

Mar 3rd, 9:30 AM - 10:45 AM

## The Universality of Communication: Preparing the Next Generation of Aviation Professionals

Patti J. Clark Ph.D.  
*Embry-Riddle Aeronautical University, clark092@erau.edu*

Doreen M. McGunagle Ph.D.  
*Embry-Riddle Aeronautical University, mcgunagd@erau.edu*

Laura Zizka Ph.D.  
*ÉCOLE HÔTELIÈRE DE LAUSANNE, SWITZERLAND, laura.zizka@ehl.ch*

Follow this and additional works at: <https://commons.erau.edu/ntas>



Part of the [Aviation and Space Education Commons](#), [Business Administration, Management, and Operations Commons](#), [Curriculum and Instruction Commons](#), and the [Scholarship of Teaching and Learning Commons](#)

---

Clark, Patti J. Ph.D.; McGunagle, Doreen M. Ph.D.; and Zizka, Laura Ph.D., "The Universality of Communication: Preparing the Next Generation of Aviation Professionals" (2020). *National Training Aircraft Symposium (NTAS)*. 27.  
<https://commons.erau.edu/ntas/2020/presentations/27>

This Presentation is brought to you for free and open access by the Conferences at Scholarly Commons. It has been accepted for inclusion in National Training Aircraft Symposium (NTAS) by an authorized administrator of Scholarly Commons. For more information, please contact [commons@erau.edu](mailto:commons@erau.edu).



**National Training Aircraft Symposium (NTAS)**

**2-4 March 2020**

**Embry-Riddle Aeronautical University – Daytona Beach, FL**

# **The Universality of Communication: Preparing the Next Generation of Aviation Professionals**

*Dr. Patti Clark, Embry-Riddle Aeronautical University*

*Dr. Doreen McGunagle, Embry-Riddle Aeronautical University*

*Dr. Laura Zizka, Ecole hôtelière de Lausanne//HES-SO University  
of Applied Sciences and Arts Western Switzerland*



# Introduction

- Goal of Aviation College Programs
- One million more STEM professionals needed in US in next decade to ensure maintaining status as global leader in science and technology (Akdere, Hickman, & Kirchner, 2019);
  - STEM education will determine if US remains a global leader and can solve some of the challenges such as energy, health, environmental protection and national security (Jang, 2015)
- McKinsey Global Institute predicts STEM shortage of 38-40 million high-skill workers in 2020 (Bunshaft et al., 2015)
  - ‘only 25% of the engineering graduates are employable by a multinational company’ (Blom & Saeki, 2012, p. 8) and
  - 25% of 15 million Americans with STEM degrees work in STEM jobs (McGunagle & Zizka, 2018)
- Training, learning linked to success in national/global economy (Anajar, Talbi, Radid, Snadrou, & Tragha, 2015)
- Key to productivity lay in STEM skills PLUS a wide range of entrepreneurial, business, management and service skills (Siekmann & Korbel, 2016); need analytical, problem-solving, numeracy and intellectual rigor skills as well as STEM disciplines (Toland, 2011)



# Identified Gap in Competencies

- Employers believe STEM graduates are deficient in interpersonal skills that are essential for team and organizational performance (Akdere, Hickman, & Kirchner, 2019)
  - EX: 95% of US employers believe they should be able to solve problems with others who have different views than their own; 80% think they need better oral and written communication skills- only 15% believe they are prepared in regards to workplace diversity and 18% to work with people from different backgrounds (Akdere, Hickman, & Kirchner, 2019)
- Graduates should be able to contextually apply and develop knowledge and have critical thinking and problem solving skills (Rayner & Papakonstantinou, 2015)
- Mismatch between knowledge and skills developed in undergrad and those needed in post-grad activities (Sarkar, Overton, Thompson, & Rayner, 2016)
- Young graduates report considerable gaps between what they learned in STEM programs and what they saw as important in the workplace including
  - EX: Communication skills, planning skills, and awareness of ethical and social issues (Sarkar, Overton, Thompson, & Rayner, 2016)
- Students rated communication, critical thinking and teamwork as most important (Demaria, Hodgson, & Czech, 2018)
- **YET many students believe they have improved their transferable skills during their degree programs** (Demaria, Hodgson, & Czech, 2018; Mark, So, Chan, Luk, & Ho, 2018)



