the steps have influenced the culture and economy of the city’s hilly neighborhoods. Their public lecture in March packed Cincinnati’s Mercantile Library to capacity.

Psychology? Students in Dr. Cecile Marczinski’s research lab tested the intoxicating effects of combining energy drinks and alcohol, with results that have confirmed the dangers of that mix. Their work attracted national attention in Time Magazine and Science Daily and on CNN and ABC.

Such research, guided by faculty mentors to teach methods and rigor, is essential to an outstanding baccalaureate experience, said Provost Sue Ott Rowlands. “It helps prepare undergraduates for success in a variety of careers,” Ott Rowlands said. She is new to NKU, having arrived in January from Virginia Tech University, where she was dean of the College of Liberal Arts and Human Sciences. She arrives with a reputation of support for undergraduate research – and some ideas about how to expand its footprint at NKU.

“It’s important to put resources into institutional priorities,” said Ott Rowlands, listing such things as faculty release time, travel funds, and grants that might be marshaled to pursue NKU’s research goals. “Faculty need time to conduct their research and to mentor student researchers. Students must have access to facilities and faculty mentors. And both faculty and students must be supported in opportunities to disseminate their research – through conference presentations, peer-reviewed journals, etc.”

As NKU boosts support for undergraduate research, it does so from a position of strength. By reputation and by the numbers, NKU can already claim an academic culture where undergraduates are encouraged to work with faculty on research projects. Overall, the university uses an internal survey to track the percentage of student success as NKU’s top objective, student research is getting more emphasis By Greg Paeth

“I would put undergraduate research as No. 1. It is the most complete expression of the academic experience.... Students all of a sudden have purpose, and they all of a sudden see themselves moving in a direction that has some relationship to their career. They become passionate about it.”

– Dr. Jan Hillard
NKU, associate provost

A strategic imperative

vol. six, 2014
Student Mark Vater on why NKU’s investment in undergraduate research is important

“It inspires interest and curiosity in future scientists. Science overall can be pretty vast, intimidating field. There’s a lot we don’t know, a lot we are simply trying to ascertain, and even issues we are unsure of how to go about testing.”

“Planning and executing projects in undergraduate labs help students to build self-confidence, persistence, and passion, which is important for success later on down the road, when experiments and ideas become more complex and involved.”

Atrazine and ryegrass are just half the story

You can inquire of Mark Vater about his research. “I am attempting to examine how a common species of ryegrass, Lolium perenne, degrades the herbicide atrazine — which is endocrine-disruptive and a groundwater pollutant in the United States... The herbicide plot — approved with a differing soil particle size, resultant activity in the rhizosphere may influence the overall amount of atrazine neutralized.” That may be hard to follow. This isn’t. It’s his answer when asked about the thrill of research. “I can only say how exhilarating it is to see a brainchild of mine become a tested question by my own hands. It’s something small, yet highly specific, and I continue to learn more about myself and the world around me with each step taken. I would say I have an undeniable love affair with life science.”

Vater, a senior is double majoring in environmental science and biology. He is one of about 200 biology majors at Northern Kentucky University who are conducting undergraduate research in partnership with a faculty mentor. Vater’s faculty adviser for his research is Dr. Kristy Hopfensperger, who also worked with him last year to apply for a U.S. Environmental Protection Agency fellowship under the agency’s 30-year-old Greater Research Opportunities program. When the awards were announced last fall, Vater’s name was among the 33 from around the country listed. GRO for short, the program provides up to $50,000 in funding for research, tuition, books, and travel to academic conferences, plus a place in an EPA summer internship.

Vater’s experiments, designed to examine how ryegrass (commonly planted after a stream or riparian area is restored) and atrazine (a toxic herbicide widely used in the United States) interact, is important real-world work. “Atrazine can feminize male amphibians and fish and has been linked to cancer in humans. After farmers apply this herbicide to their fields, it washes into local streams and rivers with storm events;” Hopfensperger said. “Mark is studying to see how that may affect plantings along stream and river banks.”

What he learns could guide streamside restorations and improve the understanding of where best to plant ryegrass to reduce atrazine concentrations.
Lessons in the lab are also life lessons

President Geoffrey Mearns kicked off the spring 2014 semester with a speech outlining the new NKU strategic plan, which calls for more student research guided by faculty mentors. It’s not just the research that NKU values, Mearns said, but also “the abiding value of the personal relationship between a teacher and a student.” Here is an excerpt:

At the September meeting of the Board of Regents, one of our outstanding students, John Crum, gave a presentation about his undergraduate research project. John is a senior, majoring in biology; his faculty adviser is Dr. Erin Strome, a biology professor. John’s research examined whether specific genes increase the risk of developing cancer. John conducted research to determine whether one particular gene – MSH2 – increases the likelihood that a person will develop breast cancer.

Now, as a former English major who barely passed introductory biology in college, I must confess that I didn’t understand all of the technical details of John’s presentation. But, in my defense, it was a pretty sophisticated presentation. There was one aspect of his presentation, though, that I fully comprehended – and that I will never forget.

At the end of the presentation, John told the regents how his undergraduate research experience has changed his perspective on his educational experience here at NKU but his life. John added that, prior to this experience, he was very introverted. In fact, he hadn’t even been able to talk to a faculty member about the possibility of supervising his project.

According to John, he finally summoned the courage and sent an email to Professor Strome. She then interviewed him, and she agreed to supervise his research project. John described the interview as one of the best decisions he had made in his life. He said, “It has helped me to never forget. It has been so much fun, yet still professional.” Then he said, “Professor Strome has helped me to never forget.

With respect to his adviser, John told the regents that Professor Strome was “really fun, yet still professional.” Then he said, “Professor Strome demanded more responsibility for my actions than anybody before or after me. She has helped me to be more confident, yet still humble.”

John concluded his remarks by describing his research experience with Professor Strome this way: “It has made me a better scientist but also a better person.”

Among the most creative faculty-student collaborations ongoing at NKU is the development of an iPad application for testing water quality in the field. Called Water Quality Pro, the app is meant to arm lay people – citizen scientists – with a tool they can take streamside to collect and analyze environmental health and then send to a central database.

The app’s development has involved faculty and students from biology, computer science, and visual arts; thus reflecting another goal in NKU’s new strategic plan to foster transdisciplinary research. The goal is driven by the idea that real problems rarely are solved within the silo of one discipline but rather by thinkers from several.

Explaining the importance of the app in a journal article they are preparing with the students who worked side by side with them on it, Drs. Miriam Steinitz-Kannan and Richard D. Durscbe, both of whom are biology professors, write:

Today, more than ever, maintaining water quality is critical as human populations rise and land use continues to increase all over the world. Pollutants such as agricultural and industrial runoff that result from an increase in anthropogenic land use cause water quality to decline. Because of this, bioassessment and chemical monitoring of watersheds all over the world are crucial to determine the quality of water.

