Geoffrey A. Wright

Associate Professor

School of Technology

Ira A. Fulton College of Engineering

FULL PROFESSOR

DOCUMENTATION

August 2020

Date of 1st Appointment at Brigham Young University:

August 2008

CHECKLIST OF MATERIALS TO INCLUDE IN FILE
FOR PROFESSORIAL FACULTY

Please include the following material in the file in the order below as outlined in Appendix A of the University Rank and Status Policy. See section 7.2 (in the Rank & Status Policy document) regarding materials to include in the file. See section 7.4 regarding the size of the file.

1. Nomination Form
2. Curriculum Vitae
3. Rank and Status Documents
4. Reports from Review Committees, Department Chair, and Dean
   - 4.1. Dean's report. (7.10.3)
   - 4.2. College review committee's report. (7.10.2)
   - 4.3. Department chair's report. (7.9.11)
   - 4.4. Report of department vote. (7.9.10)
   - 4.5. Department review committee's report. (7.9.8)
5. Personal Statement
   - 5.1. Self-assessment of citizenship, teaching, and scholarship (also address any areas of concern raised in the last review) (3.2, 3.3, 3.4, 4.3)
   - 5.2. In the final continuing faculty status review, also include the letter from the initial continuing faculty status review (third year review letter and AVP letter in cases where a delay has been granted).
6. Citizenship (3.2)
   - 6.1. A description of committee assignments and other citizenship activities inside the university.
   - 6.2. A description of citizenship activities in the profession. (3.2.2.I)
   - 6.3. A description of other citizenship activities. (3.2.2)
   - 6.4. Review letters of citizenship activities. (3.2.3, 7.9.3)
7. Teaching (3.3)
   - 7.1. A list of courses taught by semester, with enrollment numbers (identify new courses developed). (3.3.2.A.1, 3.3.2.A.2)
   - 7.2. For faculty in departments with graduate programs, a list of graduate students supervised (indicate whether you were the committee chair or a committee member). (3.3.2.A.5)
   - 7.3. Narrative describing mentoring and experiential learning activities, including those that involve students in scholarly efforts. (3.3.2.A)
   - 7.4. A few illustrative copies of syllabi, handouts, assignments, examinations, etc.(3.3.2.G.1)
   - 7.5. A description of steps taken to evaluate and improve teaching. (3.3.2.D)
   - 7.6. A description of products of high quality teaching and mentoring. (3.3.2.F)
   - 7.7. Student evaluations and a typescript of student comments. (3.3.2.B, 7.9.4)
   - 7.8. At least two peer evaluations of teaching. (3.3.2.C, 7.9.5)
   - 7.9. A list of teaching awards. (3.3.2.E.1)

8. Scholarship (3.4)
   - 8.1. A list of all scholarly and creative works (indicate whether each work is peer-reviewed, and describe your contribution to jointly authored works). (3.4.4.1, 3.4.4.2)
   - 8.2. The three best examples of scholarship and a brief explanation why they were selected. (7.3)
   - 8.3. Grants for research or creative works. (3.4.4.2.F)
   - 8.4. A list of awards or recognition for scholarship. (3.4.4.2.I)
   - 8.5. At least three external review letters of scholarship. Include reviewer CVs and a brief discussion of how the reviewers were selected. (7.9.6)
   - 8.6. A copy of the waiver letter (7.9.2)

IMPORTANT: To export this document from Word to PDF format, select File->Save As and then set file format to PDF and select “Best for electronic distribution and accessibility” to ensure that the bookmarks for each section are present in the pdf file.

1 . Nomination Form

NOMINATION FOR CONTINUING FACULTY STATUS AND
ADVANCEMENT IN RANK

Name: Geoffrey A. Wright BYU ID: 19-367-7836	Year Appointed: 2008
Current Rank: Associate Professor	Year Received: 2014
Department: School of Technology	College: Fulton College of Engineering
Highest Degree: Ph.D. Year: 2008	Institution: BYU

X	For advancement to the rank of : Professor
	Initial Review for Candidacy for Continuing Faculty Status
	Final Review for Continuing Faculty Status

PLEASE REFER TO THE UNIVERSITY RANK AND STATUS POLICY (14 January 2008) FOR A LIST OF ITEMS TO BE INCLUDED IN THIS FILE:
Professorial Faculty -See APPENDIX A Professional Faculty - See APPENDIX B

RECOMMENDATION OF UNIVERSITY COUNCIL ON RANK AND STATUS:

- ☐ Advancement in rank
- ☐ Continuing Faculty Status
- ☐ Candidacy for CFS
- ☐ Other:
- ☐ Deny advancement in rank Grant
- ☐ Deny Continuing Faculty Status Grant
- ☐ Deny Candidacy for CFS

Signature: _____ Date: _____

ADMINISTRATION RECOMMENDATION:

- ☐ Advancement in rank
- ☐ Grant Continuing Faculty Status Grant Candidacy for CFS
- ☐ Other:
- ☐
- ☐ Deny advancement in rank
- ☐ Deny Continuing Faculty Status

Signature: _____ Date: _____

[Note: Upon completion of the review process, the Office of the Associate Academic VP-Faculty will make copies and return them to the colleges for distribution as follows: Dean's Office-blue; Department Chair-green; Faculty Member-canary.]

[Rev. July 2008]

2. Curriculum Vitae

Geoffrey Wright
Brigham Young University
Associate Professor
ENG: Technology
(801) 422-7804
geoffwright@byu.edu

Professional Positions

Associate Professor of Technology Engineering and Studies, Brigham Young University. (2014 - Present).

Adjunct Professor of Education and Innovation, Cambridge University, Cambridge, UK (Sp/Su, 2016).

Assistant Professor of Technology Engineering and Education, Brigham Young University. (2007 - 2014).

Religious Education Instructor, Brigham Young University. (2005 - 2008).

Instructional Psychology and Technology Instructor, Brigham Young University. (2005 - 2007).

Assistant Principal – Intern, Alpine School District: Orem High School, Mountain Ridge Junior High, and Foothill Elementary. (2006 – 2008).

Career and Technical Teacher, Mountain Ridge Junior High. (2004 – 2008).

Information Communication Technology Teacher, Ramona Junior High. (2001 – 2004).

Computer Science Teacher, Chino High School. (2002 – 2004).

Education

Doctor, Brigham Young University, 2008.
Major: Instructional Psychology and Technology

Master, Chapman University, 2003.
Major: Educational Leadership and Administration

Bachelor, Brigham Young University, 2001.
Major: Technology Teacher Education

Professional Memberships

International Technology and Engineering Education Association (ITEEA), 2008 – Present

Council on Technology and Engineering Teacher Education (CTETE), 2019 – Present

Society for Information Technology and Teacher Education (SITE), 2008 – Present

Educational Media (edMedia), 2008 – Present

E-Learn, 2008 – Present

Pupils Attitude Towards Technology (PATT), 2008 - Present

American Society for Engineering Education (ASEE), 2008 – Present

Utah Association for Career and Technical Education (UACTE), 2008 - Present

Awards and Honors

Distinguished Technology and Engineering Educator (DTE), ITEEA, 2020.

National Technology and Engineering Collegiate Outstanding Advisor Award, ITEEA. (2020).

Distinguished Service Award, Nebo School District. (2019).

Dr. Gerald Day Authorship Award - Top Journal Article, ITEEA. (2018 - 2019).

Ira A. Fulton Faculty– Outstanding Faculty Teaching Award, BYU. (2017).

ITEEA New Faculty of Year, International Technology and Engineering Education Association. (2014 - 2015).

Consulting

Project Work Groups (PWG), Salt Lake City, Utah. (2020 – Present).

Skweez (M6), Salt Lake CIty, Utah. (April 2009 - Present).

LeahNaomi, Provo, Utah. (January 2008 - Present).

Innovators Time, Mexico. (2016 – Present).

MACILE, Santa Domingo, DR. (2012 – 2016).

Utah Youth Village, SLC, Utah. (2012 – 2014).

USBE Department of IT, Salt Lake City. (January 2008 - December 2008).

USBE Special Education, Granite State Office, SLC UT. (January 2008 - December 2008).

Publications

Note: only publications since last appointment are added to this listing.

Articles in Refereed Journals

1. Wright, G. A., Olsen, G., West, J. H., Crookston, B. T., & Walsh, T. (2020). Building Electric Bikes to Promote Student Interest in Public Health and Engineering. In Technology Engineering Teacher (8th ed., p. 7). Reston, Virginia, USA: ITEEA.
2. Wright, G. A., & Walsh, T. (2020). Increasing Female Enrollment in Technology and Engineering Classes: An All-Female Class. In Technology and Engineering Teacher (7th ed., pp. 13–17). Reston, VA, USA: ITEEA.
3. Buxton, A., Jensen, J. L., Wright, G. A., Bybee, S. M., Phillips, A., Phillips, T., & Steadman, M. (2020). Spiders or Butterflies? Despite Student Preference, Gender-Biased Lesson Models. Do Not Impact Interest, Attitude, and Learning in Biology. Advances in Social Sciences Research Journal, 7(4), 15. https://doi.org/https://doi.org/10.14738/assrj.74.8074.
4. Wright, G. A., & Weidman, J. E. (2019). Promoting Construction Education in K-12 by Using an Experiential, Student-centered, STEM-infused Construction Unit. Technology and Engineering Teacher, 79(1).
5. Wright, G. A. (2019). Investigating if Multidisciplinary or Homogenous Teams Are More Innovative in a Higher Education Setting. Business Review, 25(1), 93–99.
6. Hall, P. C., Hoj, T., Julian, C., Wright, G. A., Chaney, R. A., Crookston, B. T., & West, J. H. (2019). Pedal-assist mountain bikes: A pilot study comparison of the exercise response, perceptions, and beliefs of experienced mountain bikers. JMIR Formative Research, 3(3). https://doi.org/10.2196/13643.
7. Wright, G. A. (2019). Teaching Entrepreneurship and Innovation to University Students. In Smart Innovation, Systems and Technologies (1st ed.). https://doi.org/https://doi.org/10.1007/978-981-13-8260-4_35.
8. Rytting, M., Wright, G. A., Shumway, S. L., & Jensen, J. L. (2019). Comparison of Simulation and Hands-on Labs in Helping High School Students Learn Physics Concepts. International Journal of Education, 11(1).
9. Wright, G. A. (2018). Abridged International Perspectives of Technology Education and Its Connection to STEM Education. International Journal of Education, 10(4). https://doi.org/https://doi.org/10.5296/ije.v10i4.13704.
10. Wright, G. A., & Weidman, J. E. STEM and Construction: Using 3D Game and Modeling Software to Promote Student Interest in Construction. Technology and Engineering Teacher. (AR: 51%; H5 Index: 11; H5 Median: 22).

The TET has a monthly circulation distribution of over 3000. It is known in the Technology and Engineering education discipline as the field's "flagship" journal (see: iteea.org/publications.aspx).

11. Wright, G. A., & Welling, J. (2018). Teaching Engineering Design Through Paper Rockets. Technology and Engineering Teacher, 77(8).
12. Wright, G. A., & Shumway, S. L. (2018). Engineering attitudes: an investigation of the effect of literature on student attitudes toward engineering. International Journal of Technology and Design Education, 1–13. https://doi.org/DOI 10.1007/s10798-017-9417-0.
13. Wright, G. A., & Jones, M. (2018). Innovation in the Elementary Classroom. Technology and Engineering Teacher, February (1), 8–13.
14. Jacob, W., Wright, G. A., West, R. E., & Skaggs, P. T. (2017). The Need, Development, and Validation of the Innovation Test Instrument. Journal of Technology Education, 29(1), 112–135.
15. Wright, G. A. (2017). An Analysis of Best Practices of Cooperative Education in the U.S. With The Purpose of Addressing Various Armenian Engineering Education Problems. Business Review, 5(2), 11–18.
16. Skaggs, P. T., & Wright, G. A. (2015). Understanding Innovation How does innovation feel. In E. Madarieta (Ed.), The International Journal of Design Management and Professional Practice (2nd ed., pp. 1–10).
17. Wright, G. A. (2015). Assessing Innovation. Business Review, Cambridge, 23(1), 8.
18. Wright, G. A., & White, M. (2015). Using ROV (Remotely Operated Vehicles) to Promote STEM in K-12 Classrooms. In Tech Directions (1st ed., Vol. March, p. 16). Ann Arbor, MI, USA: Prakken Publications.
19. Hurd, R. C., Wright, G. A., Hacking, K., Truscott, T., & Damarjian, J. L. (2015). Underwater Robotics Surface In Utah. Technology and Engineering Teacher, 74(5), 9.

Refereed Conference Proceedings (with Archival Publications)

Includes peer-reviewed papers appearing in conference proceedings where the full papers were reviewed rather than an abstract or extended abstract. Conference acceptance rates (AR) for appropriate conference year are included when available.

1. Wright, G. A., & Jones, M. (2019). The Ecology and Complementary Aspects of Engineering Design and Innovation. In International Technology, Education and Development Conference. Valencia, Spain: ISI.
2. Wright, G. A., & Jones, M. (2018). Instructional Frameworks Improve Creativity In Education. In E-Learn: World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education (2018). Chesapeake, VA, USA: AACE.
3. Wright, G. A., & Weidman, J. E. (2018). Promoting Construction Education in K12 by Using a Experiential Student-Centered STEM Infused Construction Unit. In American Society for Engineering Education. 1818 N Street N.W. Suite 600, Washington DC 20036, USA: ASEE.
4. Wright, G. A., & West, J. H. (2018). Increase Student STEM Self-Efficacy Through an Experiential Learning Public Health Engineering Pedelec Design Activity. In EdMedia + Innovate Learning 2018 (1). Waynesville, NC 28786, USA: AACE.
5. Wright, G. A., & Jones, M. (2016). Why, Why, and How of Teaching Innovation to Middle School Students. In ELearn (1). Waynesville, NC, USA: Association for the Advancement of Computing in Education (AACE).
6. Wright, G. & Wiedman, J. (2016). Bringing Back Construction Education to the Classroom by Digitizing It. In G. Chamblee & L. Langub (Eds.), Proceedings of Society for Information Technology & Teacher Education International Conference (pp. 1534-1537). Savannah, GA, United States: Association for the Advancement of Computing in Education (AACE). Retrieved September 8, 2020 from https://www.learntechlib.org/primary/p/171896/.
7. Wright, G. A., & Bates, D. (2015). Underwater Robotics Experience Changes Student Interest in sTEm. In E-Learn: World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education (2015, 1067–1073). Retrieved from www.editlib.org/p/152128/

8. Wright, G. A., & White, M. (2015). A Hands-on, Collaborative, Guided Inquiry sTEm Curriculum Increases Elementary Student Understanding and Interest in Science, Technology, Engineering, and Mathematics. In E-Learn: World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education 2015 (2015, 1283–1293). Retrieved from www.editlib.org/p/152166/
9. Wright, G. A., Shumway, S. L., Vargas, C., & Terry, R. E. (2015). Development of an engineering and technology curriculum for Dominican Republic 6-12th graders. In Proceedings of the Latin American and Caribbean Consortium of Engineering Institutions. Retrieved from http://www.laccei.org/
10. Wright, G. A., Shumway, S. L., Vargas, C., & Terry, R. E. (2015). Scaffolding to improve understanding of engineering and technology in the Dominican Republic. In Proceedings of the Latin American and Caribbean Consortium of Engineering Institutions. Retrieved from http://www.laccei.org/
11. Wright, G. A., Truscott, T., Hurd, R., & Hacking, K. (2015). A Remotely Operated Vehicle Scaffolded Activity is Increasing Student and Teacher Interest in STEM – A Reporting on a Three-year Study Funded by the Office of Naval Research. In 2015 ASEE Annual Conference and Exposition (Summer). Seattle, Washington: American Society for Engineering Education (ASEE).
12. Wright, G. A., & Shumway, S. L. (2015, July). The Development, Implementation, and Evaluation of Teaching Engineering Curriculum to Dominican Republic Junior High and High School Students. Summer. Seattle, Washington: American Society for Engineering Education (ASEE).
13. Wright, G. A. (2015). Promoting sTEm in Grades 2 – 8 by Engaging Students in Hands-on Engineering and Technology Activities that Leverage Fundament Science and Mathematics Concepts. In Society for Information Technology and Teacher Education. Reston, Virginia, USA: AACE -- Association for the Advancement of Computing in Education.
14. Wright, G. A. (2014). A Blended STEM Curriculum: Using ROVs, Programming, and Robotics to Teach K-8 Students Core Concepts of Science, Technology, Engineering and Math. In E-Learn World Conference (2014, 2098–2108). Retrieved from www.editlib.org/p/148765/
15. Wright, G. A. (2014). Improve Mathematics and Engineering Interest Through Programming. In International Conference on Education and Educational Engineering (2014). Paris, France, France: World Academy of Science, Engineering and Technology.
16. Wright, G. A. (2014). Promoting the Engineering Design Process by Teaching Students How to be Innovative. In International Conference on Education and Educational Engineering (2014). Paris, France, France: World Academy of Science, Engineering and Technology.
17. Wright, G. A. (2014). Remotely Operated Vehicles: Underwater Technology in Classrooms. In Society for Information Technology and Teacher Education (2014, 1957–1960). Retrieved from www.editlib.org/p/131072/

Books Authored

1. Wright, G. A., & Carlson, W. (2018). Rainy Day Engineering (1st ed., p. 107). Provo, UT, USA: BYU.

Invited Non Refereed Presentations

1. Wright, G. A., & Jones, M. (2019). International Perspectives on Teaching Innovation. In ITEEA 2019 Conference Proceedings. Reston, Virginia, USA: International Technology and Engineering Education Association.
2. Wright, G. A. (2019). Why Tech Ed? In STEC (2019, 4). Urbana-Champaign, Illinois, USA: MVTTEC.
3. Wright, G. A. (Presenter & Author), Bartholomew, S. (Presenter & Author), ITEEA Annual Conference, "Research in TES," ITEEA, Baltimore, MD. (March 2020).
4. Hall, P. C. (Presenter & Author), Hoj, T. (Author Only), Julian, C. (Author Only), Wright, G. A. (Author Only), Chaney, R. A. (Author Only), Crookston, B. T. (Author Only), West, J. H. (Author Only), International Conference of Public Health and Preventative Medicine, "Pedal-assist mountain bikes: A pilot study

comparison of the exercise response, perceptions, and beliefs of experienced mountain bikers," SCIRP, Bangkok, Thailand. (December 2019).

5. Wright, G. A., STEC, "Why Tech Ed?," MVTTEC, Nashville, TN. (October 2019).
6. Wright, G. A., Discovery Learning, "Rockets and Maglevs in K12 Classrooms," Discovery Gateway Children's Museum, Salt Lake City, Utah. (July 2019).
7. Wright, G. A., STEM Education, "Enhancing STEM with ROVs," Utah State STEM Office, Layton, Utah. (July 2019).
8. Wright, G. A., Smart Education and e-Learning, "Innovation in Higher Education," KES International, Malta. (June 2019).
9. Wright, G. A., ROVs for Chinese STEM Program, "Fundamentals of ROVs," IPERC: International Partnership of Education Research, Utah. (May 2019).
10. Wright, G. A., International Technology and Engineering Education Annual Conference, "International Perspectives on Teaching Innovation," ITEEA, Kansas City, MO. (April 2019).
11. Wright, G. A., Altran Innovation and Entrepreneurship, "Teaching Innovation using the USERS Model," Paris Chamber of Commerce, Paris, France. (July 2018).
12. Wright, G. A., STEM Outreach, "The How, What, and Why of STEM Outreach in K12 Settings," OSU, OSU, Corvallis, Oregon. (November 2017).
13. Wright, G. A., STEM Teacher Training, "Designing and Building ROV," OSU and OSOE, Oregon. (November 2017).
14. Wright, G. A., Ogden STEM Teacher Training, "STEM EIE," OSD, Ogden, Utah. (October 2017).
15. Wright, G. A., Jones, M. (Presenter & Author), Women and Entrepreneurship, "Innovative Thinking," Chamber of Commerce - cities of Utah County, Provo, Utah. (September 2017).
16. Wright, G. A., Social Innovation in Africa, "Using Divergent Thinking for Social Innovation," ANZA, Tanzania. (August 2017).
17. Wright, G. A., Pupils Attitudes Towards Technology (PATT), "Teaching Algebra Through Functional Programming," ITEEA, Philadelphia. (June 2017).
18. Wright, G. A., Edge Conference, "The What Why and How of Building a STEM Relationship," Utah State Office of Education, Provo, Utah. (November 2016).
19. Wright, G. A., University of Cambridge Colloquium, "ITI: Innovation Test Instrument," University of Cambridge, Cambridge, England. (May 2016).
20. Wright, G. A., University of Cambridge Colloquium, "Models of Innovation," University of Cambridge, Cambridge, England. (May 2016).
21. Wright, G. A., Business and Entrepreneurship Colloquium, "How to Effectively Teach Innovation," OSU, Corvallis, Oregon. (November 2015).
22. Wright, G. A., Parent Workshop, "Internet Safety," USBE - NEBO SD, Springville, Utah. (November 2015).
23. Wright, G. A., Utah Valley Chamber of Commerce, "Promoting STEM Education," UVCC, Provo, Utah. (September 2015).
24. Wright, G. A., MSE Seminar, "Innovation 101," BYU, MSE. (February 2015).
25. Wright, G. A., UACTE, "Innovation in High School and Junior High CTE Classrooms," Utah State Office of Education, Salt Lake City. (February 2015).
26. Wright, G. A., UACTE, "Using ROV to Promote Technology and Engineering," Utah State Office of Education, Salt Lake City. (February 2015).

27. Wright, G. A., Entrepreneurship Colloquium, "How to Think and Work Innovatively," Oregon State University, Corvallis, Oregon. (November 2014).
28. Wright, G. A., How to Protect Yourself and Your Children Online, "Internet Safety," PTA, Nebo School District, Mapleton, Utah. (January 2014).

Contract, Fellowships, Grants and Sponsored Research

Jensen, J., Wright, G., West, R., Sansom, R., Turley, J. NSF Research Grant: 15-585. Improving Undergraduate STEM Education: Education and Human Resources (IUSE: EHR): $300,000. (2017 – 2020).

Giboney, J., Wright, G. NSA GenCyber Grant: $94,724 (2020 – Present).

Wright, G. Utah Underwater Robotics – sponsorship grant from US Synthetic: $112,000 (2013 – Present).

Wright, G. STEM Action Center Competition Grant – STEM Action Center of Utah: $4000 (2020, 2019, 2018, 2017).

Wright, G. K12 Student Innovator of the Year – sponsorship grant from Action Target: $2000 (2016, 2017).

Wright, G. Silverstone Systems – sponsorship grant for TEECA: $2000 (2015, 2016).

Wright, G. DR Horton Home Builders – sponsorship grant for TEECA: $2000 (2015, 2016).

Wright, G. Grandeur Peak Grant: $9000 (2016).

Skaggs, P. T. (Co-Principal), Wright, G. A. (Co-Principal), University, $20,000.00. (August 2013 - July 2014).

Wright, G. A., "Complementary Cognition: Improving mathematical self-efficacy through programming," $20,000.00. (2009).

MRG, BYU. $20,000 (2018 - 2020). Building Electric Bikes to Promote Student Internet in Engineering and Public Health.

Wright, G., Shumway, S., Truscott, T. MEG (co-pi), BYU. $20,000 (2010 - 2012). Using ROVs in Landlocked States to Promote K12 STEM Interest, Self-Efficacy, and Enrollment

Terry, R., Wright, G., Shumway, S. MEG (co-pi), BYU. $20,000 (2010 - 2012). The Development, Implementation, and Evaluation of Teaching Engineering Curriculum to Dominican Republic Junior High and High School Students.

Wright, G., Rich, P. MSE Grant (co-pi), MSE, BYU. $20,000 (2010 - 2012). Improving Mathematical Self-Efficacy in K12 Students Through Programming.

NCETE NSF Grant: $10,000,000. (2004 - 2009). NSF Award 0426421 for National Center for Engineering and Technology Education (BYU portion: $150,000). I worked as a consultant on this grant.

Wright, G., Rich, P. (co-pi) MEG, BYU. $20,000 (2008 - 2010). Computational Thinking in Education.

ORCA, Student Research Grants, Brigham Young University. (2006, 2008, 2010, 2012).

Total: ~ $721,000

Exhibits and Performances

Wright, G. A., Reynolds, D., West, R. E., Rich, P. J., "Measuring and Building Creativity and Innovation In Students," Everything is Creative: LDS RADIO LDS Motion Studio, Salt Lake City and Provo, Utah. (August 2009 - 2009).

Wright, G. A., Boyer, J., "Museum of People and Culture: Instructional Design, Game Design and Programming, and Web Design and Programming," BYU Museum of People and Culture Provo, Utah. (July 2009 - 2009).

Wright, G. A., Fullmer, T., Asplund, R., "Photography Essay," Microsoft International Imagine Cup, Cairo, Egypt. (July 2009 - 2009).

Wright, G. A., "Technology in the Classroom," Blogger http://techintheclass.blogspot.com. (2007).

Wright, G. A., "Wooden Tops for Service and Rehabilitation," Cover photo for practitioner journal (The Technology and Engineering Teacher).

Teaching Experience

TES 125, Communication Technologies and Systems, 3 credit hours.

TES 276A, Exploration of Teaching A. 3.5 credit hours..

TES 276B, Exploration of Teaching B. 0.5 credit hours.

TES 490R, Independent Research & Dev. 3 credit hours.

TES 229, Metals and Polymers. 3 credit hours (co-taught).

TES 476, Student Teaching. 12 credit hours (co-taught).

TECH 112, Innovation. 1 credit hours.

TECH 699R, Master's Thesis. 2 enrolled.

TES 291R, Undergraduate Seminar. 0.5 credit hours.

TEE 675, Grant Writing & Publishing. 3 credit hours.

TES 251, Video Prod Nonlinear Editing. 3 credit hours.

TES 255, Visual Communication Design. 3 credit hours.

ENT 312, Innovation Bootcamp. 1 credit hours.

IAS 201R, Cultural Survey. 0.5 credit hours.

TES 360, Standards for Tech Literacy. 3 credit hours.

BUS M 312, Innovation Bootcamp. 1 credit hours.

TEE 675, Curric Dev in Technology Educ. 3 credit hours.

TEE 350, Multimedia Authoring & Publish. 3 credit hours.

IT 492R, Special Problems. 1 credit hours.

REL C 324, The Doctrine & Covenants. 2.0 credit hours.

REL C 324, The Doctrine & Covenants. 2.0 credit hours.

IP&T 287, Inst Tech for EAC,ElEd, & SpEd. 2.0 credit hours.

Directed Student Learning

Master's Thesis. (April 2018 - Present).
Chair: Gregg Olson

Master's Thesis. (April 2015 - 2018).
Chair: Jonathan Whelling

Master's Thesis. (December 2012 - 2014).
Chair: Jordan Vance

Master's Thesis. (August 2011 - 2013).
Advised: Jared Merrill

Master's Thesis. (April 2010 - 2012).
Advised: Jason Boyer

Master's Thesis. (April 2014 - August 2017).
Advised: Matthew Rytting

Master's Thesis. (April 2014 - April 2017).
Chair: Blake Hoover

Student Teaching. (January 2013 - April 2013).
Advised: Benson Kyle

Student Teaching. (January 2013 - April 2013).
Advised: Kylie Cox

Student Teaching. (January 2013 - April 2013).
Advised: Tara Barton

Student Teaching. (January 2013 - April 2013).
Advised: Wilson Cameron

Master's Thesis. (April 2010 - April 2013).
Advised: Robert Lee

Mentored Research, "Cyberbullying." (October 2012 - February 2013).
Advised: Jackson Andrew

Student Teaching. (September 2012 - December 2012).
Advised: Corina Sorenson

Student Teaching. (September 2012 - December 2012).
Advised: Romney Olsen

Student Teaching. (September 2012 - December 2012).
Advised: Whitney Thomas

Master's Thesis. (April 2010 - December 2012).
Chair: Tyler Lewis

Master's Thesis. (January 2011 - March 2012).
Advised: Jacob Wheadon

Master's Thesis. (April 2010 - February 2012).
Advised: Heather ure

Master's Thesis. (2009 - 2011).
Advised: Neil Bly

Mentored Research. (February 2010 - October 2011).
Advised: Cameron Wilson

Master's Thesis. (April 2009 - October 2011).
Advised: Sona Tadevosyan

Master's Thesis. (April 2009 - August 2011).
Chair: Scott Bartholomew

Master's Thesis, "Female Technology Literacy and Interest Published: No." (2008 - 2010).
Advised: Kari Cook

Dissertation. (January 2007 - June 2010).
Advised: Isaku Tateishi

Internship, "Winter Hours: 36 Spring Hours: 0 Summer Hours: 0 Fall Hours: 0." (2009).
Advised: Chris Andrews

Internship, "Winter Hours: 0 Spring Hours: 0 Summer Hours: 0 Fall Hours: 32." (2009).
Advised: Tyler Lewis

Master's Thesis. (2009).
Advised: Tonya Tripp

Mentored Research. (2009).
Advised: Braden Boss

Mentored Research. (2009).
Advised: Scott Bartholomew

Mentored Research. (2009).
Advised: Seth Warburton

Clinical, Winter (2008).
Advised: Alan Buzbee

Citizenship

University/Department/Program

- TES (Technology and Engineering Studies) Program Chair (2019 – present)
- University Secondary Education Committee (2017 – present)
- University Educators Preparation Program Committee (2017 – present)
- University Initial Programs Council (2019 – present)
- SOT (School of Technology) Advisory Committee (2019 – present)
- TES Graduate Chair (2012 – present)
- SOT Innovation Committee (2010 – present)
- SOT Communications Committee (2016 – present)
- TEECA (Technology and Engineering Education Collegiate Association) club Faculty Advisor (2008 – present)
- UUR (Utah Underwater Robotics) club Faculty Advisor (2012 – present)

Professional Citizenship

- TEECA (Technology and Engineering Education Collegiate Association) National Advisor (2014 – 2016)
- ITEEA (International Technology and Engineering Education Association) Board Member (2015 – 2018)
- CTETE (Council on Technology & Engineering Teacher Education) Committee Member (2018 – present)
- MVTTE (Mississippi Valley Technology Teacher Education) Member (2017 – present)
- Journal reviewer for IJTDE (International Journal of Technology and Design) (2014 – present)
- Conference reviewer for ASEE K12 division (2012 – present)
- Conference reviewer for SITE (2008 – present)
- Conference reviewer for edMedia (2008 – present)
- Conference reviewer for eLearn (2010 – present)
- TEECA Communications Event Coordinator (2010 – 2014; 2019 – present)
- TEECA Tech Challenge Event Coordinator (2010 – 2015)
- TEECA Teaching Challenge Event Coordinator (2012, 2013)
- USBE (Utah State Office of Education) UACTE (Utah Association for Career and Technical Education) Multimedia Committee Member (2010 – present)

- USBE (Utah State Office of Education) UACTE (Utah Association for Career and Technical Education) Tech. Ed. Committee Member (2010 – present)

Related Citizenship

- Director of UUR (Utah Underwater Robotics) Program (2012 – Present)
- Director of K12 SIOY (2016 – 2020)
- Nebo Associates Program member (2018)
- Director of Nebo Technology and Engineering Outreach program (2014 – Present)
- Skweez Marketing board member (2012 – 2016)
- Leahnaomi.com UX and technology consultant (2010 – present)
- Utah Youth Village media production consultant (2012 – 2014)
- First Lego League judge (2012, 2014 – 2015, 2017)
- Director of Diverge Converge (2016 – present)
- Girl Scouts of America outreach member (2012)
- Head Varsity Volleyball Coach, Chino High School. (2001 – 2004).
- Varsity Track Coach, Chino High School. (2001 – 2004).
- JV Basketball Coach, Chino High School. (2002 – 2004).
- Bantam AAU Basketball Coach Mapleton Utah. (2010 – 2019)
- Soph. Football Coach Maple Mountain High School (2018 – present)

3. College and Department Rank & Status Expectation Documents

Guidelines for Continuing Status and Advancement in Rank

Ira A. Fulton College of Engineering and Technology Approved by Academic Vice President's Council 3 February 2016, Rev A 9/21/17

Faculty at Brigham Young University should be examples for students of individuals who love learning, contribute to the world's knowledge, serve in scholarly communities, and apply knowledge to help others. Our efforts extend beyond traditional academic boundaries as we create a community of "bilingual" scholars who are well founded in both the spiritual and the secular and as we strive to reach our prophetic destiny as "a leader among the great universities of the world" (President Spencer W. Kimball, 2nd Century Address). The college Rank and Status process is intended to encourage all faculty members in the college to be outstanding teachers, productive scholars, and dedicated citizens at the university and in their professional communities.

1. Intent of this Document

The purpose of this document is to provide guidelines that clarify the application of the university rank

[1] and status criteria to faculty in the college [RSP, 1.5] . The document presents a set of principles and

targets that can be used to complement more specific departmental requirements. While the balance of teaching, citizenship and scholarship will vary among faculty members, successful candidates will achieve acceptable performance in all areas and be strong in one or more areas.

2. Core Values

The Ira A. Fulton College of Engineering and Technology values the following characteristics of learning communities, which provide a foundation for the college guidelines for continuing status and rank advancement:

2.1.Excellence in teaching that engenders passion for learning, develops students as learners and confident problem solvers, and helps students to achieve desired learning outcomes. Such teachers will naturally incorporate and seek to develop 'best practices.'

2.2.Scholarship that focuses faculty and students on significant issues and makes important contributions in advancing the frontiers and applications of science, engineering and technology. Excellent scholarly work improves the world and enhances the reputation of the university, faculty and students.

2.3.Mentored learning environments, both in and out of the classroom, where students and faculty explore together and learn from and teach each other. Our understanding of individual worth and potential and our commitment to the development of each individual guide the mentoring process. Mentoring helps students achieve the strategic learning outcomes of 1) technical excellence, 2) leadership, 3) character/ethics, 4) global competence, and 5) innovation.

2.4.Efforts performed with the guidance and influence of the Spirit. Students will be strengthened spiritually as they seek the direction of the Spirit and learn in an environment bathed in the light of the restored Gospel.

[1] Citations in square brackets refer to the University Rank and Status Policy, 14 January 2008, and abbreviated as RSP. These citations do not attribute text from that document, but rather refer to the section of the University document that is clarified in this document.

3. Scholarship

3.1.Candidates should perform scholarly and creative work that is recognized by the scholarly community as advancing the candidate's discipline and that contributes to improving the quality of life for humankind [RSP 3.4.1]. This is most readily accomplished if the candidate has a well-defined area of scholarship.

3.2.Candidates should develop a sustainable scholarship effort that involves student mentoring [RSP 3.4.4.1.D]. Mentoring should help students achieve the strategic learning outcomes as appropriate to the discipline and research area.

3.3.Scholarship has impact through the dissemination of scholarly and creative products, recognition and citation of the work by other researchers, adoption of ideas in the work by the academic community or in industry, and by influencing or transforming the atmosphere of thought in the discipline. Evidence of impact should be provided by the candidate.

3.4.Scholarly work must be peer-reviewed according to disciplinary norms. Disciplinary norms are determined at the department or program level, and are convincingly documented in the department rank and status document. A substantial portion of the work should appear in selective venues known for their quality and widely recognized as the top venues in the field [RSP 3.4.4.1.E]. This might include publication in high-quality, peer-reviewed journals or equivalent venues; or recognition of creative works in reputable, juried venues. Disciplinary norms determine the quality and importance of specific venues. Large numbers of lesser- quality products do not compensate for the lack of high-quality products.

3.5.Strong research programs typically require consistent external funding. As required to maintain a high quality research program, candidates should pursue and obtain external funding [RSP 3.4.4.1.F]. External, peer-reviewed funding obtained from competitive sources provides strong evidence of the impact and quality of research ideas.

3.6.Scholarship and creative work should inform and enliven a faculty member's teaching [RSP 3.4.4.1.D].

Teaching

4.1.Teaching and mentoring are the primary means by which we help students to achieve the Aims of a BYU Education and are of paramount importance. All faculty members should be actively engaged in effective teaching and mentoring activities that stretches the mind and strengthens the spirit [RSP 3.3.1].

4.2.Candidates should actively work to improve their teaching and adopt best practices. Assessment instruments (e.g., student evaluations including comments) should be used regularly to improve teaching [RSP 3.3.2.D]. Faculty members should establish well-defined outcomes for their courses and contribute in a meaningful way to the development of strategic learning outcomes in their students [RSP 3.3.2.C.3].

4.3.Mentoring of undergraduate students is an important element of teaching in the college. Candidates are encouraged to build strong mentored learning environments that involve both undergraduate and graduate students (where applicable) [RSP 3.3.2.F].

4.4.In units with graduate programs, candidates should have a proven record of mentoring graduate students in accordance with the principles of a quality graduate education at BYU [RSP 3.3.2.F].

Citizenship

5.1.Citizenship at BYU should reflect an atmosphere consistent with principles of the gospel and include concern for the individual [RSP 3.2.2.A, 3.2.2.C].

5.2.All faculty members should participate in citizenship activities as part of the university community, as well as part of their professional community [RSP 3.2.2.I]. They should be willing to work for the common good of the students, program, university and profession. External citizenship includes activities such as academic visits, participation in technical meetings, journal editorships, committee service, local chapter involvement, and leadership at national and international levels.

Review Practices

6.1.It is the responsibility of the candidate to make the case that he/she is a qualified

teacher, scholar and citizen [RSP 1.2].

6.2.The quality of scholarly products is assessed by the quality and extent of the peer review process [RSP 3.4.4.1.E] and other evidences of impact. It is the responsibility of the candidate to communicate the quality of the peer review in the application packet. This may be done by describing unique aspects of the review process, for example, acceptance rates, citation counts, impact factors, adoption rates, and other measures of recognition by peers, applicable to their particular discipline.

6.3.The scholarship should include products for which the candidate is the principal author, generally indicated by being the first author or the discipline-specific most prestigious author position. In any case, the candidate should identify those products for which he or she is the principal non-student author. Candidates should explain their role in producing the three examples of scholarship included in the file.. Candidates with a limited number of scholarly products as principal author should discuss this in the narrative, and should consider including an annotated biography to briefly explain their contributions to each product.

6.4.All courses taught by a candidate should be evaluated by students and a complete set of teaching evaluations (with all comments) included in the application packet [RSP 3.3.2.B]. The candidate's teaching load and performance should be compared to department norms and expectations.

6.5.Peer review of teaching is the principal method for evaluation of course materials, content, pedagogy, and rigor [RSP 3.3.2.C]. Application packets must include at least two peer evaluations of teaching as required by the university [RSP 3.3.2.C]. Reviews should include both classroom visits and a rigorous content review by competent peers.

Candidates for Associate Professor/CFS

7.1.While it is not necessary for a candidate to excel in all areas to be successful, a candidate for CFS/Associate Professor should be at least acceptable in all three areas, and strong in either teaching or scholarship.

7.2.Candidates for Associate Professor should show evidence of an emerging external reputation in their field of expertise [RSP 3.4.1].

7.3.Candidates for CFS and advancement to the rank of Associate Professor should be producing on the order of two high-quality peer-reviewed products per year at the time of their review, and demonstrate that this level of scholarly productivity is sustainable [RSP 3.4.3]. This is a general guideline, and the acceptable number of products necessarily depends on faculty loading constraints and norms within the discipline.

7.4.Candidates for Associate Professor should provide evidence of the development, improvement and effectiveness of their teaching [RSP 3.3.2]. Such evidence may include documentation of efforts to learn and apply improved pedagogy, use of assessment to improve teaching, use of student or other evaluations as a measure of effectiveness, etc.

7.5.Citizenship responsibilities at the university for faculty seeking CFS and advancement in rank to Associate Professor are determined primarily by the department, and are typically focused on activities at the department level [RSP 3.2.2].

7.6.Candidates for Associate Professor are, in general, expected to participate actively in professional societies and provide external professional service to their discipline [RSP 3.2.2.I].

Candidates for Professor

8.1.In addition to the university requirement of at least five years in rank (Associate Professor), candidates for Professor should typically have at least 10 years total in a faculty position or other academic-style environment where open scholarship and publication are a primary responsibility [RSP 5.3.D]. The 10 years of faculty-equivalent service need not be at BYU.

8.2.Candidates for Professor should have an established record of high-quality scholarship and/or production of creative works that make a marked contribution to the discipline [RSP 5.3.C]. Publications and creative works should show evidence of rigorous peer review, as described in Section 3.4. Sustained research funding can be another evidence of scholarship, particularly when the funding is subject to peer or panel review.

8.3.Candidates for Professor should demonstrate sustained productivity in their scholarly/creative work [RSP 5.3.D, 3.4.3]. They should provide evidence of the impact of their scholarly/creative work [RSP 3.4.1].

8.4.Candidates for Professor should be recognized as experts in their area of focus [RSP 5.3.C]. International recognition is encouraged. Evidence of this recognition may include items such as comments in external letters, external committee work, citations of publications, service on conference committees, editorships, external funding, invited presentations, recognition by professional societies, and adoption of ideas from the scholarly contributions by other scholars or in industry practice.

8.5.Candidates for Professor should have and be able to document a sustained record of effective classroom teaching [RSP 5.3.B].

8.6.Candidates for Professor should actively work to update and improve the courses that

they teach [RSP 5.3.B]. They should support and contribute positively to program assessment and improvement. They should make consistent efforts to improve their teaching.

8.7.Candidates for Professor should be active and effective mentors of students and, as appropriate, other faculty [RSP 3.3.F]. They should have a record of sustained and successful mentoring of undergraduate, M.S., and/or Ph.D. students through to completion as appropriate, consistent with the expectations of the academic unit to which the candidate belongs.

8.8.Candidates for Professor are expected to demonstrate mature and effective citizenship in their unit, and preferably be involved in college- and/or university-level service, [RSP 5.3.A]. They should also demonstrate leadership in their professional communities [RSP 3.2.2.I]. This implies that the candidate has played an active role in citizenship activities that have made a positive impact.

8.9.Candidates for Professor should relate well with other faculty and should promote department collegiality [RSP 3.2.2.C]. Their sphere of interest and influence should extend well beyond their own individual academic interests.

Professional Faculty

9.1.Professional faculty have specialized responsibilities [RSP 6.1], which are specified in their offer letters and/or contracts. The documents that describe the specialized responsibilities provide the standards used in rank and status reviews for professional faculty.

College CS/AIR Document:
TES Disciplinary Norms September 2020

Guidelines for Continuing Status and Advancement in Rank: Technology and Engineering Studies (TES)

Faculty in the Technology and Engineering Studies Program, located in the School of Technology in the BYU College of Engineering accept the Ira A. Fulton College of Engineering "Guidelines for Continuing Status and Advancement in Rank" (February 2016) as their guiding document when applying for tenure and promotion. Given that the Technology and Engineering Studies program is a teacher preparation program located in the College of Engineering with teacher licensure coordinated through the McKay School of Education, the intent of this document is to provide school and college advancement committees with additional information regarding the disciplinary norms of the Technology and Engineering Education profession.

Technology and Engineering Studies
The primary purpose of the Technology and Engineering Studies (TES) program is to prepare men and women to be technologically literate and to teach technology and engineering. These men and women are expected to lead their profession, advance technological literacy, and carry forth the mission of BYU. TES faculty teach an integrated core of courses that provide students with a unified experience in pedagogical conceptual knowledge and technology content through model teaching. TES faculty work with the BYU McKay School of Education, the Utah State Board of Education and local school districts to provide coursework and practicum experiences needed for majors to obtain a secondary education teaching license. The priority of TES faculty is to inform high-quality teaching; as such, efforts of TES faculty in teaching, scholarship, and citizenship are guided by an intentional emphasis on impacting pedagogy of colleagues and teacher professionals.

Teaching
Given their unique responsibilities as teacher educators, TES is a 50/30/20 program (Teaching, Research, Citizenship). It is expected that TES Faculty will place a strong emphasis on their teaching responsibilities and that they will demonstrate teaching excellence in their classes - as measured by student ratings and peer feedback. Classes within the major are unique in that they are a mixture of technical content and pedagogy with a focus on preparing students to teach technical content. Instructors are usually present for both the instruction and lab experiences. Teaching load for TES faculty is typically 2:2:1. Additionally, it is the expectation that all TES faculty will be involved in some degree of student teaching supervision.

Scholarship
TES faculty are expected to establish and maintain a program of scholarship that informs and strengthens their teaching and that is related to the profession. The expectation for sixth-year review (CFS) faculty is that they will have established a research agenda and demonstrated scholarly excellence through the creation of peer-reviewed products consistent with the university and college AIR documents. Because of the potential impact on K-12 teachers and the education profession, peer-reviewed conference proceedings, publications in practitioner journals, and curriculum products adopted at the district, state and national level, are an appropriate venue for research. It is the responsibility of candidates applying for continuing status and advancement in rank to provide evidence of the consistency and impact of their scholarly products in the AIR document.

