

**Douglas C. Williams, Ph.D.**

Title Department Office Number Extension Email Address	Professor / Director / CILAT EDCI / CILAT MDD 107 2-6412 dwilliams@louisiana.edu
Education	Doctor of Philosophy, Instructional Technology, University of Texas at Austin Master of Science, Computer Science, University of Southwestern Louisiana Bachelor of Science, Computer Science, University of Southwestern Louisiana
Teaching Philosophy	My teaching focuses on innovation and empowerment. I incorporate problem-based learning, design projects, and design thinking, an approach to creative problem solving. I embed rich media (e.g. video, animations) in my course and connect research to practice.
Bio	<b>Dr. Douglas Williams</b> is Director of CILAT and a professor of instructional technology in the College of Education. He holds bachelor and masters degrees in computer science from the University of Louisiana at Lafayette. He completed a doctoral degree in Instructional Technology at the University of Texas at Austin. Dr. Williams worked as a programmer for more than 10 years in the United States, Sweden and Australia.
Courses Taught	EDCI 100: Orientation to Teacher Education, IRED 320: Technology in the Classroom, IRED 330: Technology in Science, IRED 505: Educational Applications of Telecom and Internet, IRED 510: Learning Environment Design 1
Research Interests	Educational games, educational robotics, problem-based learning, case-based learning, design thinking.
Teaching Experience	1999- Present, Instructional Technology Courses
Publications	<b>Refereed International / National Journal Publications</b> Emad Habib, Matthew Deshotel, and Doug Williams (2018) Unlocking the Educational Value of Large-Scale, Coastal-Ecosystem Restoration Projects: Development of Student-Centered, Multidisciplinary Learning Modules. <i>Journal of Coastal Research: Volume 34, Issue 3: pp. 738 – 751.</i> Lai, G., Zhu, Z., & Williams, D. (2017). Enhance students' learning in business statistics using video tutorials. <i>Journal of Teaching and Learning with Technology, Vol. 6, No. 1, pp. 31-44.</i> doi:10.14434/jotlt.v6n1.21161 Ma, Y., Williams, D., & Prejean, L. (2014). Designing an Electronic Educational Game to Facilitate Immersion

and Flow. *Journal of Interactive Learning Research*, 25 (1), 27-49

Ma, Y. & Williams, D. C. (2013). The potential of a first LEGO league robotics program in teaching 21st century skills: An exploratory study. *Journal of Educational Technology Development and Exchange*, 6(2), 13-28.

Ma, Y., Williams, D., & Prejean, L. (2012). Understanding the Relationship Among Various Design Components in A Game-Based Learning Environment. *International Journal of Gaming and Computer Mediated Simulations*, 4(1), 68-85.

Habib, E., Ma, Y., Williams, D., Sharif, H. O., and Hossain, F.: HydroViz: design and evaluation of a Web-based tool for improving hydrology education, *Hydrol. Earth Syst. Sci.*, 16, 3767-3781, doi:10.5194/hess-16-3767-2012, 2012.

Habib, E., Ma, Y., and Williams, D., 2012, Development of a web-based hydrologic education tool using Google Earth resources, in Whitmeyer, S.J., Bailey, J.E., De Paor, D.G., and Ornduff, T., eds., *Google Earth and Virtual Visualizations in Geoscience Education and Research: Geological Society of America Special Paper 492*, p. 431–439, doi:10.1130/2012.2492(33).

Williams, D., Ma, Y., & Prejean, L. (2010). A preliminary study exploring the use of fictional narrative in robotics activities. *Journal of Computers in Mathematics and Science Teaching*, 29(1), 51-71.

Pedersen, S., Arslanyilmaz, A., & Williams, D. (2009). Teachers' assessment-related local adaptations of a problem-based learning environment. *Educational Technology Research and Development*, 57(2), 229-249.

#### **Refereed Book Chapters**

Ma, Y., Lai, G., & Williams, D. (in press 2010). Instructional Technology and Educational Gaming. In Ouyang, R., & Wang, C. (Eds.), *Instructional Technology*. Beijing, China: Renmin University Press.

