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Faces of NPS: Ralucca Gera, PhD

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Faces of NPS

Ralucca Gera, PhD
Professor of Mathematics
Principal Investigator, Campus of the Future

Dr. Ralucca Gera is a Professor of Mathematics at the Naval Postgraduate School. She has taught at NPS since 2005 and recently finished a three-year post as Associate Provost for Graduate Education. Gera came to NPS directly after completing her doctorate at Western Michigan University. Gera founded and lead the development of CHUNK Learning, an innovative, personalized, and adaptive learning platform, and currently serves as Director and is the Principal Investigator of the Campus of the Future line of effort of NPS' newly announced Cooperative Research and Development Agreement with Microsoft, working to provide adaptable learning environments that meet the needs for collaborative and student-centered learning based on skills and experiences. Gera has also served as advisor, co-advisor, or reader to a number of thesis and doctoral candidates as well as on PhD Dissertation Committees. She has taught students from many departments, including Operations Research and Computer Science and advised on many projects that span more than one department.

What led you to the Naval Postgraduate School and what has been the most impactful moment(s) of your time on faculty here?

I was thrilled at the opportunity of teaching at the nation's leading institution for defense higher ed, focused on engaging with graduate students regularly. The classroom and research conversations at NPS are extremely rich and fulfilling, both as an associate professor and as a full professor. In addition to the classroom environment, I had the opportunity to experience the scientist-at-sea environment on an aircraft carrier, better understanding the setting that our past, present and future students live in and from where sometimes they even join their classes.

Tell us about your current research and how it might impact the Fleet and Force.

My current educational research focus is on personalizing learning since the modern educational ecosystem is not one-size fits all, and the students are accustomed to personalization in their everyday lives. Thus, students now expect the same personalization from education systems, especially when they are out in the fleet and seek to advance their education. Additionally, the COVID-19 pandemic placed us all in an acute teaching and learning laboratory experimentation, creating expectations of self-paced learning and interactions with focused educational materials. Consequently, we've been developing and improving a framework that offers content choices and multiple modalities of engagement to support self-paced learning and propose an approach to personalized education based on network science and data mining. This framework brings attention to learning experiences by providing the learner engagement and content choices supported by a network of knowledge based on and driven by individual skills and goals. We further developed a prototype of such a learning platform, called CHUNK Learning, that I use in teaching the higher level classes in graph theory and network science. When appropriate, such a platform provides flexibility in, and focus on, learning and engagement.

As the director and founder of CHUNK Learning, the previous Associate Provost for Graduate Education, and now the principal investigator for the NPS-Microsoft Campus of the Future initiative, your emphasis on enhancing the education system for students at NPS can't be missed. What is the value of an NPS education for military students and how does the type of learning here enhance the student experience? How will it transform over the next few years?

My focus in all these positions has been to understand and step up efforts that provide choices for flexible teaching and flexible learning styles to support thought-provoking experiences. Today's education is generally linear; students study the same topics, at the same time, and at the same speed. However, this approach leaves some students behind while not challenging others. We thus seek to expand that by providing flexibility in engaging with the content by incorporating self-paced and self-directed learning by connecting learned skills with students' background,

interests and desired education. Incorporating AI into our education and educational support can diminish the stress that students might experience when they run into common challenges that are certainly unique for each of them.

I seek to be and to inspire early adopters that bring NPS to the forefront of advanced education. Modern learning ecosystems can support an engaging and collaborative education environment, overcoming psychological isolation through an interactive learning community. This enables the data-driven, 21st-century warfighters that embrace crowdsourcing and social learning platforms for exchange of ideas, to seamlessly learn and connect using mobile devices for some hands-on training and classes, to ultimately support lifelong learning through a blend of face-to-face, asynchronous, or hybrid educational opportunities.

"Campus of the Future will facilitate collaboration..."

Dr. Ralucca Gera on how the Campus of the Future project builds collaborative opportunities and enhances NPS' research ecosystem.

https://youtu.be/RrG5Qiu3hxo

https://www.npsfoundation.org/faces-of-nps/ralucca-gera