Disciplinary Norms for Scholarship in TES

Scholarship Level 1: Quality Peer-Reviewed Products

- Professional/Research journal publications that have either high impact factor (for the field/discipline), wide distribution, and or low acceptance rates (for the field).
- Creative works that receive juried/industry recognition at a national or international level.
- Curriculum products that are incorporated and have high impact at a regional or national level.

- Research or education-related books or chapters (Note: must show evidence of peer- review).
- Peer-reviewed first-tier conference proceedings (published conference proceedings). First-tier are defined as: discipline's leading conferences.
- Peer-reviewed grants received from national or international organizations

Scholarship Level 2: Quality Products

- Peer-reviewed second-tier conference proceedings (published conference proceedings).
- Research or education-related books or chapters in a book (without evidence of peer-review).
- Mentored student creative projects that received peer-reviewed/juried recognition.
- Invited national presentations or professional development.
- Curriculum products that are incorporated and have impact at a district or school level.
- Peer-reviewed scholarly articles in a practitioner journal.
- Competitively awarded research grant awards.

Scholarship Level 3: Other Products

- Conference presentations (without published proceedings).
- Invited regional presentations or professional development.
- Non peer-reviewed commissioned works.
- Non-competitively awarded funding.
- Initial patents or patent family awards.

Citizenship

TES Faculty should be involved in a variety of citizenship activities at the program, college and national level. Special emphasis should be placed on citizenship activities that are related to the education profession such as committee assignments and collaborative activities with local, state, and national education agencies.

4. Reports from Review Committees, Department Chair, and Dean

4.1 Dean's Report

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4.2 College review committee's report

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4.3 Department chair's report

This page will be replaced with the Department chair’s report by the college office

4.4 Report of department vote

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4.5 Department review committee's report

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5. Personal Statement

This document is a summary of my activities related to teaching, citizenship, and scholarship, and is intended to provide support for my application to become a Full Professor. I have worked as a professor at BYU for the past 12 years. During this time, I have learned much about teaching, citizenship, and scholarship. It has been a blessing to have worked and collaborated, and learned from so many wonderful peers and students. I know it is due in large part to their mentoring, examples, and help that I have grown as a professor, teacher, and disciple. I am so grateful for the opportunity to be employed by BYU. BYU has provided the fruitful ground that has enabled me to find peace, growth, and true joy in life. I pray that my efforts demonstrate my consecration and commitment to BYU's unique mission – which I love and admire. I am genuinely grateful for BYU.

5.1 Self-assessment of citizenship, teaching, and scholarship

I have thoroughly enjoyed my tenure here at BYU. Accordingly, I believe my efforts in citizenship, teaching, and scholarship meet the expectation to advance to Full Professor.

In addition to teaching additional classes I was able to maintain a high level of teaching (see student ratings), and a high level of scholarship. On my annual review report provided to me by the Director of the School of Technology I was consistently ranked at the "Excellent" level, surpassing the level stated in our Advancement and Rank Document. Despite these efforts, I know I have room to grow. I believe my passion for BYU, teaching, and our program and students will ensure I continue to grow and further my efforts in teaching, citizenship, and scholarship.

Below is a self-assessment of my citizenship, teaching, and research.

5.1.1 Citizenship:

My citizenship within and outside of BYU are summarized in Section 6 of this document. Some highlights since my last review (2014) include:

- Program Coordinator, TES Program (Winter 2020 - present)
- Chair, TES Graduate Committee, School of Technology (Winter 2013 – present)
- Member, Executive Leadership Committee, School of Technology, (Winter 2020 - present)
- Chair, Innovation Committee, School of Technology (Winter 2013 – present)
- Co-founder of UUR (Utah Underwater Robotics (2013 – present)
- Founder of K12 SIOY (2016 – 2019)
- Faculty Advisor to BYU TES Club (2008 – present)
- Journal and conference reviewer(ITDE (2016 -present); SITE (2013 – present); eLearn (2010 – present)
- ITEEA Board of Directors (2017 - 2019)
- TEECA National Club Advisor (2016 – 2018)
- TEECA National Event Author and Director (2010 – present)
- Significant outreach to middle and high schoolers related to sTEm education (2009 - present)
- University EPP (Educators Preparation Program) committee member (2019 – present)
- University Programs Council (IPC) member (2019 – present)
- University Programs Council – technology committee (IPC) member (2017 – 2020)

Overall, I believe that my citizenship activities have been strong and include significant leadership elements expected at the Full Professor level. On the scale recommended by the School of Technology and the Technology and Engineering Studies program, I rate my citizenship as Excellent.

5.1.2 Teaching:

My teaching and mentoring experiences are summarized in Section 7 of this document.

In TES we've been asked to teach a 2:2:1 course load. I have maintained this requirement, plus I accepted several other courses to teach because of program and school need. For example, I accepted the invitation to develop and teach the Innovation Bootcamp for the School of Technology, which gave me the opportunity to teach 3 sections of Innovation Bootcamp for the past 6 years. I have also been willing to organize and teach TES 291R (our program's seminar) since I was hired, in addition to other special topic courses that fall under TES 490R.

Although I taught several additional classes, and continued my citizenship and research efforts, my classes continued to perform well according to the student rating metrics (old system: instructor (average: 7.5 on 8 point scale) and course (average: 7.1 on 8 point scale), and on the new system (4.7 on 5 point scale). My overall instructor and course ratings on both the old and new systems place me above the average teaching and course scores of the School of Technology and Technology and Engineering Studies Program.

In addition to carrying the extra load, and maintaining a high level of quality teaching, I was fortunate to help develop the Innovation Bootcamp course (TECH113; formerly TECH 312). This course has been rated as one of the top 3 most popular classes at BYU by students for the past several years, and constantly has a wait list for every section.

Other highlights include receiving the DTE (Distinguished Technology Educator) award from our national organization (ITEEA), mentoring graduate students, mentored and supervised over 60 undergraduate students on various outreach projects (including underwater robotics, small house building, STEM training, mathematical self-efficacy through coding, pedelecs, among other projects) each of the past 6 years (total = 360), and developed and taught various engineering ed. lessons and units (average of 6 multi-day lessons per year = 36 total lessons) with students at various elementary and junior high schools).

An important final item to mention regarding teaching is the additional assignment of being a university student teaching supervisor. Since I was hired in 2008 I have been asked to supervise several student teachers each semester (average of 3 per year). Although this was assigned to another professor, he asked if I would be willing to help. This is not documented in the BYU system, as the responsibility/course load was listed under the other professor. Being a student teaching supervisor requires a lot of time for observing and evaluating and filling out requisite paper work. Although this did require some sacrifice, I was willing to help to ensure our (TES) student teachers were appropriately mentored and supervised.

Based on these results and in comparison to the standards outlined in our AIR document, and according to the scale recommended by the School of Technology and the Technology and Engineering Studies program, I rate my teaching as Excellent.

5.1.2 Research:

My scholarship and creative works are summarized in Section 8 of this document. Some highlights since my last review (2014) include:

. Authored 1 book, 18 journal articles (academic and trade), 17 conference proceedings (national and international), and 41 conference presentations and or invited talks (national and internationally).

. Google scholar metrics indicate 1,118 total citations, h-index = 13, and i10-index = 17 since 2015. However, it should be noted that one of the primary journals that I publish in (the Technology and Engineering Teacher, a primary journal in our field) is not indexed by google scholar. Therefore, the data from google isn't fully representative of my scholarship efforts.

. Co-PI for an NSF grants ($300,000) and PI or co-PI several national ($200,000) internal grants.

Based on these results and according to the scale recommended by the School of Technology, and the Technology and Engineering Studies program, I rate my research as Excellent.

5.2 Letter from the previous continuing faculty status review

Third year review letter and AVP letter in cases where a delay has been granted.

6. Citizenship

6.1 A description of committee assignments and other citizenship activities inside the university

The following section (6) outlines the activities that I have engaged in since the time of my last review (2014).

My citizenship activities at the university have increased over the years. Most recently as the Program Chair of TES (Technology and Engineering Studies) I have received several additional university assignments. The Chair position requires me to be on the University Secondary Education Committee – which covers the EPP (Educators Preparation Program) committee and assignments. I also serve on the University IPC (Initial Programs Council) which deals with education related matters of accreditation, state board office of education standards and policies and their rapport and impact on BYU pre-service teaching programs. Also, as TES Chair, I serve on the SOT Advisory committee, where we discuss SOT and program budgets, needs, expectations, trainings and so forth. At present, I still serve as the graduate coordinator for TES within the SOT (6 years), I also serve on the SOT Communication Committee, and finally I serve as the chair of the SOT Innovation Committee. Within my own program I have served as the Faculty Advisor of two clubs: the TEECA (Technology and Engineering Education Collegiate Association) club, and the UUR (Utah Underwater Robotics) club. Although both clubs are sponsored and run through BYU, they both have significant ties to state and national organizations.

Summary List of University Citizenship:

- TES (Technology and Engineering Studies) Program Chair (2019 – present)
- University Secondary Education Committee (2017 – present)
- University Educators Preparation Program Committee (2017 – present)
- University Initial Programs Council (2019 – present)
- SOT (School of Technology) Advisory Committee (2019 – present)
- TES Graduate Chair (2012 – present)
- SOT Innovation Committee (2010 – present)
- SOT Communications Committee (2016 – present)
- TEECA (Technology and Engineering Education Collegiate Association) club Faculty Advisor (2008 – present)
- UUR (Utah Underwater Robotics) club Faculty Advisor (2012 – present)

6.2 A description of citizenship activities in the profession

Our program (Technology and Engineering Studies) is an affiliated member of the national organization: ITEEA (International Technology and Engineering Education Association), which also includes a colligate division titled: TEECA.

We have our own TEECA chapter at BYU which I have served as the advisor for the past 12 years. During the past 12 years I have been an active member of ITEEA and TEECA on the national level. I have served as a national ITEEA board member (2015 – 2018) and as the National TEECA advisor. This was a wonderful opportunity for me to serve, learn, collaborate, and build rapport with professors and educational stakeholders connected to STEM education across the country and even internationally.

In addition, because TEECA is directly connected to students, I was able to mentor students from many other universities, even bringing many of them to BYU for summer workshops and leadership trainings. An additional division of ITEEA is CTETE (Council on Technology & Engineering Teacher Education). This division is mostly made up of professors in the field of TES. Currently I serve on committee within CTETE that is investigating the deployment of the new Standards of Technological Literacy.

As part of ITEEA I was also honored with the opportunity to be part of the 21st Century Leadership Team of ITEEA, where a small group of ITEEA members are invited to be part of a Leadership cohort to learn and develop skills and connections to help build the technology and engineering education field.

An additional entity connected to our Technology and Engineering Education field I serve with is the MVTTE group (Mississippi Valley Technology Teacher Education). This has been an honor to be associated with this group as it has led to many great connections, and contributions to our field and program at BYU.

On the national level, I have also served as a reviewer for several journals and conference publications connected to our field, namely: International Journal of Technology and Design, ASEE (K12 division), SITE (Society of Information Technology in Education), EdMedia, and eLearn, among others.

On a state level I have had the opportunity to serve the Utah State Office of Education by serving on various curriculum committees associated to Technology and Engineering Education, namely, the multimedia, cybersecurity, video production, and technology education committees. On these committees, we are tasked with writing and reviewing curriculum standards, tests, and reviewing accreditation issues. This has allowed me to work alongside many of the state's education leaders, which has been a great learning and service opportunity. It has also provided many opportunities to provide trainings for in-service teachers around the state, doing workshops at the state's spring and summer teacher trainings, and also going to individual school districts and schools to perform the trainings.

Summary List of Professional Citizenship:

- TEECA (Technology and Engineering Education Collegiate Association) National Advisor (2014 – 2016)
- ITEEA (International Technology and Engineering Education Association) Board Member (2015 – 2018)
- CTETE (Council on Technology & Engineering Teacher Education) Committee Member (2018 – present)
- MVTTE (Mississippi Valley Technology Teacher Education) Member (2017 – present)
- Journal reviewer for IJTDE (International Journal of Technology and Design) (2014 – present)
- Conference reviewer for ASEE K12 division (2012 – present)
- Conference reviewer for SITE (2008 – present)
- Conference reviewer for edMedia (2008 – present)
- Conference reviewer for eLearn (2010 – present)

- TEECA Communications Event Coordinator (2010 – 2014; 2019 – present)
- TEECA Tech Challenge Event Coordinator (2010 – 2015)
- TEECA Teaching Challenge Event Coordinator (2012, 2013)
- USBE (Utah State Office of Education) UACTE (Utah Association for Career and Technical Education) Multimedia Committee Member (2010 – present)
- USBE (Utah State Office of Education) UACTE (Utah Association for Career and Technical Education) Tech. Ed. Committee Member (2010 – present)

6.3 A description of other citizenship activities

In addition to my service at the university and in my professional field, I have had the opportunity to serve in various other ways which has enhanced my learning and growth as a professor and individual. I think the one I am most proud of us serving as the Director of UUR (Utah Underwater Robotics). I have served in this position for 9 years. UUR runs the largest underwater robotics competition for K12 students in the country, by supporting more than 1200 K12 participants each year. As a non-profit organization, we leverage our connection to BYU by involving over 300 BYU volunteers (mostly engineering students) who go out to individual schools to teach students and help teachers understand the engineering design process while building an underwater robot. UUR has been a hugely successful service in the state, receiving several state recognitions. What I am most proud of is how UUR has encouraged student interest in STEM on both the collegiate and K12 level. Similar to UUR I had the opportunity to serve as the Director of the K12 SIOY, which is a workshop series and inventing competition for K12 students. This popularity of this entity grew to an international level where several groups of K12 students from both Mexico, China, and Taiwan participated. In the same realm of K12 service I was able to be part of the Nebo School District Associates program, where I had the opportunity to work with teachers and administrators from the school district on teaching pedagogy. Likewise, I was able to run the Technology and Engineering Outreach program – which we started, to provide technology and engineering learning activities for K8 students, and also some teacher trainings and resources. Outside of the K12 arena I was able to serve as a board member of a startup company called Skweez, which was a mobile coupon company. I regularly serve as a UX and usability consultant for various companies, namely Leahnaomi, Utah Youth Village (for who we developed several online training and information videos), local judge for various Vex and Lego robotics competitions. Finally, we started a non-profit training entity that provides workshops and consulting on innovation. The non-profit is called: Diverge Converge. It has allowed us to travel and work with companies and individuals around the United States, in Mexico, Canada, Europe, and Africa.

Summary List of Professional Citizenship:

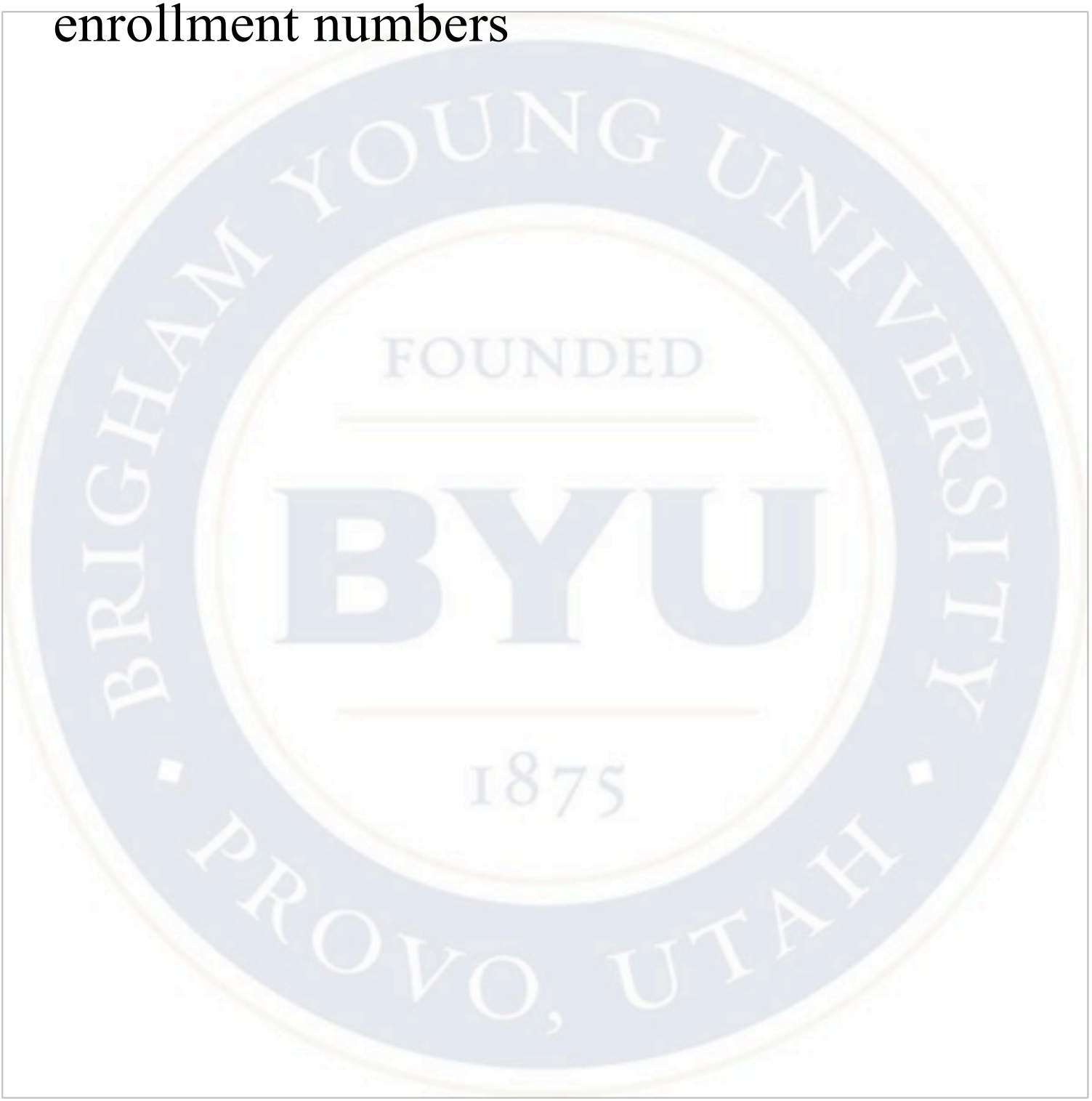
- Director of UUR (Utah Underwater Robotics) Program (2012 – Present)
- Director of K12 SIOY (2016 – 2020)
- Nebo Associates Program member (2018)
- Director of Nebo Technology and Engineering Outreach program (2014 – Present)
- Skweez Marketing board member (2012 – 2016)
- Leahnaomi.com UX and technology consultant (2010 – present)
- Utah Youth Village media production consultant (2012 – 2014)
- First Lego League judge (2012, 2014 – 2015, 2017)
- Director of Diverge Converge (2016 – present)
- Girl Scouts of America outreach member (2012)

6.4 Review letters of citizenship activities

7. Teaching

Of the many blessings BYU has provided me, I feel that BYU's support and mission of quality teaching and mentoring has been one of the primary reasons I have found success and peace here. I am so grateful for the amazing students who also believe and support this pragmatic and exciting method of learning: experiential learning and mentoring. I believe in collaborating with them and other professors I have grown, and been able to make several positive impacts on society and in people's lives. I hope to continue to grow and develop and make positive impact as I follow the spirt of mentoring and teaching. Below is my report of my teaching and mentoring since my last review.

7.1 A list of courses taught by semester with enrollment numbers



The following is the definition of the teaching expectation for TES faculty: "Given their unique responsibilities as teacher educators, TES is a 50/30/20 program (Teaching, Research, Citizenship). It is expected that TES Faculty will place a strong emphasis on their teaching responsibilities and that they will demonstrate teaching excellence in their classes. Classes within the major are unique in that they are a mixture of technical content and pedagogy with a focus on preparing students to teach technical content. Instructors are usually present for both the instruction and lab experiences. Teaching load for TES faculty is typically 2:2:1. Additionally, it is the expectation that all TES faculty will be involved in some degree of student teaching supervision (TES AIR Addendum, 2020). However, despite the 2:2:1 requirement, I have taught more classes because of program need. Although I taught several additional classes, my classes continued to perform well according to the student rating metrics (old system: instructor (average: 7.5 on 8 point scale) and course (average: 7.1 on 8 point scale), and on the new system (4.7 on 5 point scale). My overall instructor and course ratings on both the old and new systems place me above the average course and instructor scores within the School of Technology and Technology and Engineering Studies Program. Tables 7.1, 7.2, 7.3, and 7.4 summarize my teaching assignments since my last review. Since my last review I have been on the University's 5 point scale.

Sem.	Course/Sec.	Enroll	% Responded	Instructor/Course Rating	Department Rating
Sp 2020	TECH 699R	1	100	5	4.7
W 2020	IAS 201R (041)	8	25	5	4.8
W 2020	TECH 112 (MULT)	49	55	4.8	4.4
W 2020	TECH 699R (003)	2	100	5	4.5
W 2020	TES 251 (001)	15	53	4.8	4.4
W 2020	TES 255 (001)	22	32	4.7	4.4
W 2020	TES 291R (001)	69	32	4.8	4.4
W 2020	TES 399R (001)	4	25	5	4.3
W 2020	TES 490R (003)	7	14	5	4.3
Fall 2019	TECH 112 (MULT)	75	45	4.6	4.5
Fall 2019	TECH 699R (003)	2	50	5	4.6
Fall 2019	TES 125 (001)	25	52	4.7	4.5
Fall 2019	TES 276A (001)	29	21	4.9	4.5
Fall 2019	TES 276B (001)	27	41	4.7	4.5
Fall 2019	TES 291R (001)	67	33	4.8	4.5
Fall 2019	TES 490R (001)	5	40	5	4.4
Sp 2019	TEE 675 (001)	2	50	5	4.5
W 2019	TECH 112 (MULT)	77	62	4.4	4.4
W 2019	TES 251 (001)	12	25	4.7	4.4
W 2019	TES 255 (001)	26	46	4.7	4.4
W 2019	TES 291R (001)	54	35	4.5	4.4
Fall 2018	ENT 312 (MULT)	10	100	4.6	4.6
Fall 2018	TECH 112 (MULT)	74	61	4.6	4.4
Fall 2018	TES 125 (001)	25	48	4.6	4.4
Fall 2018	TES 276A (001)	22	14	4.8	4.4
Fall 2018	TES 276B (001)	20	45	4.7	4.4
Fall 2018	TES 291R (001)	49	47	4.5	4.4
Fall 2018	TES 490R (004)	2	50	5	4.4
Sp 2018	IAS 201R (005)	7	14	5	4.4
Sp 2018	TES 360 (001)	7	14	5	4.5
Sp 2018	TES 490R (005)	6	17	5	4.5

W 2018	IAS 201R (060)	1	100	5	4.6
W 2018	TECH 312 (MULT)	78	54	4.6	4.4
W 2018	TES 251 (001)	13	38	4.8	4.4
W 2018	TES 255 (001)	21	76	4.7	4.4
W 2018	TES 291R (001)	37	54	4.5	4.4
Fall 2017	TECH 312 (MULT)	73	10	4.6	4.4
Fall 2017	TECH 699R (003)	4	53	5	4.4
Fall 2017	TES 125 (001)	13	25	4.6	4.4
Fall 2017	TES 276A (001)	16	62	4.4	4.4
Fall 2017	TES 276B (001)	16	25	4.5	4.4
Fall 2017	TES 291R (001)	32	50	4.1	4.4
Su 2017	TEE 490R (002)	1	100	5	4.6
Sp 2017	TEE 675 (001)	1	100	5	4.6
W 2017	TECH 312 (MULT)	73	54	4.4	4.2
W 2017	TEE 251 (001)	13	65	4.5	4.2
W 2017	TEE 255 (001)	16	65	4.2	4.2
W 2017	TEE 291R (001)	29	48	4.3	4.2
Fall 2016	BUS M 312 (001)	10	61	4.5	4.3
Fall 2016	TECH 312 (MULT)	70	68	4.4	4.3
Fall 2016	TEE 125 (001)	18	79	4.3	4.3
Fall 2016	TEE 276A (001)	19	38	4.9	4.3
Fall 2016	TEE 276B (001)	18	63	4.6	4.3
Fall 2016	TEE 291R (001)	34	53	4.8	4.3
Fall 2016	TEE 490R (004)	1	100	5	4.3
W 2016	TECH 312 (MULT)	71	62	4.6	4.3
W 2016	TEE 251 (001)	20	54	4.8	4.3
W 2016	TEE 255 (001)	23	65	4.1	4.3
W 2016	TEE 291R (001)	31	69	4.7	4.3
Averages		26.31	54	4.71	4.41

Table 7.1 Courses taught by semester since prior review 2014 on BYU 5-point scale

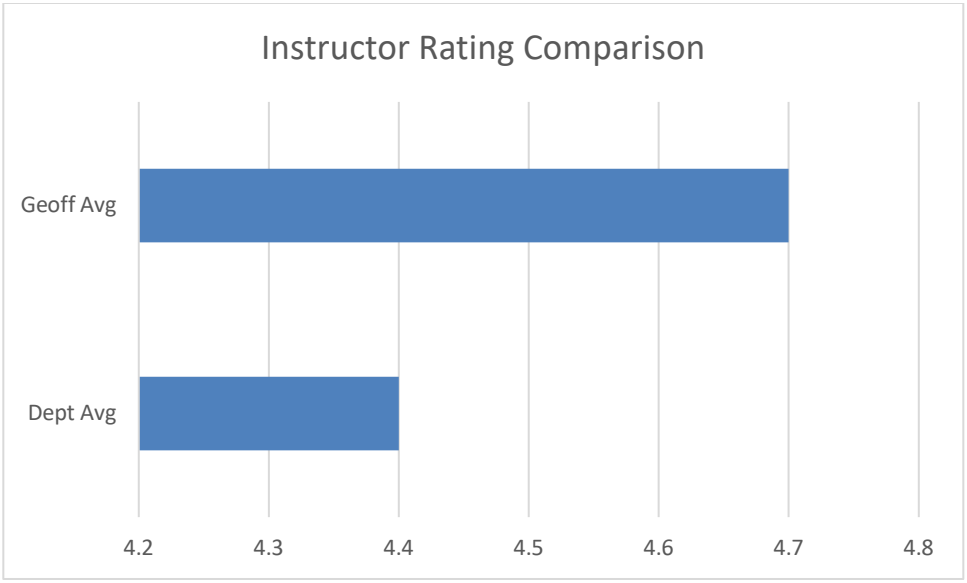


Table 7.2 Comparing Instructor Rating vs. SOT Rating 5-year Trend

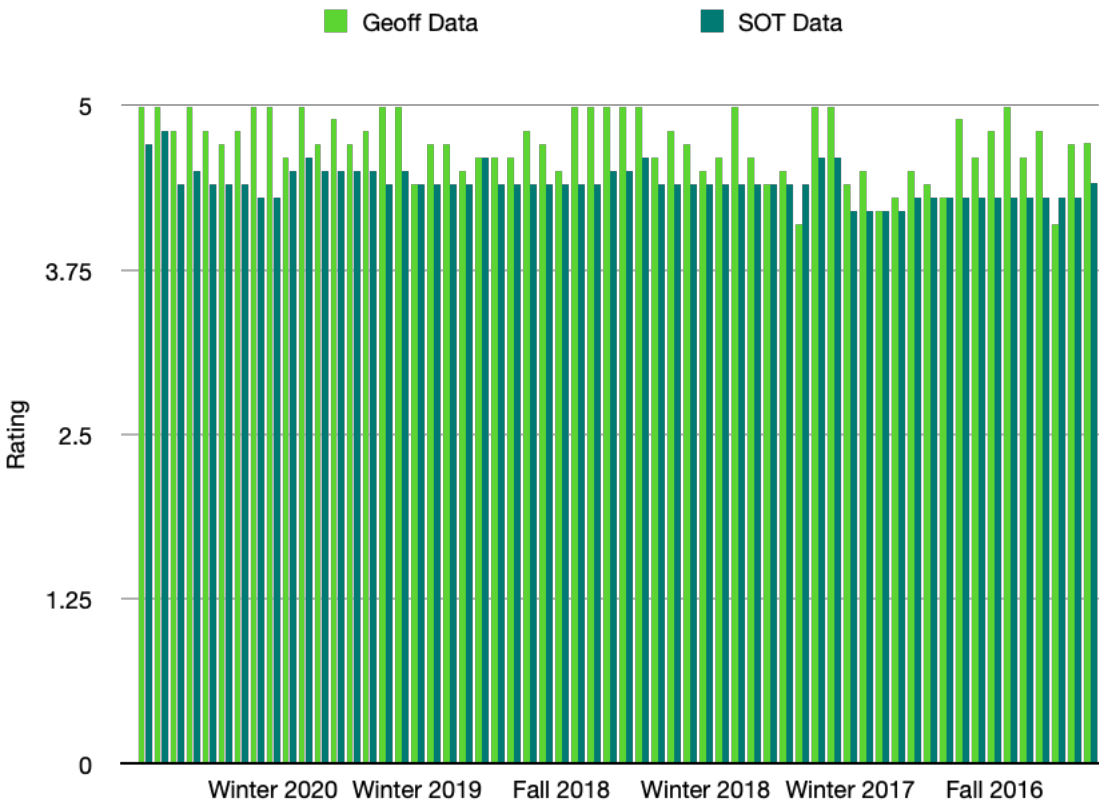


Table 7.3 Trend graph of Geoff's rating compared to Department rating using BYU 5-point scale

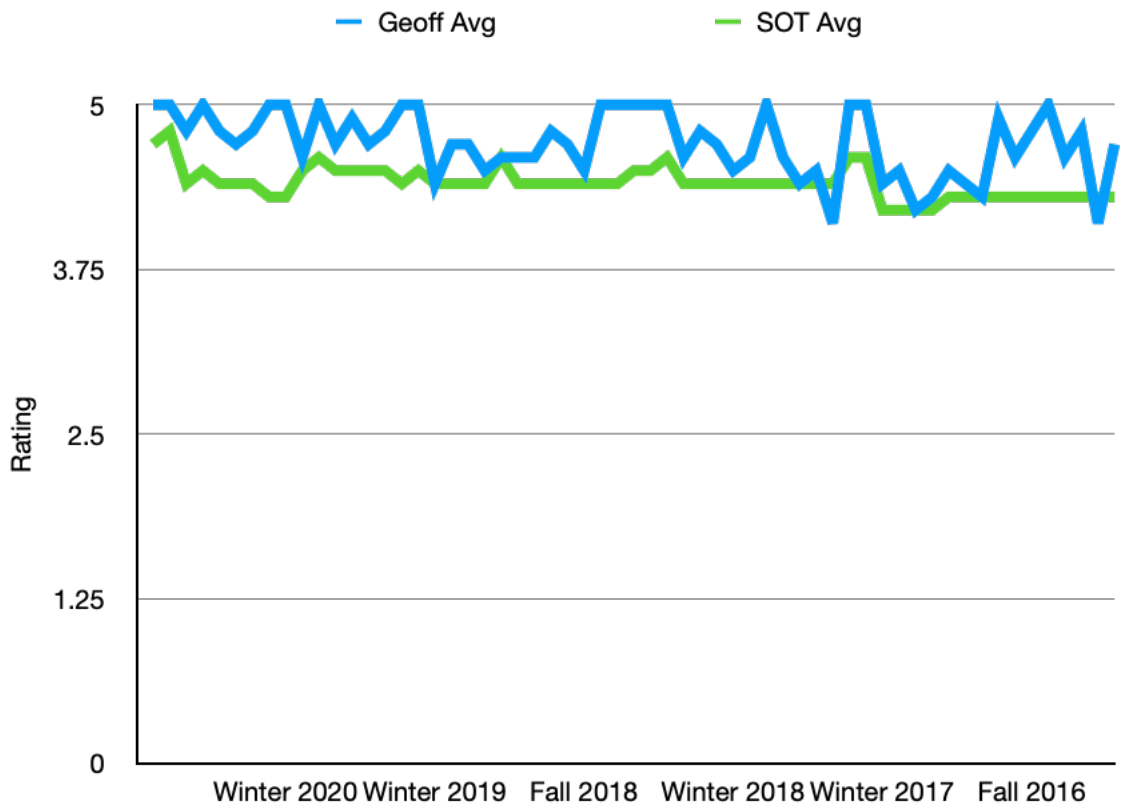


Table 7.4 Line graph comparing Geoff avg scores to SOT avg scores using BYU 5-point scale

Several of the courses I teach are consider core/required courses in our major. Whereas I also teach several other service or elective courses. In the table below (7.5), I only list major teaching classes, and leave out other courses such as 399R, 490R, 699R, and 695R and other special topics type courses such as the SOT required TECH 112. The entirety however is still listed above in Table 7.1. I have also grouped the classes to show trends. One emergent trend is that course ratings increased over the years since my last review.

Sem.	Course/Sec.	Enroll	% Responded	Instructor/Course Rating
Fall 2019	TES 125 (001)	25	52	4.7
Fall 2018	TES 125 (001)	25	48	4.6
Fall 2017	TES 125 (001)	13	25	4.6
Fall 2016	TEE 125 (001)	18	79	4.3
AVG		**20.25**	**51**	**4.55**
W 2020	TES 251 (001)	15	53	4.8
W 2019	TES 251 (001)	12	25	4.7
W 2018	TES 251 (001)	13	38	4.8
W 2017	TEE 251 (001)	13	65	4.5
W 2016	TEE 251 (001)	20	54	4.8
AVG		**14.6**	**47**	**4.72**
W 2020	TES 255 (001)	22	32	4.7
W 2019	TES 255 (001)	26	46	4.7
W 2018	TES 255 (001)	21	76	4.7
W 2017	TEE 255 (001)	16	65	4.2
W 2016	TEE 255 (001)	23	65	4.1
AVG		**21.6**	**56.8**	**4.48**
Fall 2019	TES 276A (001)	29	21	4.9
Fall 2019	TES 276B (001)	27	41	4.7
Fall 2018	TES 276A (001)	22	14	4.8
Fall 2018	TES 276B (001)	20	45	4.7
Fall 2017	TES 276A (001)	16	62	4.4
Fall 2017	TES 276B (001)	16	25	4.5
Fall 2016	TEE 276A (001)	19	38	4.9
Fall 2016	TEE 276B (001)	18	63	4.6
AVG		**20.8**	**38.6**	**4.69**
W 2020	TES 291R (001)	69	32	4.8
W 2019	TES 291R (001)	54	35	4.5
Fall 2018	TES 291R (001)	49	47	4.5
W 2018	TES 291R (001)	37	54	4.5
Fall 2017	TES 291R (001)	32	50	4.1
W 2017	TEE 291R (001)	29	48	4.3
Fall 2016	TEE 291R (001)	34	53	4.8
W 2016	TEE 291R (001)	31	69	4.7
AVG		**41.9**	**48.5**	**4.53**
Sp 2017	TEE 675 (001)	1	100	5

Note: The following are the Innovation Bootcamp Courses - Taught by Committee

W 2020	TECH 112 (MULT)	49	55	4.8
Fall 2019	TECH 112 (MULT)	75	45	4.6
W 2019	TECH 112 (MULT)	77	62	4.4
Fall 2018	TECH 112 (MULT)	74	61	4.6
W 2018	TECH 312 (MULT)	78	54	4.6
Fall 2017	TECH 312 (MULT)	73	10	4.6
W 2017	TECH 312 (MULT)	73	54	4.4
Fall 2016	BUS M 312 (001)	10	61	4.5
Fall 2016	TECH 312 (MULT)	70	68	4.4
W 2016	TECH 312 (MULT)	71	62	4.6

Table 7.5 Course grouped by subject matter

7.2 A list of graduate students supervised

The TEE (note: the graduate program associated with TES is called TEE: Technology and Engineering Education) graduate program functions under the School of Technology MS graduate program. TEE is a small graduate program, where we receive 1 – 2 applicants per year. We have high acceptance of our applicants (over 80%) as most of our applicants are former undergraduate students from our program. The focus of the graduate program is to provide a graduate education opportunity for students wishing to further investigate the field of Technology and Engineering Education. Consequently, many of our applicants are in-service teachers in local school districts. Relatedly, many of the theses the students work on are connected to their classrooms, i.e., research and projects investigating improved teaching in the field of technology and engineering education. The graduate studies website defines the program as follows: "The technology and engineering education specialization helps students who have graduated in technology and/or engineering teacher education or related areas to be more effective leaders. The opportunity will be theirs to achieve knowledge and skills for leadership in teaching, supervising, and managing in schools or industry. Through a research-oriented thesis, students will develop writing and research abilities related to technology and engineering education" (gradstudies.byu.edu). There are 4 required classes (Stats 511, TEE 610, 625, and 675), 6 credits of thesis, and 11 credits of elective course work which will be aligned with the career and research interests of the students.

I have had the opportunity to work with 18 students since coming to BYU. 14 of the 18 received their MS, 1 withdrew from the program, and I currently have 3 active graduate students. Of the 14 who have completed their degree, all were co-authors on papers and or conference presentations, and all had the opportunity to present their research at 1 – 2 conferences. All are currently employed. I have found it a joy and blessing to mentor, learn from, and work with these students. Below is a list of those students.

Student	Position	Date
Thomas Walsh	Member	Active
Ben Bund	Chair	Active
Jessica Allen	Member	Active
Gregg Olson	Chair	Graduated 2020
Jonathan Whelling	Chair	Graduated 2018
Amy Buxton	Member	Graduated 2018
Matt Rytting	Member	Graduated 2017
Blake Hoover	Chair	Graduated 2017
Jordan Vance	Chair	Withdrew 2016
Robert Lee	Chair	Graduated 2014
Tyler Lewis	Chair	Graduated 2012
Jacob Wheadon	Chair	Graduated 2012
Heather Ure	Member	Graduated 2012
Neil Bly	Member	Graduated 2011
Sona Tadevoysan	Chair	Graduated 2011
Scott Bartholomew	Chair	Graduated 2011
Kari Cook	Member	Graduated 2010
Isaku Tateishi	Member	Graduated 2010

*Note: TES does not have a large graduate program. TES averages 1 new student enrolled per year.

7.3 Narrative describing mentoring and experiential learning activities, including those that involve students in scholarly efforts.

I cannot think of any project I have been involved in since coming to BYU where I haven't involved students. I believe mentoring to be a huge part of my pedagogical approach to teaching and learning. Many of the projects have been both outreach service opportunities and scholarly, where we have researched and wrote about our findings from the outreach. A few descriptive examples are provided below.

1.) Recently Matt Jones, an undergraduate in TES, and I worked on an innovation curriculum for elementary schools. We collaborated on the design and implementation. Then I mentored him as he went on taught the curriculum. As part of the implementation however, we also designed and created an Innovation Assessment Tool. We administered the assessment to the students, and found that the students were more innovative thinkers after conducting the experiment. We wrote up the findings from this workshop and study, and it was later published in the top journal in our field. It was then later awarded the honor of Top Journal Article of the year by the journal and our national organization. The success of this effort led us to believe we should continue to work on the Innovation Assessment Tool. Which we have continued to do. Matt has since graduated on gone on to Purdue University to pursue graduate degrees, but he has decided to continue to study innovation. Collectively, Matt and I were able to travel and present at various conferences around the world on our efforts, which helpful Matt gain confidence to go forward with advanced degrees and additional research.
2.) Other similar examples I have been blessed to have since coming to BYU include: working with an organization it the Dominican Republic where we designed and developed STEM activities and curriculum to teach there. We conducted this mentored experience over four years, and took various groups of students to the DR to implement the curriculum. It was a huge success.
3.) We designed and conducted a similar effort for people in Mexico, where I took several students to conduct workshops in Puebla and Mexico City over two years, in an effort to promote innovation and STEM education. The students who assisted in this project were Madison Hamilton, Lamoni Limon, Matt Jones, Matt Bowman, and Jacob Neeley.
4.) As mentioned above, I worked with graduate students, and two undergraduate students specially (Whitney Carlson and Amy Costello) on the design and copy and publication of the book Rainy Day Engineering.
5.) I have worked with students on what was known as ORCA and MEG grants many times, and the projects included:
    a. Building Tiny Homes with elementary students – this was a collaborative project I designed and conducted with students from TES (3 students) and CM (6 students);
    b. Designing and building an electric bikes curriculum to teach about mechanical engineering and city planning, where 6th grade students built bikes, studied and evaluated their city, and made pitches to

the city council and mayor regarding public health issues. This was a collaborative project I designed with students from TES (3 students), ME (2 student), and Public Health (2 students).

6.) Most recently I am working with TES undergraduate students (Josh Luchs, Angela Brady, and Maddie Hunt) on studying women in engineering and have collaborated with the Women in Engineering group in the college.

7.) Also, recently, a peer in IT (Dr. Giboney) and I have received a grant to work with students (IT and TES) to design and conduct cybersecurity camps for Jr. high and high school aged students.

In short, I heavily believe in mentored learning and experiential learning opportunities. They have provided amazing learning and growth opportunities for students and myself.

7.4 A few illustrative copies of syllabi, handouts, assignments, examinations, etc.

TES 125: Intro. To Communication Technology

Section 001 Fall 2020

MWF 2 – 4pm, 230 SNLB (the class will be divided into 2 groups: A - G will attend a lecture on Monday, and H - Z will attend lecture on Wednesday. Friday will be reserved for lab time - the TA and Dr. Wright will be present then to assist any who can benefit from extra instruction. Although lab time is offered, and computers are available in the lab, if you understand the content, have your own equipment, etc. you may work remotely. HOWEVER, with ALL assignment it is imperative to seek feedback from the TA and or Dr. Wright - this will ensure your learning and skill development is on track).

Instructor: Dr. G. Wright <geoffwright@byu.edu>

Office Hours: TH 2 - 4pm

TA: Josh Luchs <joshualuchs@gmail.com> TA

Lab Hours:

(*Addendum for Fall 2020: in this class you will be exposed to a variety of communication technologies, and related skills (see below). The goal of this class is to help you be more technologically literate in the comm tech world. One telling evidence will be if you can synthesize all of the topics/skills intro creating a novel and useful communication technology by the end of the semester - and market it. Keep this in mind as you go through the semester).

As the world becomes increasingly directed and dependent on technologies our world continues to evolve towards becoming a Technolpoly (Postman, 2001), where mankind becomes ultimately technologically dependent and ignorant. Because of this there is a real need to be technologically savvy in order to help continue the ethical use and development of technology. It is for this reason TTE 125 introduces students to a broad range of communication technologies. However, it is important that each student understand not necessarily simply how to use the technologies explored during the course of the semester, but rather see how learning their functions can help further the world's technological evolution in an ethical and moral way.

In light of the scope of the technologies to be covered in this class, the course will move very rapidly and requires your diligence, hard work, and patience (simply because there may develop a need to slightly alter and or deviate from the proposed schedule.) Attendance is required in this class (which means MWandF), however you are allowed two un-excused absences.

Specific Learning Outcomes:

- Introduce students to past communication technologies, with a focus on their development, usability, sustainability, evolution, and relative impact on: society, politics, economy, environment, and leisure.
- Introduce students to contemporary communication technologies, with a focus on their development, usability, sustainability, evolution, and relative impact on: society, politics, economy, environment, and leisure.
- Help students develop an understanding of the ethical development and use of communication technologies.

- Help students develop the skills to not only be users, but actors in the positive development and evolution of society's Technopoly (Postman, 1999).
- Expose and train students in a broad range of communication technology tools and services (i.e., Wiki language, desktop publishing, web authoring, HTML and CSS languages, Flash and JavaScript, social bookmarking, Video and TV production, RSS and ATOM feeds and subscriptions, Pod and Vodcasting, digital photography (techniques, tools, storage), computer hardware and networking issues, GPS technologies, and 3D modeling.

In short the primary purpose of this class is to expose students to a broad, varied mix of contemporary communication technologies. The word technology (in reference to this class) refers to multimedia and digital communication venues. Throughout this semester students will be asked to collect, implement, and assess the relative value of various contemporary technologies, and will be asked to discuss if and how the technologies should be used in classrooms and in the world. The following table outlines a list of the major communication technologies each student will need to learn, use, and understand:

Grading

7.4.1 You should be able to get any grade you are willing to work for, but the pace will be fast and rigorous. There will be several in class quizzes, lots of assignments, a mid-term, and final exam. Grades will be given based on a traditional A, B, C rubric with the actual cut off points determined at the end of the semester guided by the following rule of thumb:

A's 95-100%	B- 80 – 84%	D's 60-69%
A- 90 – 94%	C's 75-79%	E >60%
B's 85-89%	C- 70 – 74%	

Extra credit can be received by completing student derived and professor approved projects connected to course content (i.e., vinyl press, screen print, music recording, etc.). Note: late assignments will be deducted 10% per day (not counting weekends) they are late. If an assignment is handed in on-time, but receives a grade less than desired, a student may resubmit the assignment for the potential of full-credit.