#### **Refereed International / National Proceedings**

Ma. Y., Williams, D., Lai, G. (March 2016). How Does a First LEGO League Robotics Program Provide Opportunities for Teaching Children 21st Century Skills?. Proceeding from the 27th annual conference of the Society for Information Technology and

	<p>Teacher Education, Association for the Advancement of Computing in Education (AACE), March 2016.</p> <p>Lai, G., Zhu, Z., Tanner, J., Williams, D., (March 2016). The Effects of Video Tutorials as a Supplement in Enhancing Students' Statistics Performance. Proceeding from the 27th annual conference of the Society for Information Technology and Teacher Education, Association for the Advancement of Computing in Education (AACE), March 2016.</p> <p>Lai, G., Williams, D., Long, Li. (March 2016). Students' Perceptions of Technology-Enhanced Pedagogy in Their Statistics Learning. Proceeding from the 27th annual conference of the Society for Information Technology and Teacher Education, Association for the Advancement of Computing in Education (AACE), March 2016.</p> <p>Williams, D., Barber, A., Lai, G., Dolenc, N. (March 2016). Examining the Preparation of Preservice Teachers to use Design Thinking, Tinkering, and Making with Elementary School Children. Proceeding from the 27th annual conference of the Society for Information Technology and Teacher Education, Association for the Advancement of Computing in Education (AACE), March 2016.</p> <p>Williams, D., Barber, A., Lai, G., Dolenc, N. (March 2016). Arborgraphia: A Location-based App for Learning About Trees. Proceeding from the 27th annual conference of the Society for Information Technology and Teacher Education, Association for the Advancement of Computing in Education (AACE), March 2016.</p> <p>Williams, D., Dolenc, N., Barber, A., Lai, G.. (March 2016). Learning From Nature. Pre-service Teachers Use of Biomimicry as a Teaching Strategy. Proceeding from the 27th annual conference of the Society for Information Technology and Teacher Education, Association for the Advancement of Computing in Education (AACE), March 2016.</p> <p>Williams, D., Ma, Y., Pedersen, S. &amp; Crochet, S. (2011). The Design of a Game Management System. In M. Koehler &amp; P. Mishra (Eds.), <i>Proceedings of Society for Information Technology &amp; Teacher Education</i></p>
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*International Conference 2011* (pp. 2275-2280).  
Chesapeake, VA: AACE.

Ma, Y., Prejean, L. & Williams, D. (2011). A Technology-Enhanced Thematic Unit in the Pedagogical Laboratory. In M. Koehler & P. Mishra (Eds.), *Proceedings of Society for Information Technology & Teacher Education International Conference 2011* (pp. 3697-3701). Chesapeake, VA: AACE.

Ma, Y., Sheppard, P. & Williams, D. (2011). Engaging Elementary Mathematics Teachers in Developing a Mathematics Teaching Case Library. In M. Koehler & P. Mishra (Eds.), *Proceedings of Society for Information Technology & Teacher Education International Conference 2011* (pp. 4007-4011). Chesapeake, VA: AACE.

Habib, E., Ma, Y., Williams, D., and Cruz-Neira, C. (2010), Development of a Virtual Hydrologic Observatory for Integration of Field Observations and Model Simulations into Engineering Hydrology Courses, NSF Grantees Poster Session, proceedings of the 2010 ASEE Annual Conference & Exposition, Louisville KY, June 20-23, 2010.

Williams, D., Ma, Y., Pedersen, S., & Prejean, L. (2009). Design of a web-based system to support assessment in virtual environments for learning (VEL). In M. Simonson (Ed.), *Selected papers presented at the 2009 annual meeting of the Association for Educational Communications and Technology (AECT)* (pp. 483-486). Bloomington, IN: AECT.

Ma, Y., Williams, D., Prejean, L., & Lai, G. (2009). Teacher candidates' knowledge development in a pedagogical laboratory. In M. Simonson (Ed.), *Selected papers presented at the 2009 annual meeting of the Association for Educational Communications and Technology (AECT)* (pp. 321-329). Bloomington, IN: AECT.