In short, water quality is a hot topic, as is the citizen science movement and its ability to use newer technologies to crowdsource environmental data collection.

“In all too many schools – many of them considered elite – students are considered turf, and the idea of helping ‘somebody else’s student’ would be anathema. We don’t work like that, either as a department or as a university.”

- Dr. Jonathan Reynolds
NKU, history professor

The origins of NKU’s embrace of undergraduate research go back at least a dozen years to when an NKU faculty team visited Harvard to see how one of the country’s most prestigious universities supports undergraduate research.

“They came back with a vision for building undergraduate research into a distinguishing feature of NKU,” said Dr. Jan Hillard, NKU’s associate provost for research, graduate studies, and regional stewardship. One idea borrowed from Harvard became NKU’s Celebration of Student Research and Creativity, marking its 13th incarnation this year. The 2013 event featured 37 oral presentations from 15 different disciplines and 174 poster presentations from 20 different disciplines. Around 500 students and 150 faculty members participated in the five-day event.

“I would put it as No. 1,” Hillard said of undergraduate research. “It is the most complete expression of the academic experience.”

He is drawn to the notion of the “apartheid scholar” – that is, learning an academic discipline and the rigors of research just as tramadans once learned blacksmithing or carpentry from a mentor. Students, he said, succeed at college not only because they take classes but also because they are able from early on to appreciate the scholarly effort. They learn how they fit in and how their work fits into the academy.

In his view – a view reflected across NKU – immersing students in the scholarly process cannot wait until graduate school. It needs to start as soon as possible:

“That’s what keeps students here,” Hillard said. “They all of a sudden have purpose, and they all of a sudden see themselves moving in a direction that has some relationship to their career. They become passionate about it. That’s why I put it No. 1.”

Senior John Crum’s research on cancer and genetics was advised by his biology professor, Dr. Erin Strome.
Q&A with NKU’s chief academic officer

Provost Sue Ott Rowlands arrived at NKU in January with a reputation for supporting undergraduate research. She intends the same commitment here.

About Sue Ott Rowlands

• She served as dean of the College of Liberal Arts and Human Sciences at the Virginia Polytechnic Institute and State University from 2007 through last year, when NKU hired her as provost and vice president of academic affairs.
• At Virginia Tech, she oversaw a $40 million annual budget, 900 faculty and staff, more than a dozen academic programs, and 18 research centers. Her college had 3,600 undergraduate and 1,600 graduate students.
• At NKU as provost and executive vice president for academic affairs, she oversees about 1,150 faculty and staff and an annual budget of more than $120 million.
• The deans of the university’s six colleges – Arts and Sciences, Business, Education and Human Services, Informatics, Health Professions, and Law – report to her, as do several other academic units on campus.
• Ott Rowlands replaces Dr. Gail Wells, who served more than 30 years at NKU and nearly a decade as provost.
• Before coming to Virginia Tech, Ott Rowlands spent five years at the University of Toledo, first as professor and chair of the Department of Theatre and Film and then two years as interim dean of the College of Arts and Sciences.

How important is research to a university? How do teaching and research complement one another? Why?

Research, broadly defined, is the creation of new knowledge and, as such, extends the work being done in the classroom setting to a broader audience. This extension of knowledge benefits the university through the support and retention of outstanding faculty members who are able to integrate their own research explorations with their teaching.

University-based research benefits the broader regional and, indeed, global community through enhancements in the quality of life. Translational, or applied, research provides direct benefit in the fields of health, technology, and education, for example, as new knowledge moves from the lab into the community, contributing to social and individual wellbeing and transformation.

Faculty engaged in both teaching and research will use one activity to enhance the other. Knowledge gained in the lab or studio or archives – is infused into the curriculum and thereby contributes to the teaching mission of the university. Likewise, the process of teaching adds to a faculty member’s deeper understanding of the subject matter, often directly impacting the work being done outside of the classroom. Students and faculty alike gain much from the integration of teaching and research. In fact, I don’t believe you can actually separate the two as distinct activities – they are inextricably intertwined in my thinking.

As provost, how do you see yourself leading NKU’s faculty and students toward more research — and are there particular directions you would like to take?

I hope to provide institutional support at current or enhanced levels through competitive internal funding programs, support for external funding proposals, student research at both the undergraduate and graduate levels, and higher visibility for NKU’s research efforts.

Our community, like many where a university is located, has a high expectation that NKU will be a community resource. Research directly links to that expectation, wouldn’t you agree?

Absolutely. NKU must stay strong to its commitment to the northern Kentucky region, and as a major contributor to the wellbeing and growth in the region it must continue to support and, indeed, expand its research in areas that directly benefit the community.

As an actor and director, I find myself engaged first in historic and linguistic research as I examine a text and then in creative research as I find ways to express through the body, voice, and imagination the character I’m playing. It’s a fascinating process.

The important thing is that we not privilege one type of research over another. All are important and contribute to our greater understanding of our past while preparing us to function successfully in the future.

People may not think of theater, your discipline, as one where research is ingrained. But research and theater have some history with one another, do they not?

People often think of bench science when they think of research. I’ve been a strong advocate of a broader definition of research throughout my career. Research is the act of expanding our understanding of a topic and, as such, exists in any and all disciplines. It might be more useful to think of research as the umbrella activity of creating new knowledge and that the way in which this knowledge is disseminated is what varies from discipline to discipline. Social research might best describe the quantitative methods used by social scientists. And creative activity can accurately describe the making of new artistic works, such as performances and compositions, or the new interpretations of previously created work.

As an actor and director, I find myself engaged first in historic and linguistic research as I examine a text and then in creative research as I find ways to express through the body, voice, and imagination the character I’m playing. It’s a fascinating process.

The important thing is that we not privilege one type of research over another. All are important and contribute to our greater understanding of our past while preparing us to function successfully in the future.

Some research is pure, some applied. Should one of those matter more for a regional university, such as NKU?

I’m not convinced that the distinction between pure and applied research is a useful distinction. Certainly, applied, or translational, research has at its core the intent to move from the theoretical realm into the realm of application. We usually think of applied research as creating new healthcare strategies, medical breakthroughs, technology innovations, and/or workforce development efforts.

But theoretical research, or research motivated purely by the creation of new knowledge, shouldn’t be diminished and adds greatly to our understanding of what it means to be human and how our societies can function successfully.

Creative research, both pure and applied, greatly adds to the quality of life. While one might argue that NKU’s mission lends itself more readily to applied research, a great university must support both.

How do teaching and research complement one another?

Here, and elsewhere in the nation, there is an increasing emphasis on research by undergraduates, often side by side with faculty members. Is this a trend you embrace?