Knowledge	Skill
Devices, Tools, and Process	Proficiency Level
Past, Present, Future, and ethical, moral, and environmental issues	Use: ability to manipulate
	Creativity: level of practical innovation
• The computer: HD, RAM, OS, motherboard, etc.	• Build and network a computer
• GPS: satellites and handhelds	• Complete the "Amazing Race"
• Cellular technology (digital/analog)	• Design an app. (and app researc
• Audio/Music: records, cds, mp3s, etc.	• Podcast

Internet/Intranet(networking)

VPN Network a computer

- Cloud Based Computing
- Printing: offset, litho, digital, lpi
- Graphic Design - principles, elements, techniques
- Digital conversion, compression, DTV
- Wireless technology andwhite space
- Bit Torrents/File Sharing
- Cloud computing
- Principles of graphic design
- Process of design
- Print design assignments: Photo 3D
- Design and modeling (google
- Video compression
- Set up a wireless router
- Webspace and storage

• Photography (cameras and video)	• Photography composition fundam • Principles of videography (Final TV • production (TV switcher) Video • camera control, lighting, an
• Websites: browsers, domains, search engines, web optimization	• Human Computer Interface • Webdesign • Interactive Media Design • Dreamweaver, Flash, Photoshop • Wikis/blogs/RSS/delicioud
• Bluetooth, infrared, other wireless	• Set up a wireless router
• Touch screen technology	• Build and network a computer
• Internet and computer safety/security	• Human Computer Interface • Webdesign • Network a computer

Preventing & Responding to Sexual Misconduct

7.4.2 In accordance with Title IX of the Education Amendments of 1972, Brigham Young University prohibits unlawful sex discrimination against any participant in its education programs or activities. The university also prohibits sexual harassment—including sexual violence—committed by or against students, university employees, and visitors to campus. As outlined in university policy, sexual harassment, dating violence, domestic violence, sexual assault, and stalking are considered forms of "Sexual Misconduct" prohibited by the university.

University policy requires all university employees in a teaching, managerial, or supervisory role to report all incidents of Sexual Misconduct that come to their attention in any way, including but not limited to

7.4.3 face-to-face conversations, a written class assignment or paper, class discussion, email, text, or social media post. Incidents of Sexual Misconduct should be reported to the Title IX Coordinator at t9coordinator@byu.edu (mailto:t9coordinator@byu.edu) or (801) 422-8692. Reports may also be

submitted through EthicsPoint at https://titleix.byu.edu/report (http://byu.us8.list-manage.com/track/click?u=2ba3f012bcd865407204981a0&id=2d8152f513&e=a8ebbbf58b) or 1-888-238- 1062 (24-hours a day).

BYU offers confidential resources for those affected by Sexual Misconduct, including the university's Victim Advocate, as well as a number of non-confidential resources and services that may be helpful. Additional information about Title IX, the university's Sexual Misconduct Policy, reporting requirements, and resources can be found at http://titleix.byu.edu (http://byu.us8.list-manage.com/track/click?u=2ba3f012bcd865407204981a0&id=18b801ab09&e=a8ebbbf58b) or by contacting the university's Title IX Coordinator.

Course Summary:

Date	Details	
	Lecture: The Computer (https://byu.instructure.com/calendar?event_id=81795&include_contexts=course_8336)	12am
Mon Aug 31, 2020	7.4.3.1 Lecture: The internet! (https://byu.instructure.com/calendar?event_id=81796&include_contexts=course_8336)	12am
	7.4.3.2 Welcome to TES 125 - Syllabus and Expectations (Students with last names: A - G) (https://byu.instructure.com/calendar?event_id=81889&include_contexts=course_8336)	12am
Wed Sep 2, 2020	7.4.3.3 Welcome to TES 125 - Syllabus and Expectations (Students with last names: H - Z) (https://byu.instructure.com/calendar?event_id=81890&include_contexts=course_8336)	12am
Fri Sep 4, 2020	7.4.3.4 Lab Work Day (https://byu.instructure.com/calendar?event_id=81891&include_contexts=course_8336)	12am
Mon Sep 7, 2020	Categories of the Web (https://byu.instructure.com/courses/8336/assignments/320930)	due by 11:59pm
	7.4.3.5 Graphic Design and Illustrator Lecture (https://byu.instructure.com/calendar?event_id=81813&include_conte	

	xts=course_8336)	12am
Wed Sep 9, 2020	7.4.3.6 ☐ RSS Feeds? Organizing the Web (https://byu.instructure.com/calendar?event_id=81897&include_contexts=course_8336)	12am
	7.4.3.7 ☐ How Does it Work? (https://byu.instructure.com/courses/8336/assignments/320937)	due by 4pm
Fri Sep 11, 2020	7.4.3.8 ☐ Lab Work Day (https://byu.instructure.com/calendar?event_id=81892&include_contexts=course_8336)	12am
	7.4.3.9 ☐ RSS Aggregator and Feeds (https://byu.instructure.com/courses/8336/assignments/320943)	due by 11pm
	7.4.3.10 ☐ Graphic Design Lecture and intro to Illustrator (https://byu.instructure.com/calendar?event_id=87789&include_contexts=course_8336)	12am
Mon Sep 14, 2020	7.4.3.11 ☐ Photography Student Lecture Due (https://byu.instructure.com/calendar?event_id=81949&include_contexts=course_8336)	12am
	7.4.3.12 ☐ RSS Feeds? Organizing the Web (https://byu.instructure.com/calendar?event_id=87790&include_contexts=course_8336)	12am
	7.4.3.13 ☐ 2 RSS Feeds of the Week! (https://byu.instructure.com/courses/8336/assignments/320922)	due by 1:59pm

	7.4.3.14 ☐ Lab Work Day (https://byu.instructure.com/calendar?event_id=81893&include_contexts=course_8336)	12am
Fri Sep 18, 2020	7.4.3.15 ☐ Illustrator Assignment 1 - get to know the tools and how to draw in illustrator (https://byu.instructure.com/courses/8336/assignments/320938)	due by 2pm
	7.4.3.16 ☐ Cell Tech and VOIP Student Lecture Due (https://byu.instructure.com/calendar?event_id=81950&include_contexts=course_8336)	12am
Mon Sep 21, 2020	7.4.3.17 ☐ Photoshop lecture (https://byu.instructure.com/calendar?event_id=81816&include_contexts=course_8336)	12am
	7.4.3.18 ☐ 2 RSS Feeds of the Week! (https://byu.instructure.com/courses/8336/assignments/320918)	due by 1:59pm
	7.4.3.19 ☐ Photoshop Assignment 1: Tutorials (https://byu.instructure.com/courses/8336/assignments/320940)	due by 4pm
Fri Sep 25, 2020	7.4.3.20 ☐ Barcode/Pictogram/RoadSign Assignment (https://byu.instructure.com/courses/8336/assignments/320927)	due by 5pm
Mon Sep 28, 2020	7.4.3.21 ☐ GPS Student Lecture Due (https://byu.instructure.com/calendar?event_id=81951&include_contexts=course_8336)	7.4.3.22 ☐ 2 RSS Feeds of the Week! (https://byu.instr

ucture.com/courses/8336/assignments/320916)		12am
		due by 1:59pm
Fri Oct 2, 2020	☐ Photoshop Assignment2 (https://byu.instructure.com/courses/8336/assignments/320941)	due by 11pm
	7.4.3.23 ☐ Hacking/Privacy/Security (https://byu.instructure.com/calendar?event_id=81948&include_contexts=course_8336)	12am
Mon Oct 5, 2020	7.4.3.24 ☐ Intro to webdesign - wireframing (https://byu.instructure.com/calendar?event_id=81790&include_contexts=course_8336)	12am
	7.4.3.25 ☐ Whitespace and frequency Student Lecture Due (https://byu.instructure.com/calendar?event_id=81952&include_contexts=course_8336)	12am
	7.4.3.26 ☐ 2 RSS Feeds of the Week! (https://byu.instructure.com/courses/8336/assignments/320925)	due by 1:59pm
Fri Oct 9, 2020	7.4.3.27 ☐ Photoshop Assignment 3: Magazine Face (https://byu.instructure.com/courses/8336/assignments/320942)	due by 11pm
	7.4.3.28 ☐ Intro AfterEffects (https://byu.instructure.com/calendar?event_id=81900&include_contexts=course_8336)	12am
	Mon Oct 12, 2020	

7.4.3.29 ☐ Website Optimization Student Lecture Due (https://byu.instructure.com/calendar?event_id=81953&include_contexts=course_8336)	12am	
7.4.3.30 ☐ 2 RSS Feeds of the Week! (https://byu.instructure.com/courses/8336/assignments/320924)		due by 1:59pm
Fri Oct 16, 2020	☐ Website Design and Programming (https://byu.instructure.com/courses/8336/assignments/320945)	due by 2pm
7.4.3.31 ☐ Bluetooth and Infrared Student Lecture Due (https://byu.instructure.com/calendar?event_id=81954&include_contexts=course_8336)		12am
Mon Oct 19, 2020	7.4.3.32 ☐ Intro to Film and Premier (https://byu.instructure.com/calendar?event_id=81901&include_contexts=course_8336)	12am
7.4.3.33 ☐ 2 RSS Feeds of the Week! (https://byu.instructure.com/courses/8336/assignments/320917)		due by 1:59pm
Fri Oct 23, 2020	☐ AfterEffect Assignment (https://byu.instructure.com/courses/8336/assignments/320926)	due by 2pm
		Mon Oct 26, 2020

	7.4.3.34 ☐ Bit torrent and file sharing student lecture due (https://byu.instructure.com/calendar?event_id=81955&include_contexts=course_8336)	12am
	7.4.3.35 ☐ 2 RSS Feeds of the Week! (https://byu.instructure.com/courses/8336/assignments/320919)	due by 1:59pm
Fri Oct 30, 2020	☐ ShortFilm (https://byu.instructure.com/courses/8336/assignments/320944)	due by 2pm
	7.4.3.36 ☐ Intro to Construction and Sketchup (https://byu.instructure.com/calendar?event_id=81903&include_contexts=course_8336)	12am
Mon Nov 2, 2020	7.4.3.37 ☐ Virtual Reality and Augmented Reality Student Lecture Due (https://byu.instructure.com/calendar?event_id=81956&include_contexts=course_8336)	12am
	7.4.3.38 ☐ 2 RSS Feeds of the Week! (https://byu.instructure.com/courses/8336/assignments/320920)	due by 1:59pm
Mon Nov 9, 2020	7.4.3.39 ☐ Touch Screen Technology Student Lecture Due (https://byu.instructure.com/calendar?event_id=81957&include_contexts=course_8336)	12am

	7.4.3.40 ☐ 2 RSS Feeds of the Week! (https://byu.instructure.com/courses/8336/assignments/320921)	due by 1:59pm
Fri Nov 13, 2020	☐ House DesignSketch-up (https://byu.instructure.com/courses/8336/assignments/320936)	due by 4pm
Mon Nov 16, 2020	7.4.3.41 ☐ Binary Student Lecture Due (https://byu.instructure.com/calendar?event_id=81958&include_contexts=course_8336)	12am
	7.4.3.42 ☐ 2 RSS Feeds of the Week! (https://byu.instructure.com/courses/8336/assignments/320923)	due by 1:59pm
Wed Nov 18, 2020	☐ Construction Learning Adventure I (https://byu.instructure.com/courses/8336/assignments/320932)	due by 3pm
Fri Nov 20, 2020	7.4.3.43 ☐ Device Sketch-up (https://byu.instructure.com/courses/8336/assignments/320933)	
	7.4.3.44 ☐ Photography (https://byu.instructure.com/courses/8336/assignments/320939)	

	7.4.3.45 ☐ Capstone Lecture - team formation and brainstorming/innovation lecture (https://byu.instructure.com/calendar?event_id=81819&include_contexts=course_8336)	12am
Mon Nov 23, 2020	7.4.3.46 ☐ Printing Student Lecture Due (https://byu.instructure.com/calendar?event_id=81959&include_contexts=course_8336)	12am
	7.4.3.47 ☐ 2 RSS Feeds of the Week! (https://byu.instructure.com/courses/8336/assignments/321770)	due by 11:59pm
Mon Nov 30, 2020	7.4.3.48 ☐ Digital TV and Digital Music Compressions and aspect ratios and formats Student Lecture Due (https://byu.instructure.com/calendar?event_id=81960&include_contexts=course_8336)	12am
	7.4.3.49 ☐ 2 RSS Feeds of the Week! (https://byu.instructure.com/courses/8336/assignments/321771)	due by 11:59pm
Mon Dec 7, 2020	7.4.3.50 ☐ Microcontrollers Student Lecture Due (https://byu.instructure.com/calendar?event_id=81961&include_contexts=course_8336)	12am
	7.4.3.51 ☐ 2 RSS Feeds of the Week! (https://byu.instructure.com/courses/8336/assignments/321772)	due by 11:59pm
Mon Dec 14, 2020	7.4.3.52 ☐ Communications Exam (ahem, Learning Adventure) (https://byu.instructure.com/courses/8336/assignments/320931)	due by 11:59pm

How Does it Work?

Published | Edit

How does it work? (You will sign up (https://docs.google.com/spreadsheet/ccc?key=0AhxS8TVblUjndFRyNFl0Y1JFSUxNY3JPMDdFWXd4OHc&usp=sharing) for a digital communication technology to research and then present to the class - using effective teaching techniques, not just a presentation! Topics include such things as: bit torrent, internet, wifi, whitespaces, gps, wikis, blogs, rss, bluetooth, DTV, etc.) Submit a link to your "teaching" here prior to your assigned date.

You will need to set up a camera and record yourself teaching your topic. Then upload your video to our TES youtube channel (https://www.youtube.com/user/BYUTechEd/videos) . The log in credentials are:

Username: geoffwright@byu.edu

PW: tes04063

YOU NEED TO MEET with the TA or Dr. Wright prior to teaching to ensure you know what should be taught. For example, if you sign up to teach about GPS technology, you will need to research the history of GPS, the types of GPS (i.e., AGPS, etc.), and pros and cons of GPS.

Points Submitting 20

a text entry box, a website url, or a file upload

Due	For	Available from	Until
Sep 9 at 4pm	Everyone	-	-

How Does it Work? Rubric

Criteria	Ratings		Pts
Signed up for subject and prepared to present on the assigned date.	5.0 pts Full Marks	0.0 pts No Marks	5.0 pts
Information is presented clearly and accurately.	10.0 pts Full Marks	0.0 pts No Marks	10.0 pts

The file used for the presentation is uploaded to Canvas.	5.0 pts Full Marks	0.0 pts No Marks	5.0 pts
			Total Points: 20.0

Capstone Assignment: Emerging Communication Technology

Published Edit

Your capstone project for the class is to finish building the emerging communication product/service/technology you and your partner(s) have worked on/developed. The service and or product should be in a prototyping stage, and must have some marketing to represent it (i.e., commercial, brochure, logos, etc.) You are required to select four of the technologies (i.e., Premier, Photoshop, Illustrator, HTML 5, SketchUp, etc.) learned in class to create the prototype and or marketing package.

The grade of your product/service will be based upon: creativity, market analysis/audience analysis, serviceability of product (how helpful), the affordances of the product, and cleanliness of presentation and product prototype (i.e., design principles, etc.).

The grade is based on 100 points broken down as follows: 25 = creativity and helpfulness of product, 25 = cleanliness of designs, 25 = function, logistics and affordances of product, 25 = marketing (above and beyond, i.e., quality of podcast, TV commercial, ad campaign, etc.) Submit a final multipage pdf here, and be ready to present product/service to class during the scheduled final time (Monday, Dec 16 at 2:30pm.)

In class we'll talk about ways to evaluate the value of your new product/system/service, however, there are a few methods for formative evaluation you should use as you go through the process (note: we hope to achieve high levels of novelty and usefulness).

This TED talk addresses one of these formative methods: http://www.ted.com/talks/jinsop_lee_design_for_all_5_senses.html?utm_source=feedburner&utm_medium=feed&utm_campaign=Feed%3A+TEDTalks_video+%28T+Site%29 (http://www.ted.com/talks/jinsop_lee_design_for_all_5_senses.html?utm_source=feedburner&utm_medium=feed&utm_campaign=Feed%3A+TEDTalks_video+%28TEDTalks+M+Site%29) (this video suggests using the 5 senses as an evaluation method - if you are high in 5 areas, then you have a good idea).

Also, here's a playlist of great TED talks on creativity and innovation that should really help open your eyes to the endless possibilities of inventing.

http://www.ted.com/playlists/11/the_creative_spark.html

(http://www.ted.com/playlists/11/the_creative_spark.html)

Points Submitting 100
a text entry box, a website url, or a file upload

Due	For	Available from	Until
Dec 17 at 1pm	Everyone	-	-

Capstone			
Criteria	Ratings		Pts
Creativity and helpfulness of product	25.0 pts Full Marks	0.0 pts No Marks	25.0 pts
Cleanliness of designs	25.0 pts Full Marks	0.0 pts No Marks	25.0 pts
Function, logistics and affordances	25.0 pts Full Marks	0.0 pts No Marks	25.0 pts
Description of criterion	25.0 pts Full Marks	0.0 pts No Marks	25.0 pts
			Total Points: 100.0

CONSTRUCTION AND ARCHITECTURE BASICS Name:

(Define each of the following. Include any building standards/codes associated with each term. You may draw an image to capture the definition – but it also needs description too). Note that points are not defined per term – to ensure you provide sufficient detail. The objective is to demonstrate your understanding of the terminology.

Joist:

Header:

Trimmer:

Sill:

Stud:

Cripple studs:

Fire Blocks:

Top Plate:

Bearing post or beam:

Rafter:

Sheathing:

Subfloor:

Girder:

Trusses:

I-beam:

Gable:

Hip:

Valley:

Fascia:

Dormer:

Eave:

Soffit:

Baluster:

Stringer:

8 TES 276A-001: Exploration of Teaching A

8.1.1 TES 276R: Exploration of Secondary Teaching

Class Hours: MW 8 - 11am (Group A - E = Monday; Group F - Z = Wednesday)

Prof: Dr. Geoffrey A. Wright | 230 G SNLB | geoffwright@byu.edu (mailto:geoffwright@byu.edu) | 422-7804 | Office Hours: MW 12:00 – 1:00

TA: Mr. Jacob Ribar < ribarjacob@gmail.com (mailto:ribarjacob@gmail.com) > | TA Office Hours: Monday/Wednesday, 11- 11:30, Other Hours Available by Request

8.1.2 Course Description:

This course (both 276 A and 276 B are required and need to be signed up and passed before being accepted to TES*) is a field-based, initial teaching experience directed at helping you as a prospective teacher experience the demands and opportunities associated with teaching secondary students, identifying your strengths and weaknesses in relating to and teaching secondary students, exploring the moral dimensions of teaching, exploring public purposes of education, and developing emerging instructional skills and professional dispositions. The class will consist of a combination of on-campus class work and public school experiences. The on-campus sessions will introduce you to various topics related to teaching and provide you with the opportunity to practice teaching in front of your peers. The public school experiences will provide you with the opportunity to observe and participate in four different school settings. The public school assignment is a professional experience in which you will be

expected to be on time, responsible, and dressed appropriately (shirt and tie for men; no sloppy jeans or attire). Teaching is difficult, time-consuming, but rewarding work. Brigham Young University's Educator Preparation Mission states: We believe education is fundamentally a moral endeavor (Goodlad, 1990 1994; Goodlad, Soder, & Sirotnik, 1990). The university's educator preparation program seeks to prepare professionals who 1) embrace and apply the moral dimensions of teaching, 2) demonstrate academic excellence, 3) engage in meaningful collaboration, and 4) act with social competence.

* To pass TES 276 A/B and be admitted to the TES program, the following criteria need to be met: Achieve a C+ or higher in the course (and maintain a cumulative 3.00 gpa). To be admitted to the teaching track, you will need to also complete finger printing/background check (http://education.byu.edu/ess/fingerprint.html) , and complete the TSA (http://education.byu.edu/teclab/sced/index.html) (each of these assessments need to be signed off, and have a "Green check-mark" in your myLink account (http://mylink.byu.edu/home/dashboard) . If any of the 4 assessments have a "Red X" then you will not pass TES 276. This must be done 1 week prior to the start of final exams (meaning, log in to your mylink, and have all the TSAs and surveys done 1 week prior to Dec. 1st).

*Finally, to be admitted to the teaching track of TES, during the final week of classes you will need to fill out the TES Teacher Application form. This will be provided to you during the final week of classes. The form needs to be turned in on the designed due date to the TES 276 Instructor.

Textbooks (these will be provided to you):

Gong, Susan P. (2002). Learning and Teaching for Exponential Growth: a three-person problem. Brigham Young University.

Marzano, Robert, J, Pickering, Debra J., & Pollock, Jane E. (2001). Classroom Instruction that Works. Association for Curriculum and Instruction.

Wong, Harry K,. & Wong, Rosemary T. (2004). The First Days of School. Harry K. Wong Publications, Inc.

8.1.3 Course Description:

This course is designed to serve as an introduction to teaching Technology Education in the secondary schools.

8.1.4 Course Basics:

Upon completion of this course students will:

1. Identify and demonstrate characteristics of an effective teacher, including:

- Positive expectations
- Classroom management
- Lesson preparation
- A knowledge of one's own strengths and weaknesses
- Participate in clinical field experience to observe and to engage in meaningful education
- practices. Research and present supplementary educational research materials.
- Demonstrate an understanding of current issues facing public schools.
- Reflect in writing, discussion, and assignment the effective teacher model and how it is reinforced through public school observation and experience.
- Evaluate and assess one's own commitments and practices relative to teaching and learning with frequent reflections on teaching practices.

Course Objectives	UETS Standard (Utah Effective Teaching Standards)	Assignment
Student will become aware of the INTASC Standards and will select and reflect about course assignments using these standards.	All	School Observation Final

Student will become aware of the State Core Requirements in their content area and will connect lessons to the core.	1, 6	School Observation TWS 2

		Inquiry Lesson Plan
Student will discuss complex issues that relate to their content area and the public purposes of education including the Moral Dimensions of Education (Goodlad).	1, 4, 9	TWS 1-4 Final
Student will experience the cultural of the school he/she visits and will consider his/her personal disposition to teach.	1, 4, 9	School Observation Field Experience D
Student will understand that teachers design instruction for specific learning goals, students' characteristics and needs, and learning contexts.	1, 2, 4, 9	School Observation TWS 4 Inquiry Lesson Plan
Students will experience teachers using on-going analysis of student learning to make instructional decisions.	6, 7, 8, 9	School Observation
Students will be able to access professional resources including websites, organizations, conferences, etc., that are available for their professional development.	8, 9	Final
Students will articulate their motivation, strengths, and weaknesses for becoming a teacher.	8	Final
Students will learn and practice the Standards for Technological Literacy (20).	All	In-class peer teachi Final Exam

The Mission of the David O. McKay School of Education is to improve learning and teaching in the school, as well as in the home, church, and community worldwide. http://education.byu.edu/deans/mission.html

(http://education.byu.edu/deans/mission.html)

8.1.5 Materials and Resources:

Standards for Technological Literacy: http://www.iteaconnect.org/TAA/PDFs/xstnd.pdf (http://www.iteaconnect.org/TAA/PDFs/xstnd.pdf)

State Core: www.uen.org (http://www.uen.org)

UETS Standards: http://www.uen.org/k12educator/uets/downloads/UtahInTASCComparison.pdf (http://www.uen.org/k12educator/uets/downloads/UtahInTASCComparison.pdf)

Technology Skills Assessment link: http://education.byu.edu/technology/tsa.html (http://education.byu.edu/technology/tsa.html)

8.1.6 Grading

You should be able to get any grade you are willing to work for, but the pace will be fast and rigorous. There will be several in class quizzes, lots of assignments, a mid-term, and final exam. Grades will be given based on a traditional A, B, C rubric with the actual cut off points determined at the end of the semester guided by the following rule of thumb:

A's 95-100%	B- 80 – 84%	D's 60-69%
A- 90 – 94%	C's 75-79%	E >60%
B's 85-89%	C- 70 – 74%	

*Note: anyone below 70% is failing (i.e., a C- is a failing grade in TES 276).

Because there are two sections for this course (i.e., TES 276 A, and TES 276 B) for which you are enrolled, there are two grades for this course. The first section represents your course work (i.e., tests, most assignments, etc.), whereas sec 2 represents your practicum/clinical work, which is graded according to your teaching performance and CPAS evaluations. Note: if you receive less than an average score of 3 on your CPAS you will not pass TES 276 B. Note: You must also maintain an ~avg. 3.0 gpa (cummulative). The following is the official statement regarding this policy by UCOTE: "The SAAS department will generate an adhoc report each semester of students in teaching majors or minors whose major/minor GPA goes below 2.85 or who receive below a C- in a class required for the teaching major or minor. This report will be sent to
the college CASs (College Advisement Centers). The CACs, which will place a hold on the registration for students identified in the report. The CACs will contact the identified students and their program coordinators to inform them of the hold and the need to meet with a CAC advisor of the program coordinator."

8.1.7 Success

In order to be successful in this course you must come prepared and willing to learn. Contrary to sometimes popular opinions
-- Your professors do not hold all knowledge and are not going to confer it upon you through the semester. In this class you are expected to become a learner and will learn along side your instructor. Coursework is expected to be difficult, demanding, and rewarding commensurate to other 4 credit hour courses. The more you put into the

course, the more you will receive out of the course.

Assignments are not permitted to be late. The mercy and justice rule will be in full effect for this course. This means that students will need to hand in assignments on their assignment due date and time. If assignments are handed in late, students will receive a 10% penalty per day. If a student consistently hands in assignments late he or she will receive no mercy at the

end of the semester. However, if a student demonstrates that he or she does not have a habit of handing in things late, she or he may receive mercy. Note: if an assignment is handed in on-time, but does not receive the desired grade, the assignment may be edited, and resubmitted, for potentially a higher grade.

Also, because mercy often hinges on habits and practices (and sometimes appears to be subjective), it would be wise to always be on time to class. This means in your seat ready to go prior to 8am.

8.1.8 Preventing & Responding to Sexual Misconduct

In accordance with Title IX of the Education Amendments of 1972, Brigham Young University prohibits unlawful sex discrimination against any participant in its education programs or activities. The university also prohibits sexual harassment
—including sexual violence—committed by or against students, university employees, and visitors to campus. As outlined in university policy, sexual harassment, dating violence, domestic violence, sexual assault, and stalking are considered forms of "Sexual Misconduct" prohibited by the university.

University policy requires all university employees in a teaching, managerial, or supervisory role to report all incidents of Sexual Misconduct that come to their attention in any way, including but not limited to face-to-face conversations, a written class assignment or paper, class discussion, email, text, or social media post. Incidents of Sexual Misconduct should be reported to the Title IX Coordinator at t9coordinator@byu.edu (mailto:t9coordinator@byu.edu) or (801) 422-8692. Reports may also be submitted through EthicsPoint at https://titleix.byu.edu/report (http://byu.us8.list-manage.com/track/click?u=2ba3f012bcd865407204981a0&id=2d8152f513&e=a8ebbbf58b) or 1-888-238-1062 (24-hours a day).

BYU offers confidential resources for those affected by Sexual Misconduct, including the university's Victim Advocate, as well as a number of non-confidential resources and services that may be helpful. Additional information about Title IX, the university's Sexual Misconduct Policy, reporting requirements, and resources can be found at http://titleix.byu.edu (http://byu.us8.list-manage.com/track/click?u=2ba3f012bcd865407204981a0&id=18b801ab09&e=a8ebbbf58b) or by contacting the university's Title IX Coordinator.

Course Summary:

Date	Details	
	☐ Intro to 276, syllabus, etc. (Group A - E) (https://byu.instructure.com/calendar?event_id=81852&include_contexts=course_8337)	12am
Mon Aug 31, 2020	☐ Lecture: What is teaching, learning, public speaking	(https://byu.instructure

.com/calendar?event_id=81838&include_contexts=course_8337)	12am	
Wed Sep 2, 2020	Group F - Z (Last names) (https://byu.instructure.com/calendar?event_id=85412&include_contexts=course_8337)	12am
Mon Sep 7, 2020	No Class (https://byu.instructure.com/calendar?event_id=82257&include_contexts=course_8337) Reflection 1 Due (https://byu.instructure.com/courses/8337/assignments/320973)	12am due by 11:59pm
	Teach Something 1 (https://byu.instructure.com/calendar?event_id=82255&include_contexts=course_8337)	12am
Wed Sep 9, 2020	Reading 1: Find your first teaching article (https://byu.instructure.com/courses/8337/assignments/320964)	due by 8am
	Teach Something 1 (https://byu.instructure.com/courses/8337/assignments/320985)	due by 11am
Mon Sep 14, 2020	Teach Something 1 (https://byu.instructure.com/calendar?event_id=82254&include_contexts=course_8337) Reflection 2 Due (https://byu.instructure.com/courses/8337/assignments/320974)	12am due by 11:59pm
Wed Sep 16, 2020	Educational Philosophies (https://byu.instructure.com/calendar?event_id=81860&include_contexts=course_8337) Educational Philosophers (https://byu.instructure.com/courses/8337/assignments/320949)	12am due by 11am

Date	Details		
Mon Sep 21, 2020	Educational Philosophies (https://byu.instructure.com/calendar?event_id=82256&include_contexts=course_8337)		12am
	Reading 2: Article 2 (https://byu.instructure.com/courses/8337/assignments/320965)		due by 8am
	Reflection 3 (https://byu.instructure.com/courses/8337/assignments/320975)		due by 11:59pm
Wed Sep 23, 2020	Teach Something 2 (https://byu.instructure.com/calendar?event_id=81972&include_contexts=course_8337)		12am
	jr high and high school signups (https://byu.instructure.com/calendar?event_id=81856&include_contexts=course_8337)	12am	
Mon Sep 28, 2020	Teach Something 2 (https://byu.instructure.com/calendar?event_id=81841&include_contexts=course_8337)		12am
	Reflection 4 Due (https://byu.instructure.com/courses/8337/assignments/320976)		due by 11:59pm
	Jr. High Visit (https://byu.instructure.com/calendar?event_id=81843&include_contexts=course_8337)	12am	
Wed Sep 30, 2020	Teach Something 2 - Video Reflection		(https://byu.instructure.com/courses/8337/

Date	Details	
	assignments/320987) due by 7:59am	
	Teach Something 2 (https://byu.instructure.com/courses/8337/assignments/320986)	due by 8am
	High School Visit (https://byu.instructure.com/calendar?event_id=82276&include_contexts=course_8337)	12am
Mon Oct 5, 2020	Reading 3: Article 3 (https://byu.instructure.com/courses/8337/assignments/320966)	due by 8am
	Reflection 5 (https://byu.instructure.com/courses/8337/assignments/320977)	due by 11:59pm
Wed Oct 7, 2020	No Class (https://byu.instructure.com/calendar?event_id=82299&include_contexts=course_8337)	12am
	Exponential Learning and STL Overview (https://byu.instructure.com/calendar?event_id=81857&include_contexts=course_8337)	12am
Mon Oct 12, 2020		
	Reflection 6 (https://byu.instructure.com/courses/8337/assignments/320978)	due by 11:59pm
	Mon Oct 19, 2020	Lecture: Moral Dimensions of Teaching (https://byu

Date	Details	
.instructure.com/calendar?event_id=81827&include_contexts=course_8337)	12am	
Reading 4: Article 4 (https://byu.instructure.com/courses/8337/assignments/320967)	due by 8am	
Reflection 7 (https://byu.instructure.com/courses/8337/assignments/320979)	due by 11:59pm	
In-Class Lesson Plan Activity (https://byu.instructure.com/calendar?event_id=81824&include_contexts=course_8337)	12am	
Learning Styles (https://byu.instructure.com/calendar?event_id=81828&include_contexts=course_8337)	12am	
Mon Oct 26, 2020	Lecture on Lesson Plans (https://byu.instructure.com/calendar?event_id=81862&include_contexts=course_8337)	8am to 11am
Reflection 8 (https://byu.instructure.com/courses/8337/assignments/320980)	due by 11:59pm	
First Lesson Plan (https://byu.instructure.com/courses/8337/assignments/320952)	due by 11:59pm	
Mon Nov 2, 2020	Lecture on Assessments and Evaluations and Rubrics (https://byu.instructure.com/calendar?event_id=81845&include_contexts=course_8337)	8am to 11am
Reflection 9		(https://byu.instructure.com/c

Date	Details		
	ourses/8337/assignments/320981)	due by 11:59pm	
Wed Nov 4, 2020	Lecture Private and Charter Schools (https://byu.instructure.com/calendar?event_id=81853&include_contexts=course_8337)		12am
	Prep to teach 6th grade class (https://byu.instructure.com/calendar?event_id=82259&include_contexts=course_8337)	12am	
	Lecture Private and Charter Schools (https://byu.instructure.com/calendar?event_id=82260&include_contexts=course_8337)	12am	
Mon Nov 9, 2020	Prep to Teach 6th Grade Class/Students (https://byu.instructure.com/calendar?event_id=81861&include_contexts=course_8337)		12am
	Reflection 10 (https://byu.instructure.com/courses/8337/assignments/320968)	due by 11:59pm	
Wed Nov 11, 2020	Teach the 6th Grade Students (group A - E) (https://byu.instructure.com/calendar?event_id=81833&include_contexts=course_8337)		12am
Mon Nov 16, 2020	Teach 6th Grade Class (group F - Z) (https://byu.instructure.com/calendar?event_id=81832&include_contexts=course_8337) Reflection 11 (https://byu.instructure.com/courses/8337/assignments/320969)		

 Lecture: Professional development and the realities of teaching! (https://byu.instructure.com/calendar?event_id=81831&include_contexts=course_8337)

 6th Grade Lesson Plan (https://byu.instructure.com/courses/8337/assignments/320946)

due by 11:59

 6th Grade Video Reflection (https://byu.instructure.com/courses/8337/assignments/320947) due by 11:59pm

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Mon Nov 23, 2020

 Lecture: Professional development and the realities of teaching! (https://byu.instructure.com/calendar?event_id=82258&include_contexts=course_8337) 12am

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 Reflection 12 (https://byu.instructure.com/courses/8337/assignments/320970) due by 11:59pm

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Mon Nov 30, 2020

 Lecture: History of Tech Ed. - online via zoom (https://byu.instructure.com/calendar?event_id=81835&include_contexts=course_8337) 12am

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 Prep STL teaching experience (https://byu.instructure.com/calendar?event_id=82278&include_contexts=course_8337) 12am

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Wed Dec 2, 2020

 Prep STL teaching experience (https://byu.instructure.com/calendar?event_id=82280&include_contexts=course_8337) 12am

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Mon Dec 7, 2020

 Exit Interview Signup (https://byu.instructure.com/calendar?event_id=81854&include_contexts=course_8337) 12am

 Reflection 13 (https://byu.instructure.com/courses/8337/assignments/320971)

due by 11:59pm

Wed Dec 9, 2020	STL Teaching Experience - video reflection (https://byu.instructure.com/courses/8337/assignments/320983)	due by 8am
	STL Teaching Experience (https://byu.instructure.com/courses/8337/assignments/320982)	due by 11:59pm
Mon Dec 14, 2020	TEE 276 Exit Interviews (https://byu.instructure.com/calendar?event_id=81855&include_contexts=course_8337)	12am
	Personal Teaching Philosophy (https://byu.instructure.com/courses/8337/assignments/320963)	due by 11am
	Reflection 14 (https://byu.instructure.com/courses/8337/assignments/320972)	due by 11:59pm
Wed Dec 16, 2020	Final Exam (https://byu.instructure.com/courses/8337/assignments/320951)	due by 11:59pm

Attendance Term 2 (https://byu.instructure.com/courses/8337/assignments/320948)

Extra Credit (https://byu.instructure.com/courses/8337/assignments/320950)

Grading Podcast - extra credit (https://byu.instructure.com/courses/8337/assignments/320956)

Midterm Learning Adventure (https://byu.instructure.com/courses/8337/assignments/320961)

8.2 A description of steps taken to evaluate and improve teaching

Because I am a teacher educator I believe it is important for teachers to seek professional development and continually reflect on their teaching in an effort to refine their abilities to most effectively teach their students. Below I outline some of the activities I have participated in or completed to help me improve as a teacher.

1. Student Ratings: I have always valued student feedback. Although our major is small, and students know they can approach me with feedback for individual assignments or the course as a whole, I have often found that the summative end of course/semester student ratings to also reveal feedback that has inspired me to change. I think the anonymity of the student ratings allow students to say and suggest things that they may not otherwise reveal. I believe their comments have helped me hone my efforts, and even include new instructional activities.

    a. Additionally, at the beginning of each semester and throughout the semester I often invite student feedback on assignments and instruction. I try and practice the ideals of a Democratic Classroom taught by John Dewey where the classroom is the students. They should understand we (as teachers) are there for them. Consequently, I interview each student throughout the semester asking for their honest critique and feedback. In these one on one settings students have shared many ideas that have helped me improve with how I connect with them, and with how I design my courses.

    b. Earlier in my career I took advantage of BYU's Midcourse Evaluations" survey we could send out to students. What I found was that the student responses (although helpful) echoed what they shared in the summative student rating, consequently, I moved to the individual interviews practice I highlight above. Regardless of the method, I do believe student feedback is important and helpful.

2. The College of Engineering initiated a teaching and learning faculty workshop – typically over lunch, where invited guests came and shared practices and ideas of how to improve teaching. I have attended each of these workshops and have found them to be very helpful. I think the presentations, workshop, and dialoging with my peers helped me reflect on my teaching and adapt new ideas.

    a. As part of the college's efforts, were we given the opportunity to invite peers from around the college to come and observe us teach. I invited several peers from across the college from different disciplines to come and observe. I also visited their classrooms and observed their teaching. We then met over lunch and talked about our observations. I really enjoyed this activity. I believe it provided me feedback from peers who's only goal was to help me improve my teaching – they didn't have any other agenda. Consequently, I found the feedback very honest and non-intimidating. Additionally, their feedback was helpful. I received several ideas that I have since integrated into my teaching.

3. Another activity that had a significant impact on my teaching was being a co-PI of the STEMFI (STEM Faculty Institute). Ultimately, the goal of STEMFI was to improve instructional practices of professors at BYU in the various STEM departments. On the

STEMFI team we had professors who were known as good teachers, and who were interested in teaching best practices. In our weekly meetings we researched and discussed teaching best practices. The dialogue and research has been invaluable. I have learned a ton about teaching and learning from these amazing colleagues. Not only did the research provide me with great activities and ideas, but then by modeling them during the Spring workshop for other STEM professors helped me think through the activities and gave me time to develop new pedagogical approaches for my own classes. STEMFI has really been an invaluable experience.

4. Because my primary field focuses on teacher education, I attend many conferences and meetings which focus on best practices in education. These conferences include such entities as: SITE, EdMedia, E-Learn, ASEE, ITEEA, ACTE, UACTE among others. At these conferences I participate on workforces, attend conference meetings, and workshops where teaching is discussed, and where new ideas and activities are presented. I always leave these meetings with new ideas to try in my classes. In addition, at many of these conferences I have been asked to provide workshops and train others in the teaching practices I employ. While the preparation and delivery of these workshops is valuable, I have found the feedback post workshop from participants to be also very valuable.

5. An additional practice I used to help me meta cognate about my teaching is "Outcome based learning." I use the learning outcomes I design prior to the course to direct the assignments and lectures and labs I conduct with the students. I often reflect and try and match the assignment with the learning outcome to ensure what is being done doesn't simply match what I had directed or designed as the outcome, but I also show it to the students and talk with them about what my desired outcome was. I then seek their feedback to verify if they believe that happened. Although some might think the grades of the assignment are a sufficient data point, I believe in interviewing them I can get an additional data point. I often ask them to teach me what they learned, which will reveal if they understand the concept, but then I follow-up that with a question: is this content important? And why? I have found that in doing that, sometimes what we did in class did not match my desired learning outcome, or that the outcome doesn't seem important to the students. This has led me to discuss my course learning outcomes with peers in person and via email (i.e., those who teach similar content outside of BYU) to verify if what I am teaching or hoping to be learned matches what should be being taught. I believe this cyclical process of reflection and evolution has helped me improve my teaching and classes.

6. I believe several other practices that many professors also do such as reading texts about teaching and our students such as Generation Me, or Habits, or Range, Shop for the Soulcraft, Bonds that Makes Us Free, etc. have also helped. I also believe in collaborating with my TAs and including them in the teaching has been helpful, as they bring new energy and ideas (and because many of them want to end up being teachers, gives them a great context in which to practice) has also helped. Finally, I have also co-taught several courses such as TECH 112, TES 229, etc. that has allowed me to collaborate and learn from many other seasoned professors and teachers – which have provided great mentoring and models to gain ideas from.

8.3 A description of products of high quality teaching and mentoring

There are two primary categories of products demonstrating "high quality teaching and mentoring" for me. The first category is: Peer Collaboration, and the second category is: Mentored Learning. I will describe each in turn.

Peer Collaboration

1. I believe an integral component of this section is the STEMFI grant I am a co-pi on. This grant is focused on improving teaching – with a particular focus on STEM student centered learning. As I described in a previous section, STEMFI is a three year grant which was awarded to us in 2017, but has since been reupped for an additional year. The intent of the grant was to research and create a Faculty Institute that would help STEM professors improve their teaching. This would be done by teaching them student centered instructional practices, and to then evaluate their efforts when they implemented them. The research team was/is made up on STEM professors from across the university – all of who are known as good teachers and who have shown interest in improving teaching. As a research team we all conducted personal and collaborative research investigating best teaching practices. We met weekly to discuss the research and findings, and eventually designed the workshop, which we later taught to STEM professors during Spring semesters. The research, planning, and dialogue was/is amazing. I have learned a ton about teaching, pedagogy, instructional design, assessment, and much more. I believe the workshop has been a huge success. The data we have gathered from the participants pre/post show that the participants have improved their teaching – based on copus reports measuring student engagement and learning.
2. A second item I believe fits this category is the development of a teacher assessment and evaluation metric. This was developed collaboratively with other professors here on campus who are involved in teacher education. We needed a tool that we could quickly use to evaluate student teacher performance. Although the took was initially designed simply for that task (i.e., student teacher evaluation) I have found the tool to also help with peer evaluations which we are asked to conduct from time to time, and for my own personal evaluation. The tool itself is tied to teaching best practices regarding techniques and characteristics, and is also tied to state and national norms.

Mentored Learning

1. I have always tried to involve as many students in teaching and research as possible. I believe mentoring is a significant evidence of high-quality teaching for me because it allows an opportunity to teach one on one. The experience has led to many great outcomes such as the development of a book titled: Rainy Day Engineering. This book is a collection of engineering activities for students and parents to do. Several elementary and junior high schools have adopted it, but the sales suggest is it most often purchased by parents and adults. The book is a result of a class assignment created in a graduate class for in-service teachers. Those graduate students were asked to create novel engineering activities into lesson plans. The collection of their ideas were then vetted in another class – an undergraduate teaching class. The undergraduate students tried out each activity, and provided feedback. Then in an mentored independent study class, I was able to work with two students to further refine the activities, design the look and feel of the book, and write the supplementary content. Undergraduate students helped with the entire process – doing the graphic design for the book, copy editing, and much more. The entire process was a great educational experience for all involved, and produced a great book.
2. I believe another teaching element that is important to mention in this section is class-based mentoring. I have mentored many students in class and outside of class. I try to marry the two as often as instructionally appropriate. One area that has been appropriate is the service base learning opportunities I design and offer in 291R. In this seminar course I require every student to be involved in a service learning opportunity that ties directly to the teaching focus of our major. This activity the students become involved with is: UUR (Utah Underwater Robotics). For this

service based learning activity they help run the largest underwater robotic outreach effort in the nation. We service over 1200 students annually from across the state (from Duschane to Ogden). Our students help order the parts for the robotic kits, assemble the robotic kits, and then go out to schools to teach teachers and their students how to build the robotics, in addition to engineering design, and various engineering concepts connected to the underwater robot (such as electronics, water proofing, buoyancy, etc.). The students also then design and run the state-wide competition where the 1200+ students come and race their robots and present associated research. We are in our 8th year of this service-based learning experience. It has been highlighted on various news channels, but more important we have tracked data on student STEM self-efficacy. The data suggests student interest in STEM increases by simply being involved in an hands-on STEM activity such as UUR. The service-based learning activity has become so popular that students from across BYU (mostly engineering students) also volunteer to help out. We average over 100 BYU student volunteers each year.