# Curriculum at Top 20 U.S. Aviation Universities

In this study:

- Compared the curriculum to the skills employers cited to assess whether the courses offered in the current programs reflect the actual needs of the aviation workplace.



# Top 20 U.S. Aviation Universities

| University  |
|---|
| <b>Purdue University</b>  |
| <b>Massachusetts Institute of Technology</b>  |
| <b>Georgia Institute of Technology</b>  |
| <b>University of North Dakota</b>   |
| <b>Ohio State University</b>  |
| <b>Embry-Riddle Aeronautical University</b>   |
| <b>San José State University</b>  |
| <b>Florida Institute of Technology</b>  |
| <b>Western Michigan University</b>  |
| <b>Hallmark University</b>  |
| <b>Spartan College of Aeronautics and Technology</b>  |
| <b>Academy College (Bloomington, MN)</b>  |
| <b>Rio Salado College</b>   |
| <b>Aerosim Flight Academy (linked to Jacksonville University, Broward College, and San Jacinto College)</b> |
| <b>Saint Louis University</b>   |
| <b>Central Washington University</b>  |
| <b>California Baptist University</b>  |
| <b>University of Central Missouri</b>   |
| <b>University of Maine at Augusta</b>   |
| <b>Bridgewater State University</b>   |

# Needed Skills from Survey with A & D Employers

- Team player
- Negotiation skills
- Communication skills
  - Verbal
  - Written
  - Oral
- Problem solving
- Decision making
- Self-motivation
- High self confidence
- Ability to gather data
- Synthesize data
- Leadership
- Customer focus
- Adaptability



# Top Skills from Survey

- Communication Centered Skills:
- Verbal
- Written
- Oral





# Content Analysis of Courses Offered

- Number of communication courses ranged from zero to 14, with an overall average of 4.7 classes within the program.
- Business management programs presented a range of one to 29 communication courses, with an average of 12.5 classes in the course catalogue.
- By enrolling in many of the current programs, the students risk entering the workplace today without the necessary business based communication skills sought by the global aviation industry.



# Business Acumen

- Despite rigorous training in job-specific competencies, there is a lack of business acumen in young aviation professional graduates.
- Focus on developing business acumen to ensure that students graduate with a strong understanding of running a company with both domestic and global strategies.
- Working in teams is representative of the real world and is important for critical thinking, problem solving and developing collaboration skills.



# Conclusion

- Stronger employer voice in skills development, increased engagement and investment in skills development (Maxwell, Scott, Macfarlane, & Williamson, 2009); employers should provide real world contexts, encourage internships, boost engagement with professional organizations (Hooley, Hutchinson, & Siobhan, 2016)
- Importance of dialogue between industry and higher education (Maxwell, Scott, Macfarlane, & Williamson, 2009)
- Attracting the next generation of aviation professionals requires a 21<sup>st</sup> Century view of the landscape to prepare students for the opportunities and challenges outside the classroom.



# Next Steps

- To summarize previous research findings, employability skills are those that help HR professionals to decide between two qualified candidates who are applying for the same job. These skills make the difference between an employee who does a task when commanded to do so versus an engaged employee who takes initiatives alone and thrives when working in a team. Employability skills lead to satisfied employees who do better work and lessen the risk of absenteeism, job-hopping, or turnovers. The necessity of preparing today's STEM students to be the best candidates for the future workplace is apparent. The only question is when STEM educational institutions will implement these changes.