Absolutely. At my previous institution we established a college-level Undergraduate Research Institute, which provided leadership to these initiatives throughout the institution... Being able to define a research question, design a methodology, test theories, and articulate outcomes is an essential part of a quality undergraduate education.
Some 600 years ago, scribes and illuminators began work on a specially commissioned rendition of The Canterbury Tales. Their task was to enliven the text with a script and drawings that both reflected and complemented Geoffrey Chaucer’s stories.

Over the centuries, their artistry has had lasting significance. The pages of one of the best-known versions of the Tales, the Ellesmere Manuscript, are laden with an ornate script. The accompanying illustrations have a primitive resonance and provide abundant information about the people who became subjects of Chaucer’s tales.

Today, Northern Kentucky University English professor Dr. Tamara O’Callaghan has similar goals in using a technology known as augmented reality to bring new dimensions to how readers experience Chaucer’s classic.

Relative new to virtual technology, augmented reality allows O’Callaghan to add images, sound, and supplemental text to a printed page. The added components, though invisible to the eye, are brought to life when a smart phone or tablet hovers over the page. Imagine a newspaper in which a photograph of last night’s baseball game triggers video highlights of the game. Likewise, O’Callaghan can creatively augment a page of Chaucer. A reader might be able to listen as the text page is read aloud with proper medieval pronunciation. Or perhaps a map pops up, plotting which a photograph of last night’s baseball game triggers video highlights of the game. Likewise, O’Callaghan can creatively augment a page of Chaucer. A reader might be able to listen as the text page is read aloud with proper medieval pronunciation. Or perhaps a map pops up, plotting the route Chaucer’s pilgrims followed to Canterbury.

O’Callaghan’s work is medieval literature and historical linguistics, and her research partner, Dr. Andrea Harbin, an English professor at the State University of New York in Cortland, call their project “The Augmented Palmest: Engaging Students through AR Encounters with the Past.” A palmest is a medieval manuscript page whose visible text masks an underlying original text that often can be restored by modern technology. What’s hidden is revealed.

The technical part of what O’Callaghan and Harbin are doing involves coding image markers called fiducials on the pages of Chaucer. An example of a simple fiducial is a QR (quick response) code found inside those ubiquitous, grid-like squares on advertising materials, signs, and product displays.

The fiducials that O’Callaghan and Harbin embed can’t be seen by the human eye but can be detected by a properly programmed smart device. She and Harbin coauthored an article about using fiducials in teaching early literature for the journal Studies in Medieval and Renaissance Teaching. They also plan to discuss their work in an upcoming conference of The New Chaucer Society in New York in Cortland.

But their work isn’t only about technology. The heart of it is their belief that Chaucer—a poet whose stories include lions, unicorns, dragons, and the Virgin Mary—wants to demonstrate how she’ll use augmented reality to add new dimensions to Geoffrey Chaucer’s 600-year-old classic The Canterbury Tales.

The technology’s promise seems endless. A Google search leaves the uninitiated feeling as though they’ve discovered the next revolution in their daily lives. Reality is about to become a mash-up of what the world presents to our eyes and ears combined with what augmented reality can add to it from the boundless memories of our computers.

As The New York Times personal technology writer Kit Eaton wrote, “It may be worth getting familiar with augmented reality not because it’s fun and occasionally useful but because it is the future of mobile devices.”

That was written in 2012. Two years later, the future is here.

"We want to create a highly immersive learning experience for students with 3-D enhancements large enough to be walked around and viewed from multiple angles.”

— Dr. Tamara O’Callaghan
NKU, English professor

our students about the history of the English language through their encounter with Chaucer and Middle English," Harbin said.

"We are teaching them about medieval English history and culture and how those both shape, and are shaped by, Chaucer and his contemporaries.”

Chaucer’s writing challenges the modern reader given the complexity of Middle English. Spelling had not been standardized. There were few rules of grammar. The pronunciation of Middle English was decidedly different from today’s English because of a phenomenon known as the "Great Vowel Shift" that began in the 15th century, roughly between the time when the Canterbury Tales first appeared and when William Shakespeare began to publish his plays.

"In teaching Chaucer, we are not only teaching literature that is still complex and engaging. We are also teaching
Everybody loves the zoo, but why? Does love translate into financial support? Why or why not? When the Cincinnati Zoo wanted answers, it asked Aron Levin’s marketing students to do the research.

By Joe Wessels

Why do donors donate, buyers buy, visitors visit, and listeners listen? Answering such questions is the specialty of Dr. Aron Levin and his students, whether for a social service agency, a zoo, a pizzeria, or a public radio station.

Levin, a Northern Kentucky University marketing professor, is the director of the Marketing Research Partnership Program, or MRPP, created in 2001 to add a real-world experience to NKU’s marketing classrooms. His students dig into the minds of customers to provide professional-level research to the likes of the Cincinnati Zoo, WNKM, and Mama Mim’s Pizzeria.

“If you think about the things you are reading in newspapers, universities need to be more accountable,” Levin said. “They need to train students to help them get careers. I feel like my program does so many of those things.”

The Cincinnati Zoo and Botanical Garden — considered one of the top three zoos in the country — hired Levin’s students in the fall of 2013 to determine what motivates people to donate money to the zoo or what makes them decline to give.

The zoo’s advertising agency recommended Levin’s program, which costs a client $1,500 versus perhaps $30,000 for similar research by a major marketing firm. The fee covers basic expenses but is only paid if an organization is happy with the students’ work.

With 215 full-time employees (double that in summer), 2,000 hungry animals (some with exotic diets), more than 75 acres of land, and 1.4 million visitors per year to keep happy, the zoo tries to mind its spending carefully. The zoo also counts on county tax support for some of its $33 million annual budget, and Hamilton County voters expect a frugal, efficient operation.

“Could I go to a research group and pay a lot of money? Sure. But when you’re a nonprofit like the zoo, that’s not an option,” Levin said. “They need to train complex marketing research for a real client.

“Presenting a project that I had worked so hard on to a table full of executives that could actually use the insights I uncovered was amazing.”

— Taylor Pohlman 2013 NKU marketing graduate

The zoo provided students with 58,000 email addresses of visitors and members. The zoo was curious: ‘Were these friends of the zoo aware that it is a nonprofit? If they donated to the zoo above and beyond buying tickets or paying membership fees, why did they give? If they had not donated, why not? What attracted them to the zoo in the first place?’ Yelton visited Levin’s class, sharing exactly what the zoo hoped to get from the research.

“Could I go to a research group and pay a lot of money? Sure. But when you’re a nonprofit like the zoo, that’s not an option.”

— Chad Yelton Cincinnati Zoo, marketing director

“We’re just trying to understand visitors, our members, and our donors and their behaviors,” Yelton said. “We unleashed the stat team. They asked some great questions and got some great results.”