3. Similarly, to UUR in our Innovation class and in two student directed independent study classes (where I was the mentor) we designed an instructional workshop and associated competition for Innovation, called K12 SIOY (Student Innovator of the Year), piggy backing on the SIOY the college puts on for BYU students (which I also helped design and run in its infancy). In this event BYU TES students taught K12 students about innovation (the how, why, and what), and then mentored them towards inventing a new product, system, or service. We have had over 200 participants each of the three years we ran the service.
4. In many of my classes I design capstone experiences where students build their knowledge and skills all semester in preparation to work for an industry client. In my TES 255 class we have created over 50 new corporate identities for a variety of companies (each student is required to find a minimum of 1 client to work for, and we also have a single client for the class as a whole), we have created instructional videos for companies in our TES 251 class, such as for Utah Youth Village and the Church of Jesus Christ of Latter-day Saints. In the TECH 112 Innovation class, we have invented new products, systems, and services for a variety of companies, Kneaders being the most recent. These have been amazing educational experiences for our students, and have provided great real-world application for their learning.
5. An additional final area I am proud of is involving the 276 students in technology and engineering K12 curriculum development. Over the past 11 years that I have been teaching 276, we have developed over 30 novel and unique lessons/unit plans that have been implemented and evaluated. The students are tasked in this class to come up with new ways to teach various principles of technology engineering. The work in groups to create the idea and associated lessons. The content areas range from communication technologies to manufacturing, electrical engineering, some chemical engineering, and civil engineering. Many of these lessons are now being in used in classrooms around the state. Even Dr. Shumway has adopted a few in to his college classes. Obviously because our TES mission is to prepare TE teachers, this has been an invaluable experience.

8.4 Student evaluations and a typescript of student comments

In this section I provide the student rating reports as provided by BYU for the core TES classes I have taught. For the entirety of student comments for non core classes those can be found on the BYU system. They were not included because the document would include an additional 200 pages.

BYU Student Rating Individual Section Report

TES 125 Comm. Tech Systems - Fall 2017
Section 001

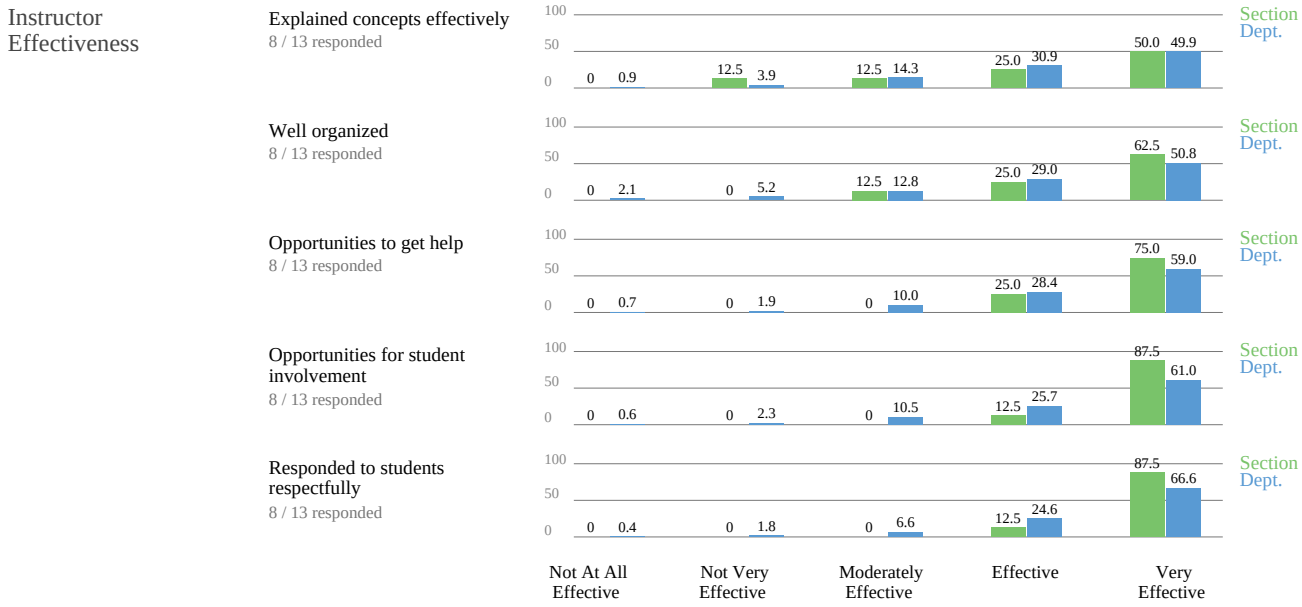
Geoffrey Wright

Historical Course Average
4.6

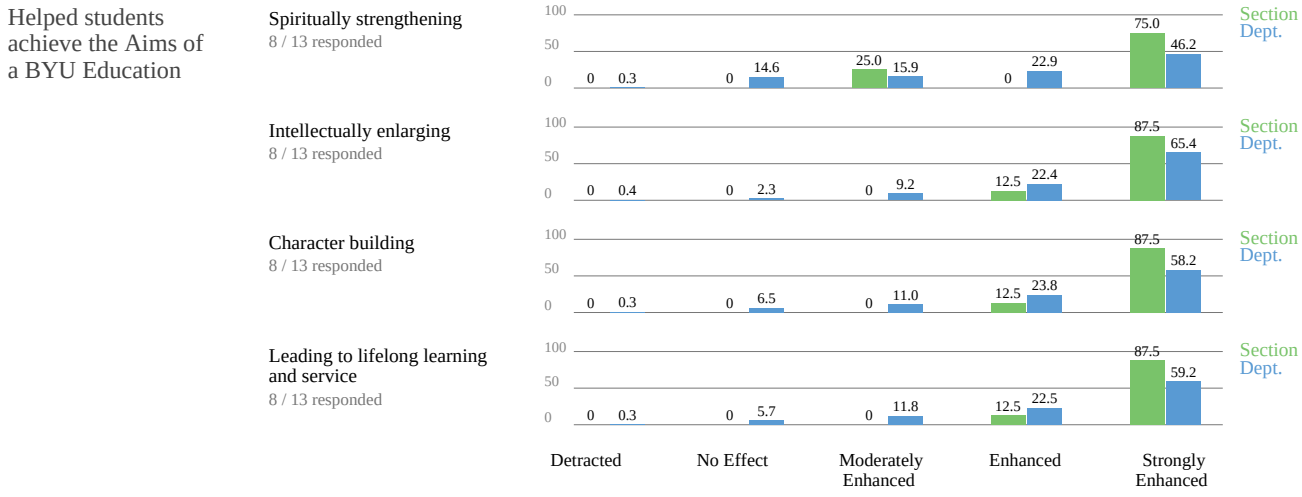
Composite Student Rating

Section	4.6	(4.1 - 5.0)
Course	4.6	
Department	4.4	(4.3 - 4.5)
College	4.2	
University	4.4	

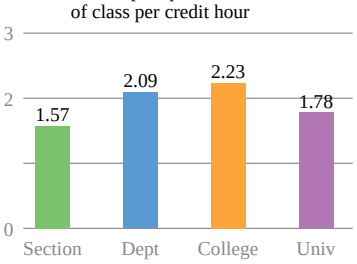
Instructor Effectiveness



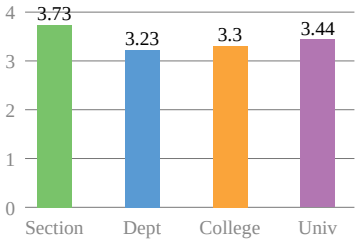
Helped students achieve the Aims of a BYU Education



Hours spent per week out of class per credit hour



Mean GPA



Grade distribution (%)

	Section	Dept	College	Univ
A	84.6	32.5	41.9	55.3
B	15.4	27.2	27.1	21.7
C	0.0	7.2	7.8	6.5
D	0.0	1.4	1.4	1.9
E	0.0	1.8	2.1	1.8
W	0.0	1.7	2.8	3.2

Instructor Comments - Geoffrey Wright

Explained concepts effectively

1. He was really good at helping us get hands-on experience and help.
2. It might have been nice to be on a computer learning with you instead of trying to follow and remember the steps to a new program and attempt to duplicate them later.

Well organized

1. The hands-on for everybody concepts really helped me learn.

Opportunities to get help

1. He was always ready to help you out.

Opportunities for student involvement

1. He was very adamant that everyone gets to try everything and learn about everything. He really wanted a hands-on experience for everyone.

Responded to students respectfully

1. N/C

What effect did this course and instructor have in helping you achieve the Aims of a BYU Education?

Spiritually strengthening

1. We always prayed in class and talked of class member's missions. Because of the small classes we were able to have real discussions and that helped me be spiritually strengthened.

Intellectually enlarging

1. I learned so much in this class that I never would have learned before simply because I had never even thought about the concepts we learned and now everywhere I go I notice them.

Character building

1. I had to work hard and try my best in this class and I love that.

Leading to lifelong learning and service

1. There's a lot I can do with the skills I learned in this class. I'm glad we learned actual skills instead of just talking about stuff.

Hours spent out of class

1. The amount of time spent depends on what project I was working on. Some weeks I didn't spend any time out of class, and some I spent like 10 hours outside of class working.

2. Depended on the assignment, some weeks were more, some less.

Additional comments

1. I loved this class! I really enjoyed learning more about the technologies that we use everyday, and some that I have little experience with. It was a great experience to practice furthering skills in using technology.
2. Geoff is a great guy and he really wants us to learn and grow, rather than just pass tests and turn in assignments, and I love that.
3. Thank you for your patience and hard work.
4. There needs to be more communication.
5. Geoff is a great professor and all-around nice guy. I enjoyed the class and learned a great deal about varying technologies. Geoff was very professional and courteous towards conflicts of schedule with lectures or homework and adjusted the class schedule as needed to meet the needs of the students. I would recommend this class to anyone interested in learning more about useful technologies and having fun doing it.
6. Almost always, you would explain a new technology as being 'easy'. Please remember that what is easy to you is not easy to everyone. This is a college level class and many of the technologies were completely new to me. Being told the thing I was learning was 'easy' and then struggling and spending 10+ hours trying to make the project is discouraging and not a nice way to learn. The 'Learning Adventure': It would be nice to have some sort of guide to taking this exam instead of requesting a regurgitation of everything we can remember. I appreciated your sense of humor though. That always made class enjoyable.

BYU Student Rating Individual Section Report

TES 276A Exploration of Teaching A - Fall 2017
Section 001

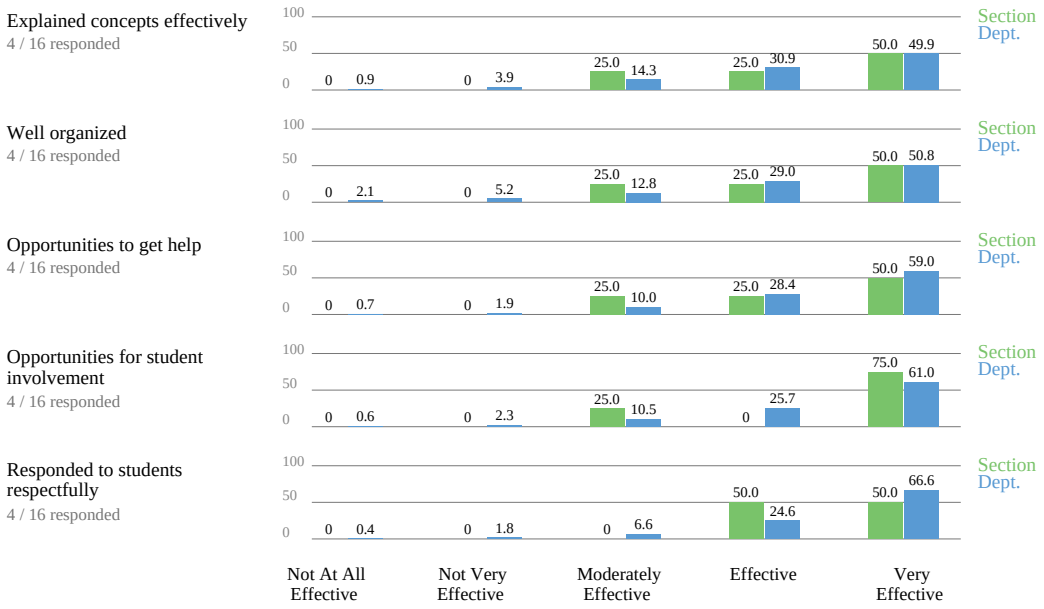
Geoffrey Wright

Historical Course Average
4.4

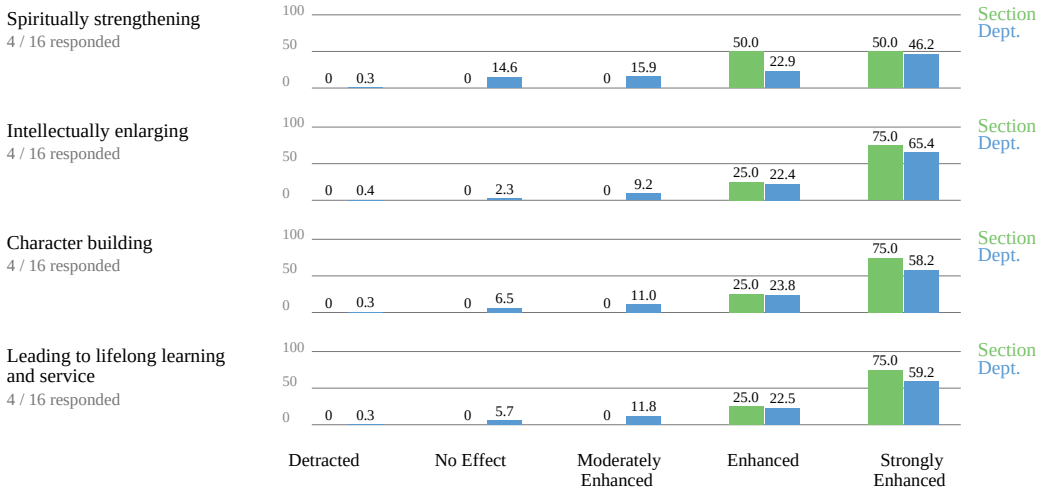
Composite Student Rating

Section	4.4	(3.6 - 5.0)
Course	4.4	
Department	4.4	(4.3 - 4.5)
College	4.2	
University	4.4	

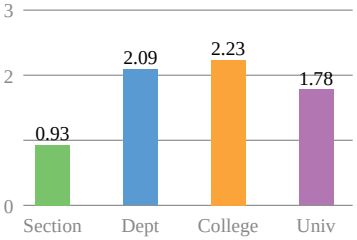
Instructor Effectiveness



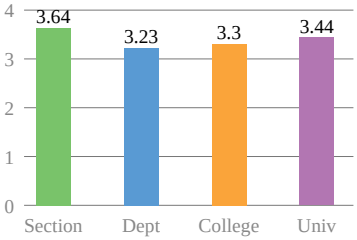
Helped students achieve the Aims of a BYU Education



Hours spent per week out of class per credit hour



Mean GPA



Grade distribution (%)

	Section	Dept	College	Univ
A	68.8	32.5	41.9	55.3
B	18.8	27.2	27.1	21.7
C	12.5	7.2	7.8	6.5
D	0.0	1.4	1.4	1.9
E	0.0	1.8	2.1	1.8
W	0.0	1.7	2.8	3.2

Instructor Comments - Geoffrey Wright

Explained concepts effectively

1. He teaches well.

Well organized

1. Super instructive.

Opportunities to get help

1. Geoff really helps students.

Opportunities for student involvement

1. It was wonderful.

Responded to students respectfully

1. Geoff is very respectful and treats all students in a loving and considerate manner.

What effect did this course and instructor have in helping you achieve the Aims of a BYU Education?

Spiritually strengthening

1. It was good that we prayed. Even though Geoff has a great fun personality, his emphasis on prayer shows its importance.

Intellectually enlarging

1. Geoff's class opened a lot of new perspectives to me.

Character building

1. Geoff encourages building character. Good job.

Leading to lifelong learning and service

1. Geoff also encourages service.

Hours spent out of class

1. Time outside class was good.

Additional comments

1. better organization of the class materials, and awareness of assignments
2. I love his teaching style and class! so FUN and motivated!
3. Geoff does a good job teaching about teaching. Perhaps it would be good to have more tests though. Or not. I guess his method forces us to have long-term retention of the information. I like Geoff and his teaching.

BYU Student Rating Individual Section Report

TES 276B Exploration of Teaching B - Fall 2017
Section 001

Geoffrey Wright

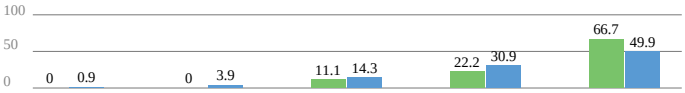
Historical Course Average
4.5

Composite Student Rating

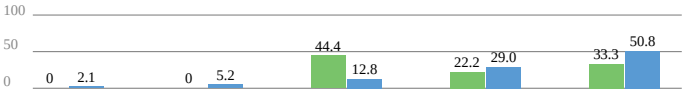
Section	4.5	(4.0 - 5.0)
Course	4.5	
Department	4.4	(4.3 - 4.5)
College	4.2	
University	4.4	

Instructor Effectiveness

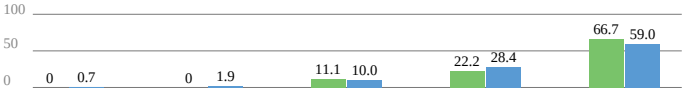
Explained concepts effectively
9 / 15 responded



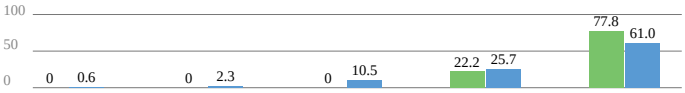
Well organized
9 / 15 responded



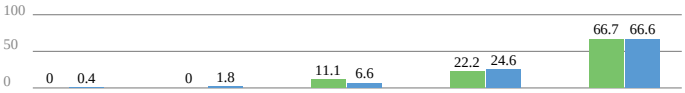
Opportunities to get help
9 / 15 responded



Opportunities for student involvement
9 / 15 responded



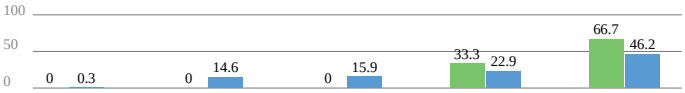
Responded to students respectfully
9 / 15 responded



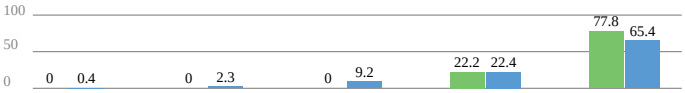
Not At All Effective | Not Very Effective | Moderately Effective | Effective | Very Effective

Helped students achieve the Aims of a BYU Education

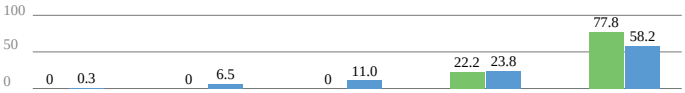
Spiritually strengthening
9 / 15 responded



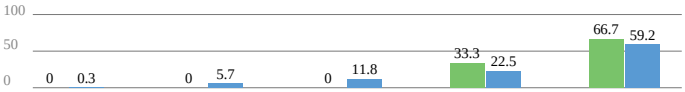
Intellectually enlarging
9 / 15 responded



Character building
9 / 15 responded

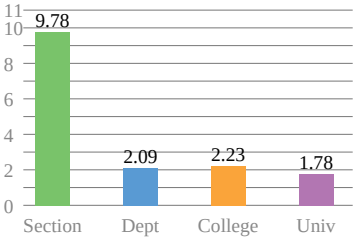


Leading to lifelong learning and service
9 / 15 responded

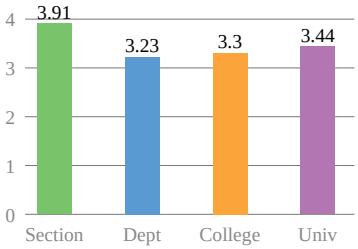


Detracted | No Effect | Moderately Enhanced | Enhanced | Strongly Enhanced

Hours spent per week out of class per credit hour



Mean GPA



Grade distribution (%)

	Section	Dept	College	Univ
A	93.3	32.5	41.9	55.3
B	6.7	27.2	27.1	21.7
C	0.0	7.2	7.8	6.5
D	0.0	1.4	1.4	1.9
E	0.0	1.8	2.1	1.8
W	0.0	1.7	2.8	3.2

Instructor Comments - Geoffrey Wright

Well organized

1. Sometimes I got confused by due dates and stuff like that.

Opportunities to get help

1. Geoff always went out of his way to help us on anything.

Opportunities for student involvement

1. Due to the diversity of students' interests and educational needs, more learning could be student directed.
2. LOVED that there was only 17 of us, the small class size makes a HUGE difference

---

Responded to students respectfully

1. always hears us out, lets of challenge him, and challenges us

---

What effect did this course and instructor have in helping you achieve the Aims of a BYU Education?

Leading to lifelong learning and service

1. I am a better person because of the things I learned in Geoff's class

---

Hours spent out of class

1. some weeks took more time than others but never too much time

---

Additional comments

1. I loved this class. It opened my eyes to the science and art of teaching.
2. Geoff does a great job adapting the class to fit with the needs of the students. I appreciate the flexibility in schedule to accommodate the pace of the class rather than a rigid schedule. Geoff also does a great job of practicing what he teaches. Geoff has his own teaching style, but it works well for most students and when it doesn't, he put in the effort to reach out to those students who need a little more attention. The class was very well prepared and structured. I appreciated the preparation that went into the lessons each day and the semester as a whole. Geoff does a great job highlighting gospel topics and making the connection between teaching, gaining light and knowledge, and education to the gospel. He also did a great job showing the application of the course material to our individual lives outside of school.
3. There needs to be more communication.
4. Geoff is an amazing teacher and I wish all the teachers at BYU had to take his class so they could teach better
5. This is probably the most useful intro class I've taken here at BYU. Thanks!
6. Thank you

BYU Student Rating Individual Section Report

TES 125 Comm. Tech amp; Systems - Fall 2018
Section 001

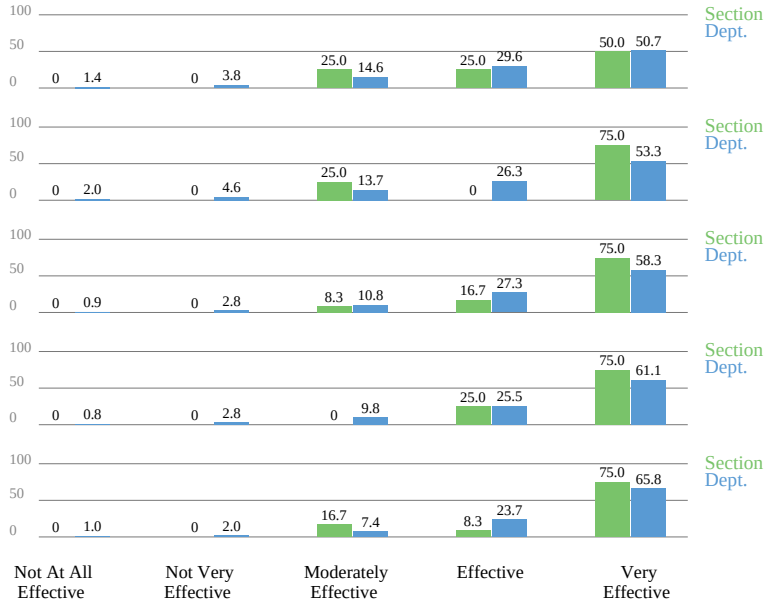
Geoffrey Wright

Historical Course Average
4.6

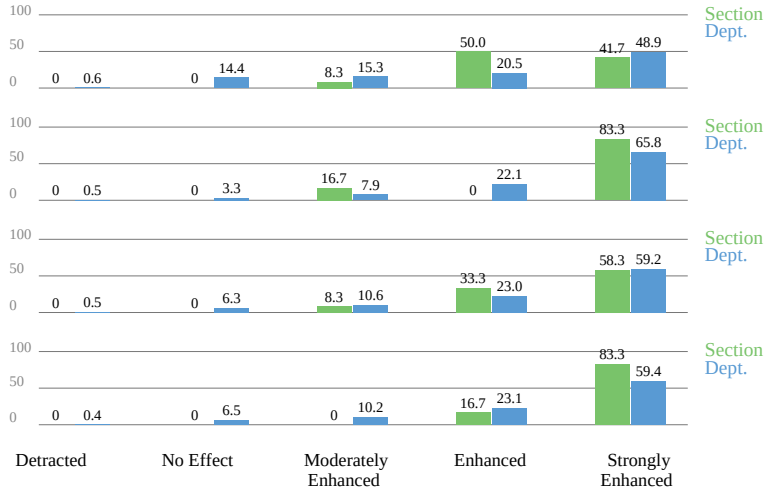
Composite Student Rating

Section	4.6	(4.2 - 5.0)
Course	4.6	
Department	4.4	(4.3 - 4.5)
College	4.3	
University	4.5	

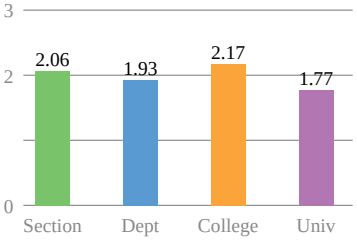
Instructor Effectiveness



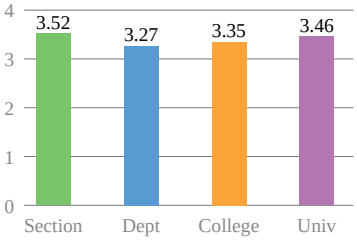
Helped students achieve the Aims of a BYU Education



Hours spent per week out of class per credit hour



Mean GPA



Grade distribution (%)

	Section	Dept	College	Univ
A	52.0	37.1	44.6	56.5
B	48.0	22.9	25.6	20.9
C	0.0	7.2	7.1	6.3
D	0.0	1.4	1.2	1.8
E	0.0	2.2	1.9	1.8
W	0.0	2.2	2.7	3.3

Instructor Comments - Geoffrey Wright

Explained concepts effectively

1. lots of us had never done many of the things we learned. now we are proficient so that's a win in my book
2. I felt like we had a few quick demos in class for a lot of the software and that was about it.
3. Most of his instruction was helpful. There were some things we learned that could have been a bit smoother while learning it. Like web design and photography. It seemed a little bit rushed and he expected us to figure it out, which can be good and bad.

Well organized

1. Canvas seems like it's a little out of date. A lot of the assignments had old descriptions that didn't apply anymore. They contradicted a lot of what was said in class.
2. It was very organized and it was easy to tell when assignments were coming up and what we were doing that day. I like the use of canvas even though it is a separate application from all of my other classes. It feels more organized and transparent.

Opportunities to get help

1. usually around for lab time
2. Geoff is always ready to help his students.
3. He was very considerate of me and my time frame when I joined the class almost a week late. He helped me catch up without creating too much stress.

Opportunities for student involvement

1. Really hands on
2. There was a lot of hands on work to be done and it felt applicable and engaging.

Responded to students respectfully

1. When talking one on one, he is very respectful of us and our questions. He has assured me when I felt less than confident about things inside and outside the class. He does like to joke around a bit with students and that did intimidate me at first, but it doesn't as much anymore.

What effect did this course and instructor have in helping you achieve the Aims of a BYU Education?

Spiritually strengthening

1. like I said, he's just a good person. He teaches through stories and jokes and well put-together lectures.
2. He makes a point to start class with a prayer when we meet together. He gets to know us one on one and asks how we are doing.

Intellectually enlarging

1. I have gained a lot of hard skills in this class that I am super thankful for.

Character building

1. A lot of this class is learning how to work together and complete things. I think that can definitely build character.

Leading to lifelong learning and service

1. The stuff we learn enables us to know how to keep learning and growing. The learning does not stop after we leave the classroom.

Hours spent out of class

1. projects take longer if you put more effort.
2. We had a lot of lab time but when we didn't finish things we would have to work outside of class. It could vary widely. On slow weeks it wasn't more than 3 hours but when we had big projects it could be much more time consuming (6+).

Additional comments

1. Geoff is a good teacher and a good person. We have learned so much in this semester, and I liked that it was often us figuring out the concepts on our own with his aid if we needed it. He let us have a lot of freedom on all the projects which I love because it helps foster creativity, which STEM classes so often love to quench (looking at you, math and CS 142).
2. This was a super fun class and I learned a lot, but sometimes felt like I was drinking out of a firehose with the amount of material we covered.
3. Bro Wright is an excellent Professor. He goes above by making sure he knows each of the students. If he sees someone is not understanding a concept, he will sit with them and assist them. He is one of the best Professors I have ever had.
4. I have enjoyed his class and interacting with him.
5. This class was a struggle for me. The course material wasn't exactly my forté. One thing that would have helped would be some walk throughs on how to do some of the assignments. On the first illustrator assignments there was a step-by-step walk through but none of the other assignments had something like that. During class I could get a lot of help, but when I had to do assignments at home, I felt lost and spent a lot of hours searching for more info and watching youtube videos.

BYU Student Rating Individual Section Report

TES 276A Exploration of Teaching A - Fall 2018
Section 001

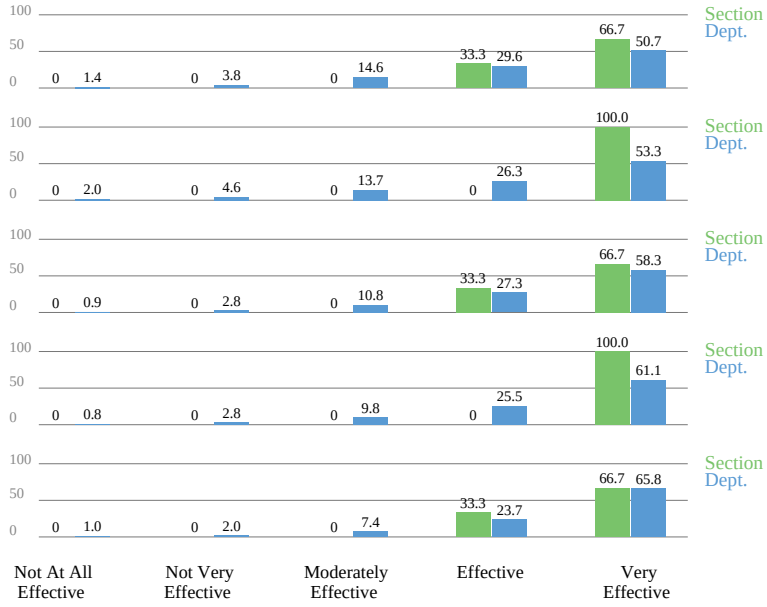
Geoffrey Wright

Historical Course Average
4.6

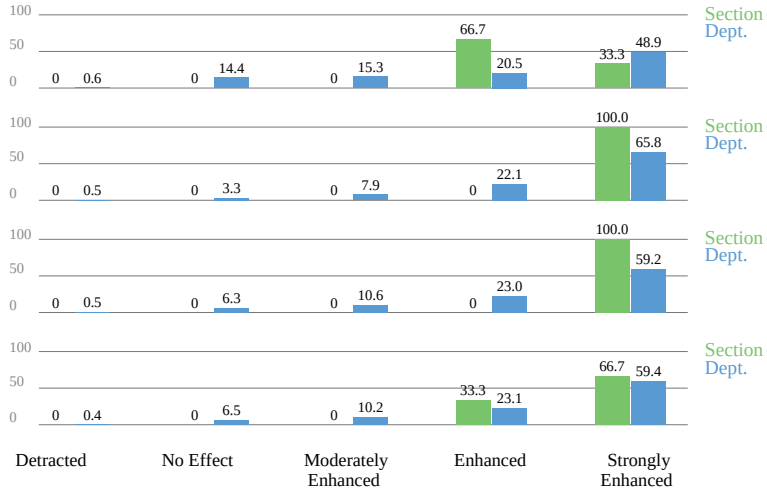
Composite Student Rating

Section	4.8	(4.3 - 5.0)
Course	4.8	
Department	4.4	(4.3 - 4.5)
College	4.3	
University	4.5	

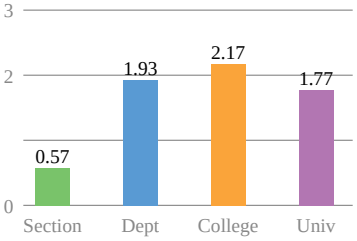
Instructor Effectiveness



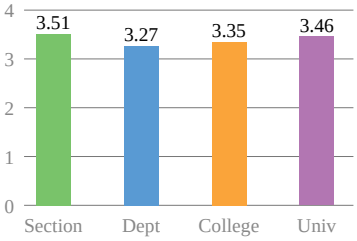
Helped students achieve the Aims of a BYU Education



Hours spent per week out of class per credit hour



Mean GPA



Grade distribution (%)

	Section	Dept	College	Univ
A	54.5	37.1	44.6	56.5
B	36.4	22.9	25.6	20.9
C	9.1	7.2	7.1	6.3
D	0.0	1.4	1.2	1.8
E	0.0	2.2	1.9	1.8
W	0.0	2.2	2.7	3.3

Instructor Comments - Geoffrey Wright

What effect did this course and instructor have in helping you achieve the Aims of a BYU Education?

Hours spent out of class

1. we would usually spend 6 hours a week in classrooms for assignments and presentations

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Additional comments

1. Geoff has been one of the best teachers I have ever had!

BYU Student Rating Individual Section Report

TES 276B Exploration of Teaching B - Fall 2018
Section 001

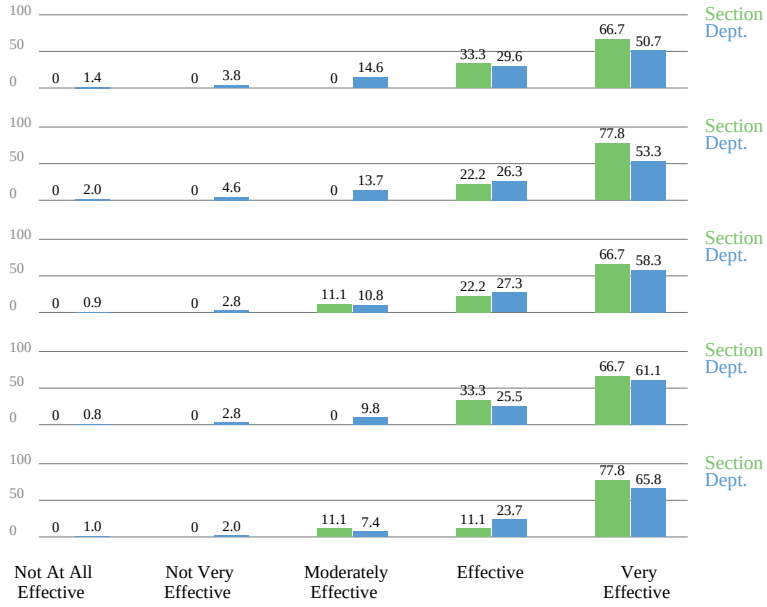
Geoffrey Wright

Historical Course Average
4.6

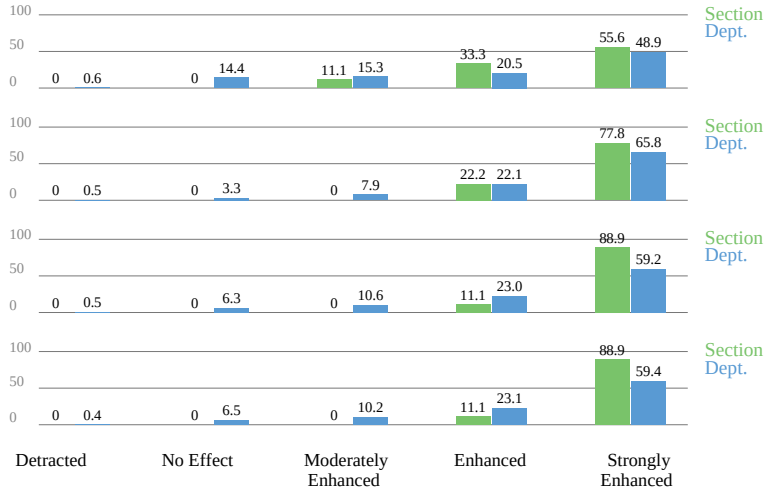
Composite Student Rating

Section	4.7	(4.3 - 5.0)
Course	4.7	
Department	4.4	(4.3 - 4.5)
College	4.3	
University	4.5	

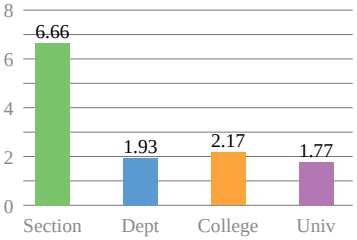
Instructor Effectiveness



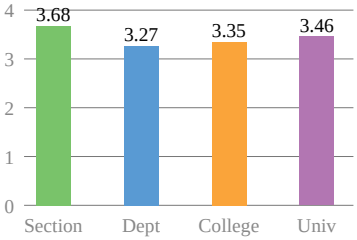
Helped students achieve the Aims of a BYU Education



Hours spent per week out of class per credit hour



Mean GPA



Grade distribution (%)

	Section	Dept	College	Univ
A	78.9	37.1	44.6	56.5
B	21.1	22.9	25.6	20.9
C	0.0	7.2	7.1	6.3
D	0.0	1.4	1.2	1.8
E	0.0	2.2	1.9	1.8
W	0.0	2.2	2.7	3.3

Instructor Comments - Geoffrey Wright

Explained concepts effectively

1. He was able to use his teaching methods to help others try to understand difficult problems.

Well organized

1. I wish it was visible on learning suite.

Opportunities to get help

1. Sometimes people fell behind or weren't given the time I felt they needed to grasp the subject.

Opportunities for student involvement

1. so many teaching opportunities
2. He is an excellent teacher.

Responded to students respectfully

1. Sometimes I feel specific students weren't given the acknowledgment or the appreciation they deserved.

What effect did this course and instructor have in helping you achieve the Aims of a BYU Education?

Spiritually strengthening

1. he spoke lots of how the gospel enhanced his learning
2. I feel I learned some from this class in regards to it being spiritually strengthening.

Intellectually enlarging

1. so much to learn about being a teacher and how to teach
2. I learned a lot about how to be a better teacher.

Character building

1. we learned how tough it is to teach and the integrity we need as teachers to be effective
2. I learned how I can embrace my teaching personality.

Leading to lifelong learning and service

1. teaching is not a lucrative career, so we would be in it for the influence we would have to better our students
2. I will be able to teach others better through the lessons I have learned. Including my future children.

Hours spent out of class

1. we were in class about 6 hours a week, so these 4 hours were dedicated to hw, readings, teaching assignments, etc

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Additional comments

1. Geoff is an amazing teacher who genuinely cares about his students. He knows how to have fun but also challenges us constantly. He made me get out of my comfort zone which I think is great.
2. This class has been so fun and super enlightening! I like that it isn't simply a theory of teaching class and that we get to practice teaching. Hands down one of my favorite classes I've taken at BYU.
3. I wish he was more understanding of mental health and the difficulties it can pose for students.
4. I have been worried about taking this course but it was really fun and interesting. Definitely useful whether you plan to be a teacher or not. I’m glad I took it this semester. I also enjoyed the camaraderie I felt in the class. I’ll miss it. You are a great teacher. Thanks for pushing us to do hard things and being open with your thoughts. That last day of class was really touching and I’ll remember that - to always put effort into the kids around us.

BYU Student Rating Individual Section Report

TES 125 Comm. Tech amp; Systems - Fall 2019
Section 001

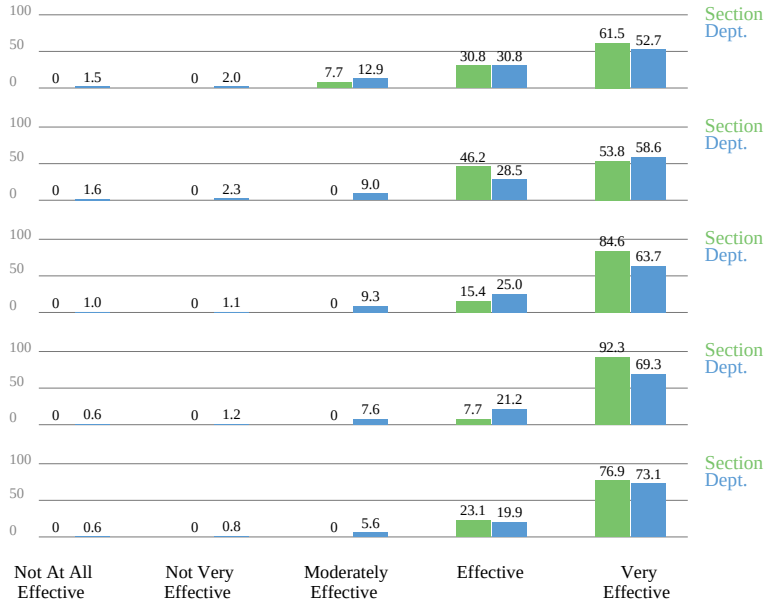
Geoffrey Wright

Historical Course Average
4.6

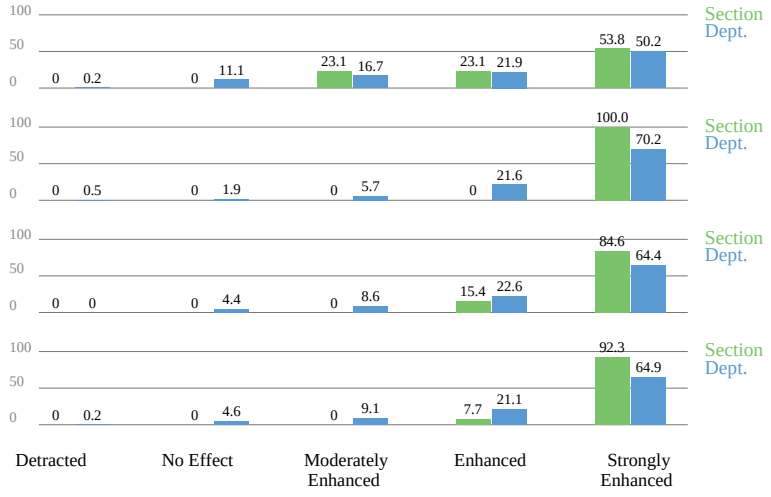
Composite Student Rating

Section	4.4 - 5.0
Course	4.7
Department 100-299	4.4 - 4.6
College 100-299	4.4
University 100-299	4.5

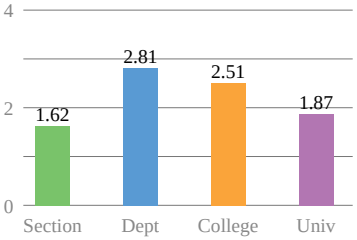
Instructor Effectiveness



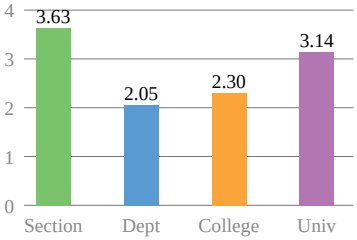
Helped students achieve the Aims of a BYU Education



Hours spent per week out of class per credit hour



Mean GPA



Grade distribution (%)

	Section	Dept	College	Univ
A	65.4	35.0	34.9	55.3
B	23.1	26.7	26.7	18.9
C	7.7	7.5	9.1	6.3
D	0.0	0.8	3.0	2.1
E	0.0	2.3	2.7	2.2
W	3.8	2.6	4.0	4.3

Instructor Comments - Geoffrey Wright

Explained concepts effectively

1. Coding has been something that is hard for me to understand, but he taught us about HTML and .css very effectively. So effectively that I was able to program a simple website, which is something I didn"t think I could do.
2. TA"s sometimes didn"t know how to help me and instructor was not available.
3. There were a lot of times where the learning was driven by us as students and guided by Dr. Wright. I think that this was important because it helped us to think critically about the things that we were learning.

Well organized

1. Very clear, concise instructions and a clear due date. He"s a great teacher.
2. The only thing that felt it could use some tweaking was the timing for the different assignments.
3. Course was interesting, but I feel it could be more useful. Spending such limited time on a wide variety of projects didn"t allow me to excel in any of them and give me confidence in any of the technologies we learned.
4. I loved that Dr. Wright was flexible and that the assignments were edited to our semester and class. My only point of criticism is that the online canvas website was not always up to date with what our assignments were for this semester.

Opportunities to get help

1. He would give us work time in class to finish projects, and he went around to each student to see if they needed help with anything.
2. Any time I went to him with some need for help, he always made time and was sincere about my issues, even if it was just to let me talk it through out loud with him.
3. Dr. Wright was very willing to help students who were in need of help. He was also very flexible allowing students the opportunity and correct amount of time for them to grow.

Opportunities for student involvement

1. Gave us cool assignments that helped me learn a lot of different applications.
2. Class discussions and group projects were something that I looked forward to in this class, which is such a change from a lot of other classes I"ve had.
3. Each activity or unit that we went over had a purpose to further our technological literacy. I found the projects we were assigned were at my level and gave me the chance to push myself and improve old skills or gain new skills.

Responded to students respectfully

1. Sometimes would make comments or put students on the spot that sometimes made me uncomfortable.
2. Maybe others might not like his style, but to me he?s legit. Dunno just a solid guy that has such a deep level of care that might not so readily seen. But i can see it.
3. Dr. Wright was respectful while also showing an appropriate amount of humor that helped ease learning and establish his personality.