Ma, Y., Williams, D., Ford, M. J., & Prejean, L. (2009). The impact of a combination of vicarious and personal experiences on teachers' technology beliefs. In I. Gibson et al. (Eds.), *Proceedings of Society for Information Technology & Teacher Education International Conference 2009* (pp. 1496-1501). Chesapeake, VA: AACE.

Prejean, L., Ford, M. J., Ma, Y., & Williams, D. (2009). Integrating fictional narrative in robotics activities. In I. Gibson et al. (Eds.), *Proceedings of Society for Information Technology & Teacher Education International Conference 2009* (pp. 3830-3835). Chesapeake, VA: AACE.

### **Software Published**

Ma, Y., & Williams, D. (2013). Shi Zi 1 (Version 3.1): Learn Chinese Characters. (Universal iPhone and iPad app).

Ma, Y., & Williams, D. (2013). Shi Zi 2 (Version 1.1): Learn Chinese Characters. (Universal iPhone and iPad app).

Ma, Y., & Williams, D. (2013). Shi Zi 3 (Version 1.1): Learn Chinese Characters. (Universal iPhone and iPad app).

Williams, D. & Ma, Y. (2013, 2014). Arbographia (Version 1.0). (Universal iPhone and iPad app).

Williams, D. & Ma, Y. (2013). Thinking Design (Version 1.0). (Universal iPhone and iPad app). Williams, D., Ma, Y., Richard, C., & Prejean, L. (2010). *Conquest of Coastlands 2.0*.

Williams, D., Ma, & Prejean, L. (2010). *Game assessment system 2.0*.

Williams, D., Ma, Y., Crochet, S., & Prejean, L. (2010, 2011). *Geographia 1.0 (iPad app)*

Ma, Y., Williams, D., Crochet, S., & Prejean, L. (2010). *Shi Zi: A Primer of Chinese Characters. (iPhone and iTouch app)*.

Pedersen, S., Crochet, S., Williams, D. (2009, 2010, 2011). *Explosion on Mars*. This is the first of five modules (web-based games) in the VELscience series, developed as part of the NSF-funded project, "Engaging Middle School Students in Student-Directed Inquiry through Virtual Environments for Learning."

Pedersen, S., Crochet, S., Williams, D. (2009, 2010, 2011). *Supervolcano*. This is the second of five modules (web-based games) in the VELscience series, developed as part of the NSF-funded project, "Engaging Middle School Students in Student-Directed Inquiry through Virtual Environments for Learning."

Pedersen, S., Crochet, S., Williams, D. (2010, 2011). *Forgery Detectives*. This is the third of five modules (web-

	<p>based games) in the VELscience series, developed as part of the NSF-funded project, “Engaging Middle School Students in Student-Directed Inquiry through Virtual Environments for Learning.”</p> <p>Pedersen, S., Crochet, S., Williams, D. (2010, 2011). <i>RiggleFish</i>. This is the fourth of five modules (web-based games) in the VELscience series, developed as part of the NSF-funded project, “Engaging Middle School Students in Student-Directed Inquiry through Virtual Environments for Learning.” Winner of the 2011 Adobe Design Achievement Awards – Innovation in Educational Interactive Media. Gold Medal, 2011 International Serious Play Awards.</p> <p>Pedersen, S., Crochet, S., Williams, D. (2011). <i>The Wetlands</i>. This is the fifth of five modules (web-based games) in the VELscience series, developed as part of the NSF-funded project, “Engaging Middle School Students in Student-Directed Inquiry through Virtual Environments for Learning.”</p> <p>Williams, D., Ma, Y., Richard, C., &amp; Prejean, L. (2009). <i>Conquest of Coastlands 1.0</i>.</p> <p>Williams, D., Ma, &amp; Prejean, L. (2009). <i>Game assessment system 1.0</i>.</p>
<p>Presentations</p>	<p>Williams D., Barber, A., Sheppard, P. (2019, June). Making Inspired by Nature: Engaging Preservice Elementary Teachers and Children in Maker-centered Learning Through Biomimicry., Poster presented at 2019 ASEE Annual Conference &amp; Exposition, Tampa, Florida.</p> <p>Williams, D., Barber, A. &amp; Sheppard, P. (2019). Making Inspired by Nature: Engaging Preservice Elementary Teachers and Children in Maker-centered Learning and Biomimicry. In K. Graziano (Ed.), Presentation at the Society for Information Technology &amp; Teacher Education International Conference (pp. 1660-1665). Las Vegas, NV, United States: Association for the Advancement of Computing in Education (AACE). Retrieved April 30, 2019 from <a href="https://www.learntechlib.org/primary/p/207866/">https://www.learntechlib.org/primary/p/207866/</a>.</p> <p>Habib, E., D. Tarboton, D. Ames, K. Elgazzar, D. Williams, T. Sloey, C. Rivet, Z. Li, M. Merck (2018). HydroLearn: An open-source platform for developing, sharing and adoption of active-learning resources in hydrology and water resources. Presentation at the American Water Resources Association (AWRA) 2018 Spring</p>