About 16,500 people opened the email. Of those, about 4,000 responded. Results showed nearly everyone was aware of the zoo’s nonprofit status. But to many respondents, the county property tax supporting the zoo equated to a donation already. Others considered their membership fee a donation. More than 60 percent indicated they aren’t financially able to donate.

The students found males are more likely to give than females. Married couples are less likely to give than singles. As for specific reasons for donating, 84 percent cited their love for the animals and the zoo. About as many, 83 percent, gave because they consider the zoo a valuable community resource. And 51 percent liked one of the perks of being a donor — more exclusive access to animals and zookeepers.

Just as the research helps the client, it also benefits students. Taylor Pohlman, 22, graduated from NKU in December 2013 with a degree in marketing. She was on the MRPP team that did the zoo research. She credits the hands-on experience with giving her confidence that she could handle complex marketing research for a real client.

“Presenting a project that I had worked so hard on to a table full of executives that could actually use the insights I uncovered was amazing,” Pohlman said.

Mike Miller also participated in MRPP, landing an internship and later a job through the experience. His final exam was a poster detailing the rationale behind his research. He used it afterward for a job interview.

“We did a project from start to finish. We had client contact. It wasn’t fake. We actually had deliverables that we produced for the client,” Miller said.

With big consumer research-focused companies — like Procter & Gamble, Kroger Co., and Macy’s — headquartered locally, having students ready to go to work is critical. Several smaller companies have sprung up to support the larger companies, providing even more jobs.

“If you want to be in research, this is the town to do it,” Levin said.

Though the MRPP students have finished their work with the zoo, the zoo hasn’t finished using the students’ work. The zoo’s manager’s reference the findings often and look for ways to integrate them.

“There was a value to them, and there was a value to us. We both got something out of it. We learned a lot, and I think the students learned a lot,” Yelton said.

“Are you willing to spend $30,000 for similar research by a major marketing firm? Sure. But when you’re a nonprofit like the zoo, that’s not an option.”

— Cincinnati Zoo, marketing director

The zoo’s manager’s reference the findings often and look for ways to integrate them.

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“Are you willing to spend $30,000 for similar research by a major marketing firm? Sure. But when you’re a nonprofit like the zoo, that’s not an option.”

— Cincinnati Zoo, marketing director
Crossing a cultural divide to better health

Healthcare professionals can serve African immigrants more effectively in the U.S. by first understanding how life differs for them in their homelands.

By Feoshia H. Davis

When Africans immigrate to the United States, they bring along their cultural attitudes on health and wellness. Back home, no one carves out time for the gym or a run. Nor is reading the latest book on nutrition a priority in a culture where food is prepared fresh at home.

That can cause health problem for Africans living in America, where more conveniences contribute to poorer eating habits and sedentary routines.

“They’re going through a transition of lifestyle. In Africa, when you get up in the morning, physical activity is built into the day. There are a lot more conveniences here,” said Dr. Matthew Asare, a professor of health education at Northern Kentucky University who is originally from Ghana in West Africa.

In a paper being prepared for publication, “Health programs and healthy lifestyle: Black males perspective,” Asare found that home culture can make it difficult to offer useful health information to immigrant populations. Black African males can be particularly hard to reach and assess.

There were 1.6 million African immigrants in the U.S. in 2010, according to the Census. African men outnumber the population at 15,000. Ghanaian Association of Greater Cincinnati estimates the total population of African immigrants in our region, the African male can be particularly hard to reach and assess.

In 2011 while working on his doctorate at the University of Cincinnati and teaching at NKU, Asare released findings that AIDS – an epidemic in Africa – remains a public health concern even after African immigrants come to the United States, where AIDS education and awareness is better than in their home cultures.

Surveying over 400 African immigrants in Ohio, Asare looked at attitudes toward condoms, monogamy, and sexual communication. He found evidence of risky behaviors, including 12 percent who reported multiple partners. The majority of those respondents did not use condoms.

Asare also found that immigrants most acclimated to American culture were most likely to practice safe sex and most likely to communicate with their partners.

Asare’s research, based on face-to-face interviews, examined health attitudes and practices of 50 men. His aim was to find better ways to reach immigrant males when it comes to the importance of healthy eating, exercise, and regular checkups.

The men came from several African countries. Many of them, 20, came from Ghana. Others were from Nigeria, Togo, Cameroon, Côte d’Ivoire, Kenya, and Uganda. Their average age was 38. Most were college educated and were either employed or self-employed. Almost all had at least a high school diploma.

Using a well-tested sampling method, Asare set out to find the health attitudes and practices of participants. He wanted to answer these specific questions:

• What are the participants’ current physical activity, nutrition, and access of preventive care behaviors?
• What are the determinants of black males’ physical activity, nutrition, and access of preventive care behaviors?
• What are the participants’ perceptions about black males’ physical activity, nutrition, and access of preventive care behaviors?
• What are the culturally appropriate ways to promote healthy lifestyle (physical activity or good eating habits) and preventive care (health screening) among black males?

The shift in lifestyle, among other factors, can lead to increased chronic disease in black African male immigrants, Asare found. His research focused on African male immigrant populations to find a deeper understanding of U.S. statistics showing that a disproportionately high number of black males suffer from chronic disease.

Centers for Disease Control and Prevention statistics show that 40 percent of black males are more likely to die early from heart disease, compared to 21 percent among white males.

It is also well documented that black males are more likely to suffer from Type 2 diabetes, high blood pressure, cirrhosis, and other preventable diseases.

What Asare wanted to know is how a subset of those statistics – African immigrants – fares. He also examined their awareness of and response to U.S. nutrition and exercise guidelines.

Asare’s work wasn’t as simple as combing through existing records. He had to create a record. He sought volunteers from the Cincinnati area, finding first-generation immigrants through African community groups, churches, and businesses.

“It’s so difficult in the U.S. to get health information on Africans,” Asare said “When you go to the doctor, for statistical purposes, immigrant Africans in America are considered black. That includes African immigrants, other black immigrants, and African Americans. It’s very difficult to get information on a specific country of origin. African Americans and Africans in America have some differences culturally, and we wanted to explore that.”

Additional research on African immigrants

His research on the health repercussions for African immigrants as they adapt to American culture is not Dr. Matthew Asare’s first significant research on this population.

In 2011 while working on his doctorate at the University of Cincinnati and teaching at NKU, Asare released findings that AIDS – an epidemic in Africa – remains a public health concern even after African immigrants come to the United States, where AIDS education and awareness is better than in their home cultures.

Asare’s research, based on face-to-face interviews, examined health attitudes and practices of 50 men. His aim was to find better ways to reach immigrant males when it comes to the importance of healthy eating, exercise, and regular checkups.