What effect did this course and instructor have in helping you achieve the Aims of a BYU Education?

Spiritually strengthening

1. We had to create our own Mormon Message. It was intellectually and spiritually enlarging.

Intellectually enlarging

1. I learned many things that I knew nothing about before taking this class.

2. This class helped my understanding about so many different types of technology. It has also given me the ability to talk about different technologies with other people and be fairly well informed. The weekly RSS feed assignments helped me to stay current with technological progression. Exploring the use of different forms of visual media and communication was very interesting and I believe that the things that Dr. Wright teaches will actually benefit me for the rest of my life. If there were a way to do it I would suggest that every student should have a class like this in their college experience, provided they have an instructor such as Dr. Wright who cares enough to cater their learning.

Character building

1. Had to work hard in this class. Built character.
2. The amount of time that we were given to complete each assignment provided a good balance of being able to learn and delve into the new technologies with being able to cover many different subjects. I feel like this helped build my character. As I put effort into my work and was able to improve my abilities it made me feel empowered. As Dr. Wright is the one who provided these opportunities I find him specifically responsible for this chance of growth.

Leading to lifelong learning and service

1. The skills and knowledge I have obtained because of this class and Dr. Wrights instruction will permit me continue following my interests in technology. I feel that I have been provided with the appropriate tools and knowledge to be able to research and learn a new technology on my own time. I was also given the opportunity to help many other students with their projects which has deepened my interest in teaching.

Hours spent out of class

1. We had a lot of class time to work on projects.
2. depended on the project and my previous experience it was more like 6-10
3. finishing up projects I couldn"t finish during class time
4. An average depending on what projects we had going on. Some took longer than others
5. Because its a lot of learning as you go, but its the way I learn so it perfect for me
6. Working on projects outside of class time.
7. I had a lot of fun going above and beyond the requirements of a lot of the assignments. I found that this extra time I spent early on usually helped me to learn newer technologies later and allowed me to help other students who were struggling.

Additional comments

1. My only negative comment would be some projects we did NOT have enough time (Premiere), and some we just had way too much time (Website). Having things more evenly spaced out would have been really nice.
2. He"s a great teacher.
3. The only comment I have is on the Pornography lecture. I don"t disagree with what was said... But as someone who has been fighting to overcome pornography for years... and was exposed as early as 6 years old. You painted a very bleak picture for the people who sometimes already feel like there is no hope. The people who just keep trying. Who keep praying for strength and deliverance. Who set up automatically shutting off internet at night. Who upgraded phones solely for better parental controls over themselves. Who have asked roommates to install open DNS on the apartment router. Sorry... I"ll stop now. It just would have been nice to hear that there is some hope. Because when the only thing left to be done is hope that the Lord will deliver you in his time... the hope can start running low.
4. this teacher rocks seriously put him in charge of the entire school of engineering, he helps me actually learn the material vs. pass the material
5. Good course! Great instructor! However, in my personal opinion, I think some of the assignments need to be toned down a little and be a little less intensive, while others need to be more intensive. I think there should only be two photoshop assignments at the most, one thats a very simple intro and one thats much more intensive, versus having three assignments where one is simple and two are intensive. Try and combine the current two more intensive photoshop assignments into one. I would consider combining the two sketch-up assignments as well. Possibly having students create an object they must incorporate into their house, like designing their own door to be used for all the bedroom doors, or designing a piece of artwork to be displayed on the kitchen island, or designing a piece of their own furniture. Then its like making two assignments into one. I also think there should have been weekly mini learning adventures giving students opportunity to really contemplate what they learn from that weeks "how does it work" presentations. Overall though, nothing negative about the class, just some opinions/suggestions to make for a better experience for future students.
6. Loved this class and Jeff is an amazing professor. Learned so much, and learned to learn better
7. I would recommend this course and major to anyone mainly because of the incredible professors, including Dr. Wright. He has helped me to keep a love of learning and a love of discovering things and working on things on my own. It has been great to also be around a group of like-minded people in this class and that I was able to participate so openly with all of them
8. I just like his class, cause he genuine and learning is his no 1 priority you can tell. I find that I listen to his more than other teachers just cause you know he?ll give you the truth in a refreshingly blunt way but can still be aware of others sensitivity. There is just a LOT of things to cover through the semester but its

good fun, the way he just lets us at it.

9. Course was fun

10. Talk about a class where there is a lot of stuff thrown at yea. But I am leaving with a lot of really useful skills. All the projects were really interesting and I learned a lot from all of them. Some of them were really hard and took a lot of time.

11. For the 3D modeling Sketch-Up unit we had two projects to complete in any order. It was suggested that we replicate the ROV model first and then move onto the creating the model for the house plan. A major part of being able to do the ROV model quickly was knowing how to create and use components. I learned this on my own and I feel like it is important enough that it should be covered in class. Also, I did not like the timing of the midterm. I feel the date was set very abruptly and I wish that I had more time to prepare and organize study opportunities with my fellow students.

BYU Student Rating Individual Section Report

TES 276A Exploration of Teaching A - Fall 2019
Section 001

Geoffrey Wright

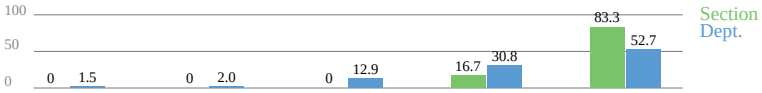
Historical Course Average
4.7

Composite Student Rating

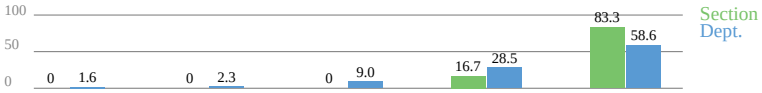
Section	4.7 - 5.0
Course	4.9
Department 100-299	4.4 - 4.6
College 100-299	4.4
University 100-299	4.5

Instructor Effectiveness

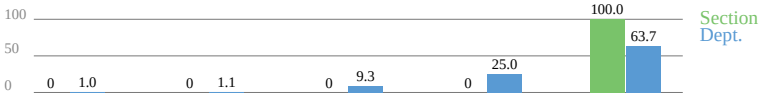
Explained concepts effectively
6 / 29 responded



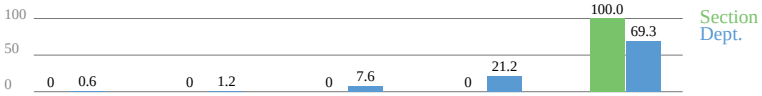
Well organized
6 / 29 responded



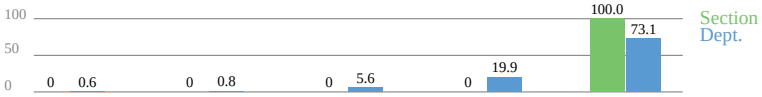
Opportunities to get help
6 / 29 responded



Opportunities for student involvement
6 / 29 responded



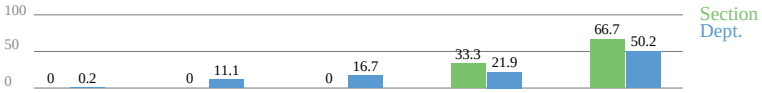
Responded to students respectfully
6 / 29 responded



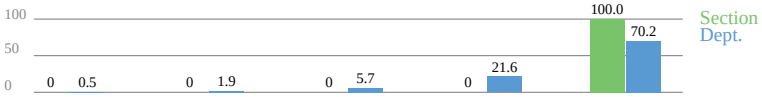
Not At All Effective | Not Very Effective | Moderately Effective | Effective | Very Effective

Helped students achieve the Aims of a BYU Education

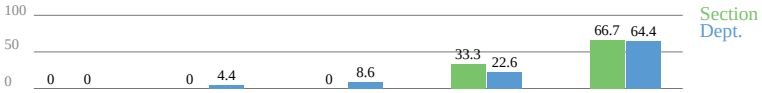
Spiritually strengthening
6 / 29 responded



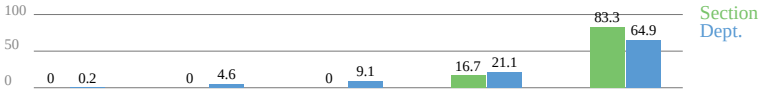
Intellectually enlarging
6 / 29 responded



Character building
6 / 29 responded



Leading to lifelong learning and service
6 / 29 responded



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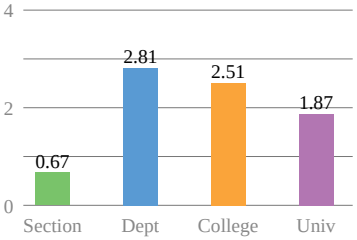
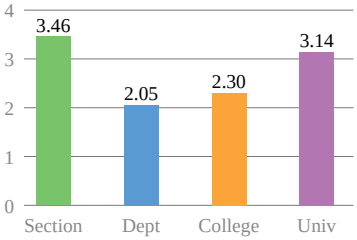
Hours spent per week out of class per credit hour



Mean GPA



Grade distribution (%)

	Section	Dept	College	Univ
A	62.1	35.0	34.9	55.3
B	27.6	26.7	26.7	18.9
C	3.4	7.5	9.1	6.3
D	3.4	0.8	3.0	2.1
E	3.4	2.3	2.7	2.2
W	0.0	2.6	4.0	4.3

Instructor Comments - Geoffrey Wright

What effect did this course and instructor have in helping you achieve the Aims of a BYU Education?

Spiritually strengthening

1. You could maybe connect some of the teaching principles to gospel teaching just as an idea.

Character building

1. I think it would be good to include more connections to outside the classroom.

Additional comments

1. Professor Wright cares about us and is willing to help. His class is interesting and the course work is just enough. I appreciate his style of teaching and wish him the best with the rest of his career. I can"t wait to take more of his classes!
2. Really enjoyed your energy and passion for the topic. We feed off of that

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BYU Student Rating Individual Section Report

TES 276B Exploration of Teaching B - Fall 2019
Section 001

Geoffrey Wright

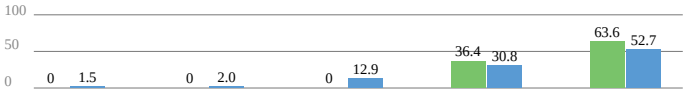
Historical Course Average
4.6

Composite Student Rating

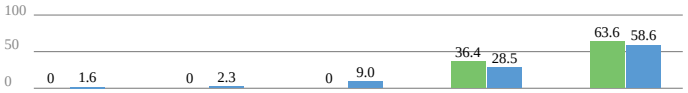
Section	4.4 - 5.0
Course	4.7
Department 100-299	4.4 - 4.6
College 100-299	4.4
University 100-299	4.5

Instructor Effectiveness

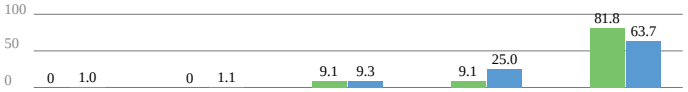
Explained concepts effectively
11 / 27 responded



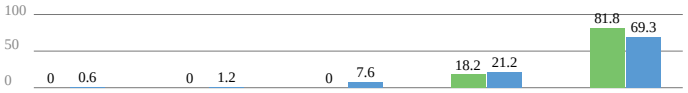
Well organized
11 / 27 responded



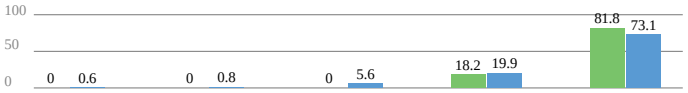
Opportunities to get help
11 / 27 responded



Opportunities for student involvement
11 / 27 responded



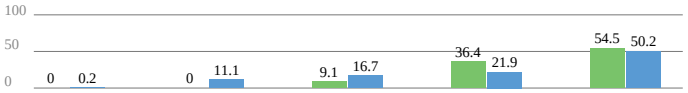
Responded to students respectfully
11 / 27 responded



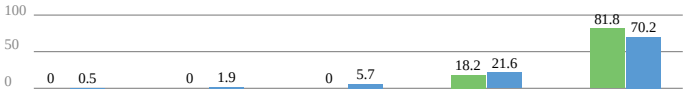
Not At All Effective | Not Very Effective | Moderately Effective | Effective | Very Effective

Helped students achieve the Aims of a BYU Education

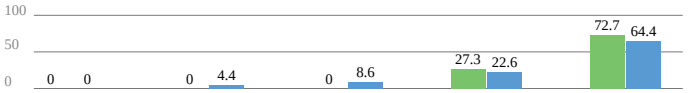
Spiritually strengthening
11 / 27 responded



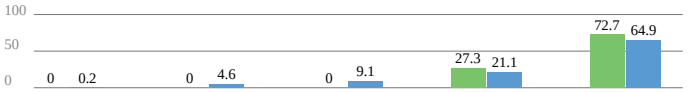
Intellectually enlarging
11 / 27 responded



Character building
11 / 27 responded

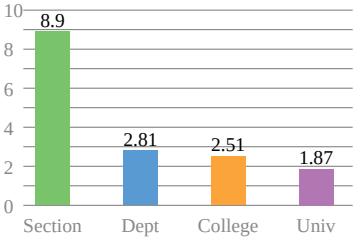


Leading to lifelong learning and service
11 / 27 responded

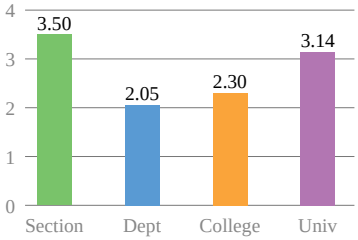


Detracted | No Effect | Moderately Enhanced | Enhanced | Strongly Enhanced

Hours spent per week out of class per credit hour



Mean GPA



Grade distribution (%)

	Section	Dept	College	Univ
A	70.4	35.0	34.9	55.3
B	22.2	26.7	26.7	18.9
C	3.7	7.5	9.1	6.3
D	0.0	0.8	3.0	2.1
E	3.7	2.3	2.7	2.2
W	0.0	2.6	4.0	4.3

Instructor Comments - Geoffrey Wright

Well organized

1. Often we cover a lot of content quickly in one class, then don"t really use or apply it again but are expected to know it
2. I think that organization on canvas is really good but could still be improved.

Opportunities for student involvement

1. Very interactive lectures. I haven"t had many classes like that at BYU.
2. I felt that almost every lesson and class period had very dynamic and active feel that provoked my participation and interest. Dr. Wright was very mindful to practice the teaching philosophies and methods he taught us during the class. Every class period it seemed used or introduced a different type of instructional technique. A lot of these techniques involved lots of student interaction and student talk time.

What effect did this course and instructor have in helping you achieve the Aims of a BYU Education?

Spiritually strengthening

1. I believe that Dr. Wright did a marvelous job of bringing the Spirit to his class. Even at BYU I rarely have felt the Spirit in such an inspiring way as I have in this class. It has caused me to think a lot about what I know and how I interact with others as a teacher/learner. I think that the weekly reflections were very important. I found them tedious at times but always extremely important as a whole.

Intellectually enlarging

1. Intellectually enlarging is an exact phrase that I would use to explain this class and Dr. Wright"s pedagogy.

Character building

1. The teaching experiences and the build up has changed my life and perspective on teaching an on myself. I feel that I have traveled from anxious and not wanting to get in front of others and teach to having fun creating lesson plans and looking forward to interacting with those I teach. My character really needed this and the encouragement that Dr. Wright provided throughout the entirety of the class.

Leading to lifelong learning and service

1. Dr. Wright and this class have cemented in my mind the importance of always seeking for more knowledge and finding a way to share that knowledge with others.

Additional comments

1. i really enjoyed Professor Wright as an instructor, he is powerful and motivating.
2. Geoff is very knowledgable but seems to kinda aloof. Kinda hard to talk to him in general.
3. Professor Wright truly cared for his students and would spend time outside of class to assist in any way the student needed.
4. Class wasn?t meant for me, but he makes the class seem like it?s applicable to all
5. Dr. Wright is awesome at teaching for school and life.
6. I needed this course in this time of my life, it has changed the way I look at myself as a student. Perhaps, others will not have had such a bond with this class, but I found it vital. Not only was the subject matter important but Dr. Wright was instrumental to my experience and interest in learning and teaching. I realized that teaching is perhaps one of the most important skills that a person can obtain in this life. We will all be teachers at some point in time whether by choice or by chance. Understanding how teaching and learning interact with each other and how we as humans interacts with each other is of upmost importance. I know that this class has changed my life and I would recommend it to everyone. I would also recommend that everyone take a class with Dr. Wright even though that would be impossible logistically speaking. I have learned that perhaps the most important part of a class is the person who is teaching. I think that Dr. Wright deserves high praise for his craft.

BYU Student Rating Individual Section Report

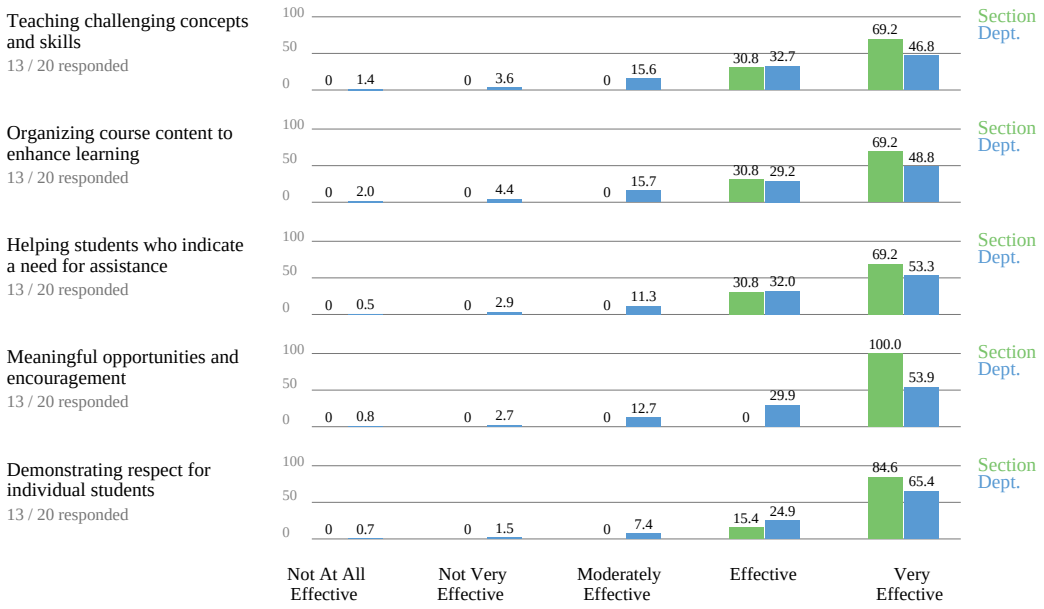
TEE 251 - Winter 2016
Section 001
Geoffrey Wright

Historical Course Average
4.8

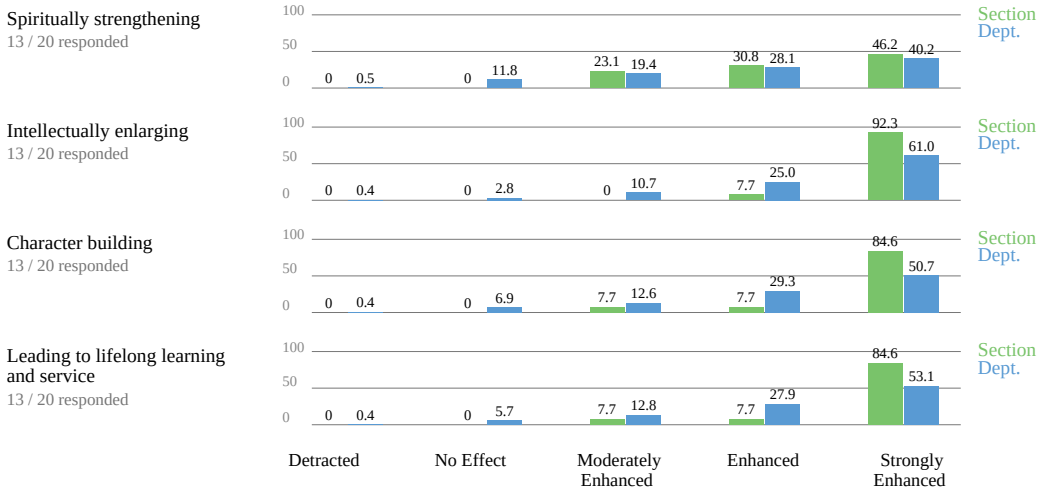
Composite Student Rating

Section	4.8	(4.6 - 5.0)
Course	4.8	
Department	4.3	(4.2 - 4.4)
College	4.3	
University	4.4	

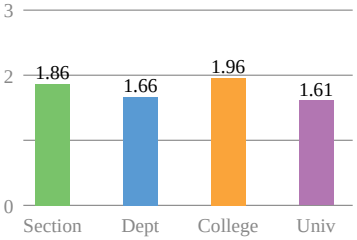
Instructor Effectiveness



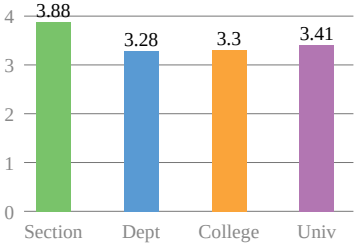
Helped students achieve the Aims of a BYU Education



Hours spent per week out of class per credit hour



Mean GPA



Grade distribution (%)

	Section	Dept	College	Univ
A	81.0	39.5	43.7	53.2
B	14.3	25.9	26.0	22.5
C	0.0	7.9	8.7	6.8
D	0.0	2.0	2.0	1.9
E	0.0	1.6	1.8	1.8
W	4.8	2.9	3.2	3.8

Instructor Comments - Geoffrey Wright

Teaching challenging concepts and skills

1. very effective, showed tutorials in class on new programs

Organizing course content to enhance learning

1. the course built up with our knowledge in the beginning we had simple projects which slowly led up to a short film
2. I liked working in groups, however, I do have a suggestion. I often felt like the people I was with in the groups dominated the projects. For example, for most of the semester, I had a "photo only" camera, and so I didn't get to film anything myself until the final project. At that point, I felt like I had to relearn a lot of the hands on stuff that everyone else had already learned. Additionally, I think it would be a good idea to assign roles in each group. For example, have primary video monkeys, primary editors, primary story boarders, etc., because I often got stuck as the "Story board and paperwork" person (aka, not awesome) even though I would have much rather been working with the equipment. Regardless, I still felt like I learned a lot, and will use these concepts in my future video projects.
3. I liked how we started off small, with just projects focusing on sound and video editing, and then later getting into doing it all. It was nice to have lectures before each different project so we knew what he was expecting.

Helping students who indicate a need for assistance

1. Cares a lot about every student. Very effective teacher.
2. very helpful is always in class to answer questions and stays after class to help anyone who wants
3. Geoff was always willing to answer questions and help us with our technique. If he didn't know the answer to like, an editing question, he would look it up and then help figure it out.

Meaningful opportunities and encouragement

1. Projects were great to work on.
2. All the hands-on projects were fantastic learning experiences! I REALLY wish we had more classes like this to practice filmmaking and photography!
3. very effective the class is very hands on, lots of projects with lots of feedback given in class
4. Loved the projects. I actually really loved the trailer re-cut assignment. I love editing, and I loved the autonomy of this assignment.
5. This whole class is participation, and all the projects and their different goals helped me learn a lot about the different types of film and how much goes into getting a project done.

Demonstrating respect for individual students

1. very effective he always asks for questions and encourages them, he asks students their opinions and lets the students have a lot of say in the class. we have a say in scheduling, assignments, and organization
2. Geoff offers lots of feedback for each project. Sometimes I felt that this feedback was given before I really had the chance to explain the vision, so I don't think he always "got it." However, his feedback was always quality, and he was determined to help us come up with a solid idea for each project.

What effect did this course and instructor have in helping you achieve the Aims of a BYU Education?

Spiritually strengthening

1. we always pray and the gospel is tied into lectures

Intellectually enlarging

1. I learned so much in this class! I wish I could take it again next semester!
2. lots of good information followed with hands on practice

3. I've always enjoyed making videos and been fascinated by the behind the scenes of film making, and this class definitely helped me learn a ton about everything that goes into making films. We were only doing like, 1-5 minute films and that was even a long process, so it's crazy to me just how much time must go into making a feature film. This class definitely gives you a feel for that process on a smaller scale. I didn't realize before going into this class how important pre-production is, and if you do that effectively, your shooting and editing will be so much easier. Geoff is a great teacher and gives helpful feedback. When we would start brainstorming ideas, he always came around and told us what he thought and how we could make it better. There were times when our group was set on one idea and didn't actually follow his advice, but once it was all finished, we realized that we probably should have and our project would have been better. :)

Character building

1. lots of teamwork where you will learn patience and humility
2. This helped me a lot in learning how to work in groups better. These projects needed multiple people working on them I think, and I mean, in film you're working with a huge team, so it was a really good experience to learn how to pull your own weight and also to be able to go with the flow.

Leading to lifelong learning and service

1. this class really inspires you to continue doing your own projects because of how much freedom we are given
2. This class got me thinking about other projects I could start doing for fun just by myself. Plus, knowing all that I do now from taking this class, I can make pretty awesome videos using techniques I didn't know about before.

Time Spent Outside of Class

1. It was a time-consuming class, but I loved it! Taking great photos and making great films takes time.
2. all the time spent was time well spent, loved this class, loved the projects, the team work, and feedback. i wish i can take it again.
3. I wish there was a little more hands on assistance. It went from PowerPoint to good luck and maybe if he rotates through each group per week shadowing them and teaching them hands o techniques with the camera that would help me feel like I improved more. For example I really liked when we went to the studio for photography - more real experiences like that would be awesome.
4. A lot of this time was shooting, and while a lot of the time we were able to do this during class time, there were times where schedules didn't line up and we had to shoot and edit outside of class. So it probably wasn't 3 hours EVERY week, but that's like an average when we were working on projects.

BYU Student Rating Individual Section Report

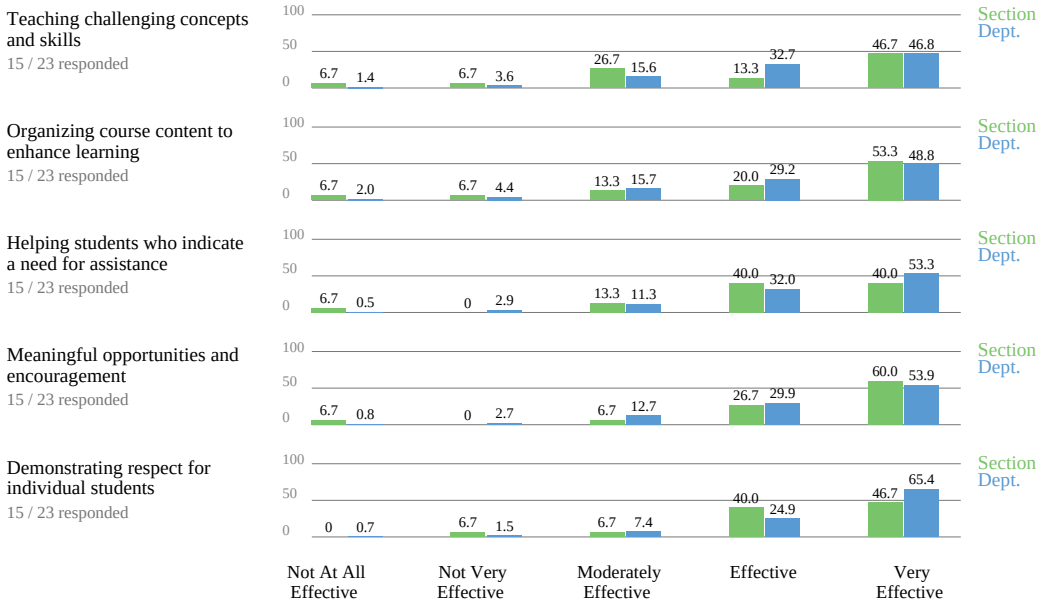
TEE 255 - Winter 2016
Section 001
Geoffrey Wright

Historical Course Average
4.5

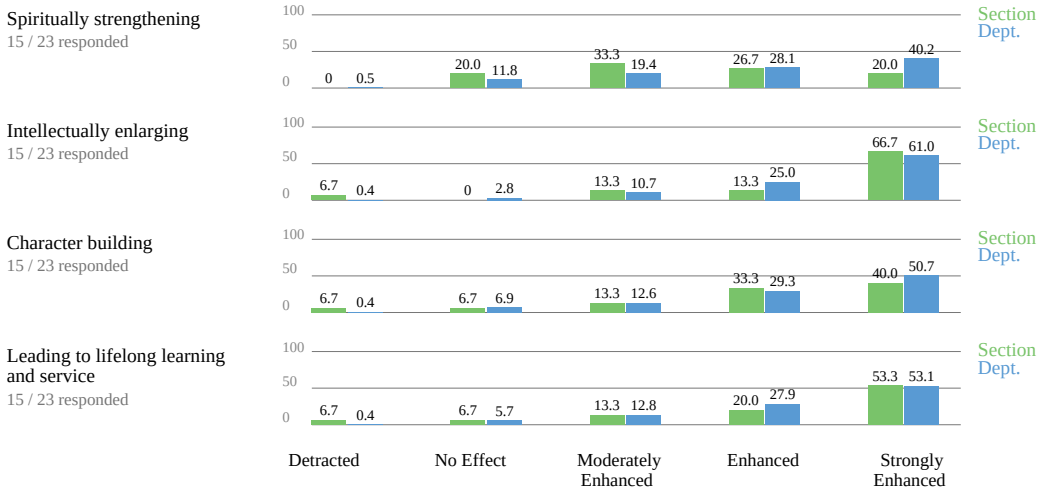
Composite Student Rating

Section	4.1	(3.5 - 4.7)
Course	4.1	
Department	4.3	(4.2 - 4.4)
College	4.3	
University	4.4	

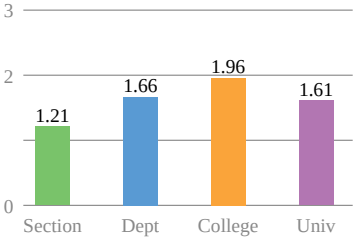
Instructor Effectiveness



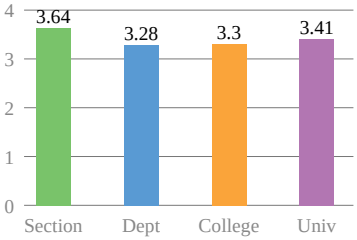
Helped students achieve the Aims of a BYU Education



Hours spent per week out of class per credit hour



Mean GPA



Grade distribution (%)

	Section	Dept	College	Univ
A	62.5	39.5	43.7	53.2
B	29.2	25.9	26.0	22.5
C	4.2	7.9	8.7	6.8
D	0.0	2.0	2.0	1.9
E	0.0	1.6	1.8	1.8
W	4.2	2.9	3.2	3.8

Instructor Comments - Geoffrey Wright

Teaching challenging concepts and skills

1. Would give very rushed instructions on how to use specific programs and when students would struggle he'd say that they could always use the Internet for help.
2. Geoff likes to teach with lecture, but the lectures are very long and difficult to get through. I'd prefer a method of quick tutorial and then going to work.
3. Lectures about the software itself moved a bit too quickly. Maybe slow them down just a touch for those of us who are very new to Adobe. Things like pre-printed cheat sheets for keyboard shortcuts would also be golden!

Organizing course content to enhance learning

1. Missed class a lot.
2. It was hard to tell which days were lecture days and which days were work days.
3. Loved the fact that deadlines were never the 11th commandment. We could always bank on his humanity if everyone felt behind.

Helping students who indicate a need for assistance

1. Geoff takes the time to help every student when we're working on projects. Then, if someone needs extra help, he makes sure they get it.
2. Needs more TAs to cover everyone's needs. The TA also didn't know much about what we were doing, so we ended up waiting for Geoff to help us.
3. Kind of hard with a class this big, but he did all he could. One suggestion might be that since it's usually only once a day that we get to talk with him about our projects that instead of giving us one thing to work on that takes 15 minutes, that he help lay out a battle plan for us that would take a bit longer. Because it's frustrating when feedback is tackled quickly but we need to wait another two days to get further direction. But like I mentioned, he does all he can with such a large class.

Meaningful opportunities and encouragement

1. Very hypocritical. Would give extra in class assignments so students who weren't in class would miss them but would miss class himself too often. Unfair to the students who were always in class. Criticism was often condescending and meaningless.
2. Loved the recreations. That was a great way to get involved quickly.

Demonstrating respect for individual students

1. As he missed class often he wouldn't really give many chances in class to ask questions.

What effect did this course and instructor have in helping you achieve the Aims of a BYU Education?

Time Spent Outside of Class

1. The projects were pretty time consuming but worth it

BYU Student Rating Individual Section Report

TEE 251 Video Prod Nonlinear Editing - Winter 2017
Section 001

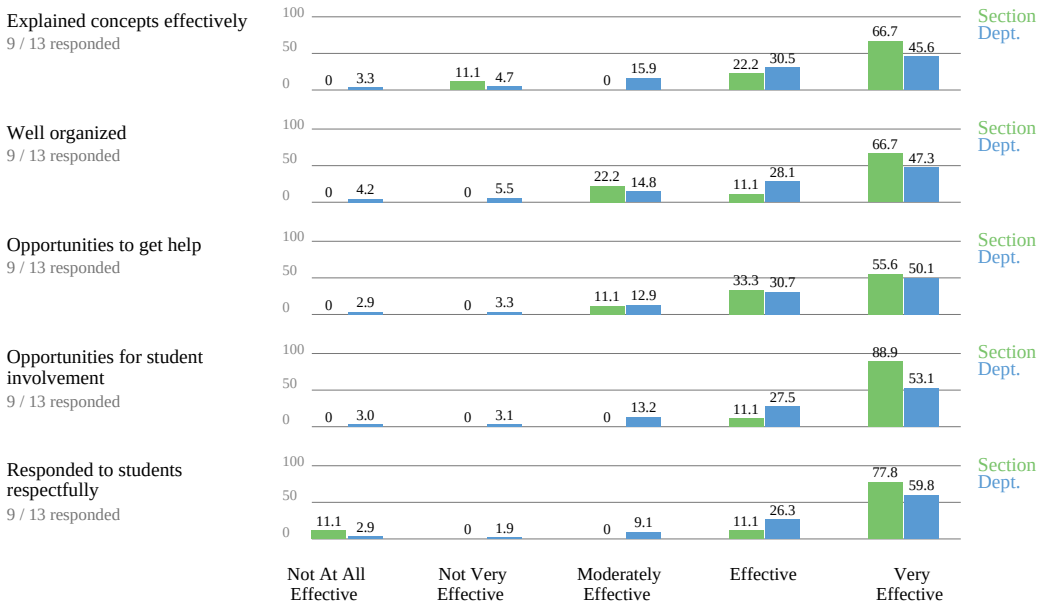
Geoffrey Wright

Historical Course Average
4.7

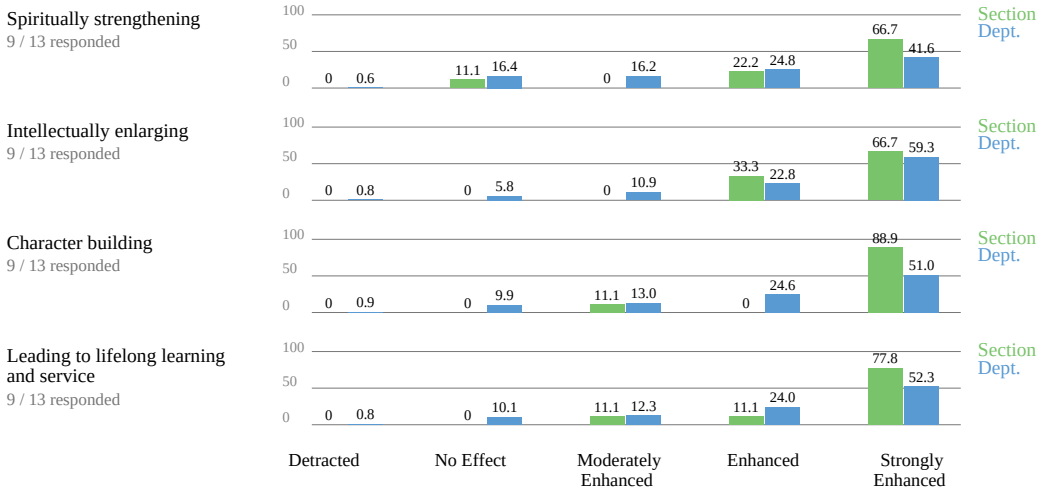
Composite Student Rating

Section	4.5	(3.9 - 5.0)
Course	4.5	
Department	4.2	(4.1 - 4.3)
College	4.3	
University	4.5	

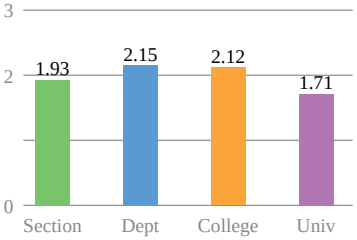
Instructor Effectiveness



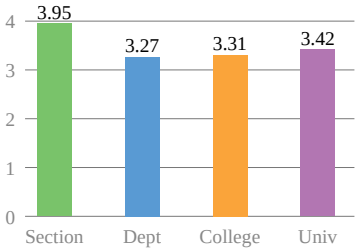
Helped students achieve the Aims of a BYU Education



Hours spent per week out of class per credit hour



Mean GPA



Grade distribution (%)

	Section	Dept	College	Univ
A	86.7	40.3	44.5	54.2
B	0.0	26.5	27.0	21.9
C	0.0	6.8	7.7	6.4
D	0.0	2.2	1.7	1.9
E	0.0	2.1	2.2	2.0
W	13.3	2.3	3.1	3.5

Instructor Comments - Geoffrey Wright

Explained concepts effectively

1. This class was more theory-based, which is fine. 125 should have covered skills, so you're good.

Well organized

1. Wasn't in love with the photo assignments, especially since it's a Video class. Way too much freedom for how strictly we're graded.

Opportunities to get help

1. Felt on multiple occasions that you were willing to help TOO MUCH. When we come with a basic question, you tell us our idea is terrible, give us a new idea, and make us run with it. Please don't run over our ideas with your own when we come to you asking something totally unrelated. Let us make mistakes once in a while, otherwise we'll never learn. You have great intentions in helping us and offering ideas, but halfway through the semester I had given up completely on coming up with ideas because I knew you'd just shoot it down and make us do your idea instead.

Opportunities for student involvement

1. Love your lectures. Lots of fun and very interactive.

Responded to students respectfully

1. Feel like I'm on the chopping block every time I ask a question in class. Haven't asked questions many times because I know you'll mock me for it. Your sarcasm / friendly teasing comes across as very aggressive and belittling most of the time.

What effect did this course and instructor have in helping you achieve the Aims of a BYU Education?

Hours spent out of class

1. Completely reasonable workload. Great timing and scheduling for all projects. Just enough time to get it done, but not so rushed that we miss elements. Great planning.
2. Depended on the assignment
3. Depends on the assignment. Could minimum of 30 minutes to a maximum of 12 hours or more depending on the assignment and group schedules.

Additional comments

1. Great class! Thanks Geoff!
2. Professor Wright made us learn by experience, which I find the most effective way to learn new skills. I am walking away from this class with skills that will be useful for the rest of my life.
3. I would have liked to spend more time going over Adobe Premier. This is a program that we use a lot, but I still don't know how to use very well.
4. He is one of my favorite instructors at BYU. He is so willing to help students understand and truly go out and learn for themselves. I love his teaching style and that he encourages us to go out and learn and try new things.
5. I grew a lot from this course. I do wish that it had been somewhat more organized, but Geoff is a busy guy, so I understand :)
6. 1. RUBRICS! We took an entire class from you about rubrics and didn't see a rubric once in this class. It's beyond frustrating to feel like I did great on a project, only to see my bad grade and wonder what in the world I did wrong. Each and every assignment needs a rubric, so we don't get docked just because you weren't a fan of it. 2. You NEED to assign groups and roles. Counting us off in numbered groups or just letting us pick is lazy. Please evaluate strengths and weaknesses of the individual projects and go from there. Also, assign roles. I know you're into the whole Laissez-Faire type of classroom, but you've taken it too far, and it causes problems. Assign a director, writer, cinematographer, etc. for multiple reasons. For one, you'll know whose grade to dock if someone sucks. Sorry for the harshness, but I was sick and tired of my grade getting wrecked because Joe Shmoe who's never touched a camera wouldn't let me help film, so it looked terrible. Also, there are very dominant personalities in the class. If you don't assign roles, that one person in each group can dominate and make the entire project run away in a direction no one else wants. By splitting the power, you make sure that groups are happy. I know you don't like to be so hands-on, but if you actually want this class to be realistic, you NEED to assign jobs. The packet for our final project had awesome outlines of roles. Use that

all the time. 3. Recognize effort and quantify improvement. It was frankly depressing how hard we worked on these projects, only to have you satirically rip them to shreds in front of our peers. Some of us don't come from a technological or film-based background, so take it easy. Give a video a few tips and ways to improve, but also point out what they've done well. You are not sincere in your compliments, and it shows. A good teacher not only knows how to point out areas of improvement, but also excels in pointing out what we've done right. You give WAY too much of the stick, try giving us the carrot every once in a while. 4. No more student ratings on projects. You're the professor, you give the grades. I say this for two main reasons: one, some people don't know what makes quality cinema. They haven't studied the theory, don't have enough experience, and base the videos off a skewed Hollywood-esque bias system. They don't know good film, so don't let them grade the projects. The second reason is because there is no way to quantify what they've done (again, a rubric would save your skin here). Oftentimes students feel funny grading other assignments, and will take off points unnecessarily, just so they don't look lazy for giving everyone a good grade. You're the one who knows our work and has seen our strengths and weaknesses, so asking others to judge us is taking all the personality and pedagogy out of it. Grade them yourself. I realize this review has been rather harsh, but it's because you're such a stellar professor. I love your humor, knowledge, and expertise, and have learned so much from you. However, I would not recommend your classes to others in their current state. They have fatal flaws, and the frustration is simply not worth it. But by fixing these few things, you can fix the course and be even more amazing.

7. Constructive criticism as well as explaining what you liked and when you liked our projects made for an enjoyable learning environment.