	<p>Specialty Conference on GIS &amp; Water Resources X - Spatial Analysis of Watersheds: Ecological, Hydrological and Societal Responses.</p> <p>Williams D., Barber, A., Sheppard, P. (2018). Making Inspired by Nature: Engaging Preservice Elementary Teachers and Children in Maker-centered Learning Through Biomimicry., Poster Presentation at the NSF Maker Summit, Washington, D.C.</p> <p>Ma. Y., Williams, D., Lai, G. (March 2016). How Does a First LEGO League Robotics Program Provide Opportunities for Teaching Children 21st Century Skills? Paper presented at the 27th annual conference of the Society for Information Technology and Teacher Education, Association for the Advancement of Computing in Education (AACE), March 2016.</p> <p>Lai, G., Zhu, Z., Tanner, J., Williams, D., (March 2016). The Effects of Video Tutorials as a Supplement in Enhancing Students' Statistics Performance. Paper presented at the 27th annual conference of the Society for Information Technology and Teacher Education, Association for the Advancement of Computing in Education (AACE), March 2016.</p> <p>Lai, G., Williams, D., Long, Li. (March 2016). Students' Perceptions of Technology-Enhanced Pedagogy in Their Statistics Learning. Paper presented at the 27th annual conference of the Society for Information Technology and Teacher Education, Association for the Advancement of Computing in Education (AACE), March 2016.</p> <p>Williams, D., Barber, A., Lai, G., Dolenc, N. (March 2016). Examining the Preparation of Preservice Teachers to use Design Thinking, Tinkering, and Making with Elementary School Children. Paper presented at the 27th annual conference of the Society for Information Technology and Teacher Education, Association for the Advancement of Computing in Education (AACE), March 2016.</p> <p>Williams, D., Barber, A., Lai, G., Dolenc, N. (March 2016). Arborgraphia: A Location-based App for Learning About Trees. Paper presented at the 27th annual conference of the Society for Information Technology and Teacher Education, Association for the Advancement of Computing in Education (AACE), March 2016.</p>
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- Williams, D., Dolenc, N., Barber, A., Lai, G.. (March 2016). Learning From Nature. Pre-service Teachers Use of Biomimicry as a Teaching Strategy. Paper presented at the 27th annual conference of the Society for Information Technology and Teacher Education, Association for the Advancement of Computing in Education (AACE), March 2016.
- Williams, D., Ma, Y., Pedersen, S. & Crochet, S. (2011). The Design of a Game Management System. In M. Koehler & P. Mishra (Eds.), Paper presented at the *Society for Information Technology & Teacher Education International Conference 2011* (pp. 2275-2280). Chesapeake, VA: AACE.
- Ma, Y., Prejean, L. & Williams, D. (2011). A Technology-Enhanced Thematic Unit in the Pedagogical Laboratory. Paper presented at the *Society for Information Technology & Teacher Education International Conference 2011* (pp. 3697-3701). Chesapeake, VA: AACE.
- Ma, Y., Sheppard, P. & Williams, D. (2011). Engaging Elementary Mathematics Teachers in Developing a Mathematics Teaching Case Library. Paper presented at the *Society for Information Technology & Teacher Education International Conference 2011* (pp. 4007-4011). Chesapeake, VA: AACE.
- Pedersen, S., Williams, D., Griffin, C., Simpson, J., Guinea-Montalvo, J., Richard, S., & Myers, J. (2010, December). *Rigglefish*. Exhibit at the Interservice/Industry Training, Simulation, and Education (I/ITSEC) Conference, Orlando, Florida.
- Myers, J., Pedersen, S. & Williams, D. (2010, June). *Virtual environments for learning: Tracking student behavior within an inquiry-based science environment*. Poster presented at Games, Learning, and Society, Madison, WI.
- Habib, E., Ma, Y., Williams, D., and Cruz-Neira, C. (2010), Development of a Virtual Hydrologic Observatory for Integration of Field Observations and Model Simulations into Engineering Hydrology Courses, NSF Grantees Poster Session, proceedings of the 2010 ASEE Annual Conference & Exposition, Louisville KY, June 20-23, 2010.
- Williams, D., Pedersen, S., Crochet, S. (2010), *RiggleFish: A Game for Teaching Genetics*, I/ITSEC Annual