# References

- Akdere, M., Hickman, L., & Kirchner, M. (2019). Develeoping leadership competencies for STEM fields: The case of Purdue Polytechnic Leadership Academy. *Advances in Developing Human Resources*, 21(1), 49-71. doi: 10.1177/152342231/8814546
- Anajar, A., Talbi, M., Radid, M., Snadrou, K., & Tragha, A. (2015). Quality management in vocational training: Evaluation of a specialized institution in lct. *Procedia- Social and Behavioral Sciences*, 191, 1928-1933. doi: 10.1016/j.sbspro.2015.04.261
- Blom, A., & Saeki, H. (2012). Employability and skill sets of newly graduated engineers in India: A study. *IUP Journal of Soft Skills*, 6(4), 7-50. Retrieved from [https://www.researchgate.net/publication/228278328\\_Employability\\_and\\_Skill\\_Set\\_of\\_Newly\\_Graduated\\_Engineers\\_in\\_India](https://www.researchgate.net/publication/228278328_Employability_and_Skill_Set_of_Newly_Graduated_Engineers_in_India)
- Bunshaft, A., Curtis-Fink, J., Gerstein, A., Boyington, D., Edwards, T., & Jacobson, C. (2015). Focus on employability skills for STEM workers. Points to experiential learning. *STEMconnector's STEM Innovation Task Force*. Retrieved from [www.STEMconnector.org](http://www.STEMconnector.org)
- Demaria, M., Hodgson, Y., & Czech, D. (2018). Perceptions of transferable skills among biomedical science students in the final year of their degree: What are the implications for graduate employability? *International Journal of Innovation in Science and Mathematics Education*, 26(7), 11-24. Retrieved from <https://search.proquest.com/openview/7137fb2db14940563f191f2032d94630/1?pq-origsite=gscholar&cbl=4403473>
- Hooley, T., Hutchinson, J., & Neary, S. (2016). Supporting STEM students into STEM careers: A practical introduction for academics. Retrieved from <http://hdl.handle.net/10545/231614>
- Jang, H. (2015). Identifying the 21<sup>st</sup> century STEM competencies using workplace data. *Journal of Science Education and Technology*, 1-33. Retrieved from <https://arxiv.org/abs/1511.05858>
- Maxwell, G., Scott, B., Macfarlane, D., & Williamson, E. (2009). Employers as stakeholders in postgraduate employability skills development. *International Journal of Management*, 8(2), 1-11. doi: 10.3794/ijme.82.267
- McGunagle, D., & Zizka, L. (2018). Meeting real world demands of the global economy: An employer's perspective. *Journal of Aviation/Aerospace Education & Research*, 27(2), 59- 76. <https://doi.org/10.15394/jaaer.2018.1738>
- Rayner, G. M., & Papakonstantinou, T. (2015). Employer perspective of the current and future value of STEM graduate skills and attributes: An Australian study. *Journal of Teaching and Learning for Graduate Employability*, 6(1), 100-115. Retrieved from <https://ojs.deakin.edu.au/index.php/jtlge/article/view/576>
- Sarkar, M., Overton, T., Thompson, C., & Rayner, G. (2016). Graduate employability: Views of recent science graduates and employers. *International Journal of Innovation in Science and Mathematics Education*, 24(3), 31-48. Retrieved from [https://www.researchgate.net/publication/307175580\\_Graduate\\_Employability\\_Views\\_of\\_Recent\\_Science\\_Graduates\\_and\\_Employers](https://www.researchgate.net/publication/307175580_Graduate_Employability_Views_of_Recent_Science_Graduates_and_Employers)
- Siekmann, G., & Korbelt, P. (2016). Defining 'STEM' skills: Review and synthesis of the literature.- support document 1, *NCVER*, Adelaide. Retrieved from <http://www.ncver.edu.au>
- Tolan, A. (2011). HE STEM Employability skills review. *The National HE STEM Programme*, University of Birmingham. Retrieved from [www.hestern.ac.uk](http://www.hestern.ac.uk)