The men came from several African countries. Many of them, 20, came from Ghana. Others were from Nigeria, Togo, Cameroon, Côte d’Ivoire, Kenya, and Uganda. Their average age was 38. Most were college educated and were either employed or self-employed. Almost all had at least a high school diploma.

Using a well-tested sampling method, Asare set out to find the health attitudes and practices of participants. He wanted to answer these specific questions:

• What are the participants’ current physical activity, nutrition, and access of preventive care behaviors?
• What are the determinants of black males’ physical activity, nutrition, and access of preventive care behaviors?
• What are the participants’ perceptions about black males’ physical activity, nutrition, and access of preventive care behaviors?
• What are the culturally appropriate ways to promote healthy lifestyle (physical activity or good eating habits) and preventive care (health screening) among black males?

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Real-world needs provide a laboratory for learning

Born of one nursing student’s inquiry into healthcare for the underserved, the Nurse Advocacy Center now hones clinical and research skills across disciplines.

By Paul Long

Nurses have long practiced outside hospitals and doctors’ offices, caring for soldiers and sailors in battle, the elderly and shut-in in their homes, children at schools, and the poverty-stricken wherever they are found.

That’s the legacy of Florence Nightingale, the founder of modern nursing, and it’s a legacy carried on by the Nurse Advocacy Center for the Underserved at Northern Kentucky University.

“If you think back to where nursing came from – how nursing was established in this country – it’s all about being in the community,” said Cindy Foster, an assistant professor of nursing and the director of the center. “We weren’t in the hospitals. Nursing was done in the homes and in the communities.”

The program sends registered nurses, along with students from the various programs in the College of Health Professions, to clinics set up to serve the indigent, the homeless, and the working poor. The demand is breathtaking, Foster said. Few days pass without a call to care of themselves. They diagnosed problems such as sore throats and headaches. After a year, Foster said, visits from the shelter to the emergency room – where care is most expensive – dropped 70 percent.

Foster said people who struggle against poverty ignore their own health until they’re falling over in pain. They’ll take their children to the doctor – free or low-cost Medicaid covers the children – but ignore their own needs.

“If you don’t have shelter, or you don’t have food on the table, and there are three hungry children at home, it’s hard to say you’re going to make a doctor’s appointment next week and get that screening done,” Foster said.

NKU’s program was founded about a decade ago as the result of a student’s interest in the healthcare of women and children in homeless shelters. The student wanted to know if such women and children regularly saw a doctor or went to emergency rooms for healthcare. So a nurse was sent to the church on Monday nights to do health assessments and first aid and to take care of immediate healthcare needs – providing things such as Band-Aids, tampons, and socks. When you spend all day on the streets, socks are an essential.

More requests came. The agency that runs public housing in Covington called, and the Nurse Advocacy Center set up a clinic in a Methodist church in City Heights, one of the agency’s apartment complexes.

The clinics are staffed with volunteer nurses, students, and others. Money comes from a variety of sources – grants, donations, sales of art or crafts made by people living in the shelters, and NKU. With the continuing need evident, the university set up and incorporated the Nurse Advocacy Center, said Foster, who runs the programs in addition to teaching in the department of nursing.

“You don’t have a doctor, so where do you go? The emergency room is your health provider,” Foster said. “If you can get people to use a registered nurse instead of running off to the emergency room for every problem, that is quite dramatic.”

Once the word spread about the clinic at Transitions, similar agencies wanted one, too. WRAP house, Welcome House, Women’s Crisis Center. So other grants were sought and more clinics set up at those agencies.

Studying the problems and charting the services showed the need was greatest in the afternoon and early evening – when the women and children were coming in and out, and the aches and pains of yet another day on the streets, or of fighting the effects of dire poverty, were grinding down the bodies, Foster said.

The Madison Avenue Christian Church in Covington had a meal program for the poor and homeless on Monday nights. Church members saw the people also had a need for healthcare. So a nurse was sent to the church on Monday nights to do health assessments and first aid and to take care of immediate healthcare needs – providing things such as Band-Aids, tampons, and socks. When you spend all day on the streets, socks are an essential.

More requests came. The agency that runs public housing in Covington called, and the Nurse Advocacy Center set up a clinic in a Methodist church in City Heights, one of the agency’s apartment complexes. The Emergency Cold Shelter on Scott Street in Covington asked for help for the homeless men there. The Horsemens’ Benevolent and Protective Association, which represents the backside workers at racetracks, asked for help at Turfway Park in Florence.

The clinics are staffed with volunteer nurses, students, and others. Money comes from a variety of sources – grants, donations, sales of art or crafts made by people living in the shelters, and NKU. With the continuing need evident, the university set up and incorporated the Nurse Advocacy Center, said Foster, who runs the programs in addition to teaching in the department of nursing.

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Professor Cindy Foster on the value, and the limits, of providing community nursing to people who are homeless:

“A lot of what we do is chronic disease management – diabetes, hypertension. A lot of it is just immediate healthcare needs. With the homeless, sometimes it’s just treating the injuries they sustain from being out on the street. In the summer, it’s hydration needs.

“We can begin to help them. That’s the thing about community nursing. You can get someone to the point where they want to take care of themselves. People who are in this population, they haven’t been served for a long time. They haven’t had access to healthcare. They feel beaten down by the system. So a lot of the work that we do is to try to get people up and get them to care about themselves.”
Nerd extroverts know they can't rest on their laurels

Media informatics is a field on the move, and Renee Human is making sure her students keep up.

By Paul Long

To teach in informatics, a wormhole in the space-time continuum might help. You could jump ahead a few months, figure out what’s happening, and then hurry back to the present to plan for what’s ahead. Or maybe the wormhole wouldn’t help. By the time you got back, others would be onto the next big thing. The field moves that fast.

Northern Kentucky University assistant professor Renee Human understands the speed of change in computing and interaction technology. She directs NKU’s media informatics program in the College of Informatics – a program she set up, which meant designing courses as well as teaching them. It’s not a job for someone comforted by change.

“Even when I teach the same classes, they’re different from when I taught them before. The introductory web class that I redeveloped two years ago has been refashioned three times in three years,” Human said. Like her field, Human is a rapid mover, given to one thought after the other, moving from one (her many projects) to another (her students and their projects) and another (her travels to conferences, meetings, and seminars) and yet one more (linking designers and developers to help businesses begin or expand). It’s part of what makes her the kind of educator that Renee Human understands the speed of change in computing and interaction technology. She directs NKU’s media informatics program in the College of Informatics – a program she set up, which meant designing courses as well as teaching them. It’s not a job for someone comforted by change.

“My research is based off an idea I had in her class. She took a little idea I had and made me believe it could be more. She’s with me every step of the way in my research.”