Conference & Exposition, Orlando FL, November 28-30, 2010.

Pedersen, S. & Williams, D. (2009, November). *The VELscience project: Engaging middle school students in student-directed inquiry in virtual environments for learning*. Poster presented at the National Science Foundation DR-K12 PI Meeting, Washington, D.C.

Ma, Y., Williams, D., & Prejean, L. (2009, November). *Assessing teacher candidates' knowledge development in a pedagogical laboratory*. Paper presented at the Association for Educational Communications and Technology, Louisville, Kentucky.

Pedersen, S., Shimek, C. & Williams, D. (2009, October). *The VELscience project : Designing virtual environments to support student-directed inquiry*. Paper accepted for presentation at the Association for Educational Communications and Technology annual conference, Louisville, Kentucky.

Williams, D., Ma, Y., & Prejean, L. (2009, November). *Design, rationale, and lessons learned from a robotics and educaching experience for children, grade 1-5*. Paper presented at the Association for Educational Communications and Technology, Louisville, Kentucky.

Williams, D., Pedersen, S., & Ma, Y. (2009, November). *Design of a web-based system to support assessment in virtual environments for learning (VEL)*. Paper presented at the Association for Educational Communications and Technology, Louisville, Kentucky.

Prejean, L., Williams, D., & Ma, Y. (2009, March). *Educaching: An Invasive Species Scavenger Hunt*. Paper presented at the National Science Teachers Association (NSTA) Conference for Science Education 2009.

Prejean, L., Williams, D., & Ma, Y. (2009, March). *Podcasting on Planet Earth*. Paper presented at the National Science Teachers Association (NSTA) Conference for Science Education 2009.

Prejean, L., Williams, D., & Ma, Y. (2009, March). *Robots Explore Mayan Ruins*. Paper presented at the National Science Teachers Association (NSTA) Conference for Science Education 2009.

