

## **CHRISTINE LIEBE**

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### **Education**

***PhD Education: Curriculum, Instruction, Assessment / April 2019***

***Walden University***

*Dissertation title: An Examination of Abstraction in K-12 Computer Science Education*

*Committee: Narjis Hyder, Danielle Hedegard, Wade Smith (Chair)*

***MS Education: Literacy / August 2008***

***Walden University***

***BS Psychology & Urban Policy / June 1989***

***Michigan State University / James Madison College***

### **Management - Teaching – Research - Consulting Experience**

***Colorado School of Mines, Computer Science Department***

***Research Associate / Adjunct Professor / May 2019 to present***

Developed, drafted, and submitted Computer Science education research proposals and publications (total research efforts resulting in ~\$1.2 million). Initiated and managed K-12 outreach programs, teacher professional development, and undergraduate scholarship programs (resulting in engaging 328 teachers, 450 K-12 students, 134 undergraduates). Coordinate and teach introductory Python programming course (450 students, 5 instructors, 18 TAs). Developed and taught pilot of an online 8-week introductory Python programming course. Provided observational feedback and coaching for adjunct instructors. Provided internal and external evaluation services. Developed and taught CS education methods course for pre-service teachers. Developed and delivered adjunct instructor training. K-12 external evaluator.

***Colorado Department of Education***

***Computer Science Content Specialist / November 2017 – September 2018***

Implemented statewide policy 1) creating new Computer Science high school standards; 2) delivering K-12 Computer Science teacher professional development grant funds; 3) developing and publishing an online K-12 Computer Science learning resource website. Supported statewide K-12 Computer Science education implementation.

***Colorado Mountain College***

***Curriculum Coordinator / January 2010 – June 2013***

Programmed courses, led and facilitated meetings, trained staff and faculty, wrote grants, approved syllabi, supervised student registration and orientation. Served on curriculum committees.

### **Colorado Mountain College**

*Special Needs Learning Coordinator / July 2011 to June 2015*

Provided curriculum support for instructors teaching students with learning disabilities. Trained faculty, staff, and community members to begin offering accommodations (not modifications) for learning disabilities.

### **Lotus Education Institute**

*CEO – Founder / June 2013 to present*

Founded and designed a private occupational school offering a 500-hour Professional Massage Therapy Certification program (in person and hybrid using Canvas). Designed and maintain website and marketing efforts. Manage accounting, recruiting, enrollment, financial aid, and teacher training. Teaching massage therapy techniques, anatomy, physiology, pathology, business, and ethics. Licensed and bonded.

### **Publications / Presentations**

Camp, T., Liebe, C. & Thiry, H. (2021, July), *CS@Mines: PATH Ambassadors to High Success, A Successful S-STEM Scholarship Program* Paper presented at 2021 ASEE Virtual Annual Conference Content Access, Virtual Conference. 10.18260/1-2-36884

Camp, T., Liebe, C., and Thiry, H. (2021). CS@Mines Successful S-STEM Scholarship Ecosystem for Low-Income and Underrepresented Students. In Proceedings of the 52nd ACM Technical Symposium on Computer Science Education((SIGCSE '21), March 13–20, 2021, Virtual Event, USA. ACM, New York, NY, USA, 7 pages. <https://doi.org/10.1145/3408877.3432524>

Waite, J., Liebe, C. (2021). Computer Science Student-Centered Instructional Continuum. In Proceedings of the 52nd ACM Technical Symposium on Computer Science Education((SIGCSE '21), March 13–20, 2021, Virtual Event, USA. ACM, New York, NY, USA, ACM ISBN 978-1-4503-8062-1/21/03. DOI: <https://doi.org/10.1145/3408877.3439591>

Camp, T., Liebe, C., and Thiry, H., (2021). Colorado Strategic Approach to Rally Teachers. In Proceedings of the 52nd ACM Technical Symposium on Computer Science Education((SIGCSE '21), March 13–20, 2021, Virtual Event, USA. ACM, New York, NY, USA, ACM ISBN 978-1-4503-8062-1/21/03. DOI: <https://doi.org/10.1145/3408877.3439636>

Camp, T., Liebe, C., and Slattery, M. (2020). Applying NCWIT Protocol to Broaden Participation in Computing: A Case Study of CS@Mines. In *Proceedings of the 51st ACM Technical Symposium on Computer Science Education (SIGCSE '20)*. Association for Computing Machinery, New York, NY, USA, 528–534. DOI:<https://doi.org/10.1145/3328778.3366958>

Falkner, N., Vivian, R., Falkner, K., Ajanovski, V., Liebe, C., Morrison, A., & Parker, M. (2020). Meaningful Assessment at Scale: Helping Instructors to Assess Online Learning. In *Annual Conference on Innovation and Technology in Computer Science Education, ITiCSE* (pp. 512-513). online: ACM. <https://doi.org/10.1145/3341525.3394993>