– Nick McKay

NKU media informatics student

Renee Human directs the media informatics program at NKU, a multidisciplinary course of study that, as she explains, brings together “communication, coding and programming, maybe a little computer science, and design and art.”

NKU’s media informatics program began by teaching the versatile skills required for multimedia journalism. Where future reporters were once taught to report, write, and maybe take pictures, they soon were also being taught to record sound and video and how to blend all of it together. Appropriate to a field always on the move, media informatics has morphed again. It now pulls together communication, design, psychology, and computer science. Human is a media informatics prototype. She started as a writer and liked to hang out with the artists and designers. She discovered she had a knack for software. She worked for a company that developed and maintained websites. Then she was asked to teach a class at a community college. Turned out, she loved teaching.

She stays connected to her old world. She’s an Adobe Education Leader, advising the company on teaching. And worthy of serious research.

In the world of media, video games have quietly become a serious business. And worthy of serious research.

By Daniel Walton

Grand Theft Auto V entered the videogame market last fall with a bang: $1 billion in sales in three days – more money in less time than any other entertainment launch in history.

The wider world of business took notice, though not for any interest in fictional car thieves. Rather, if games for entertainment could register returns like that, then what might be in store for the “gamification” of other sectors? Gaming is being used, for example, for employee training and other corporate applications.

As the sector grows, so do questions about how designers interact with users. Therein lies the sweet spot of Dr. Renee Human’s research: how the communication (or lack of it) between players and developers can influence a game’s success.

Among the games she’s studied is Maxis Software’s Spore, whose players design creatures for world conquest. Players customize virtual warriors with horns, wings, and the like. Dissatisfied with the available options, some players make changes – or “mods” – to Spore’s characters.

The end user license agreement, or EULA, that a user accepts as a condition of playing the game expressly forbids mods. But Human found that Maxis often makes use of mods in official updates to Spore. In one example, players modified the game to allow asymmetrical features on their creatures, such as a horn on the left side but not the right. Maxis soon came out with a patch that enabled players to do that, though without acknowledging the original mod.

Since, Human explains, “most developers can’t speak to you unless it’s totally anonymous,” she instead analyzed thousands of messages by players on Spore’s Internet forums. Users with names like Bushworldelf and Dragorokos, instructing each other. Although modding is forbidden by the EULA, nearly 1,700 player messages referenced the practice, and developers did not discourage the discussion by deleting posts or issuing warnings.

Human interpreted these mixed messages in the framework of coordinated management of meaning theory, a philosophy of communications research that emphasizes the way in which responses shape the meaning of a conversation.

The insights into how users influence game modifications inform the development of the gaming applications that Human is programming at NKU. Not as flashy as Spore, hers is being used for more productive purposes, such as health education. Players earn points in one app by completing real-world exercise tasks like stretching or short walks.

Human is incorporating mods by encouraging users to submit their own activities. “Well, I skydived. Does that count for points?” she imagines a player asking. “Yeah, that counts for a bunch of points!”

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By Feoshia H. Davis

Honesty Abe was quite a lawyer

He's been played on screen by Henry Fonda and Daniel Day-Lewis. He's been cast as a vampire slayer. Books about him fill library shelves. The $5 bill and the penny carry his image, as does a new postage stamp. But what do we know about Lincoln the lawyer? A lot more than you might think, now that Lincoln's like-minded colleagues has said, was more sacred to Lincoln than the law.

How, for example, could the man who would become the Great Emancipator represent a slave owner trying to retrieve a runaway slave and her four children? Billings explored that question in a paper, "The Matson Slave Case: A Countercultural View," that he delivered last September at a conference on Illinois History. The case, which unfolded in 1847, has given some writers reason to question Lincoln's commitment to the antislavery cause, but Billings sees instead a lawyer who, though deeply troubled by human bondage, is committed to legal ethics that obligate attorneys to vigorously represent a client's interests even when the attorney's values and the client's conflict.

As Billings explains in the paper, which he's now preparing for publication, the future president did not jump at a chance to represent a slave owner. Nor did he shy from it. Lincoln, Billings argues, felt a primary obligation to the law — the same obligation that would, during his presidency, lead him to hold a free election in the midst of war and guide him toward an emancipation strategy that violated neither the law nor the Constitution. Nothing, as one of Billings' like-minded colleagues has said, was more sacred to Lincoln than the law.

That observation, from preeminent Lincoln scholar Harold Holzer, is in the introductory essay of Billings' book, Abraham Lincoln, Esq.: The Legal Career of America's Greatest President, published by the University Press of Kentucky in 2010. Billings is coeditor of the book and wrote three of the essays collected in it. As the book shows, understanding Lincoln the lawyer has become a particular fascination of Billings.

"We evaluated his career, looking into the special law practices that hadn't really been discussed before. That included his time as a real estate lawyer and his ethics as a lawyer. We dedicated two chapters to his Washington years in constitutional and international law," Billings said. Billings and his coworkers make abundant use of The Law Practice of Abraham Lincoln, a newly available online repository of more than 100,000 letters, legal briefs, court records, diaries, newspaper stories, and other documents related to Lincoln's legal career that scholars are just beginning to plumb. The site is part of a larger project of the Illinois Historic Preservation Agency and the Abraham Lincoln Presidential Library and Museum to collect, publish, and annotate the written record of Lincoln's life.

"Lincoln did not have close friends he confided in. Even the friends he had didn't fully understand what made him tick, and that's surprising to people today."

— Roger Billings

NKU, law professor

"There have been more than 5,000 cases discovered that he handled and 100,000 documents: I'm one of the people using this treasure trove of documents to analyze Lincoln's law career," Billings said.

Like many Lincoln enthusiasts, Billings' interest was ignited by Lincoln's Civil War years. While serving in the Army himself, Billings grew more interested in the former commander-in-chief. He started collecting Lincoln books. "I'd go to used book shops and buy five or six at a time," Billings recalled.

"There are just a few hundred books really worth collecting out of the thousands written. I have many of those. This has been a hobby, but as a professor I've become interested academically in the law career of Abraham Lincoln." Lincoln's 25-year law career had been largely overlooked or misconstrued. "It's not that formal legal schooling, was a practicing attorney from 1836 to 1861. Licensed in Illinois, he argued cases in county, state, and federal courts. He used his country charm to sway opinion. The charm and his backwoods upbringing belied his keen legal mind.

"Lincoln's style was to be folksy with the jury," Billings said. "But he was sly as a fox, conceding points to the other side, except for the one point most likely to lose his case. He was an extraordinary lawyer, because the best lawyers in the state welcomed a chance to work with him. He

At least 16,000 books have been published on Abraham Lincoln, more than on any other American. Yet for all the inquiry, our 16th president still has the power to perplex, just as he did in his own time.