BYU Student Rating Individual Section Report

TEE 255 Visual Communication Design - Winter 2017
Section 001

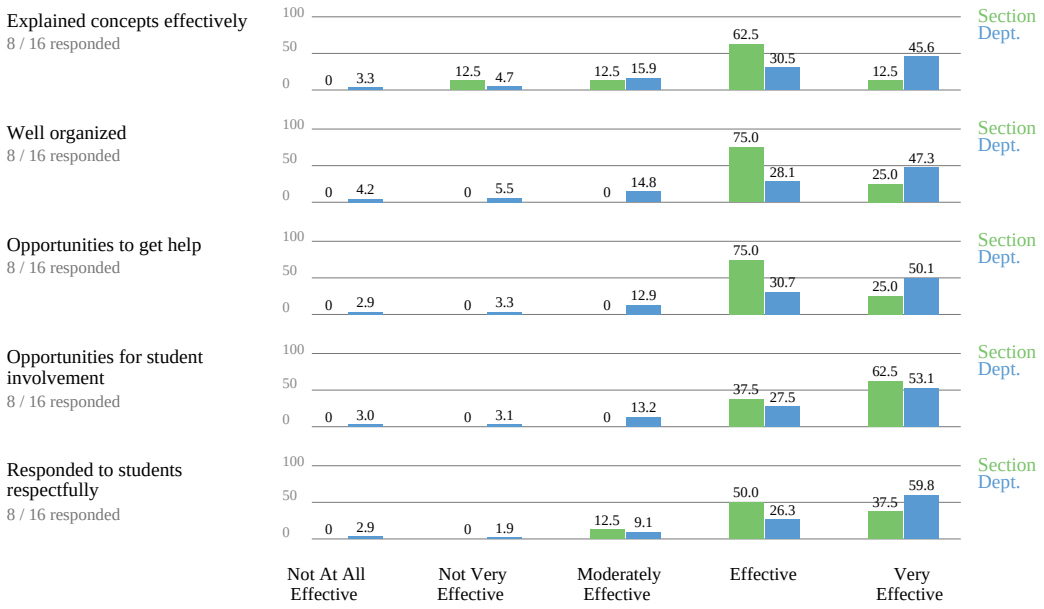
Geoffrey Wright

Historical Course Average
4.4

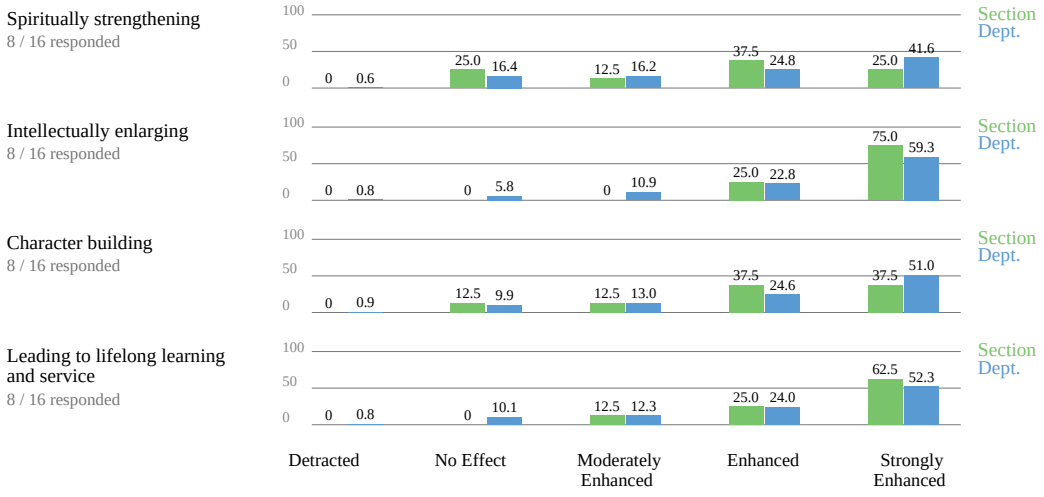
Composite Student Rating

Section	4.2	(3.7 - 4.7)
Course	4.2	
Department	4.2	(4.1 - 4.3)
College	4.3	
University	4.5	

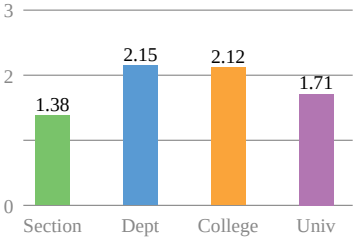
Instructor Effectiveness



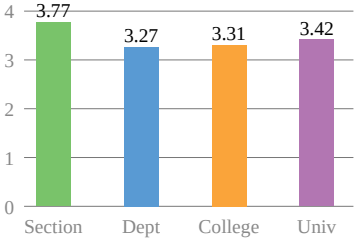
Helped students achieve the Aims of a BYU Education



Hours spent per week out of class per credit hour



Mean GPA



Grade distribution (%)

	Section	Dept	College	Univ
A	76.5	40.3	44.5	54.2
B	17.6	26.5	27.0	21.9
C	0.0	6.8	7.7	6.4
D	0.0	2.2	1.7	1.9
E	0.0	2.1	2.2	2.0
W	5.9	2.3	3.1	3.5

Instructor Comments - Geoffrey Wright

Explained concepts effectively

1. Your powerpoints may be well organized, but your lectures are scattered and you don't do a very good job at actually explaining new concepts. You have a manner of speaking where you use new ideas as though students already know what they are and you're just reviewing them.

Well organized

1. The most difficult part of this class was coming up with a good concept with enough time to execute it within the assignment period. Perhaps overlapping the assignments a little (introducing and talking about basic concepts before the previous assignment is due) would help.
2. I don't feel like Geoff fully plans for what it takes to realistically do the assignments as a rookie student. His abilities are far above ours and I feel like he plans based on his skills.

Responded to students respectfully

1. I have a strong impression that too much of your feedback is dictated by personal taste. I've seen good designs get shot down because they had a bar in them that you called an "underline." I also dislike that you talk about clients and their opinions as though they're stupid and inferior to the designer's. You once told me that a client's requirements were preventing my design from being a good one. That's ridiculous! A good design IS a design that meets all the client's requirements (and then some). You also tend to prefer certain styles and talk about them like they're superior design to styles you like less, when this isn't objectively the case.
2. I would say "Very Effective", however he would regularly reference asian information and call out the only asian student in our class as if she were th expert in all things asian. I don't know if it bothered her but it bothered me greatly!

What effect did this course and instructor have in helping you achieve the Aims of a BYU Education?

Spiritually strengthening

1. I will say he is one of the only professors I have had at BYU that begins EVERY class with a prayer.

Leading to lifelong learning and service

1. I am more confident in my graphic design abilities now, and interested in continuing to pursue it after BYU.

Hours spent out of class

1. Spent quite a bit of money printing everything too.

Additional comments

1. I learn a lot in this class. the instructor is excellent.
2. I have loved this class. The only thing I HATE about it is the replication assignments. I can see what the value can be with this assignment but I wish he could come up with an alternative to provide the same learning opportunity.

BYU Student Rating Individual Section Report

TES 251 Video Prod Nonlinear Editing - Winter 2018
Section 001

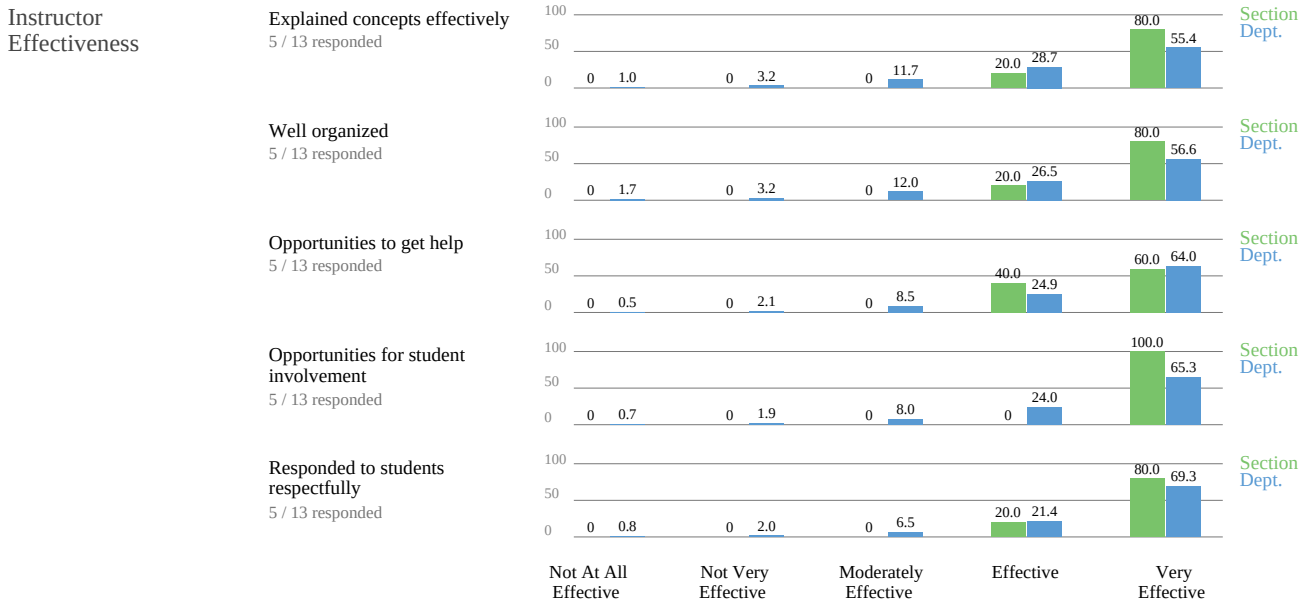
Geoffrey Wright

Historical Course Average
4.8

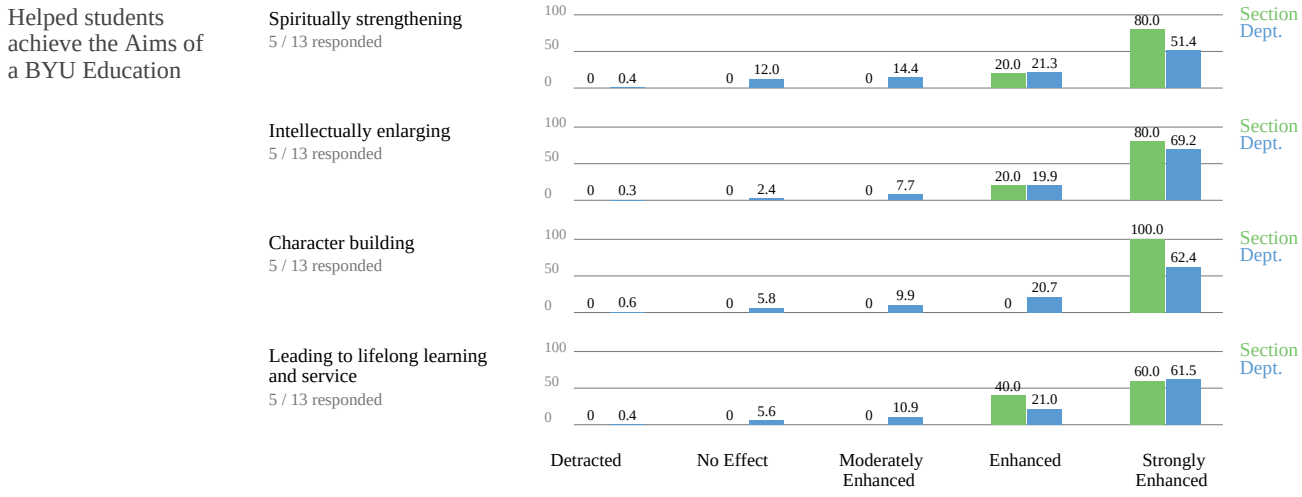
Composite Student Rating

Section	4.8	(4.4 - 5.0)
Course	4.8	
Department	4.4	(4.3 - 4.5)
College	4.3	
University	4.5	

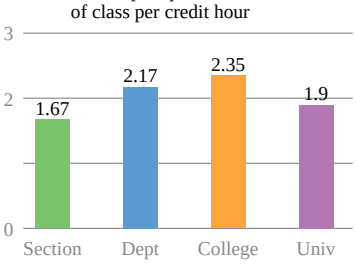
Instructor Effectiveness



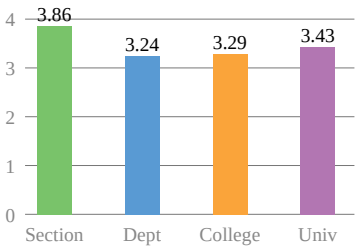
Helped students achieve the Aims of a BYU Education



Hours spent per week out of class per credit hour



Mean GPA



Grade distribution (%)

	Section	Dept	College	Univ
A	92.3	34.3	42.1	55.0
B	7.7	25.3	26.7	21.0
C	0.0	6.5	8.3	6.4
D	0.0	1.3	1.7	1.9
E	0.0	2.4	2.0	1.9
W	0.0	3.0	3.3	3.6

Instructor Comments - Geoffrey Wright

Opportunities to get help

1. Would appreciate a little more time spent on how to use equipment rather than figure it out as you go

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What effect did this course and instructor have in helping you achieve the Aims of a BYU Education?

Intellectually enlarging

1. I have learned a new skill in this class.

Hours spent out of class

1. Several group projects that were completed outside of class.

Additional comments

1. This class was AMAZING! I only wish there was a way to tailor the coursework to the level of student's knowledge. As a beginner with photography/videography, I often felt intimidated by the fast pace of the course and the little I knew how to do. However, I learned so much and am glad I took the course!
2. Professor Wright is super helpful and is always willing to assist on any project. I have learned a lot more about video production in this class than my last three years in the school of communications

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BYU Student Rating Individual Section Report

TES 255 Visual Communication Design - Winter 2018
Section 001

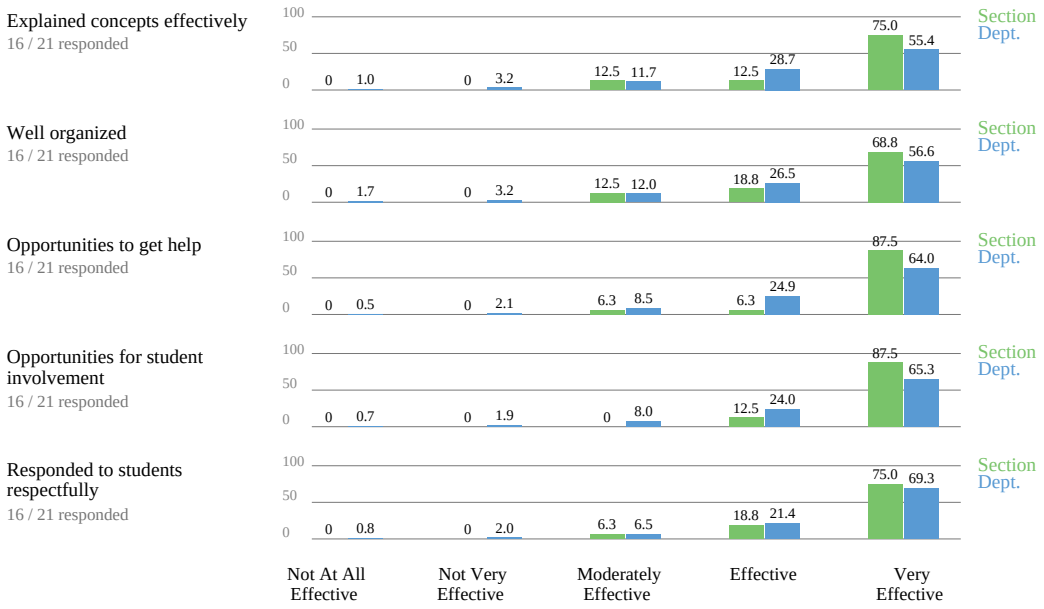
Geoffrey Wright

Historical Course Average
4.7

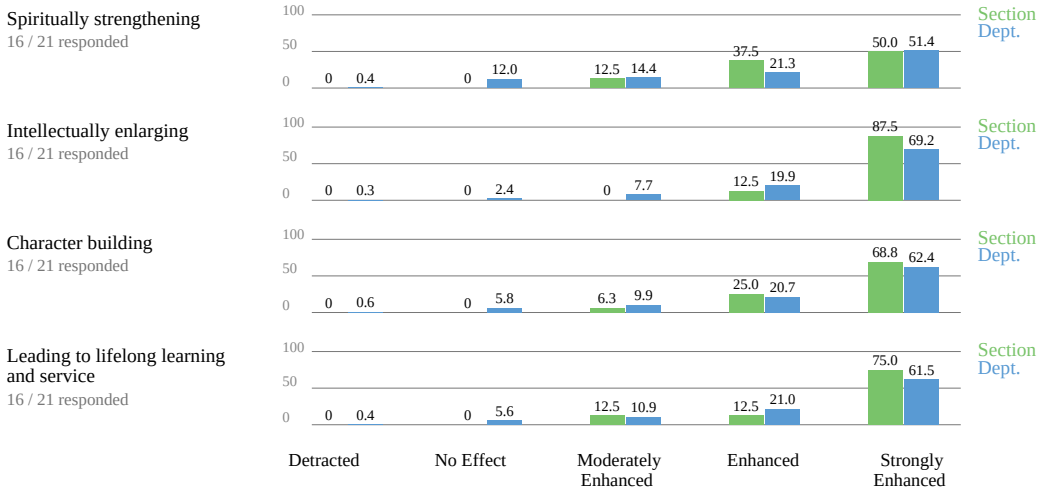
Composite Student Rating

Section	4.7	(4.4 - 5.0)
Course	4.7	
Department	4.4	(4.3 - 4.5)
College	4.3	
University	4.5	

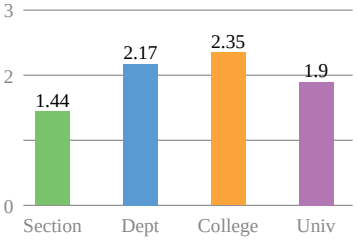
Instructor Effectiveness



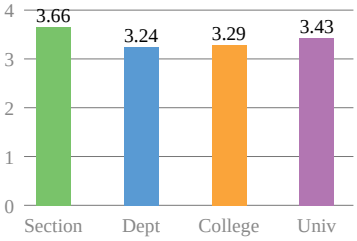
Helped students achieve the Aims of a BYU Education



Hours spent per week out of class per credit hour



Mean GPA



Grade distribution (%)

	Section	Dept	College	Univ
A	76.2	34.3	42.1	55.0
B	19.0	25.3	26.7	21.0
C	4.8	6.5	8.3	6.4
D	0.0	1.3	1.7	1.9
E	0.0	2.4	2.0	1.9
W	0.0	3.0	3.3	3.6

Instructor Comments - Geoffrey Wright

Explained concepts effectively

1. The man is a wizard.
2. He did a good job of showing us how to do things and then also gave us resources to find more information.
3. Sometimes it seemed like we were left to ourselves to figure some programs out, but I understand that with limited time and so many students it's impractical to expect him to teach everything for everyone all at once. Still, I sometimes felt like his expectations didn't fully take that fact into account, and felt overwhelmed.

Well organized

1. I like how the class was organized and that he was flexible to the needs of the class members.

Opportunities to get help

1. He was always more than willing to help. He knew how to get me to solve my own problems, rather than pushing me out of the way to fix it. Great mentor and teacher.
2. He made sure to provide one-on-one feedback on a regular basis.
3. He was really effective when he was there but he missed quite a few class period which made it a bit harder to get his feedback.
4. He is always willing to meet as long and as often as necessary to help with questions or concerns regarding the class itself or really anything in general.
5. He will always give one on one direction and feedback when it's needed.

Opportunities for student involvement

1. Every week was a new meaningful opportunity that left me with assets to be used outside of class. I felt like he helped me graphically forge my own tools for life.
2. The class was very interactive and he gave us lots of opportunities to actively participate.
3. Every assignment was very hands-on, and I felt like I learned so much more than I would have in a more lecture-heavy format.

Responded to students respectfully

1. He is sarcastic sometimes, but he was always respectful of the students and their needs.
2. He's such a good guy, and is really considerate of students' individual concerns and problems. I always felt like he had time for me, and went out of his way to see how he could help.

What effect did this course and instructor have in helping you achieve the Aims of a BYU Education?

Spiritually strengthening

1. Geoff bore his testimony to us about the importance of relationships and giving of your light to the world. I resonated with what he said, and it has stuck with me.
2. We do not talk about spiritual topics very often but we have on a few occasions and it has been uplifting.
3. The material itself wasn't super spiritual, but getting to know Geoff as a person has been really special. He is a great guy, and has helped me to have some powerful spiritual insights.
4. There were often moments in class when he would bring the important lessons of the Gospel into out lessons.

Intellectually enlarging

1. I have learned a ton of intellectual things about design!
2. I gained completely new skills while also expanding the knowledge I had about software that I has previously used. I feel like a much more capable designer after taking his class.
3. I have learned a lot in this class especially through doing.
4. I'm amazed at how much I have learned in just this past semester.

Character building

1. The group work has helped me to build my character.

Leading to lifelong learning and service

1. He is one of those teachers that believes in you and inspires you in the realest way. He's not going to baby you, but he helps build your confidence and accountability in becoming a graphic design professional.
2. We have learned skills that we could use in the future to help those around us!

Hours spent out of class

1. Loved learning how to use the Adobe Suite.
2. We had a lot of in-class time to work on our projects.

Additional comments

1. One of my favorite classes. I felt like each assignment was relevant and had value for my future. Geoff and Whitney gave great feedback for each assignment. I also felt like there was just enough time to demand quality work and not be terribly rushed.
2. Phenomenal teacher, expert at his craft, overall a pretty great guy. Love the sarcasm.
3. AWESOME CLASS! LOVE IT
4. Great Professor
5. This course is honestly probably one of the most practical classes I have taken at BYU. I know for a fact that the skills I was able to learn will directly benefit me in the future.
6. Geoff is one of my favorite instructors, and I am really grateful for all he does to make his students' time meaningful, productive, and fun.
7. Geoff Wright is an extremely caring and concerned professor. His desire to reach out and help each student succeed is remarkable. He makes himself available outside of class and always responds to student's emails with thoughtful, helpful advice. I wish more professors were like him.
8. Prof. Wright is honestly an amazing teacher. He makes all his classes engaging and I can feel his sincere desire to help his students. He is a great teacher and would take many other classes from him.
9. Geoff does a great job at helping students to push the boundaries of their capabilities and improve their designs.

BYU Student Rating Individual Section Report

TES 251 Video Prod Nonlinear Editing - Winter 2019
Section 001

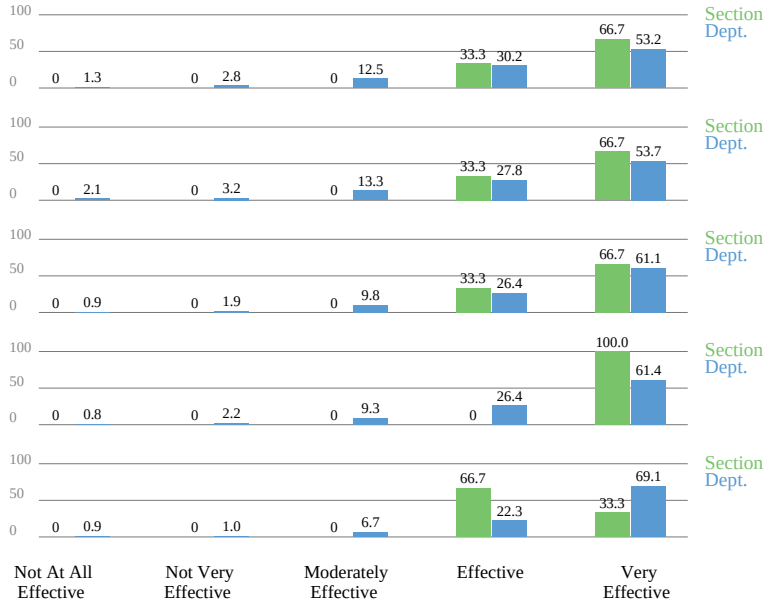
Geoffrey Wright

Historical Course Average
4.8

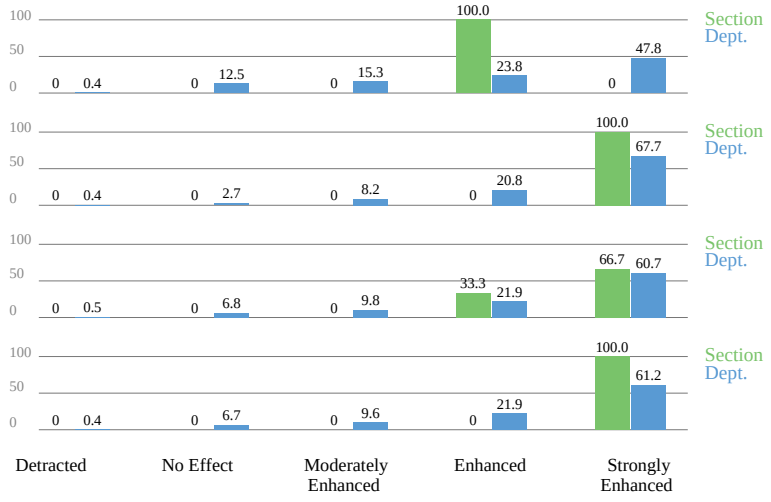
Composite Student Rating

Section	4.7	(4.2 - 5.0)
Course	4.7	
Department	4.4	(4.3 - 4.5)
College	4.3	
University	4.5	

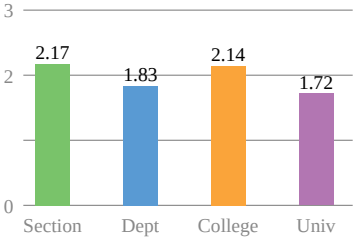
Instructor Effectiveness



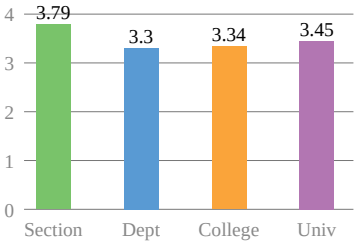
Helped students achieve the Aims of a BYU Education



Hours spent per week out of class per credit hour



Mean GPA



Grade distribution (%)

	Section	Dept	College	Univ
A	91.7	34.1	43.8	56.2
B	8.3	25.0	26.8	20.5
C	0.0	6.8	7.4	6.1
D	0.0	1.0	1.5	1.8
E	0.0	1.5	1.6	1.9
W	0.0	3.1	3.3	3.6

Instructor Comments - Geoffrey Wright

Well organized

1. The photo projects weren't given much attention so the video production dominated our time.

What effect did this course and instructor have in helping you achieve the Aims of a BYU Education?

Hours spent out of class

1. This one is hard to calculate because the class time blends into out of class time when filming and shooting.
2. filming, editing, planning, photography assignments

Additional comments

1. Dr. Wright is great! I'd loved this lass aside from the photo projects that unintentionally fell behind because of the large emphasis on video.
2. This was a great class and I enjoyed the assignments. They helped me stretch my thinking, become more creative, and learn new hard skills.

BYU Student Rating Individual Section Report

TES 255 Visual Communication Design - Winter 2019
Section 001

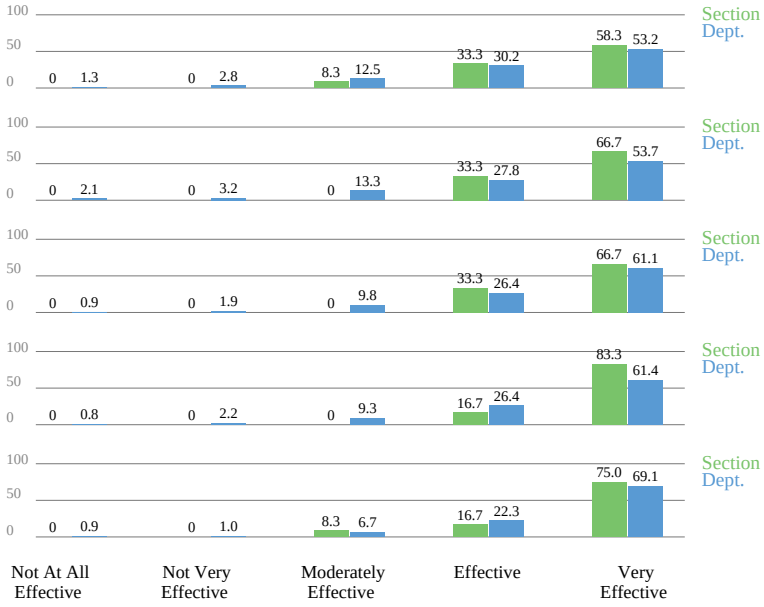
Geoffrey Wright

Historical Course Average
4.7

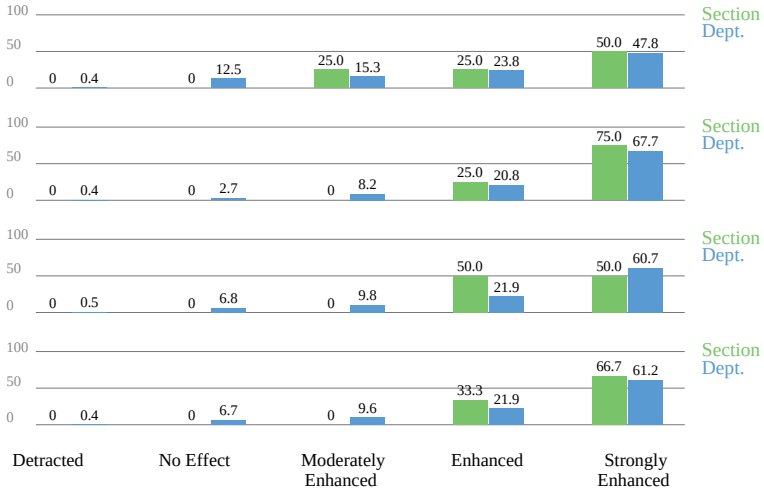
Composite Student Rating

Section	4.7	(4.4 - 5.0)
Course	4.7	
Department	4.4	(4.3 - 4.5)
College	4.3	
University	4.5	

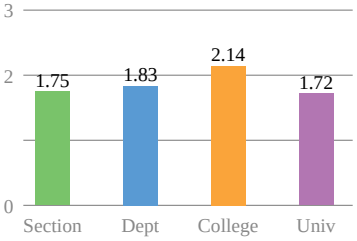
Instructor Effectiveness



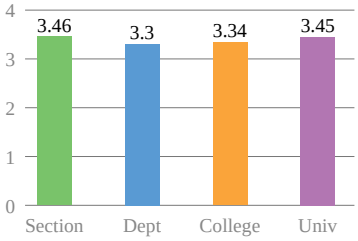
Helped students achieve the Aims of a BYU Education



Hours spent per week out of class per credit hour



Mean GPA



Grade distribution (%)

	Section	Dept	College	Univ
A	65.4	34.1	43.8	56.2
B	23.1	25.0	26.8	20.5
C	7.7	6.8	7.4	6.1
D	0.0	1.0	1.5	1.8
E	3.8	1.5	1.6	1.9
W	0.0	3.1	3.3	3.6

Instructor Comments - Geoffrey Wright

Explained concepts effectively

1. Though most of the time he taught us through a self-learn kind of approach, if you asked him about a hard concept he was good at explaining things.
2. sometimes you just go through materials / tutorials super fast

---

Well organized

1. Expectations were easy to understand and the class was organized. Things moved quite quickly though. The late assignment policy he had for the class made it possible to catch up later but it did cause some people to procrastinate working on assignments. I feel like you need a balance. Some assignments I did feel like we needed more time but maybe not too much freedom in having the whole semester to catch up.
2. The class moves so fast that it can be hard to keep up.

Opportunities to get help

1. Professor Wright knew all the names of the students, and would go to each student to see what they were working on, and if they needed help.
2. Geoff is awesome; he responds to emails so fast and is always quick to help with anything.
3. He was accommodating to situations that came up for students and was fair.

Opportunities for student involvement

1. Thanks for having us do all of those fun projects!
2. There was always an opportunity to ask questions.
3. The assignments provided a lot of meaningful opportunities to be actively engaged. They were useful as portfolio builders and I feel like it was all stuff that could be super applicable in the future. It was very hands on.

Responded to students respectfully

1. Thanks for being patient with me.
2. Sometimes I have a hard time telling if he likes me or not and he does tease students a bit, which can give off a bit of an intimidating vibe to newer people. But every once in a while he compliments you on your work and you can tell he really means it as he is blunt in his honesty and you know he isn't just saying it.

What effect did this course and instructor have in helping you achieve the Aims of a BYU Education?

Spiritually strengthening

1. We started each class with a prayer. I kind of wished he didn't stare people down to call on them, but glad we did start with a prayer.

Intellectually enlarging

1. I feel like I learned and progressed so much for this class. All super applicable skills too. I learned both hard and soft skills that I know I will use sometime in the future.

Character building

1. We had some good team projects that I believe helped build character and develop some of those soft skills.

Leading to lifelong learning and service

1. I definitely think that what I learned in this class will help me learn more in the future. It is a great launching point to learn so much more about Visual Communications.

Hours spent out of class

1. I chose to put more time into the work than was necessary because I wanted to make a quality work.
2. It ranged quite a bit. It mostly depended if I finished the projects quickly or not. It could range from anywhere from 3 to 9 hours each week. Towards a deadline, it could easily reach towards 9 if you tried to put in quality work.

Additional comments

1. Professor Wright, is one of the best professors I have had while attending BYU. I have learned valuable skills in Adobe Photoshop and Adobe Illustrator that I will use later in life.
2. Geoff is honest, kind, and genuinely encouraging. He wants his students to succeed.
3. I enjoy being in Geoff's class and I feel like it was one of the most valuable classes that I took this semester.
4. Fun class! Thanks for a good semester.
5. Geoff is a great guy, goes out of his way to get to know us individually and connect with us.

BYU Student Rating Individual Section Report

TES 251 Video amp; Photography Production - Winter 2020
Section 001

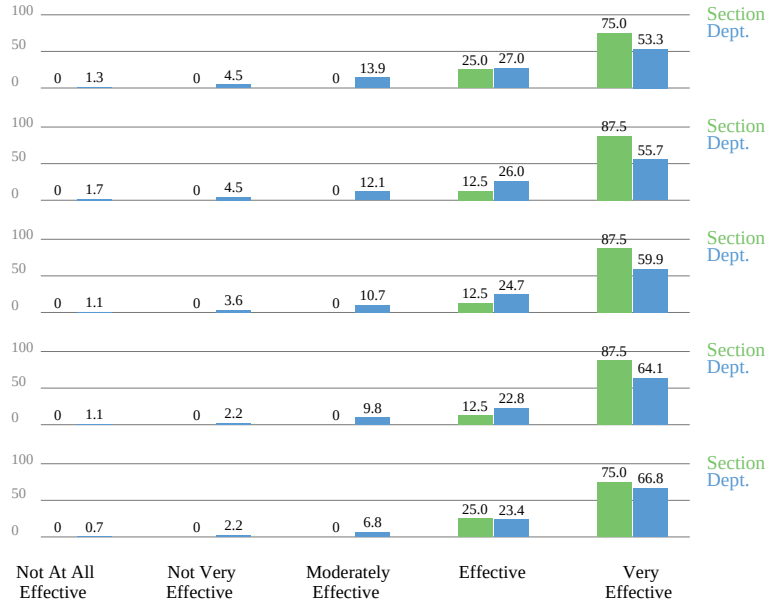
Geoffrey Wright

Historical Course Average
4.8

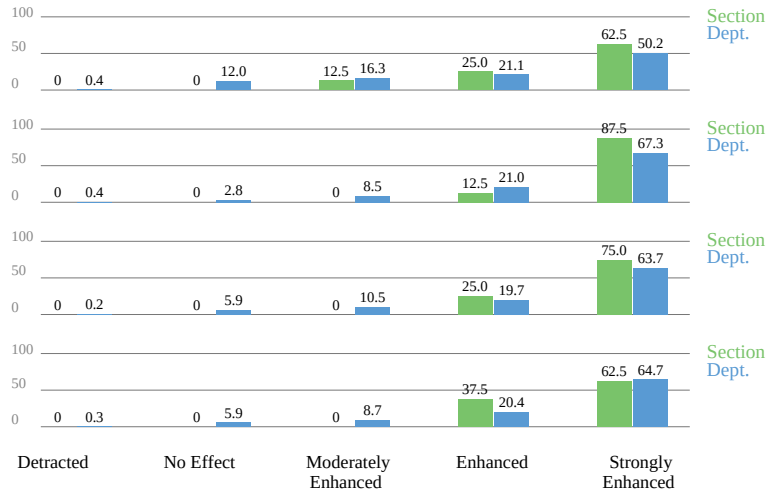
Composite Student Rating

Section	4.5 - 5.0
Course	4.8
Department 100-299	4.3 - 4.5
College 100-299	4.4
University 100-299	4.5

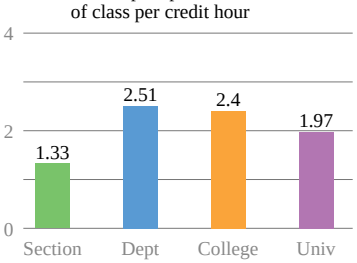
Instructor Effectiveness



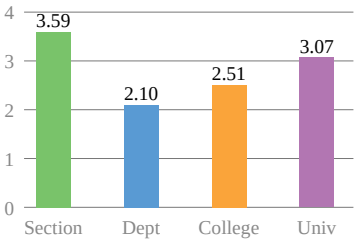
Helped students achieve the Aims of a BYU Education



Hours spent per week out of class per credit hour



Mean GPA



Grade distribution (%)

	Section	Dept	College	Univ
A	56.3	27.6	33.0	54.8
B	31.3	27.7	24.9	17.1
C	6.3	10.3	10.7	7.2
D	0.0	2.0	2.3	1.4
E	0.0	2.3	3.8	3.0
W	6.3	4.6	4.8	4.5

Instructor Comments - Geoffrey Wright

Explained concepts effectively

1. Hard to say when classes got cut off

What effect did this course and instructor have in helping you achieve the Aims of a BYU Education?

Spiritually strengthening

1. Dr. Wright wasn"t afraid to stand up for the principles he believed in or the gospel.

Intellectually enlarging

1. Very hands on, a fast paced class, but I got out of it everything I wanted to.

Hours spent out of class

1. Depending on the assignment. Sometimes we could finish everything in class, other times we had to spend a decent amount of time out of the classroom editing or finishing assignments. But it was fun.
2. Depending on the week and which assignments were due, I would spend more time.

Additional comments

1. great dude. bummer that the semester was so short
2. Super fun ! Both the course and instructor!
3. LOVE this professor
4. I loved this class! Geoff did a great job at teaching us and pushing us to put forward our best work. He was always willing to help us when we needed it and asked for it. He also was great about sending out regular emails after classes went online to check in.

BYU Student Rating Individual Section Report

TES 255 Visual Communication Design - Winter 2020
Section 001

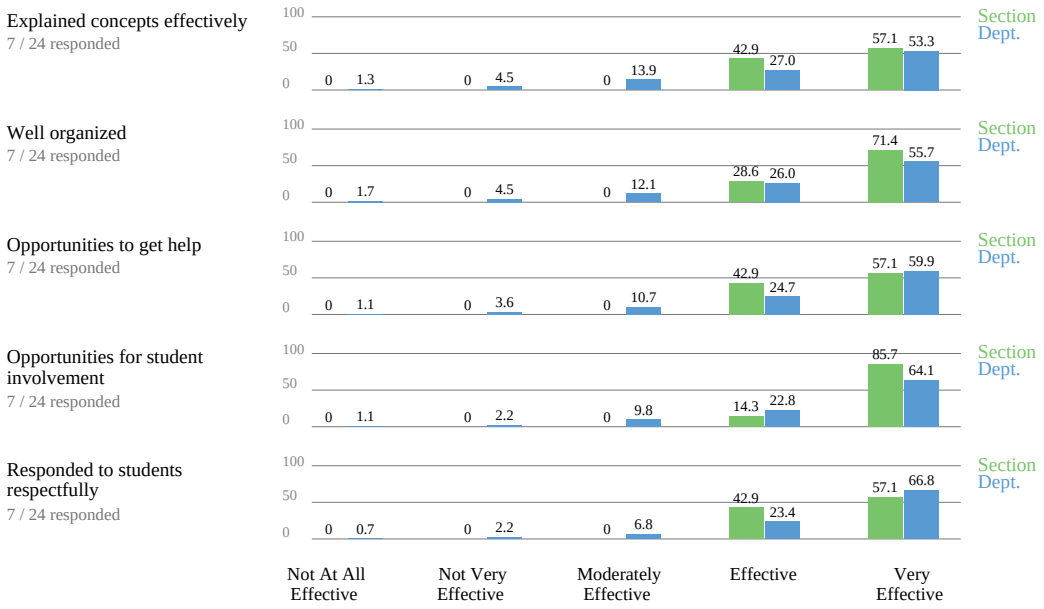
Geoffrey Wright

Historical Course Average
4.7

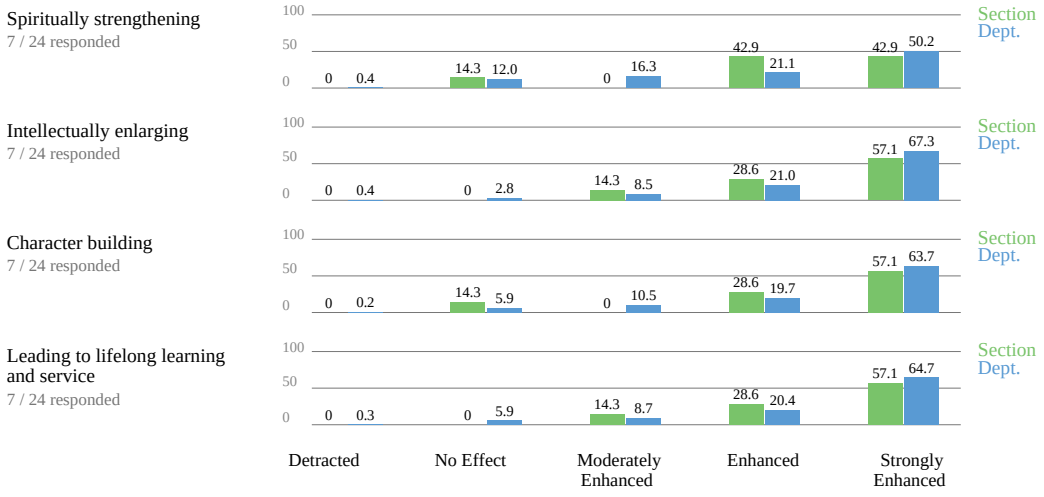
Composite Student Rating

Section	4.4 - 5.0
Course	4.7
Department 100-299	4.3 - 4.5
College 100-299	4.4
University 100-299	4.5

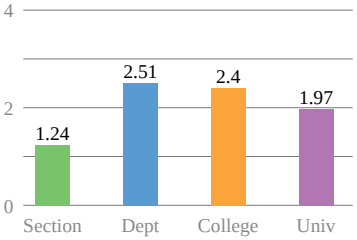
Instructor Effectiveness



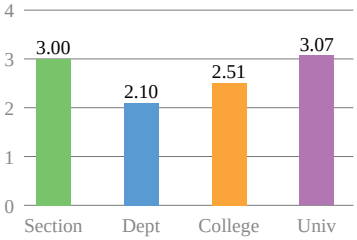
Helped students achieve the Aims of a BYU Education



Hours spent per week out of class per credit hour



Mean GPA



Grade distribution (%)

	Section	Dept	College	Univ
A	36.0	27.6	33.0	54.8
B	36.0	27.7	24.9	17.1
C	8.0	10.3	10.7	7.2
D	12.0	2.0	2.3	1.4
E	0.0	2.3	3.8	3.0
W	8.0	4.6	4.8	4.5

Instructor Comments - Geoffrey Wright

Explained concepts effectively

1. learning how to wrangle the software was a challenge, but Geoff always took time to show us techniques that would speed us along

---

Opportunities to get help

1. he came around during our lab times to talk through our ideas with us instead of leaving us to our own devices. he would try to understand our ideas, and then point us towards tools available which would help us do our work better

---

Opportunities for student involvement

1. Geoff provided great feedback and pushed students to get out of their comfort zone
2. there would be one project to understand the basic of the software, and then the next project would be a real application of our knowledge to create something useful

---

Responded to students respectfully

1. healthy banter with everyone helped ease our worries as we began each assignment

---

What effect did this course and instructor have in helping you achieve the Aims of a BYU Education?

Spiritually strengthening

1. Talking about what you do to keep your kids safe with technology was insightful and beneficial to me

---

Character building

1. i would have to come in on my own time to finish projects, and once everything went totally online i had to be my own boss to get it all done

---

Leading to lifelong learning and service

1. i don"t know if i want a career of any of the stuff we did in this class, but having these skills gives me opportunities to create things for my family and friends in the future

---

Hours spent out of class

1. Lab work, learning adventure prep
2. Honestly, I don"t know. The time it takes me to do a project is all a blur - it just flies by.
3. 6 class hours a week, i would usually just stay an hour late on Friday to finish up something from that week before my next class

---

Additional comments

1. Amazing as always. I"m so glad you have your forgiveness policy. I need due dates to keep me on track, but I also need forgiveness and the chance to improve. Your teaching methods is perfect for me. Thank you for such a great semester! Side note: I"ve also been doing way more design work for jobs and friends since these classes. Thank you!
2. Great guy. The specifications on assignments were generally very vague. Once we started doing things remotely, I had very little direction on what he wanted us to do.

8.5 At least two peer evaluations of teaching

This page will be replaced by the department office with the peer evaluations

8.6 A list of teaching awards

Over the past 5 years since my last appointment I have I have received four teaching awards:

1. DTE: Distinguished Technology Educator award. This was awarded to me from our national organization ITEEA (International Technology and Engineering Education Association) March, 2020.

2. NEBO PTA: I was awarded “Excellence in Service” for the many engineering and technology outreach and afterschool programs I organized and ran over the past 10 years. April 2019.

