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An Evaluation on How General Aviation Pilots Learn Basic Meteorology

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Introduction. As General Aviation (GA) accidents continue to occur each year, industry officials as well as researchers search for insights into possible causes to these accidents. Weather, in particular degraded weather poses a threat to general aviation. In fact, according to Jarboe (2005), “weather-related airplane accidents led to 240 fatalities in the United States (U.S) and Puerto Rico”(pp.3-11). Considering these facts, questions rise to the degree to which GA pilots actually understand aviation weather knowledge. Currently, the Federal Aviation Administration (FAA) requires private pilots to pass the FAA Knowledge exam with a 70% or above. Although this exam includes weather-related questions to test pilots' knowledge of these concepts, pilots can fail the weather portion of the knowledge exam while passing the entire exam, thus receiving their private pilot's license without fully understanding the extent of weather products and weather phenomenon. Therefore, the purpose of this study was to gain a deeper understanding into how pilots learn basic meteorology.

Method. In order to assess how pilots learn about weather phenomenon, products, and sources before and/or during their training, we conducted 30 semi-structured interviews with ERAU and non ERAU affiliated pilots. The interview included questions such as, where pilots receive their weather training, how they receive their training, which phase of flight was the most important in terms of weather awareness, and what courses provided the most beneficial weather-related material.

Results. The results of the interview reveal several interesting points. 1) Pilots learn weather-related material better when instructed by their flight instructor over any

other form of instruction. 2) Pilots stated that the preflight phase of flight was the most crucial for understanding weather products and basic meteorological concepts. 3) As for which courses provided the most beneficial weather-related information, pilots claimed that the introductory weather course (WX201) gave students a better understanding of weather phenomenology over the more advanced weather course (WX301). Pilots stated that the material learned in WX301 was "too specific" and "unnecessary." And although confessing that they did not fully understand or conceptualize the weather information presented in their meteorology courses, pilots explained that they felt comfortable with the breadth of weather-related knowledge learned. Ultimately, pilots agreed that weather plays an important role in flight and general aviation.

Discussion. The information obtained from these interviews helps emphasize the importance of improving the quality and scope of weather-related questions on the FAA written exam. The results of the data seek to provide insights into how to better prepare student pilots during their training for possible weather-related hazards during their flight. Ultimately, the goal of this study is to train student pilots with a greater depth of weather knowledge in order to increase certainty in decision making during weather-related events.

References

Jarboe, J. (2005). U.S. Aviation Weather-Related Crashes and Fatalities in 2004. *NOAA's National Weather Service*, 4(2), 3-11. Retrieved February 17, 2015, from <http://www.nws.noaa.gov/os/aviation/front/05june-front.pdf>