<p>Grants</p>	<p><b>National Funding Agency</b></p> <p>Habib, E, Elgazzar, K., Williams, D.. (2017). Collaborative Research: Improving Student Learning in Hydrology &amp; Water Resources Engineering by Enabling the Development, Sharing and Interoperability of Active Learning Resources. National Science Foundation, DUE. Amount: \$805,284.</p> <p>Williams, D., Barber, A., Sheppard, P. (2017). EAGER:Maker: Making Inspired by Nature: Digital Tools and Activities for Supporting Pre-service Elementary Teachers in Applying Biomimicry in a Maker-centered Classroom. DUE, National Science Foundation. Funded Amount: \$255,814.</p> <p>Williams, D., &amp; Ma, Y. (2014-2016). Design Thinking, Making, Tinkering, Inventing, and Robotics. Gear-UP Initiative, \$154,090.</p> <p>Williams, D., &amp; Ma, Y. (2014-2016). Design Thinking, Making, Tinkering, Inventing, and Robotics. Gear-UP Initiative, \$154,090.</p> <p>Habib, E., Visser, J., Williams, D., &amp; Ma, Y., (2013). Impact of Climate Change on the Eco-Hydrology of Louisiana Coastal Ecosystem: Development of Research-Driven Student-Centered Learning Modules. Louisiana Sea Grant College Program. Funded amount: \$158,386.</p> <p>Williams, D., &amp; Ma, Y. (2013). Enhancing technology education with LEGO robotics. University Teacher Education Program Grant. Education Blueprint Association. Funded amount: \$3,204.</p> <p>Habib, E., Ma, Y., Williams, D., Meselhe, E. (September 2011 – August 2016). <i>Development of Adaptable Web Modules to Stimulate Active Learning in Hydrology using Data and Model Simulations</i>. National Science Foundation, TUES Program. Funded amount: \$390,569.</p> <p>Williams, D., &amp; Ma, Y. (2013). Enhancing technology education with LEGO robotics. University Teacher Education Program Grant. Education Blueprint Association. Funded amount: \$3,204.</p> <p><b>State Agency</b></p> <p>Williams, D., Barber, A., (2019). Enhanced maker-centered learning collaborative classroom. Board of Regents Traditional Enhancement Program. Funded amount: \$56,426.</p>
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	<p>Williams, D., Barber, A., Dolenc, N., Tackie, N., Gallagher, M. (2017). Improving Teacher Preparation Through Collaborative Learning Space with a STEM Focus. Board of Regents Traditional Enhancement Program. Funded amount: \$92,992.</p> <p>Williams, D., Ma, Y., Saft, C., Smith, K. (July 2011 – June 2012). Learning Through Design: A Curriculum for Teaching Design. Louisiana Board of Regents, Traditional Enhancement Program. Funded amount: \$106,853.</p> <p>Ma, Y., Williams, D., Sheppard, P. (2011). Enhancing Pre-service Teachers Conceptual Understanding of Elementary Mathematics and Related Teaching Strategies. Louisiana Board of Regents, Traditional Enhancement Program. Funded amount: \$122,871.</p>
Conferences Attended	
Professional Memberships	<p>American Educational Research Association  Association for the Advancement of Computing in Education</p>
Awards	<p><b>1<sup>st</sup> Place, 2011 Adobe Design Achievement Award, Innovation in Interactive Media.</b> <i>Rigglefish: Engaging Middle and High School Children in Scientific Inquiry and Genetics.</i> Competition Hosted by Adobe and the International Council of Graphic Design Associations (Icograda). Icograda is the world body for professional communication design. Each year, top practitioners and faculty in the field of design judge this competition. In 2011, there were 4605 submissions from 73 countries.</p> <p><b>Gold Medal, 2011 International Serious Play Awards.</b> <i>RiggleFish.</i> This competition is a partnership between Clark Aldrich, author of five top selling books on serious games, and DigiPen Institute of Technology, a leading educational institution offering degrees in video game design, computer science, and animation. DigiPen has campuses in Redmond, WA, Singapore, and Spain.</p> <p>Recipient of the Patrick R. Rutherford Endowed Professorship in Education, University of Louisiana at Lafayette, Through 2016.</p>

	<p>Serious Games Showcase and Challenge: Finalist for <i>Rigglefish</i>, a computer-based game for middle school science. The SGC&amp;C is held annually at the Interservice/Industry Training, Simulation, and Education (I/ITSEC) Conference, which is draws over 19,000 attendees from industry, the military, and government. December, 2010.</p>
Additional Skills	Software Development
Dissertation	<p>Title: Hypermedia-supported authentic learning environments (HALE): Examination of tools and features which can support student learning</p> <p>Description: This dissertation conducts research with an innovative hypermedia product for sixth graders in space science: Alien Rescue. Using a problem-based learning approach that is highly interactive, Alien Rescue engages students in scientific investigations aimed at finding solutions to complex and meaningful problems.</p> <p>Advisor: Min Liu, EdD, University Texas at Austin</p>
Other Professional Experience	Software Development
Service	Mentor Youth Robotics Team