His presidency, his views on slavery — even his marriage — continue to be dissected and debated nearly 150 years after his assassination.

"Lincoln did not have close friends he confided in. Even the friends he had didn't fully understand what made him tick, and that's surprising to people today," said Roger Billings, a professor at Northern Kentucky University's Chase College of Law.

"Lincoln is a chameleon. He shows many colors to his personality. No one has yet figured out which one is genuine."

But Billings, like other Lincoln scholars, has not stopped trying. For speeches at conferences, for journal articles, and in a book collecting scholarly essays on Lincoln's legal career, Billings has studied the historical record to understand a president whose life sometimes seems to contradict his own legacy.

Stanley Chase College of Law

Ed: He received his J.D. from University of Akron, 1969; B.A., Walsh College, 1959.
It’s one of the reasons you can read post-1850 English and get a pretty good sense of what the characters in a Shakespeare play are saying, but you read Chaucer, who was really just 200 years earlier, and you can’t understand it so easily,” O’Callaghan said.

Harbin and O’Callaghan met in 2012 when they attended a digital humanities summer institute sponsored by the National Endowment for the Humanities at University of Illinois Urbana-Champaign and the University of South Carolina. They were among 25 academics and graduate students selected from across the United States, Canada, and Europe to attend the institute, which explored ways to use new technology in teaching, research, and scholarship in humanities-based disciplines.

After discussing projects that might dovetail with the objectives of the institute, O’Callaghan and Harbin settled on Chaucer and augmented reality. They surveyed the existing scholarly work to assure that their idea was fresh. It was.

The spring they met was awarded the grant. The $599,024 digital Humanities Start-Up Grant is the largest NEH grant awarded to NKU to date.

The vision O’Callaghan and Harbin have for their work goes beyond the smaller-scale use of augmented reality. They imagine, for instance, a virtual model of Canterbury Cathedral with a roof the viewer could remove to see inside. Already, that is technically possible, if challenging. But O’Callaghan also points out that what’s possible with augmented reality today is only a precursor of what’s to come, which makes this a perfect time to imagine the next possibilities.

“We want to create a highly immersive learning experience for students with 3-D enhancements large enough to be walked around and viewed from multiple angles,” O’Callaghan explains.

The project will present opportunities for involvement with other fields of study, including history, media studies, art, language, literature, architecture, and of course, computer science. Such transdisciplinary scholarship is encouraged as including in the new strategic plan as it seeks to deconstruct academic isolation in favor of collaboration among scholars from different departments.

As Provost Sue Ott Rowlands put it, “Tamara’s research is a wonderful example of the university’s new strategic plan coming to life. This innovative work is an inspiration to us as we begin to build a culture that is supportive of transdisciplinary initiatives.”

The center’s direct service to the community is its most obvious bend at getting into the school’s structure as an academic purpose as students apply their learning. They sharpen clinical skills, learn to collaborate with each other and with community partners, and learn how to interact with real patients and real illness.

They also use their research projects to investigate and address community health challenges. In their senior year, nursing students at NKU must complete a capstone project for their degree. The Nurses Advocacy Center is a pathway for those who want to look into the community for such research. One student, for example, helped write the rules for the clinic at City Heights – doing the research, planning the program, and writing a policy manual.

“Seraph Foster, class of 2017, led a project on women who were strength girls at City Heights in cooking classes and fitness workouts for eight months in an attempt to evaluate whether the girls’ self-esteem could be boosted along with their knowledge and concern about their own health.”

“Tamara’s research has been published, and not all of it is historically accurate. I’m happy to add to the accurate understanding of Lincoln’s speeches,” Foster said. “They’ve told us they have diabetes, cancer, or any health problems, but they don’t know the symptoms – or what to do if they’re ever diagnosed.”

Tamara F. O’Callaghan is an associate professor of medieval literature and historical linguistics in the Department of English. She has been at Northern Kentucky University since 2010.

Cindy Foster is an assistant professor of nursing and has been at Northern Kentucky University since 2000. She has served as director of the Nurse Advocacy Center for the Underserved for seven years.

Education: She has a Ph.D. in medieval studies (1995), M.A. in English (1998), and B.A. (Hons.) in English (1994) from University of Toronto.

Health professionals

In addition to limitations of time and money that prevented many project adopters from adopting the project, African men had misconceptions about their own health and habits. In the area of exercise, 78 percent said they were physically active. But when asked what kind of, and how much, exercise they got each week, responses painted a different picture. More than half said they didn’t exercise regularly. There were different reasons for this, but recurring themes were that it was a waste of time and kept them from working together.

One man explained: “It’s not our culture to have a schedule for exercise. In Africa, our daily activities involved exercise. We walk to almost everywhere we go. We walk to farm, walk to fetch water. In short, we do involve exercise. I know a few friends who don’t care about physical activity or exercise.”

Cultural differences exist in the areas of nutrition and health screenings as well. Ninety-four percent of the men said they have a healthy eating behavior and prefer to cook and eat traditional African food. However, when questioned further, many admitted to occasionally eating fast food, especially when away from home. Many also said traditional African foods are expensive, hard to find, and difficult to prepare.

In addition, about 80 percent said they never check the nutritional components of food. As one man said, “I don’t know anything about nutritional components. I just eat what I like.”

Just over half of the men said they took advantage of health screenings for conditions like diabetes, cancer, and high blood pressure. Although many of those who didn’t avail themselves said lack of insurance was a contributing factor, culture played a role as well.

“Some see going for a physical checkup as sometimes not good for their health,” Asare said.

“If they’re told they have diabetes, cancer, or any health problems, they don’t function as normal. Some of the participants were concerned that, if they went for a checkup, the doctors’ findings might somehow hasten death. So when health professionals invited them, they felt OK, they’d rather go on with their lives. They don’t worry about knowing their health status,” Foster said.

In concluding his research, Asare found that the men would respond most to culturally informed health programs that explain why certain health behaviors are needed and important. When health professionals truly understand the immigrant culture and lifestyle, those messengers should be much better received, he found through interviews.

“The goal is to use the messages ‘should focus on the importance of physical activity versus physical inactivity and the general benefits of physical activity; emphasize physical activity as a preventive mechanism and not as a cure; and promote time management and sports like soccer.’ Asare wrote.

Matthew Asare has been an assistant professor in kinesiology at Northern Kentucky University since 2010.

Education: He has a Ph.D. from University of Cincinnati, (2011); an M.A. from Ohio University (2001); M.B.A. from Ohio University (2000).

Chase law

loved trial work but not office work. He did draft hundreds of excellent office work documents such as deeds and mortgages, however.”

If Lincoln had a fault as a lawyer, perhaps it was his filing system. As Bills report in Abraham Lincoln, Esq., the man whose name would become synonymous with freedom took liberties with office records, sometimes filing them in his stovepipe hat and too often misplaced them.