Vivian, R., Quille, K., McGill, M., Falkner, K., Sentance, S., Barksdale, S., . . . Maiorana, F. (2020). An International Pilot Study of K-12 Teachers' Computer Science Self-Esteem. In *Annual Conference on Innovation and Technology in Computer Science Education, ITiCSE* (pp. 117-123). online: ACM. <https://doi.org/10.1145/3341525.3387418>

Liebe, C., Camp, T. (2019). An Examination of Abstraction in K-12 Computer Science Education. In 19th Koli Calling International Conference on Computing Education Research (Koli Calling

'19). Koli, Finland. ACM, New York, NY, USA, 9 pages <https://doi.org/10.1145/3364510.3364526>

Falkner, K., Sentence, S., Vivian, R., Barksdale, S., Busuttil, L., Cole, E., Liebe, C., Maiorana, F., McGill, M., Quille, K. (2019). An International Comparison of K-12 Computer Science Education Intended and Enacted Curricula. In Proceedings of Koli Calling '19: 19th Koli Calling International Conference on Computing Education Research (Koli Calling '19). ACM, New York, NY, USA, 10 pages <https://doi.org/10.1145/1122445.1122456>

Falkner, K., Sentence, S., Vivian, R., Barksdale, S., Busuttil, L., Cole, E., . . . Quille, K. (2019). An international benchmark study of K-12 computer science education in schools. In *Annual Conference on Innovation and Technology in Computer Science Education, ITiCSE* (pp. 257-258). online: ACM. <https://doi.org/10.1145/3304221.3325535>

Liebe, C. (2017). Comparison of Abstraction in Computer Coding and in Critical Thinking. In P. Resta & S. Smith (Eds.), Proceedings of Society for Information Technology & Teacher Education International Conference 2017 (pp. 1394-1402). Chesapeake, VA: Association for the Advancement of Computing in Education (AACE).

### ***Computer Science Teachers Association (CSTA) Conference***

*CS-SCIC: CS Student-Centered Instructional Continuum Workshop / July 2021*

*Instruction of Abstraction in K-12 Computer Science / July 2017*

### ***National Accuplacer Conference – The College Board***

*Critical Literacy Acquisition and Accuplacer Success / June 2011*

### ***Colorado Adult Educator and Professionals Association (CAEPA)***

*ESL Students and Learning Disabilities / October 2010*

### ***Colorado Teachers of English to Speakers of Other Languages (COTESOL)***

*Adult ELL's and Critical Literacy Acquisition / November 2011*

### ***International Asian TESOL Conference – Cebu, Philippines***

*Adult ELL's and Critical Literacy Acquisition / August 2011*

### **Pending Research Grants**

CS-GREAT: Computer Science Grade-level Researcher/Educator Assessments and Tests, NSF DRK-12 program, submitted October 2021. \$1,300,000. Co-PI and internal evaluator.

PATHS+: Path Ambassadors to High Success Plus Faculty Action Research, NSF, S-STEM program, submitted February 2022. \$1,500,000. Co-PI and internal evaluator.

## **Scholarly Activities**

### ***ITi CSE 2020 Working Group***

ITiCSE Conference, Virtual / July 2020

Invited to participate in a conference working group: An International Benchmark Study of K-12 Computer Science Education in Schools.

### ***ITi CSE 2019 Working Group***

ITiCSE Conference, Aberdeen, Scotland / July 11-17 2019

Invited to participate in a conference working group: An International Benchmark Study of K-12 Computer Science Education in Schools.

### ***CS- IMPACT Network***

National Researcher Network / March 2019 to present

Invited to participate in monthly virtual meeting with national CS education researchers, NSF-funded.

### ***National Science Foundation***

*Review Panelist / January 2019, March 2020*

Served as a reviewer with a national team and evaluated educational proposals.

### ***American Education Association***

Conference Proposal Reviewer / April 2019

### ***STARS Computing Corps.***

*Evaluation Assistant / August 2014 to August 2015*

Provided data collection and analysis for computer science recruiting and teaching.

### ***Professional Memberships***

Association of Computing Machinery: Special Interest Group for Computer Science Education

American Education Research Association

American Evaluator Association

Computer Science Teachers Association (Colorado chapter Vice President)

## **Awards and Acknowledgements**

### ***Don E. Ackerman Fellowship / Walden University***

The Don E. Ackerman Research Fellowship in Educational Leadership supports research that advances leadership in education through better understanding or practice.



***Summit Award 2011 / Colorado Mountain College***

Special recognition for contributions towards developmental education.

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**Academic Interests**

Computational thinking, K-12 Computer Science curriculum alignment

Abstraction and critical thinking in computer science education

Language acquisition and critical thinking

Comparison of learning language and learning computer science High school and college retention

**Life Experience**

Single mother of a 25-year-old daughter and a 21-year-old son

Immigrant in Switzerland for 6 years, speak conversational German

Raft guide in Vail, CO

Skied Mt. Blanc and many other backcountry peaks

Climb /lead 5.9 ish