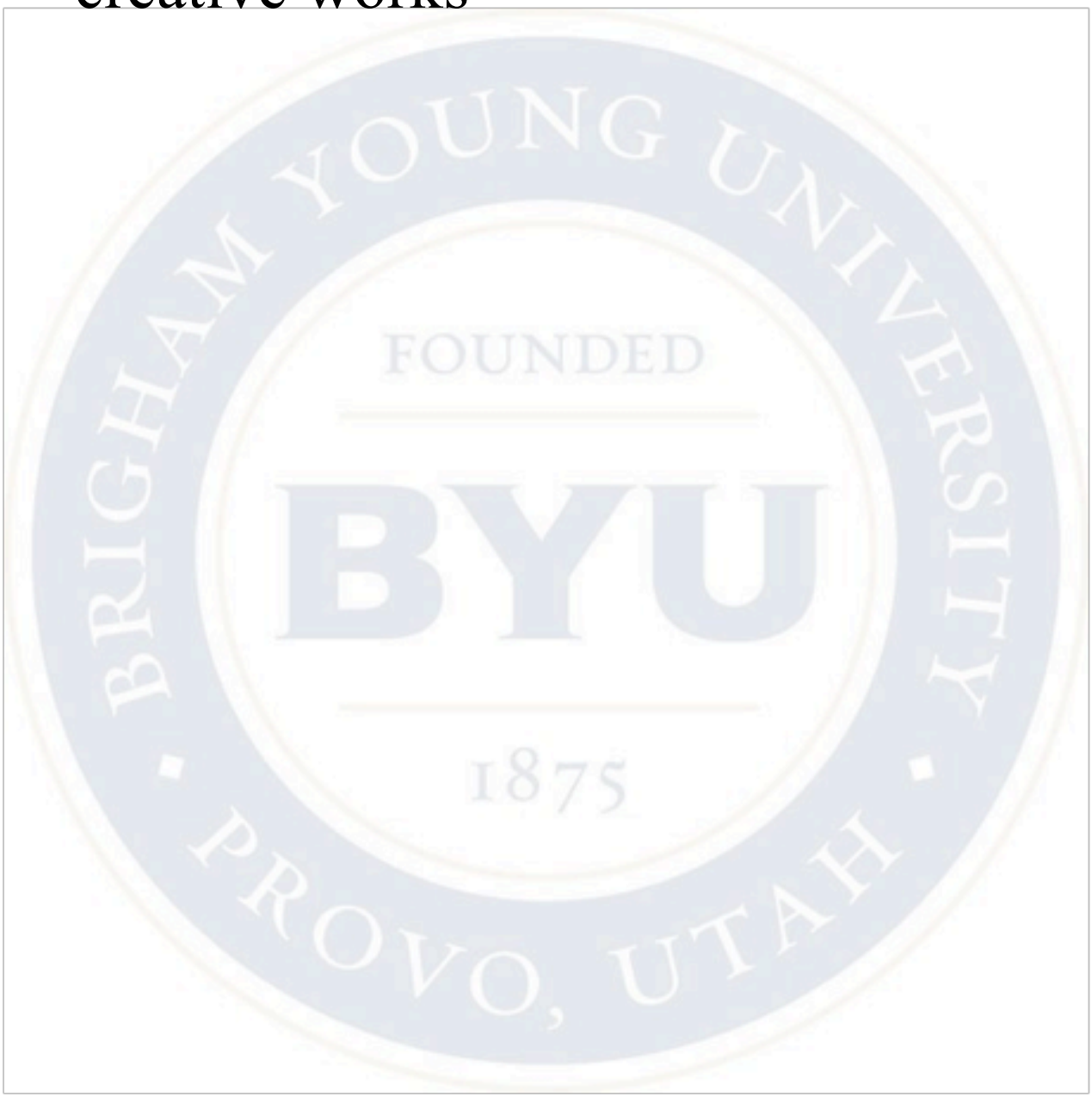
3. College Outstanding Faculty Teaching Award: The college administers a student survey where students vote who they feel should be awarded the Outstanding Teaching Award. I was awarded this in 2018.

4. TEECA Advisor of the Year: TEECA is the name of our national student engineering organization (Technology and Engineering Collegiate Association). I was recognized and awarded the advisor of the year award in March, 2020 at the national convention.

9. Scholarship

My scholarly and creative work focuses broadly in the area of STEM education, with emphases of developing and measuring the impact of technology and engineering instruction on student technology and engineering self-efficacy, creating interest in technology and engineering education, innovation instruction and assessment, and improved STEM instruction from K12 – higher ed. Because of my background as a public-school teacher and administrator, as well as a graphic designer, I believe my trainings have enhanced my research insights and ensured that I focused on research projects of meaning. I know that many of the research efforts have led to, what I deem, as the most important measure: improved teacher performance and therefore improved student learning. Part of my research focus has been to build connections with people in various STEM fields to bridge the gap between the STEM disciplines. I believe that in doing this I was able to publish and present in venues in my discipline and in those of my collaborators that were beneficial to our field and theirs, and which will hopefully lead to more collaboration and reduction of the oftentimes siloed discipline-specific life.

9.1 A list of all scholarly and creative works



This section should include (but is not limited to):

1. A list of publications and creative works. Student co-authors should be underlined.
2. A discussion about the quality of the publication venues and the metrics used to assess the quality of the venues (e.g., impact factor of the journal).
3. If publications are co-authored, please describe your role or contribution. A discussion about the author order is also helpful.
4. It is helpful to include an annotated publication list that includes a paragraph under each publication describing points 2 and 3. Also, since not all scholarship results in publications (e.g., performances, exhibitions, juried creative works such as paintings, illustrations), it is helpful to briefly describe the venue quality and other pertinent information in an annotated creative works list about each creative work provided in point 1.

8.1 A list of all scholarly and creative works

My scholarly work focuses on STEM education, teacher education, technology and engineering teacher education, and other related content such as innovation and design thinking.

Table 8.1 summarizes my scholarly products since being hired at BYU. Whereas Table 8.2 summarizes scholarly work since my last appointment to associate professor in 2014. Figure 8.3 is a graph showing my annual publication pattern since my last appointment. Both tables provide data that highlight how I have met and exceeded the publication baseline as outlined in TES's AIR addendum document.

Publication Category	N
Refereed Papers (journal articles)	38
Presentations with Publication (i.e., ASEE, SITE, etc.)	41
Workshops/Presentations without Publication (state, national, international)	45
Books	1
Creative Works (designs, photos, etc.)	7
Contracts/Grants (i.e., NSF, sponsorships)	16
Total	148

Table 8.1 is a summary of my scholarly products, and includes published works both before and since my promotion to Associate Professor. All works are peer reviewed unless otherwise stated.

Publication Category	N
Refereed Papers (journal articles)	19
Presentations with Publication (i.e., ASEE, SITE,	18

etc.)	
Workshops/Presentations without Publication (state, national, international)	27
Books	1
Creative Works (designs, photos, etc.)	3
Contracts/Grants (i.e., NSF, sponsorships)	8
Total	76

Table 8.2 Scholarly and Creative Products Since Time of Last Review

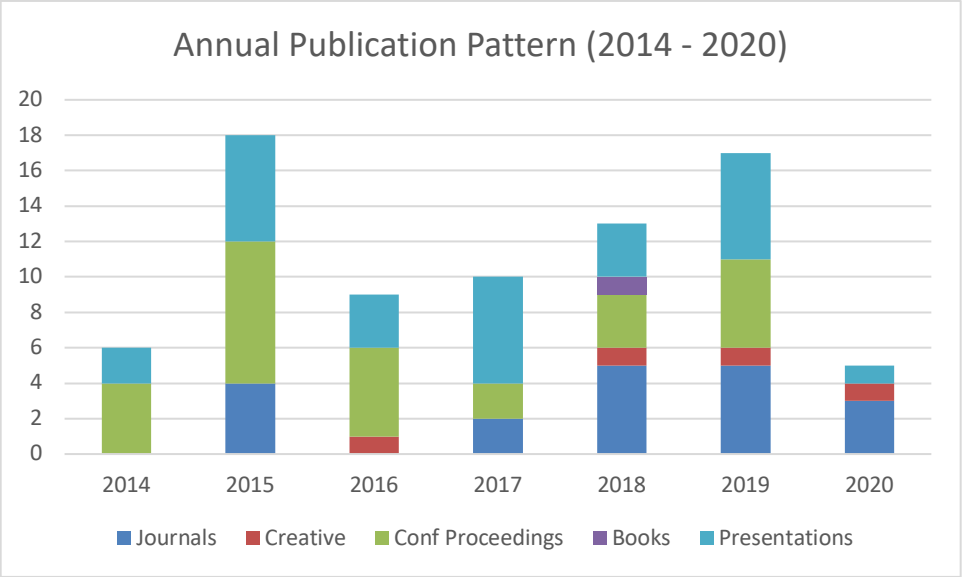


Figure 8.3 Publication Pattern Since Last Appointment
(Note: 2020 was impacted by covid pandemic shutdown and is not complete yet)

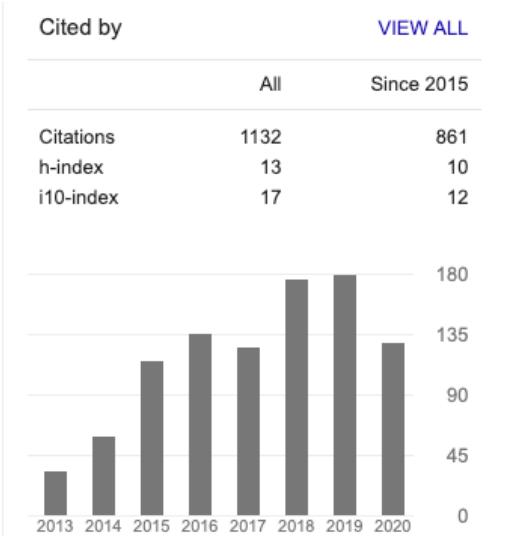


Figure 8.4 Google Citation Index

Although a standard method for measuring impact of scholarship is to review citations and citation statistics such as h-index, many of the journals in our field are not recorded by google scholar. Notwithstanding I am including my scholar metrics as per google which shows an active scholarship rating, for example, the h-index provides evidence of the number of articles (13) that have been cited at least 13 times. The google scholar i10 index of 17 indicates that at least 17 of the articles have been cited 12 or more times (figure 8.4). Although I find the data interesting and helpful, because the most recognized journal in our field (the Technology and Engineering Teacher) is not documented or measured by google scholar, h-indexing and i10 indexing does not fully communicate impact. In our field (TES) journals such as the Technology and Engineering Teacher (TET) have significant impact based on their distribution. Meaning, all educational stakeholders (i.e., teachers, administrators, professors, and professionals connected to the field of technology and engineering education) will receive or have access to TET. It is a monthly periodical that has significant distribution nationally and internationally. Below as each journal article is presented, a rating is provided based on Scopus data as available and when not, acceptance rate, or circulation – as the TET would be measured by. Although different disciplines and journals measure products differently, our AIR document accounts, recognizes, and fully values the venues in which I have published. In the listings below, student authors are underlined. Note, the listings below only include publications and presentations since last appointment. For a full listing please refer to the CV included above.

Articles in Refereed Journals

Journal Impact Factors (IF) and H Index ratings are from ISI Journal Citation Reports (scores above 1.0 are considered good quality) and google metrics; Acceptance Rate (AR) and Circulation are provided for journals in which those are the primary metrics. Additional notes on quality are added to provide context and describe impact as needed. Based on time of review, index rating, connection to our field (TES), connection to my own research agenda, and other journal metrics I gave each journal a rating (Q1 – Q4; which is the same as saying Tier 1 – Tier 4).

1. Wright, G. A., Olsen, G., West, J. H., Crookston, B. T., & Walsh, T. (2020). Building Electric Bikes to Promote Student Interest in Public Health and Engineering. In Technology Engineering Teacher (8th ed., p. 7). Reston, Virginia, USA: ITEEA. (AR: 51%; H5 Index: 11; H5 Median: 22). The TET has a monthly circulation distribution of over 3000. It is known in the Technology and Engineering education discipline as the field's "flagship" professional journal (see: iteea.org/publications.aspx). It is peer reviewed. I would rate this journal as a Q1 (tier 1) for our field.

2. Wright, G. A., & Walsh, T. (2020). Increasing Female Enrollment in Technology and Engineering Classes: An All-Female Class. In Technology and Engineering Teacher (7th ed., pp. 13–17). Reston, VA, USA: ITEEA. (AR: 51%; H5 Index: 11; H5 Median: 22). The TET has a monthly circulation distribution of over 3000. It is known in the Technology and Engineering education discipline as the field's "flagship" professional journal (see: iteea.org/publications.aspx). It is peer reviewed. I would rate this journal as a Q1 (tier 1) for our field.

3. Buxton, A., Jensen, J. L., Wright, G. A., Bybee, S. M., Phillips, A., Phillips, T., & Steadman, M. (2020). Spiders or Butterflies? Despite Student Preference, Gender-Biased Lesson Models. Do Not Impact Interest, Attitude, and Learning in Biology. Advances in Social Sciences Research Journal, 7(4), 15. https://doi.org/https://doi.org/10.14738/assrj.74.8074 (H5 Index: 10; H5 Median: 16). ASSJR uses an initial double-blind review and then secondary editor review prior to acceptance. I would rate this journal as a Q2 (tier 2) for our field.

4. Wright, G. A., & Weidman, J. E. (2019). Promoting Construction Education in K-12 by Using an Experiential, Student-centered, STEM-infused Construction Unit. Technology and Engineering Teacher, 79(1). (AR: 51%; H5 Index: 11; H5 Median: 22). The TET has a monthly circulation distribution of over 3000. It is known in the Technology and Engineering education discipline as the field's "flagship" professional journal (see: iteea.org/publications.aspx). It is peer reviewed. I would rate this journal as a Q1 (tier 1) for our field.

5. Wright, G. A. (2019). Investigating if Multidisciplinary or Homogenous Teams Are More Innovative in a Higher Education Setting. Business Review, 25(1), 93–99. (AR:12%; H5 Index: 15; H5 Median: 19). I would rate this journal as a Q2 (tier 2) for our field. The Business Review is a refereed academic journal which publishes the scientific research findings in its field with the ISSN 1553-5827 issued by the Library of Congress, Washington, DC. The Journal is indexed by the WorldCat, the world's largest library catalog. It is distributed in 55 countries. It uses a double-blind review process.

6. Hall, P. C., Hoj, T., Julian, C., Wright, G. A., Chaney, R. A., Crookston, B. T., & West, J. H. (2019). Pedal-assist mountain bikes: A pilot study comparison of the exercise response, perceptions, and beliefs of experienced mountain bikers. JMIR Formative Research, 3(3). https://doi.org/10.2196/13643 (H5 Index: 7; H5 Median: 10). I would rate this journal as a Q2 (tier 2) for our field. This journal is a refereed academic journal. It is first reviewed by the Managing Editor to describe whether the paper fits the formal criteria, then a section editor assigns it to 4 external experts for peer blind review. This journal fits our field because it publishes studies from all areas of medical and health

research which connects to our STL (Standards for Technological Literacy; specifically, STL #14: Medical Technologies; and since this article concerned health and medical concerns that is the reason this journal was identified.)

7. Wright, G. A. (2019). Teaching Entrepreneurship and Innovation to University Students. In Smart Innovation, Systems and Technologies (1st ed.). https://doi.org/https://doi.org/10.1007/978-981-13-8260-4_35 (Impact Factor: 0.59; H5 Index: 12; H Index: 18). I would rate this journal as a Q2 (tier 2) for our field. This was a refereed journal publication in the form of a book series published by Springer. I was invited to submit an article to this series because of my experience and research in innovation and education. Springer has one of the strongest STM and HSS eBook collections and archives. As part of Springer Nature, Springer sits alongside other trusted brands like Nature Research, BMC and Palgrave Macmillan.

8. Rytting, M., Wright, G. A., Shumway, S. L., & Jensen, J. L. (2019). Comparison of Simulation and Hands-on Labs in Helping High School Students Learn Physics Concepts. International Journal of Education, 11(1). (H5 Index: 10; H Index: 10; RG Impact Factor: 0.18; avg. rating of impact based on citations as listed by Research Gate). I would rate this journal as a Q2 (tier 2) for our field. This journal was included because it has a direction connection to the research represented in the article, and has an obvious connection to our field of "education." It is a refereed journal and uses a double-blind review process.

9. Wright, G. A. (2018). Abridged International Perspectives of Technology Education and Its Connection to STEM Education. International Journal of Education, 10(4). https://doi.org/https://doi.org/10.5296/ije.v10i4.13704 (H5 Index: 10; H Index: 10; RG Impact Factor: 0.18; avg. rating of impact based on citations as listed by Research Gate). I would rate this journal as a Q2 (tier 2) for our field. This journal was included because it has a direction connection to the research represented in the article, and has an obvious connection to our field of "education." It is a refereed journal and uses a double-blind review process.

10. Wright, G. A., & Weidman, J. E. STEM and Construction: Using 3D Game and Modeling Software to Promote Student Interest in Construction. Technology and Engineering Teacher. (AR: 51%; H5 Index: 11; H5 Median: 22). The TET has a monthly circulation distribution of over 3000. It is known in the Technology and Engineering education discipline as the field's "flagship" professional journal (see: iteea.org/publications.aspx). It is peer reviewed. I would rate this journal as a Q1 (tier 1) for our field.

11. Wright, G. A., & Welling, J. (2018). Teaching Engineering Design Through Paper Rockets. Technology and Engineering Teacher, 77(8). (AR: 51%; H5 Index: 11; H5 Median: 22). The TET has a monthly circulation distribution of over 3000. It is known in the Technology and Engineering education discipline as the field's "flagship" professional journal (see: iteea.org/publications.aspx). It is peer reviewed. I would rate this journal as a Q1 (tier 1) for our field.

12. Wright, G. A., & Shumway, S. L. (2018). Engineering attitudes: an investigation of the effect of literature on student attitudes toward engineering. International Journal of Technology and Design Education, 1–13. https://doi.org/DOI 10.1007/s10798-017-9417-

0 Impact Factor: 1.72; H5 Index: 27; H5 Median: 46). I would rate this journal as a Q2 (tier 2) for our field. This journal is very well known in our field because of the research it publishes and because its editor is one of the most well cited and known professors in our field: Marc de Vries. Many TES professors from around the world publish in this journal – however, it takes over 220 days to day of publication if accepted.

13. Wright, G. A., & Jones, M. (2018). Innovation in the Elementary Classroom. Technology and Engineering Teacher, February (1), 8–13. (AR: 51%; H5 Index: 11; H5 Median: 22). The TET has a monthly circulation distribution of over 3000. It is known in the Technology and Engineering education discipline as the field's "flagship" professional journal (see: iteea.org/publications.aspx). It is peer reviewed. I would rate this journal as a Q1 (tier 1) for our field.

14. Jacob, W., Wright, G. A., West, R. E., & Skaggs, P. T. (2017). The Need, Development, and Validation of the Innovation Test Instrument. Journal of Technology Education, 29(1), 112–135. (AR: 30%; H5 Index: na; H5 Median: na). Listed and known as the top research journal in Technology and Engineering Education. It is a referred scholarly journal produced by ITEEA and CTETE. I would rate this journal as a Q1 (tier 1) for our field.

15. Wright, G. A. (2017). An Analysis of Best Practices of Cooperative Education in the U.S. With The Purpose of Addressing Various Armenian Engineering Education Problems. Business Review, 5(2), 11–18. (AR: 12%; H5 Index: 15; H5 Median: 19). I would rate this journal as a Q2 (tier 2) for our field. The Business Review is a refereed academic journal which publishes the scientific research findings in its field with the ISSN 1553-5827 issued by the Library of Congress, Washington, DC. The Journal is indexed by the WorldCat, the world's largest library catalog. It is distributed in 55 countries. It uses a double-blind review process.

16. Skaggs, P. T., & Wright, G. A. (2015). Understanding Innovation How does innovation feel. In E. Madarieta (Ed.), The International Journal of Design Management and Professional Practice (2nd ed., pp. 1–10). Retrieved from http://www.cgpublisher.com/ (AR: 30%; SJR score: 0.102; H Index: 2). I would rate this journal as a Q2 (tier 2) for our field. This journal is peer reviewed and refereed. Its focus is on design, design work, and design in practice. It is a well-read journal in the fields of innovation and design, which fit my and Prof. Skaggs' research agenda in innovation and design.

17. Wright, G. A. (2015). Assessing Innovation. Business Review, Cambridge, 23(1), 8. (AR: 12%; H5 Index: 15; H5 Median: 19). I would rate this journal as a Q2 (tier 2) for our field. The Business Review is a refereed academic journal which publishes the scientific research findings in its field with the ISSN 1553-5827 issued by the Library of Congress, Washington, DC. The Journal is indexed by the WorldCat, the world's largest library catalog. It is distributed in 55 countries. It uses a double-blind review process.

18. Wright, G. A., & White, M. (2015). Using ROV (Remotely Operated Vehicles) to Promote STEM in K-12 Classrooms. In Tech Directions (1st ed., Vol. March, p. 16). Ann Arbor, MI, USA: Prakken Publications. (H5 Index: 15; H5 Median: 19). I would rate this journal as a Q2 (tier 2) for our field. Although Tech Directions may also fit the category of Trade Journal/Magazine, I included it in this listing because it has a wide circulation as

most technology and engineering educators receive a copy because it contains practitioner ideas and pedagogical methods for CTE and TES disciplines.

19. Hurd, R. C., Wright, G. A., Hacking, K., Truscott, T., & Damarjian, J. L. (2015). Underwater Robotics Surface In Utah. Technology and Engineering Teacher, 74(5), 9. (AR: 51%; H5 Index: 5; H5 Median: 9). The TET has a monthly circulation distribution of over 3000. It is known in the Technology and Engineering education discipline as the field's "flagship" professional journal (see: iteea.org/publications.aspx). It is peer reviewed. I would rate this journal as a Q1 (tier 1) for our field.

Refereed Conference Proceedings (with Archival Publications)

Includes peer-reviewed papers appearing in conference proceedings where the full papers were reviewed rather than an abstract or extended abstract. Conference acceptance rates (AR) for appropriate conference year are included when available.

1. Wright, G. A., & Jones, M. (2019). International Perspectives on Teaching Innovation. In ITEEA 2019 Conference Proceedings. Reston, Virgina, USA: International Technology and Engineering Education Association.
2. Wright, G. A., & Jones, M. (2019). The Ecology and Complementary Aspects of Engineering Design and Innovation. In International Technology, Education and Development Conference. Valencia, Spain: ISI.
3. Wright, G. A., & Jones, M. (2018). Instructional Frameworks Improve Creativity In Education. In E-Learn: World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education (2018). Chesapeake, VA, USA: AACE.
4. Wright, G. A., & Weidman, J. E. (2018). Promoting Construction Education in K12 by Using a Experiential Student-Centered STEM Infused Construction Unit. In American Society for Engineering Education. 1818 N Street N.W. Suite 600, Washington DC 20036, USA: ASEE.
5. Wright, G. A., & West, J. H. (2018). Increase Student STEM Self-Efficacy Through an Experiential Learning Public Health Engineering Pedelec Design Activity. In EdMedia + Innovate Learning 2018 (1). Waynesville, NC 28786, USA: AACE.
6. Wright, G. A., & Jones, M. (2016). Why, Why, and How of Teaching Innovation to Middle School Students. In ELearn (1). Waynesville, NC, USA: Association for the Advancement of Computing in Education (AACE).
7. Wright, G. & Wiedman, J. (2016). Bringing Back Construction Education to the Classroom by Digitizing It. In G. Chamblee & L. Langub (Eds.), Proceedings of Society for Information Technology & Teacher Education International Conference (pp. 1534-1537). Savannah, GA, United States: Association for the Advancement of Computing in Education (AACE). Retrieved September 8, 2020 from https://www.learntechlib.org/primary/p/171896/.
8. Wright, G. A., & Bates, D. (2015). Underwater Robotics Experience Changes Student Interest in sTEm. In E-Learn: World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education (2015, 1067–1073). Retrieved from www.editlib.org/p/152128/

9. Wright, G. A., & White, M. (2015). A Hands-on, Collaborative, Guided Inquiry sTEm Curriculum Increases Elementary Student Understanding and Interest in Science, Technology, Engineering, and Mathematics. In E-Learn: World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education 2015 (2015, 1283–1293). Retrieved from www.editlib.org/p/152166/
10. Wright, G. A., Shumway, S. L., Vargas, C., & Terry, R. E. (2015). Development of an engineering and technology curriculum for Dominican Republic 6-12th graders. In Proceedings of the Latin American and Caribbean Consortium of Engineering Institutions. Retrieved from http://www.laccei.org/
11. Wright, G. A., Shumway, S. L., Vargas, C., & Terry, R. E. (2015). Scaffolding to improve understanding of engineering and technology in the Dominican Republic. In Proceedings of the Latin American and Caribbean Consortium of Engineering Institutions. Retrieved from http://www.laccei.org/
12. Wright, G. A., Truscott, T., Hurd, R., & Hacking, K. (2015). A Remotely Operated Vehicle Scaffolded Activity is Increasing Student and Teacher Interest in STEM – A Reporting on a Three-year Study Funded by the Office of Naval Research. In 2015 ASEE Annual Conference and Exposition (Summer). Seattle, Washington: American Society for Engineering Education (ASEE).
13. Wright, G. A., & Shumway, S. L. (2015, July). The Development, Implementation, and Evaluation of Teaching Engineering Curriculum to Dominican Republic Junior High and High School Students. Summer. Seattle, Washington: American Society for Engineering Education (ASEE).
14. Wright, G. A. (2015). Promoting sTEm in Grades 2 – 8 by Engaging Students in Hands-on Engineering and Technology Activities that Leverage Fundament Science and Mathematics Concepts. In Society for Information Technology and Teacher Education. Reston, Virginia, USA: AACE -- Association for the Advancement of Computing in Education.
15. Wright, G. A. (2014). A Blended STEM Curriculum: Using ROVs, Programming, and Robotics to Teach K-8 Students Core Concepts of Science, Technology, Engineering and Math. In E-Learn World Conference (2014, 2098–2108). Retrieved from www.editlib.org/p/148765/
16. Wright, G. A. (2014). Improve Mathematics and Engineering Interest Through Programming. In International Conference on Education and Educational Engineering (2014). Paris, France, France: World Academy of Science, Engineering and Technology.
17. Wright, G. A. (2014). Promoting the Engineering Design Process by Teaching Students How to be Innovative. In International Conference on Education and Educational Engineering (2014). Paris, France, France: World Academy of Science, Engineering and Technology.
18. Wright, G. A. (2014). Remotely Operated Vehicles: Underwater Technology in Classrooms. In Society for Information Technology and Teacher Education (2014, 1957–1960). Retrieved from www.editlib.org/p/131072/

Books Authored

1. Wright, G. A., & Carlson, W. (2018). Rainy Day Engineering (1st ed., p. 107). Provo, UT, USA: BYU.

Invited Non-Refereed Presentations

1. Wright, G. A. (2019). Why Tech Ed? In STEC (2019, 4). Urbana-Champaign, Illinois, USA: MVTTEC.
2. Wright, G. A. (Presenter & Author), Bartholomew, S. (Presenter & Author), ITEEA Annual Conference, "Research in TES," ITEEA, Balitmore, MD. (March 2020).
3. Hall, P. C. (Presenter & Author), Hoj, T. (Author Only), Julian, C. (Author Only), Wright, G. A. (Author Only), Chaney, R. A. (Author Only), Crookston, B. T. (Author Only), West, J. H. (Author Only), International Conference of Public Health and Preventative Medicine, "Pedal-assist mountain bikes: A pilot study comparison of the exercise response, perceptions, and beliefs of experienced mountain bikers," SCIRP, Bangkok, Thailand. (December 2019).
4. Wright, G. A., STEC, "Why Tech Ed?," MVTTEC, Nashville, TN. (October 2019).
5. Wright, G. A., Discovery Learning, "Rockets and Maglevs in K12 Classrooms," Discovery Gateway Children's Museum, Salt Lake City, Utah. (July 2019).
6. Wright, G. A., STEM Education, "Enhancing STEM with ROVs," Utah State STEM Office, Layton, Utah. (July 2019).
7. Wright, G. A., Smart Education and e-Learning, "Innovation in Higher Education," KES International, Malta. (June 2019).
8. Wright, G. A., ROVs for Chinese STEM Program, "Fundamentals of ROVs," IPERC: International Partnership of Education Research, Utah. (May 2019).
9. Wright, G. A., International Technology and Engineering Education Annual Conference, "International Perspectives on Teaching Innovation," ITEEA, Kansas City, MO. (April 2019).
10. Wright, G. A., Altran Innovation and Entrepreneurship, "Teaching Innovation using the USERS Model," Paris Chamber of Commerce, Paris, France. (July 2018).
11. Wright, G. A., STEM Outreach, "The How, What, and Why of STEM Outreach in K12 Settings," OSU, OSU, Corvallis, Oregon. (November 2017).
12. Wright, G. A., STEM Teacher Training, "Designing and Building ROV," OSU and OSOE, Oregon. (November 2017).
13. Wright, G. A., Ogden STEM Teacher Training, "STEM EIE," OSD, Ogden, Utah. (October 2017).
14. Wright, G. A., Jones, M. (Presenter & Author), Women and Entrepreneurship, "Innovative Thinking," Chamber of Commerce - cities of Utah County, Provo, Utah. (September 2017).

15. Wright, G. A., Social Innovation in Africa, "Using Divergent Thinking for Social Innovation," ANZA, Tanzania. (August 2017).
16. Wright, G. A., Pupils Attitudes Towards Technology (PATT), "Teaching Algebra Through Functional Programming," ITEEA, Philadelphia. (June 2017).
17. Wright, G. A., Edge Conference, "The What Why and How of Building a STEM Relationship," Utah State Office of Education, Provo, Utah. (November 2016).
18. Wright, G. A., University of Cambridge Colloquium, "ITI: Innovation Test Instrument," University of Cambridge, Cambridge, England. (May 2016).
19. Wright, G. A., University of Cambridge Colloquium, "Models of Innovation," University of Cambridge, Cambridge, England. (May 2016).
20. Wright, G. A., Business and Entrepreneurship Colloquium, "How to Effectively Teach Innovation," OSU, Corvallis, Oregon. (November 2015).
21. Wright, G. A., Parent Workshop, "Internet Safety," USBE - NEBO SD, Springville, Utah. (November 2015).
22. Wright, G. A., Utah Valley Chamber of Commerce, "Promoting STEM Education," UVCC, Provo, Utah. (September 2015).
23. Wright, G. A., MSE Seminar, "Innovation 101," BYU, MSE. (February 2015).
24. Wright, G. A., UACTE, "Innovation in High School and Junior High CTE Classrooms," Utah State Office of Education, Salt Lake City. (February 2015).
25. Wright, G. A., UACTE, "Using ROV to Promote Technology and Engineering," Utah State Office of Education, Salt Lake City. (February 2015).
26. Wright, G. A., Entrepreneurship Colloquium, "How to Think and Work Innovatively," Oregon State University, Corvallis, Oregon. (November 2014).
27. Wright, G. A., How to Protect Yourself and Your Children Online, "Internet Safety," PTA, Nebo School District, Mapleton, Utah. (January 2014).

9.2 The three best examples of scholarship and a brief explanation of why they were selected

The scholarship examples should be since appointment at the assistant professor rank for those being reviewed for CFS and/ or promotion to associate professor, or since review for associate professor (which could include service elsewhere). The university R&S policy states that "evidence should emphasize work performed at BYU and since the last rank advancement (section 3.4.4.2)."

8.2 The three best examples of scholarship and a brief explanation why they were selected

The following 3 examples of scholarship are included:

- 1) A journal article titled “Innovation in the Elementary Classroom” (Technology and Engineering Teacher - Volume 77, Issue 5 - February 2018) by Geoffrey A. Wright, and Matthew Jones (undergraduate student in TES). I included this paper as one of my best examples of scholarship because it was awarded the Top Paper in our field in the year 2018 by our national organization. I was also happy to have invited an undergraduate to help with the data and writing of this paper. It was a great mentoring experience, highlighted by this wonderful award and recognition.

- 2) A journal article titled “The Need, Development, and Validation of the Innovation Test Instrument” published in the Journal of Technology Education (Vol. 29 No. 1, Fall 2017). I chose to include this paper as it was published in our field’s top research journal. This journal at the time had a long review delay of over a year, and then with further revisions the articles under review could take up to two years to be published. Although the journal does not have the highest impact factor rating, the journal is the top journal in our field, and has a lengthy review process and for those reasons I thought to include it. I also wanted to include it because I invited two other professors from across campus, and a graduate student to lead out on the paper – which I believe is important. This shows my desire to mentor and collaborate with others. Note: because of the length of the article only the first half (12 pages) was included in this document. The entirety of the document can be found on the JTE website or via ERIC (https://eric.ed.gov/?id=EJ1164713).

- 3) Although I have several other papers I am proud of (because of where they were published and or presented), I instead chose to include a book I wrote as the third example of scholarship. The book is titled: Rainy Day Engineering. I am very proud of this book because it represents who I am, and what our field is about, and also because I included two undergraduates and several graduate students to bring it together. The mentoring experience was a wonderful experience for me and the students, and it helped create a book that was based on practitioner experiences. The book is a collection of novel and exciting engineering activities for students. Schools, parents, and people of all ages can use the book. The book was selected as the gift awarded to all the major university donors which I believe is a nice validation. In addition, the book sold out within the first month of publication. And although that was simply via a kickstarter campaign, I believe it shows evidence of success. Most recently several districts have requested copies for all of their STEM and elementary teachers. Note that I did not include the entirety of the book because it’s length would make this document too long. A full request of the book can be provided if required for the review.

feature article

Photo credit: Julie Sicks-Panus.

innovation
in the elementary classroom

The USERS framework for teaching innovation provides a successful instructional approach for teaching innovation to K-University students.

by Geoffrey A. Wright and Matthew D. Jones

The definition of creativity is often debated. Although most scholars agree that creativity is having original ideas with value (Wright, 2017), the debate hinges on the assessment of the creative piece's value and novelty. Although this does not prove a hindrance for many artistic fields, creativity alone is insufficient for many industries, where value and uniqueness are measured according to large-scale economic and human impact. When something (a product, system, or service) is accepted as having large-scale economic and human impact, it is considered innovative. The classic definition of innovation is when something is original and useful as measured by being successfully implemented into society (Lewis, 2011). Creativity works within innovation when creative thoughts are used to innovate solutions to problems and issues that benefit society economically.

Because innovation is often assessed according to economic impact, and because innovation is the primary contributing factor to the success of a company, industry, product, system, or service, it is obvious why innovation has been coined the currency of modern-day industry (Dale, 2007; Stokes, 2014). What does that mean? It means that economies and organizations of the world agree that innovation is key to being successful in our modern age—where people who possess an in-

novative skill set are in high demand (Dyer, 2011). Consequently, there is a need to ensure that students are developing the mindset and skills to be innovative.

If we consider the fact that today's elementary students will likely be eligible to retire in the 2070s, can we promise that their education will prepare them for the future? *Standards for Technological Literacy* (*STL*) (ITEA/ITEEA, 2000/2002/2007) helps solve this dilemma by providing a literacy framework of essential core technological knowledge and skills students should have in order to be high-functioning citizens. Implicit in *STL* are the ideas of creativity and innovation.

Although children are innately creative, creativity is not typically taught as part of innovation in schools and may often be replaced by core content areas. This is concerning because, if we are not teaching innovation mind- and skill sets, then we are degrading our students' education experience and not adequately preparing them to be globally competitive. Drs. Burnett and Figliotti (2015; McGarvey, 1990) of the International Center for Studies in Creativity (ICSC) discussed this in their research on innovation curriculum, stating:

> "[Creating and considering many alternatives is a skill] about going beyond the obvious and producing a variety of possible solutions, ideas or options…However, as we mature, our ability to produce many alternatives seems to fade. Between Kindergarten and second grade students alone, there is a 74% drop in creativity rankings."

In this article, the authors outline an innovation curriculum that can be taught to elementary-aged students to expand their creative and innovative abilities and potential. The curriculum focuses on divergent and convergent thinking principles embedded in a hands-on learning pedagogy. The curriculum framework is based on an innovation model known by the acronym: USERS (Wright & Jones, 2016). USERS (Image 1) stands for Understand, Shape, Explore, Refine, and Share. Each component has 3-4 associated behaviors that are used to help teach the related innovation component. The purpose of the curriculum is to teach and train students how to be more innovative—thus addressing the need to more fully equip them with the skills they will likely need in the 21st century.

The curriculum is based on a university course successfully implemented for the past six years in an engineering and technology university in the United States. The curriculum was designed for K-12 students and has been piloted several times in various K-12 settings. The curriculum is comprised of five lessons and can be taught as a stand-alone course or embedded into any existing course that teaches innovation. For the purpose of this paper, the curriculum will be presented based on a two-week stand-alone course taught in a sixth grade class during 2016.

Image 1: USERS Innovation Components.

During this instructional time, five one-hour lessons were taught to a sixth grade classroom in a public K-6 school in a suburban setting. The five lessons occurred over a five-day period. Each "innovation" component (Image 1) was taught on a separate day—Understand on Day 1, Shape on Day 2, etc. Every lesson used a mixed-method instructional technique, where students were given some brief, direct instruction and then engaged in hands-on learning activities associated with the behavior being addressed (see table on page 13). Although the curriculum was taught as a five-day experience, the curriculum can be modified to be taught all in one day (as we do with our university students), taught over a week, or embedded within any course where innovation is a key learning outcome.

Day 1—Understand

Discovering opportunities for innovation lies in opening our minds, our eyes, and our hearts to the people and experiences around us (hence the title of Day 1: Understand). Innovation is creative thought implemented successfully into society, which implies a certain understanding of the people, systems, and services already in place. Understanding includes the elements of **observing**—carefully taking time to watch how people interact with everyday activities; **experiencing**—gaining empathy to learn of the issues others face; **inquiring**—asking questions to gain or deepen understanding, comprehension, and knowledge; and **networking**—connecting with people is important, because it helps people: see things from different perspectives; connect unrelated experiences to better understand the issue(s); draw upon each others' strengths to tease out valuable information to the many facets of the problems that we might not observe, experience, or identify on our own.

The key takeaway during Day 1, Understand, is for students to be able to spot problems. Without identifying a problem, there is no opportunity for innovation. To teach students how to be good problem spotters (or problem finders) we first ask them to complete three activities. Activity 1 involves the students completing a role-play exercise where they accidently have cut their hand and need to put a Band-Aid on to stop the bleeding. We use

Image 2: Adaptive (compensatory) examples.

ketchup to simulate this experience. We also have the students take mental notes and then write their observations on some chart paper or a whiteboard. The second activity is called Vuja De. In this activity students are asked to experience something that is an everyday behavior as if they have never experienced it before. For example, have the students try to tie their shoe or brush their teeth for the first time. And while they are experiencing the activity for the first time, invite the students to take mental notes on their feelings, impressions, and interactions with the products and process(es) with which they interacted. During the sixth-grade implementation, "eating yogurt" was used as the Vuja De experience. In this example, they had to open and eat the yogurt as if for the first time. The final activity used to help the students become better problem spotters is called Identify Adaptive/Compensatory Behaviors. Adaptive or Compensatory Behaviors are defined as things humans do to make up for the lack of design of a product, system, or service. A classic example is putting a plastic bag over a bike seat (see Image 2). In that example, the user is "compensating" for the lack of design of the bike seat by having to add a bag to prevent it from getting wet. The curriculum is designed to end with the Identifying Adaptive (Compensatory) Behavior activity because students are assigned to then use that activity (skill) at home—where they are expected to identify a problem (problem spot) in their own home or neighborhood. The reason the Identifying activity is used is because many problems can be easily identified by human adaptations or modifications (e.g., tinfoil wrapped on stove-top burners to prevent spillage. See Image 2).

Day 2—Shape

The goal of Day 2 is to teach students how to shape the understanding of the problem they identified (found) into viable innovative products, systems, or services. Shaping involves three components: **organize**—gathering all the data (photos, verbal, and written observations and experiences) to narrow down observations; **simplify**—turning observations into clear, concise, and thorough problem statements; and **clarify**—turning problem statements into succinct design questions that lead to the discovery of novel solutions.

For example, in the sixth-grade class the students worked to find the root issue(s) of their problem-spotting observations and formulate problem statements (Image 3). In this class, a student returned with the following observation: "Mowing my lawn is hard." This was a good start, but to create a problem statement we need to get to the root of the issue. The associated problem statement then evolved to: "Mowing my lawn takes too much time and energy."

Once students had a statement, they needed to create a design question. Design questions are used to clarify the issue's key attributes. The sixth-grade students were instructed at this time to begin their questions with phrases like, "How might we…?" and "What are all the ways we can…?" The design question from the lawn-mowing problem statement was, "What are all the ways you can mow your lawn without it taking too much time and energy?" Once students have framed their issue with at least ten design questions, they are ready to move on to the next element of USERS, which is Explore.

Day 3—Explore

With a design question readily at hand, students can start exploring possible solutions. This is done by questioning, comparing, and combining. **Questioning** is where we ask, "What if…?" and "How…?" and "Why…?" questions to immerse ourselves in the problem and consider multiple angles. **Comparing** is time to practice associating seemingly dissimilar industries, products, and ideas. Doing this breaks down our assumptions and leads us to create new possibilities. **Combining** is when we SCAMPER (Substitute, Combine, Adapt, Modify/Minimize/Maximize, Put to Another Use, Eliminate, Reverse) to push our thinking to consider varying perspectives and possibilities.

As soon as a design question has been identified, students need to list as many questions as possible about their issue. "Why do we even need..?"; "How does [this] work?"; "What if we made...?" and so on. The outcome of these questions is to push the status quo, because innovation means developing something new to solve the problems of today. Prompting students to ask as many questions as they can in a certain amount of time allows them to break out of the box of current thinking. They can consider multiple alternatives and pathways for innovative solutions.

Comparing our ideas with seemingly dissimilar industries, products, and ideas helps us see and create valuable connections. A list of random nouns (horse, baker, swimmer, etc.) are digitally projected, and students are tasked with creating as many connections as they can between the noun and their idea. This kind of connectivity is called forced association. They are forced simply because they have the constraints of dealing with the list displayed on the screen, but the associations are endless. For example, a student could look at how a baker stores his or her cooking supplies and associate that with storage for a playroom or garage.

SCAMPER is an acronym that stands for: *Substitute, Combine, Adapt, Modify/Minimize/Maximize, Put to Another Use, Eliminate, Reverse*. Typically, younger students will have some idea of what it is that they want to have as their solution, but SCAMPER provides one more opportunity to consider their ideas in new ways. A great example of SCAMPER is a screwdriver. For *substitute* you could make the tips of a screwdriver removable. *Combine* has multiple outcomes, but you could develop a shaft and handle that are one solid piece. For *adapt*, you could make a bent shaft for certain tasks or other adaptations. For *minimize/maximize/modify* you can simply change the size of the tool or its associated attributes (e.g., handle, shaft, tip). You could make the handle a storage area for tips for putting to another use. For *eliminate* you could remove a large handle and streamline the tip, shaft, and handle into one long single piece. You can reverse the handle to be perpendicular to the shaft and suddenly have a tool with increased torque.

Day 4—Refine

Prototyping is defined as: a physical communication device that visually represents the proposed solution. Prototypes are used to further ideate and lead you from divergent thinking towards convergent thinking (implementation). As part of the USERS curriculum, prototyping is taught as something you can use to validate your idea and get feedback. There are several key elements that make prototyping more meaningful for students in an innovation activity. Those elements are: **visualizing**—the ability to sketch and/or design how the prototype will work; **validating**—"getting your hands dirty" to make something (it doesn't have to be perfect—in fact the messier and more crude it is, sometimes the better feedback you can get, as long as the creation provides sufficient evidence to communicate the solution); and **iterating**—when you redo or remake or rehash the idea over and over again you eliminate fear of failure, which is a huge hindrance to creative and innovative thinking (Christensen, 2000).

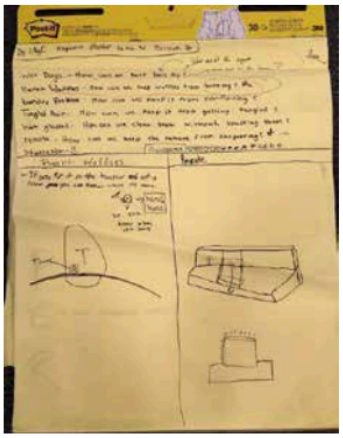


Image 3: Problem statement.

The hands-on component of prototyping requires the students to make various iterations of multiple, equally compelling solutions. Often students decide on a solution and make only that one. Although this could be a "correct" solution, it may not be the "right" solution. Consequently, we require students to make 2-3 equally compelling solutions—meaning each one is just as feasible, creative, and useful.

To help students create/prototype these solutions, they are provided with a box of maker materials (string, tape, cardboard, foam, straws, CDs, wire, etc.) and asked to design three different but equally interesting and compelling solutions to one of the issues (i.e., opportunities for innovation). Often students struggled with formalizing three distinctly unique and equally compelling solutions. Therefore, it is important for the instructor to spend time with each group during the shaping phase to make sure that the students have a design question that really provides open-ended possibilities. If done correctly and completely, the idea-generation phase typically produces many potential solutions.

An example of a prototype developed in our class would be a simple plastic cup with pipe cleaner handles to demonstrate a mug with foldable handles to increase storage capabilities. By creating this simple device, the students could validate their sketches and receive feedback about the possibilities of market validity of such a product.

Day 5—Share

Sharing involves showing, demonstrating, and presenting your product, system, or service with a great story or pitch. The key elements of sharing are: **show**—sometimes words can get in the way of you really showing off how great the product is; therefore, this element requires the students to show without words their innovation; **demonstrate**—walking the audience through or having someone come up from the audience and use your product; and **describe**—no innovation has ever made great success without a great story. Consequently, for this element, students are expected to write a story—hopefully one that highlights and invokes empathy by clearly defining how their solution addresses an actual problem.