“Books’ big and other work on Lincoln have made him a popular speaker. He has organized symposiums and spoken at Gettysburg, Pa., in addition to Springfield. He sits on the boards of Lincoln associations in both cities. "These associations are dedicated to the study and accurate preservation of Lincoln’s legacy,” Bills said.

“Chase law continued from page 23
natural. Hair, like grass, is among the more demanding things to render realistic in computer-generated images. “So when the character moves, does the hair flow like it would? When the character steps on the grass, what kind of grass is it? Does it flatten all the way? Does the grass spring back up?” Human asked, explaining the challenge.

“It’s the art driving the technology instead of the technology driving the art. So the artists are like, ‘We want to do this too.’ So the coders get in there and create the algorithms.”

But remember the wormhole? The reason it would be handy is that what you learn about grass and hair today, you say “hi” to them, and they’re like this…” She looks downward, eyes averted.

Media informatics students? You can tell them, too, Human said: “We’re extroverts. We’re nerd extroverts.”

Renee Human is an assistant professor and serves as the program director for media informatics.

Education: She has a B.A. in English from Wheaton College (1989) and an M.A. from University of Kentucky in Communication (2005). She also completed her coursework and qualifying exams toward her Ph.D. in communication at University of Kentucky and is working on her dissertation.

Undergraduate research is highly valued and widely supported at Northern Kentucky University. Typically, student research is mentored by a professor. Each spring, many of the students involved in research over the past year report on their work during a weekend celebration of student research and creativity. Here is a sample of what was presented April 15-19, 2015.

The Effect of Active Video Games on Heart Rate: Exercise or Not?

Students: Scott Brock, Josh Volpenheim, Brian Gish
Faculty sponsor: Gabriel Sanders, Kinesiology and Health

Abstract: Nintendo Wii Sports Boxing and Xbox Kinect Sports Boxing are considered active video games. However, the Wii requires only upper-body movements while the Kinect requires full-body movements for successful play. We assessed average and maximal heart rate during four conditions: Twenty students wore a heart rate monitor and participated in four 10-minute conditions: rest, treadmill walking at 3 mph, Wii Boxing, and Kinect Sports Boxing. Finding: It may be beneficial to play games such as Kinect Sports Boxing to increase physical intensity, as they have a potential to increase heart rate to 77 percent of maximum versus 62 percent for Wii Boxing and 65 percent for walking 3 mph on the treadmill.

Cloud-based P2P Web Caching for Mobile Devices

Student: Josh Newkirk
Faculty sponsor: Wei Hao, Computer Science

Abstract: More and more web traffic is generated from mobile devices. Perceived response time is an important performance metric for mobile user experience. Web caching is a widely used approach to reducing the response time. However, mobile devices often have limited storage space. In this research, we used cloud computing and peer-to-peer (P2P) techniques to design cloud-based P2P web caching. We performed experimental studies to validate our approach.

Finding: Quantitative analysis validated this approach, showing improved response time.

Omotenashi: Japanese Hospitality

Student: Misun Kim
Faculty sponsor: Yasue Kuwahara, Communication

Abstract: Many foreigners who visit Japan talk about the dis-tinguished experience of Japanese hospitality. The way they serve you in Japan is completely different from that of other countries. Meanwhile, this service spirit of Japan is not limited to hotels and restaurants but is also present in every store. This service mindset is called “Omotenashi.” In recent years, Omotenashi has been adapted by the business world. For example, Shiseido (a Japanese cosmetic company) set up Omotenashi marketing strategies. This service mindset is expected to increase the customer experience.

Finding: Omotenashi can be an effective business strategy, since its ability to satisfy customers and earn customer loyalty increase the company’s profitability.

From Lazarus lizards to Japanese hospitality

The faculty members and students involved in the research are investigating the factors that contribute to the unique Japanese hospitality. They have found that the Japanese have a strong sense of community and are willing to go the extra mile to ensure that their guests have a positive experience. This sense of hospitality is called Omotenashi, and it is a key factor in the Japanese approach to customer service.

The researchers are also looking at the Lazarus lizards, which are known for their adaptability and resilience. They have found that these lizards have a similar approach to life, which is to be adaptable and flexible and to value the support and cooperation of others. The researchers believe that this approach can be applied to the study of hospitality and customer service.

The research is ongoing and expanding to see if that can be solved.

Dramal Activities and Metabolism of the Lazarus Lizard (Podarcis muralis) as an Introduced Species

Students: Wesley Parsons, Mitch Morcro
Faculty sponsor: Richard Duthie, Biological Sciences

Abstract: A founder population (10 individuals) of Lazarus lizard (Podarcis muralis), introduced from Italy in 1952, has since grown exponentially throughout greater Cincinnati, where they thrive in urbanized xeric microhabitats. Our research evaluated the niche of these introduced lizards to determine if they 1) occupy a vacant urban niche and 2) pose a threat to the local ecosystem. We studied the foraging ecology of these lizards as well as their time-activity budgets. Finding: Lazarus lizards occupy an unexploited niche in urban settings where they bask and move mostly in the sun elevated on rock walls, with maximal metabolic rates and sprint speeds between 33°C and 38°C.

Slave Narratives and Their Historical Significance

Student: Angelica Smith
Faculty sponsor: Michael Washington, History and Geography

Abstract: During the times of slavery, the treatment of Africans was unimaginable. A major problem was that no one in the North knew how badly slaves were being treated in the South until slaves began to write slave narratives. These narratives described the slaves’ daily experiences. The purpose of the project was to describe the historical significance of the slave narratives. Finding: Slave narratives were the revelation to the North that slavery was truly a terrifying circumstance that blacks experienced. The narratives helped the abolitionist movement.

Synthesis of Fullerenes Complexes via One-Pot Method for Solar Cells

Student: Jessica Horn
Faculty sponsor: Keith Walters, Chemistry

Abstract: We want to create a solar cell using the organic compound fullerene. Because these are macromolecules, they have a high molecular weight. They are good electron acceptors, which make them potential molecules for use in solar cells synthesis. The goal is to attach a metal as the electron donor that, when excited by a photon, would create energy for the solar cell. A functionalized fullerene is necessary for this system, and our work involved a one-pot Sonogashira coupling reaction, which might be a faster, more efficient way to prepare functionalized fullerenes and other compounds.

Finding: The one-pot process appears to improve reaction yields. However, the presence of side products have proven challenging in purifying the final product. The research is ongoing and expanding to see if that can be solved.
“Universities are places of inquiry and truth-seeking, and the ultimate moments of truth-seeking happen when we interact with the world around us as researchers and creators.”

KEVIN G. KIRBY, DEAN, COLLEGE OF INFORMATICS