

Learning While Flying – A Simulation Based Case Study

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Extended Abstract

In the study Learning While Flying – A Simulation Case Study, students learning and retention is assessed using a motion based fixed wing flight simulator. Several studies show that useful and effective teaching and learning methods are one of the most important necessities of educational systems in higher and post-secondary education. Additionally, it is seen that enhancing student's learning using advanced technology raises the quality of the course and gives students a better understanding to the principles of their education. In the study, data is collected and compared from three separate and independent groups of students. Group A is provided with a literary review in the form of a brochure that describes the functions of the flight simulator, flight controls, aircraft principles, instruments and the required mission details. This group represents students that learn by reading and understanding the theory. Group B is not given the literary review but is instead given a short preflight presentation that covers the same information as the brochure. Their first real exposure to flight is when they start flying the simulator. This group represents students that are kinesthetic learners. Group C is provided with both the literary review, and the preflight presentation. After their respective reviews, all participants are asked to complete a pre-defined mission. Points are given for successfully completing several legs of the mission, and they are graded based on their flight performance and handling and control of the aircraft during the mission. It is expected that Group C will perform better than the other two groups due to the redundancy of the information provided through the different mediums. All students will then be asked to return and fly the same mission several weeks later. Their flight will be graded in the same manner as before and compared to the original flights. The idea of this research is to explore how students learning a new skill learn and retain the material when taught using several styles or methods of teaching. The results, while not statistically significant, show minor differences between the average scores of the three groups. Students that are given lectures (Group B) and those that are given both lectures and literature before the simulation (Group C) tend to perform marginally better than those that are only given the literature for review (Group A). Currently, the study is still a work in progress. Next, student's retention will be tested by retesting all the members of Groups A, B and C. The results of this study might be applicable to other similar scenarios. If it is observed that any one of the chosen modalities e.g. lectures, pre-reading or hands-on training is more effective in student learning than others, then it can be concluded that instructors teaching material similar to the ones used in this study could apply that modality more often than other modalities to improve learning. This could help improve overall student understanding, progression, long-term retention and application of the learning material.

Keywords: Flight, Training, Simulation, Learning, Students, Hands – on, Practical, Laboratory, Retention