For example, in the sixth-grade anecdote presented earlier, the instructor presented his problem statement and design question derived from an issue one of the students had brought on Day 1 (Statement: "My dog is always wet or smelly when he enters the doggy door of our home." Question: "What are all the ways I can make my dog dry and smell nice when he enters from the backyard?"). The instructor then presented his own exploration of the problem, the connection and associations he made to the problem, shaping observations, and creating potential solutions through associative thinking, and SCAMPERING. The instructor then showed, demonstrated, and described his solution using a story about his own experience with a wet dog coming in the house and his mom getting mad at him for not drying the dog. He then called a student to come up and use the stuffed animal dog he brought to demonstrate his solution: the doggy door dryer (Image 4).

Image 4: Doggie door dryer prototype.

Conclusion

The 21st century demands a more innovative workforce and economy (Fadel, 2011), where students are prepared for the unknown future by possessing innovative thinking behaviors and skills. The USERS framework for teaching innovation provides a successful instructional approach for teaching innovation to K-University students. It has been used at the elementary level in various settings, and has also been taught at the university level to students from myriad majors—ranging from the humanities to engineering and technology. Data from these implementations has been collected that documents how well students are learning and understanding what it means to be innovative; in addition, student innovativeness has been assessed before and after participating in the USERS-based innovation course. Although the findings for the associated research are outside the scope of this article, the data has shown that students can be taught how to be innovative thinkers and that they enjoy courses where they can be innovative (Wright, 2016). This article provides a framework and example of how innovation can be taught. Although many innovation models exist, USERS was specifically designed and developed to help educators teach innovation since it is essential to a student's future.

For more information on this research and on the USERS framework, please visit divergecon-verge.org.

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Table 1: USERS Matrix

Day	Understand	Shape	Explore	Refine	Share
Behavior	Observe	Organize	Question	Visualize	Show
Activity	Optical illusions—this gets students' minds flexible and prepares their eyes to see things in new and interesting ways.	This was done as homework. They were to go problem-spotting and record those observations on a document they brought to class on Shape day.	With their design questions, they formulated many possible solutions.	Sketches—Had to have three sketches passed off by instructor before construction.	They had to have their three prototypes brought to the front of the room.
Behavior	Experience	Simplify	Compare	Validate	Demonstrate
Activity	Band-Aid—students pretend to have bleeding hand and must apply Band-Aid with one hand.	Problem Statements—they take their observational findings and create problem statements to each of them.	Forced Associations—Using random nouns, students compare similarities between their issues and the nouns.	Construction of solutions—using maker supplies they made their prototypes.	As part of their presentation they had to demonstrate how one would use each prototyped solution.
Behavior	Inquire	Clarify	Combine	Iterate	Describe
Activity	Bendy vs. Non-Bendy Straws—Ask how were bendy straws invented? After some time exploring, they were then told the proper story.	Problem Questions—They took two of their favorites from the above activity and made problem questions from them.	SCAMPER—using the SCAMPER technique, they found other ways to solve their problem.	They had to make three equally compelling ideas to push them to continue to solve the problem.	They had to share their problem statement, problem question, and the process of how they found their solution(s).

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This is a refereed article.

The Need, Development, and Validation of the Innovation Test Instrument

Jacob Wheadon, Geoff A. Wright, Richard E. West, & Paul Skaggs

Abstract

This study discusses the need, development, and validation of the Innovation Test Instrument (ITI). This article outlines how the researchers identified the content domain of the assessment and created test items. Then, it describes initial validation testing of the instrument. The findings suggest that the ITI is a good first step in creating an innovation assessment because it is more inclusive of both divergent and convergent thinking. In comparison, past innovation assessments have only assessed either divergence or convergence. The ITI still needs further validation and improvement to make strong claims about its ability to determine the effectiveness of an innovation course.

Keywords: Innovation, assessment, validity, creativity

This article is based on the Master's Degree Thesis Wheadon, J. D. (2012). *Development and initial validation of an innovation assessment* (Master's thesis, Brigham Young University). Retrieved from http://scholarsarchive.byu.edu/etd/3326/

The Need for Innovation

In industry and education, there is an increasing push for organizations and individuals to be more innovative (Fagerberg, 1999; Wagner, 2010). Rapid technological change has created the need for organizations and individuals to adapt quickly (Christensen & Eyring, 2011). Christensen (1997) describes how disruptive innovations fundamentally change markets and require new ways of thinking for organizations to adapt and survive. He describes how individuals in organizations need to think differently in order to compete in today's marketplace. Because of the rapid rate of technological change that is occurring today, disruptive innovations are changing markets even faster than in the past. This has led to a greater need for people to cultivate innovation skills.

Innovation skills are also needed to create job growth. Various economies have made claims and refocused their industries to further promote and harness innovation. The European Union (EU) reported that "the central aim of the EU 2020 strategy is to put Europe's economies onto a high and sustainable growth path. To this end, Europe will have to strengthen its innovative potential and use its resources in the best possible way" (European Commission, 2011, p. 2). Similarly, the Federal Bureau of Business and Economics of India stated: "In the

ever-changing world, innovation is the only key which can sustain long-run growth of the country . . . innovation [provides] competitive advantage" (National Portal of India, 2014). In the United States, innovation had been reported as the de facto source of job creation since the 20th century (Drucker, 1985). Drucker (1985), Wagner (2012), Former President Barack Obama (The White House: President Barack Obama, 2011), and Friedman and Mandelbaum (2011), among others, have all advocated for the growth and development and the need for people and organizations to be more innovation—to be globally competitive and marketable.

The Need to Teach Innovation

Many of these calls for increased innovation have mentioned the need for schools to teach students to be more innovative (Friedman & Mandelbaum, 2011; Wagner, 2010; Wagner 2012). They have said that for American students to remain competitive in a global market and be able to adapt to a constantly shifting playing field, they need to become innovators. Schools need to teach students the skills and behaviors of great innovators (Wagner, 2010).

In a recent study, Dyer, Gregersen, and Christensen (2011) identified the common behaviors that many of today's leading innovators share. By studying innovators' behaviors, they found that people who want to be better innovators can learn and practice behaviors that will help them create innovations. Dyer et al. give educators a set of teachable skills that students can learn to perform. They claimed that although some people might have a natural propensity for innovation, anyone can learn to be more innovative.

With the knowledge that innovation can be taught, some schools, consulting firms, and corporations have begun teaching innovation. Well-known examples include the Hasso Plattner Institute of Design at Stanford University (d.school; 2017; Stanford Graduate School of Business, 2017), IDEO (IDEO, 2017; Kelly, 2005), and Innosight (Innosight, 2011), who have all reported the great value and impact of their teaching about innovation.

The College of Engineering and Technology at Brigham Young University (BYU) has a three-fold mission statement, and innovation is central to that mission. Consequently, a faculty committee was created with the goal of developing a course to teach innovation. The course curriculum uses an active learning pedagogy, teaches students about the need for innovation, and engages them in various activities during which they practice and develop divergent and convergent thinking skills and behaviors (Howell, Skaggs, & Fry, 2010). The course is currently known as the Innovation Bootcamp, and its curriculum is focused on teaching an innovation model that promotes idea finding, idea shaping, idea defining, idea refining, and idea communicating.

The Need to Assess Innovation Teaching

The Innovation Bootcamp in various forms has been taught in the College of Engineering and Technology since 2008. The course consistently receives very positive student feedback on end of term evaluations. In addition, informal assessments asking students to report on their level of interest and ability in using innovation pre- and post-course suggested that the course was having a positive impact. However, because the informal assessments were not initially designed with the intent of a longitudinal study of testing student innovative ability, the researchers believed that an assessment should be developed to ensure that course learning outcomes were being met. In addition, they believed that an innovation assessment such as this would prove to be of significance to others interested in assessing innovative ability.

Current Innovation Assessments

Tyler Lewis's (2011) thesis, *Creativity and Innovation: A Comparative Analysis of Assessment Measures for the Domains of Technology, Engineering, and Business*, analyzed various innovation and creativity assessments and measures. His findings suggested that innovation was either being measured in terms of creativity or divergent thinking (i.e., creativity tests often focused directly on divergent thinking; Houtz & Krug, 1995). Other creativity tests measure different aspects of divergent thinking, such as flexibility (Torrance, 1963), fluency (Houtz & Krug, 1995; Torrance, 1963), and originality (Houtz & Krug, 1995; Torrance, 1963), or focus on the environment for promoting innovation or focus on the end or implementation of the product (convergent thinking). For example, measures in Radosevic and Mickiewicz (2003) evaluated the success of innovation programs in terms of financial outputs, such as sales of a product or an increase in profits during or after the introduction of an innovation course or program. However, the measures that Lewis (2011) suggested would not be accurate for measuring people's innovative abilities.

The instructors of the Innovation Bootcamp implemented various measures such as the Torrance Test of Creative Thinking (TTCT) but found that these types of assessments, as Lewis (2011) had postulated, only measured the divergent thinking (creativity) part of innovation. Still needing a innovation assessment that would assess a person's innovative ability, the researchers decided to develop their own assessment to measure both divergent and convergent thinking.

Methodology

The faculty members involved with the development of the Innovation Bootcamp visited various recognized innovation institutions such as Innosight, IDEO, and Stanford's d.school, among others, and completed a very comprehensive literature review of innovation principles, methods, and processes. They ultimately identified five common themes in the innovation

research, which they used as the primary content stands for the Innovation Bootcamp. The five content strands, or "phases of innovation," are: idea finding, idea sharping, idea defining, idea refining, and idea communicating (see Figure 1).

The focus of Idea Finding is on helping students to be able to identify opportunities for innovation (some call this the problem-finding phase). The research on innovation suggests a wide variety of tools to help people identify or find innovation opportunities. The Bootcamp focused on teaching students three such tools in the areas of observing, experiencing, and inquiring.

The purpose of the second phase, Idea Shaping, is to help students organize, simplify, and clarify the results from their observations, experiences, or inquiries from the Idea Finding phase.

The third phase, Idea Defining, helps the students start to solve the problem that they identified from the previous two phases. Some researchers define this phase as brainstorming; however, it is more than simply generating a variety of options. This phase is concerned with associating and connecting ideas that may seem unrelated with the intent of forming ideas that are highly useful and novel.

The fourth phase is Idea Refining. During this phase, students are taught how to visualize, validate, and iterate the potential solutions that they generated in the previous phases. Other innovation researchers might connect or associate this phase with prototyping. However, the researchers at the Innovation Bootcamp believe that this phase is more than prototyping because it also promotes the need to decide the validity and value of the solution. This phases also stresses the idea of rapid prototyping in any format, from basic card stock and sketches to wire mockups and photo manipulations. The Idea Refining phase uses the motto of "anything that can quickly communicate your idea" to prompt students.

The final phase, Idea Communicating, teaches students how to communicate their solutions and ideas to others. This phase is taught by providing examples and rationale showing that presentations are insufficient to communicate an idea; there is a need to show, demonstrate, and describe within a context or situation. Meaning that a solution must be presented within the context of how the solution will fulfill the demand or problem.

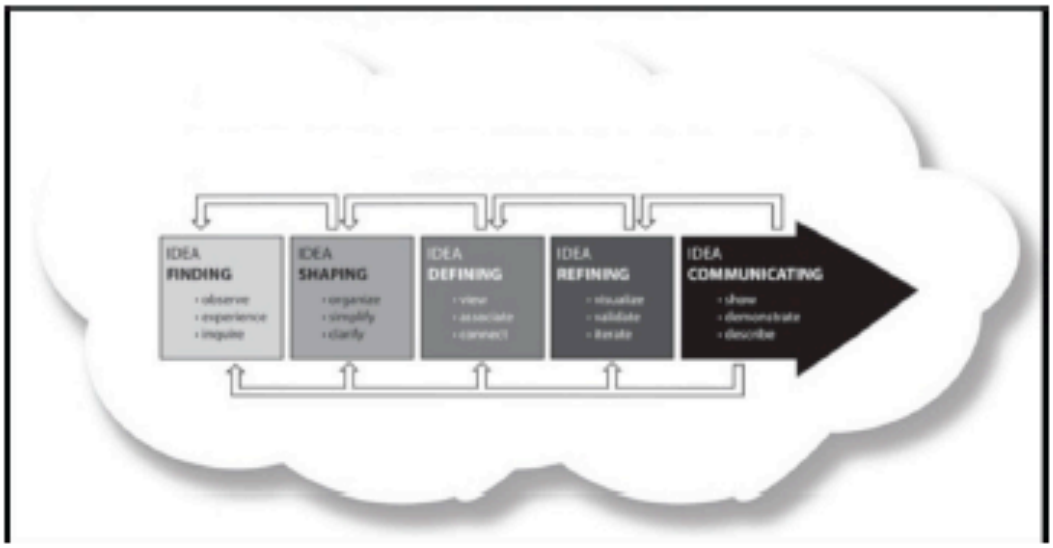


Figure 1. BYU Innovation Bootcamp model.

The five phases were used to organize the learning outcomes for the course, which guided the creation of the assessment. The learning outcomes were organized into four parts: opportunity recognition (Phases 1 and 2 of the innovation curriculum), ideation (Phase 3), idea refining (Phase 4), and communication (Phase 5). The four learning outcomes were used to create a two-way chart that was used to organize what needed to be measured in the assessment. The two-way chart, called a table of specifications (Miller, Linn, & Gronlund, 2009), is a common tool used in the development of tests, assessments, and curriculum development (Table 1) in which content strands are listed on one axis and cognitive processes are listed on the other axis. Bloom's Revised Taxonomy was the foundation for the cognitive processes in the Innovation Test Instrument (ITI; Anderson & Krathwohl, 2001). Bloom's Revised Taxonomy was used because it is a well-known and respected list of cognitive processes, and this list aligned with the course's learning outcomes. The course's learning outcomes focus on application by inviting students to apply what they are learning, so two test items were created to meet this demand. Because the course teaches students how to analyze opportunities for innovation in the various problem-spotting activities, two test questions were created to align with this cognitive process. The cognitive process of evaluation was also a key element of the course's learning outcomes; therefore, two test questions were related to this process. In these two questions, students were required to justify their decisions for the newly designed innovation. Finally, in the cognitive process of creation, the desired outcome was to assess an individual's ability to prototype an idea. A prototype is defined as a strong visual manifestation. Consequently, in the two test questions related to creation, students were required to draw and annotate the new product, system, or service that they came up with.

Table 1
Table of Specifications

	Remember	Understand	Apply	Analyze	Evaluate	Create
Opportunity recognition				2		
Ideation						2
Idea refining					2	
Communication			2			

The table of specifications (see Table 1) shows the number of items created for each learning outcome. Ultimately, there were assessment items made in the apply, analyze, evaluate, and create cognitive-process areas.

The first item type corresponded with the first learning outcome and tested students' ability to find problems using a photo-identifying activity. In this activity students were asked to identify as many areas or behaviors that were problematic. Students were graded on how many problems they were able to identify within a specified amount of time. Higher scores were awarded to those who identified more novel problems (novelty was measured using student response frequency).

In the second item type, students were given a problem statement (i.e., bike seats get wet) and were asked to write out as many solutions as they could within a specified amount of time. Higher points were again awarded for more novel but feasible answers. The TTCT uses a similar grading scheme (Torrance, 1963).

The third item type assessed the students' ability to evaluate ideas by presenting a series of possible solutions to a given problem and asking them to rank order the solutions from best to worst. Their rankings should have been based on the definition of innovation used by the Innovation Bootcamp: original and useful ideas that can be implemented successfully. The student responses were compared with the responses of four technology and engineering professors who have significant experience in innovation research and industry. To ensure interrater reliability, the responses of the professors were compared and analyzed prior to comparing them with the student responses.

The final item type assessed the students' abilities to effectively communicate their ideas to others. This item required students to write out a pitch for the innovative solution that they ranked the highest on the previous ranking question. The pitch was limited to 700 characters, which meant that it had to be concise. The grading of the pitch was based on conciseness and effective communication of the value of the solution.

The final item was graded by two raters using the provided rubric. Raters were trained on how to use the rubric and then graded five questions. They graded preselected responses that were considered by the researchers to be good, mid-grade, and poor in order to ensure that the raters could be reliable at different levels of performance. The raters discussed any areas in which they disagreed. After grading the first five responses and their subsequent discussion, the raters graded five more responses and then discussed the scores. This process continued until raters achieved agreement, which was defined as a correlation greater than 0.75 because an interrater reliability above 0.75 is considered "excellent" (Cicchetti, 1994, p. 286). After the raters graded all responses, interrater reliability was estimated for all scores.

Testing Procedures

An initial pilot version of the test was first administered during the fall semester (2012) of the Innovation Bootcamp course. It was administered to three sections of the course, which had 20 students in each section ($n = 60$). The pilot version was done to help with initial test form equivalence and instrument validity. Following the initial pilot implementation, the results were analyzed, and the test was revised. The revised version of the test was then administered during the winter semester of the course to five sections of the Innovation Bootcamp ($n = 100$). Students were told that the test was a contest and that the top scores would receive a cash prize. The extrinsic motivation of a cash prize was added based on the results from the pilot test, which suggested that we needed to ensure students were motivated to do their best on their test to ensure maximal performance.

Revisions to the ITI after the initial test. After the initial test, the results were analyzed and revisions to the ITI were made in order to improve the test. The biggest problem with the initial test was that the subjects did not achieve maximal performance. Few of the subjects finished the test, and others quickly went through the items without giving much thought to them. This likely happened for a couple of reasons. The first reason is test fatigue. Subjects' performance dropped off significantly the longer they spent on the test. This was remedied by making the test shorter. The original length of the test was longer so that there would be a larger item bank for future testing. This proved infeasible for this study because the subjects could not maintain concentration over the large number of items.

The second reason for inadequate performance was that the stakes were not sufficiently high to prompt maximal performance. In order to resolve this issue, the second round of testing was done as a competition. Cash prizes were offered to subjects with the highest test scores.

Fixing these two problems with the test strengthened evidence of construct validity. Problems with fatigue and lack of incentive hurt the construct validity of the test. Problems in the test procedure affected scores enough that they did

not accurately describe a person's ability to perform the tasks. By fixing these problems, a stronger claim of construct-related evidence can be made.

Test form equivalence. Because a major part of this study was to create equivalent forms that can be used for pre- and post-testing, two forms of the test were created and given to the students at the same time. To find the forms equivalent, corresponding items should have similar means and standard deviations for the same group of test subjects. Also, student rankings by total score should be the same for both forms of the test.

Results

Overall Results for the Initial Test

The initial (or pilot) test was given to the three sections of the Innovation Bootcamp in the fall semester. The participants were split into two groups. Half of the students from each class were put into Group A, and half were put into Group B. Table 2 lists the participant scores and the means and standard deviations for the groups.

Table 2
Summary of Overall Scores for the Initial Test

	Group A			Group B		
	Overall	Form 1[a]	Form 2	Overall	Form 1	Form 2[a]
Mean	75.83	44.92	30.92	98.17	46.33	51.83
SD	36.95	15.67	21.88	43.58	21.60	23.60
Correlation	.93			.86		

[a] Indicates which form was taken first by each group (Group A started with Form 1, and Group B started with Form 2).

These data show that scores declined as test time increased, meaning that, regardless of the test form, averaged scores were lower on the second test form. For example, Group A's mean scores decreased from 44.92 to 30.92, which was similar to Group B's decrease from 51.83 to 46.33. Although the decline was lower in Group B, because both groups experienced a decline, this was attributed to (a) test fatigue and (b) lack of incentive.

Observation showed that the subjects became fatigued because of the length of the test and the number of items. For example, many of the subjects did not attempt to complete later items on the second form. Because of this finding, the test was modified into a significantly shorter version. Originally, each form of the test was going to have two items of each type; however, only one item of

each type was included on each form of the revised version to reduce test fatigue.

Another limitation of the results is that many of the students failed to achieve maximal performance on the test items because they were not interested enough in completing the test (not enough incentive). Some subjects skipped essay questions or answered them with only a few words, which was problematic because the test was designed to score participants based on subjects' maximal performance of cognitive tasks. In the initial trial of the test, stakes were not high enough to prompt maximal performance. Consequently, incentives were offered for high performance on the revised version of the test.

Analysis of Individual Items

Analysis of the scores and responses for individual items were used to gather evidence of validity and to find ways to improve the items for future tests. Even though the initial test's issues of length and test fatigue limited what could be learned from these results, there were still important things shown. Some of the items did not perform as expected and were revised for the second round of testing. The problem-finding items did not generate a large enough variety of responses and were modified. Also, the communication items needed better instructions and were modified to help the subjects understand better what was expected of them.

Analysis of Problem-Finding Items

In the problem-finding items, subjects tried to identify problems from photographs provided in the test. A rater counted all of the responses to find out which responses were more common than others. Figures 1–4 show the pictures used in each item.

Table 3
Summary of Statistics for Problem-Finding Items

	Overall		Group A		Group B	
	Mean	*SD*	Mean	*SD*	Mean	*SD*
Man on couch	7.75	3.94	9.17	4.47	6.33	2.66
Leaky drain	7.88	5.24	8.17	6.15	7.58	4.11
Printer	7.33	5.91	6.58	5.68	11.08	6.78
Street cracks	6.71	5.59	5.75	5.83	7.33	5.47

These statistics show that there was a significant order effect. The subjects tended to perform better on items that they completed earlier in the test. This makes establishing equivalence between the items difficult because it is unknown whether the change in scores was a result of those items being more difficult or a result of the order in which the subjects completed the items. Notwithstanding the order effect, some claims can be made about the difficulty of the items. Both groups scored higher on the printer item than the street cracks item. Because these items were placed in the same section of the test, this difference can likely be attributed to difficulty of the items. The other scores were inconclusive. Even though the man on couch and leaky drain items were in the same section of the test, Group A performed better on the man on couch item, and Group B performed better on the leaky drain item. The man on couch and street cracks items showed less divergence in their responses. This led to the decision to test different photographs in the second round of testing. In this initial test, problem-finding photographs were taken of specific problems similar to the ones that students identify in the Innovation Bootcamp; however, in the revised version, the problem-finding items had pictures that were taken of scenes from a home without focusing on specific problems. It was hoped that these photographs would give subjects the opportunity to identify a wider range of problems and that having to identify problems from a broader scene would be closer to the experience of problem finding that students face in the Innovation Bootcamp and that innovators face in real-world practice.

Analysis of Solution Items

The solution items gave subjects problem statements and asked them to generate as many solutions as they could. The scoring of these items followed a similar procedure to the problem-finding items. Students received points for the solutions that they generate, and more points were awarded for novel (less common) responses.

The responses show that some of the items gave the subjects greater opportunities for different answers than others. The bakery item (i.e., a local

supermarket has to discount their leftover baked goods after they are a day old) performed particularly poorly in this regard. It did not generate a very large number of different responses from the subjects. The garbage liner (i.e., garbage can liners often slip down inside of the cans when they are full of garbage) item performed best, followed by the headphone item (i.e., headphone wires get tangled in people's pockets), and then the corner-cutting item (i.e., people often cut across the lawn in places around campus, which leaves ugly dead patches in the grass). Other than the bakery item, these items garnered more responses than the problem-finding items. Table 4 shows the overall means and standard deviations as well as the means and standard deviations for the two test groups.

Table 4
Summary of Statistics for Solution Items

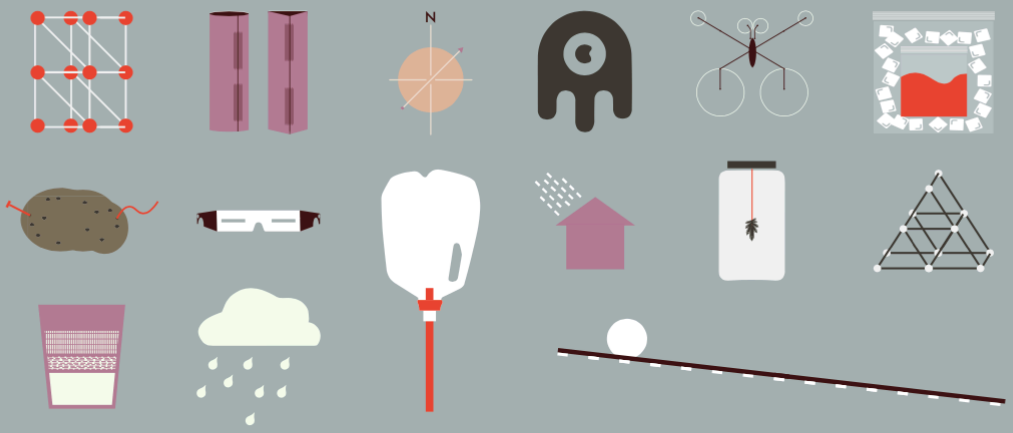
	Overall		Group A		Group B	
	Mean	*SD*	Mean	*SD*	Mean	*SD*
Garbage liner	7.33	5.91	5.50	2.25	9.17	7.61
Headphone	6.71	5.59	5.83	3.08	7.58	7.17
Bakery	5.71	4.25	4.50	3.75	6.92	4.37
Corner cutting	9.88	8.91	5.33	4.17	14.42	10.00

As with the problem-finding items, it is difficult to determine item equivalence based on the data shown here because of the order effect, which is attributed to test fatigue. These data show that for both groups, the bakery item was the most difficult. The other scores do not conclusively describe the equivalence of the other items.

The data from the solution items show that they performed better than the problem-finding items. In most of the items, the subjects gave a larger number of different responses than in the problem-finding items. Thus, the garbage liner and headphone items were chosen for more testing (to be used in the second round) because their means were closer than the others and because they had a large number of different responses.

Analysis of Ranking Items

The ranking items gave subjects a problem statement and four potential solutions. Participants ranked solutions using the Innovation Bootcamp's definition of innovation: original and useful ideas implemented successfully. Prior to administering the test, the ranking items were given to four engineering and technology professors. Their rankings were used to create a key to grade the students' scores by summing the point values from their rankings and then



RAINY DAY ENGINEERING

50 OF THE BEST ACTIVITIES FOR FAMILIES TO DO AT HOME

Produced by Technology Engineering Studies, Brigham Young University

Growing up in Vancouver, British Columbia, I often had my Saturdays ruined by endless rain. Sure, I'd love to go out and stomp around in the puddles, but only for a few hours. What then? I'd complain to my mom to entertain me: "Give me something to do, anything! ...Except chores!"

Because she was a brilliant mother who knew I liked to make things, she bought me a book of science experiments. I thereafter spent most of my rainy (and non-rainy) Saturdays playing with baking soda and vinegar, statically charged balloons, and rubber band guitars. Those afternoons made a lasting impression of exploration, learning, and fun. Did I become a scientist? No. But I do think having my mind and hands engaged in active learning left a positive educational impact on me – even if I didn't notice it at the time.

Now as an adult with 3 kids of my own, I want my kids to have a similar experience. But I don't want them to be limited to cliche science experiments with textbook solutions. I want them to be able to question the world around them, identify problems, and then tackle them by designing and building their own solutions. I searched online for websites, books, anything that fit what I envisioned. Although I found many great websites, and a few activities in print, I never found the package deal I was hoping for. So, I decided to create it myself.

I have taught technology and engineering education for the past 12 years in various capacities, from primary school up to university level. Currently, I am a professor of Technology and Engineering Education at Brigham Young University in Provo, Utah, but I also spend as much time as I can with

my kids at their elementary school, running after school programs, teaching and working with kids in a myriad of technology and engineering activities.

This book is not encompassing of every technology and engineering field. Nor do I claim to have invented all of the technology or engineering activities myself – many have been shared with me by friends and colleagues, or are a mashup of activities found online. Nonetheless, I have used and completed all of the activities in this book with my children and many of their friends, and I believe they represent a holistic approach to the fields of technology and engineering.

I have tried to ensure the activities get at the idea of the Engineering Design Process. This process has a focus on problem solving, where the ingredients of "asking, imagining, planning, creating, and improving" are key to arriving at the final solution(s). I believe this process is applicable and foundational to many aspects of life, and of course in all technical careers.

I hope you enjoy this book and the activities as much as I do. And I hope it becomes part of childhood memories for you and your children, much as my rainy day science activity book did for me.

Sincerely,

Geoff Wright

Foreword

Thoughts from the graduate students who helped review, write, and critique many of the activities in this book:

The engineering educational lessons and activities in this book bring the engineering design process to life for any capable youth or adult who tries them. Students will experience the engineering design process in simple, original and entertaining ways. The lessons engage, encourage and spark curiosity, as well as the desire to extend thinking beyond the activities provided.

Ingenious solutions to hard problems don't come without some failures. The activities will help you discover procedures and products that can be improved and then help you ask the right questions to do the revising and improving. Many of these activities are designed to fail soon and fail often. As students continue through failures and eventually discover the best solutions, they will take ownership of their results and want to share what they have learned with others. No doubt interest in the chemical, electrical, mechanical and civil engineering fields will increase as a result of the questions and answers unearthed by following the activities in this book.
Daniel Bates, Vista High Middle School Teacher

The activity instructions and learning materials presented here were developed and compiled by teachers and parents as a starting point in the endeavor to fill our society's need for engineers. Here we will explore Mechanical, Chemical, Electrical and Civil Engineering at a conceptual level to inform and excite students about the many opportunities and possibilities that engineering has to offer. The activities are designed for a range of learning levels. They also incorporate everyday materials that can easily be found around your own home.
Blake Hoover, Wasatch Jr. High Teacher

After going through the lessons here, I hope that you will learn new things that will leave you with more questions than you started with. I invite you to keep trying to figure out the problems that don't work the first time. I hope that you realize that you can do engineering, and it is extremely rewarding and fun!
Jared Massic, Maple Mountain High School Teacher

This book has been created for kids, parents, and teachers to explore the expansive world of engineering. As a high-school engineering teacher, many of my students know they want to be "engineers" without realizing the many fields that title contains. This book is a compilation of hands-on activities that have been designed to give kids a basic understanding of the civil, mechanical, chemical and electrical engineering disciplines. The hope is that after completing several of the activities in this book, kids will have a general understanding of each field, be able to recognize what skills and knowledge each one requires, and determine which of those they possess and want to develop further.
Khristen Massic, Nebo Learning Center

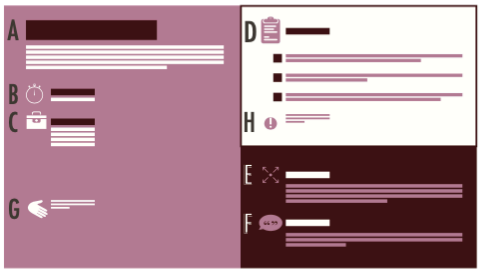
This book contains a variety of fun, easy activities to excite young minds. Each experiment comes with easy to follow instructions to guide children to success. Parents and children will enjoy designing and experimenting as they "think outside the box" with to solve problems.

Each activity will challenge children to expand their minds and explore the unknown. Children will develop important problem solving skills necessary not only for future engineering careers but for any other career they may choose. Parents will get to see their children enjoy learning, overcome failures and celebrate successes, all while brushing up on their own problem solving skills. This book is a must-have for anyone with children."
Michael Graham, Flight Instructor, UVU

Creation. That is what life is about. From the earliest times, humans have created memories, feelings, art, relationships, games, weapons, friends, enemies, technology, buildings, and ideas. From history, the lives we remember are those who created the most. Sometimes they created horrible things, but more often wonderful ones. While this may sounds grandiose, I stand by the point that it is in our nature to discover, create, and reshape the world around us. Engineering, at its heart, is about discovery and creation. Through the activities in this book you will be encouraged to look at things in new ways. Your ability to problem solve, to design, and to test will all be enlarged. The activities in this book can be done alone or with others, and you will find that there are many ways to customize the activities to better fit your interests. Whether you are a parent helping a child, a teacher helping a student, or just someone bored on a rainy day, I hope you enjoy the process of creation.
Matt Rytting, Physics Teacher

Organization

A - Activity Title
B - Time the activity typically takes to complete
C - Materials needed for the activity
D - Instructions for the activity
E - Optional ideas, instructions or questions to take the activity further
F - Questions to help make important connections, or to spark curiosity and additional research.
G - Tips to help you be more successful
H - Safety precautions for this activity



A Note on Materials

Each activity in this book comes with a list of key materials needed for that project. However, in order to avoid redundancy, we have eliminated listing common tools and adhesives such as scissors, wire cutters, pliers, tape, glue, etc.

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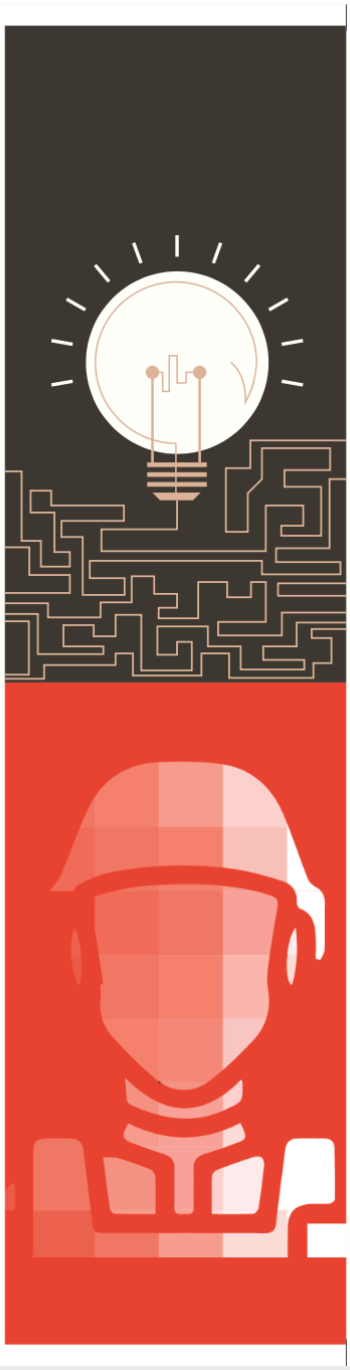

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Bio Batteries

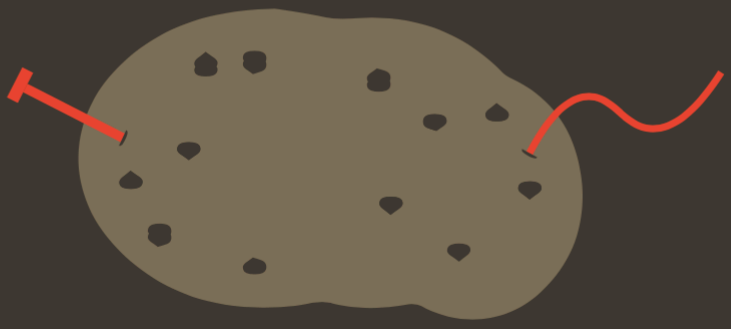
Have you ever eaten a potato and thought to yourself, "This would make a fantastic clock battery?" You haven't? Well, now you can do just that! With the help of a couple of spuds, some nails and a wire, you will create a chemical battery capable of powering a bedside clock.

Time:

10-15 minutes

Materials:

2 Potatoes
2 Short pieces of heavy copper wire
2 Galvanized nails (it is important that they are galvanized)
3 Alligator clip wire sets, or flexible copper wire
Paperclips
1 Low-voltage clock
1 Marker



Helpful Hint: The potatoes will work best if they are freshly scrubbed.

Procedure:

1. Remove the battery from the clock, be sure to note the where the positive and negitive sides go.
2. Number the potatoes "1" and "2" with the marker, and insert one nail into the end of each potato.
3. Insert one short piece of copper wire into each potato as far away from the nail as possible.
4. Use one alligator clip to connect the copper wire in potato 1 to the positive terminal in the clock's battery compartment, and use another clip to connect the nail in potato 2 to the negative terminal. Use the third clip to connect the nail in potato 1 to the copper wire in potato 2.
5. Take a look at the screen and set the clock!

Expansion:

Try hooking your potato battery up to a small lightbulb.
Try cutting your potatoes in half and using more wire and nails to connect them. Does this make the lightbulb shine brighter or dimmer?

Discussion:

How is the potato able to power the clock?
What would happen if you only used copper wire, or only used galvanized nails?

Procedure:

1. Heat the marshmallows for 10-15 seconds in a bowl in the microwave.
2. Add 2 tablespoons of peanut butter, and mix together thoroughly.
3. Add powdered sugar a little at a time until the dough is no longer sticky to the touch.
4. Enjoy eating your delicious "alloy"!

Expansion:

Try mixing other things with marshmallows to get a different alloy. Experiment with different amounts of powdered sugar, and observe how changing the ratio of sugar changes the properties of your alloy.

Discussion:

How are the properties of your "alloy" different than the ingredients by themselves?

Discovering Alloys

An alloy is a metal composed of two or more elements which bond when they are molten together. For example, steel is an alloy made of carbon and iron. Since iron melts at 2,800 degrees F, it would be difficult to create a steel alloy in your home, but you can learn about the process by making this delicious marshmallow-peanut-butter "alloy" in the microwave!

Time:
10-20 minutes

Materials:
3 Large marshmallows
2 Tablespoons peanut butter
Powdered sugar
Microwave safe bowl

Procedure:

1 Place the two chairs about 10 feet apart from each other, and tie one end of the string to one of the chairs. Thread the straw on the string, then tie the second end of the string to the other chair. Pull the string taught by adjusting the chairs.

2 Blow up the balloon, pinch the end and secure it with the clothespin, then tape the straw to the balloon.

3 Starting the balloon at one end of the string, release the clothespin. Did the balloon go anywhere?

4 Make adjustments to your "rocket" to improve how well it travels from one end of the string to the other. Adjustments could include changing how much you blow up the balloon or changing where the straw is taped to the balloon.

Expansion:

Try "To the Moon and Back" on the next page.
Challenge your friends to see who can build the fastest rocket.

Discussion:

How well did your first rocket work? Why?
Did your rocket designs have any problems? How did you solve them?

To the Moon

When an aerospace engineer designs a rocket, it's important that they use just the right balance of propulsion and mass. If their rocket is too big without powerful enough engines, the rocket won't make it off the ground. If the rocket is too light and the engines too powerful, the rocket will be hard to control and could crash.

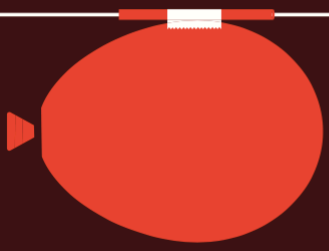
Utilizing the materials outlined below, you will create a balloon rocket that must travel between two fixed points. Your challenge is to determine which combination of thrust and structural design will create the greatest movement.

Time:

15 minutes

Materials:

Two chairs
Balloon
Drinking straw
12 Feet of string
Clothespin



Procedure:

1. Place a towel on a table and get the ice cubes out of the tray and ready to go. Prepare a container of water and place it by the towel.

2. Take two ice cubes and place them on the towel. This will be your base, so place them as far apart as you want your arch to span (6 inches apart for an 11 ice cube arch is typical).

3. Add ice cubes end-to-end on each side, building toward the middle. As you place each ice cube, first wet the ends in the water and then press the ice cubes together for 10 seconds.

4. Continue adding ice cubes until there is only space for one ice cube in the middle. Join the two sides with your "keystone" cube and your arch should be free standing!

Expansion:

Try building a larger arch or one with multiple layers. Get a friend to help so your arch doesn't melt.

Add food coloring to the ice cubes ahead of time to make a cool design!

Discussion:

Were you able to complete your arch before the ice melted?

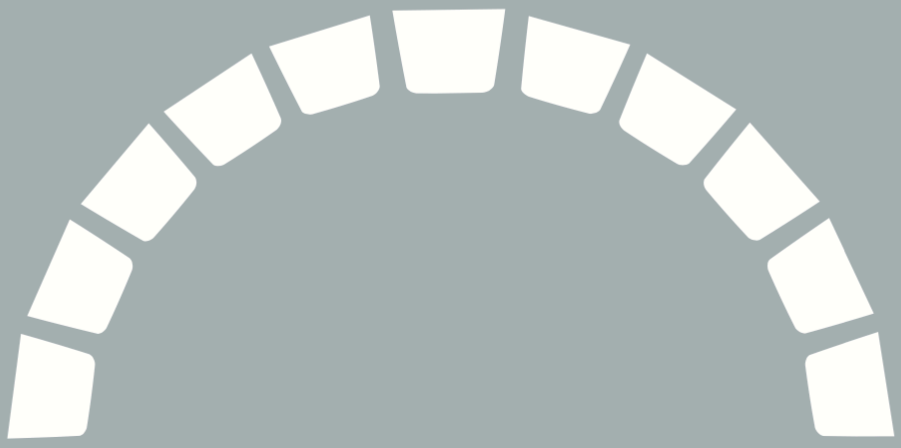
How could a Roman builder keep the blocks of stone in place before the arch was complete?

Ice Cube Arch

The Romans were some of the greatest engineers of the ancient world. They built roads, bridges, aqueducts, and buildings, many of which are still in use today. One feature of many of their structures was the arch. The Roman arch was rounded in shape with one stone (the "keystone") at the top and the rest of the stones built symmetrically around it. In this activity, you will build your own arch, but you will have to work fast before your building materials melt away. Can you keep cool under pressure?

Time:
10-15 minutes

Materials:
Ice cubes (9 to 11)
Towel
Water



9.3 Grants for research or creative works

I have applied for a variety of NIH (National Institute of Health), NSF (National Science Foundation), and foundational funding. Most of my grant writing has been in collaboration with peers, colleagues, and students from across campus. Although I have not been awarded every grant I have applied for, I believe the grants I have received have enhanced my research, provided wonderful experiential learning opportunities for undergraduates and graduate students, and has led to a variety of journal articles. Below is a summary of those which I have been awarded. Several non-awarded NSF and NIH proposals were not included.

1. Jensen, J., Wright, G., West, R., Sansom, R., Turley, J. NSF Research Grant: 15-585. Improving Undergraduate STEM Education: Education and Human Resources (IUSE: EHR): $300,000. (2017 – 2020).
2. Giboney, J., Wright, G. NSA (National Security Agency) GenCyber Grant: $94,724 (2020 – Present).
3. Wright, G. Utah Underwater Robotics – sponsorship grant from US Synthetic: $112,000 (2013 – Present).
4. Wright, G. STEM Action Center Competition Grant – STEM Action Center of Utah: $4000 (2020, 2019, 2018, 2017).
5. Wright, G. K12 Student Innovator of the Year – sponsorship grant from Action Target: $2000 (2016, 2017).
6. Wright, G. Silverstone Systems – sponsorship grant for TEECA student competition scholarships: $2000 (2015, 2016).
7. Wright, G. DR Horton Home Builders – sponsorship grant for TEECA student competition scholarships: $2000 (2015, 2016).
8. Wright, G. Grandeur Peak Grant: STEM startup money for STEM Outreach Initiatives: $9000 (2016).
9. Skaggs, P. T. (Co-Principal), Wright, G. A. (Co-Principal), University, $20,000.00. (August 2013 - July 2014).
10. Wright, G. A., "Complementary Cognition: Improving mathematical self-efficacy through programming," $20,000.00. (2009).
11. MRG (Mentoring Research Grant) BYU. $20,000 (2018 - 2020). Building Electric Bikes to Promote Student Internet in Engineering and Public Health.
12. Wright, G., Shumway, S., Truscott, T. MEG (Mentoring Environment Grant) (co-pi), BYU. $20,000 (2010 - 2012). Using ROVs in Landlocked States to Promote K12 STEM Interest, Self-Efficacy, and Enrollment
13. Terry, R., Wright, G., Shumway, S. MEG (Mentoring Environment Grant) (co-pi), BYU. $20,000 (2010 - 2012). The Development, Implementation, and Evaluation of Teaching Engineering Curriculum to Dominican Republic Junior High and High School Students.
14. Wright, G., Rich, P. MSE Grant (co-pi), MSE (McKay School of Education), BYU. $20,000 (2010 - 2012). Improving Mathematical Self-Efficacy in K12 Students Through Programming.
15. NCETE NSF Grant: $10,000,000. (2004 - 2009). NSF Award 0426421 for National Center for Engineering and Technology Education (BYU portion: $150,000).
16. Wright, G., Rich, P. (co-pi) MEG (Mentoring Environment Grant), BYU. $20,000 (2008 - 2010). Computational Thinking in Education.
17. ORCA (Office of Research and Creative Activities), Student Research Grant, Brigham Young University. (2006, 2008, 2010, 2012).

Total: ~ $721,000

9.4 A list of awards or recognition for scholarship

An article I wrote with an undergraduate student was awarded the “Top Paper” award by our national organization: ITEEA (International Technology and Engineering Education Association). The article is titled: “Innovation in the Elementary Classroom” (Technology and Engineering Teacher - Volume 77, Issue 5 - February 2018) by Geoffrey A. Wright, and Matthew Jones (undergraduate student in TES). I was not only pleased to receive this award from our national organization, but I was thrilled that one of my undergraduate research assistants could also be part of receiving this award. It was a great mentoring experience, highlighted by this wonderful award and recognition.

9.5 At least three external review letters of scholarship including reviewer CVs and a discussion of how reviewers were selected

This page will be replaced by the department office with the external reviewers evaluations

9.6 Copy of Waiver Letter