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Maximizing Student Achievements: Mastering Aviation English

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Maximizing Student Achievements:

Mastering Aviation English

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by

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Abstract

Flight training delays and corresponding increased costs appear to be widespread among universities with aviation programs. Students in these programs have to juggle demanding academics and flight training. Additionally, international students, for whom English is not their primary language, have the added disadvantage of learning complex aviation concepts in English. In order to maximize retention in collegiate flight programs, an experimental aviation English course has been designed to help frontload aviation vocabulary and take a proactive approach to teaching language skills that are essential in flight training.

Maximizing Student Achievements:
Mastering Aviation English

Statement of the Challenge

Prior studies indicate that student flight training delays and corresponding increased costs are widespread among universities with aviation programs (Bryan and Thuemmel, 1996).

Identification of students prior to failure in professional flight courses was conceived from an eighteen-month study of training trends in the Embry-Riddle Aeronautical University, Prescott, Arizona Department of Aeronautical Science. Through this study of flight training trends and assessment of how the College of Aviation could better assist students in ensuring the success of the flight training requirements, it was realized that, in order to maximize student retention, students at risk must be identified early, prior to training failure or financial distress.

In evaluating this data it became apparent that international students, for whom English was not their primary language, had some difficulty mastering aviation concepts and communication while completing their initial phase of flight training.

Innovative Approach

To address this problem, an Aviation English course was developed to assist non-native English speakers in mastering aviation-specific content and communications. The learning goals and objectives for this course are to have good knowledge of international radiotelephony alphabet and numerals, basic flight fundamentals and maneuvers, airport operations, national airspace operations, and emergency procedures. Students will know how to comprehend basic air traffic controller (ATC)-pilot transmissions, basic runway navigational directions given by ATC, and communicate effectively with clear, understandable speech, and at an appropriate tempo. Other important goals and objectives for this course include students understanding the role of ATC and the importance of clear communication by conducting an interview and providing a written summary of the interview. Students will learn the value in safety by recognizing situational awareness through the means of analyzing both fatal and non-fatal incidents, why these incidents occurred and how they could have been avoided.

This course follows three models of pedagogy. The first is a Content-based Instructional (CBI) model, which allows for students to make strong connections to academic content while learning and mastering language skills necessary to be successful in their flight training (Stoller, 2008). According to Stoller (2002), in CBI the focus of content objectives and language objectives can shift along a continuum to meet the needs of the students. Stoller also asserts in her plenary address at the TESOL conference (2002) that as content is learned, students will then improve their language skills. For this course, a great portion of the class is structured on content rich objectives and discussions, which are centered on topics that the students are learning concurrently in their Private Pilot Ground School (AS 121) course. The students' Private Ground School course provides the fundamental aviation knowledge and technical foundation they will need in their foundational aeronautical coursework. As a complementary course, it provides

additional language support through the use of content with the use of Cooperative Learning Strategies, such as jigsaw reading, that promote student-to-student interaction (Johnson, 1998). Materials used for this portion of the course include but are not limited to the Pilots Handbook of Aeronautical Knowledge, Airport Facility Directory, and the Aeronautical Information Manual.

The second model is English for Specific Purposes (ESP), which incorporates language acquisition strategies through the use of special topics, such as aviation (Master, 1997). The focus on this portion of the course is primarily on language objectives rather than content objectives. Language forms and grammatical structures that are relevant to the field of aviation are explicitly taught, so that communicative skills are strengthened (Hutchinson, 1987). Students are provided additional vocabulary and language support in areas, such as phraseology and pronunciation, so that students can master critical concepts and better prepare students for their initial phases of flight training. Pronunciation is a key aspect of this course and will facilitate the students in understanding, being understood, and building self-confidence in a communicative environment (Goodwin, 2001). The goal is for students to obtain functional intelligibility where errors do not interfere with the message and are not distracting; native-like fluency is not a goal for this course.

Along with pronunciation and speaking fluency, listening comprehension is another key aspect of this course. Listening skills are supported through the use of authentic discourse in both routine and non-routine aviation situations and both bottom-up and top-down processing strategies are used to support student learning. Richard and Burns define bottom processing as sounds, words, and phrases; whereas top processing is focused on meaning (2011). An example of top-down approach would be to provide students with an authentic audio transmission, such as a pilot communicating with ATC, and allow students to listen for meaning. After students had several attempts to listen to the audio transmission, students are then supplied with a written script to deconstruct the transmission on a word level, a bottom-up approach. In an airplane, there are no scripts for pilots to use, but by providing structured practice within the classroom students are given the confidence they need to apply their skills in flight.

The final model is the use of Computer-assisted Language Learning (CALL) where instruction is aided by digital learnings strategies, such as classroom capture technology, to improve and build language skills (Hubbard, 2009). Egbert (2005) asserts that CALL is focused on language development, not technology. In other words, technology is used as a learning tool. For the use of this course, a classroom capture technology is used to record lectures in the Private Pilot Ground School course. Students work at different paces, so by capturing vital lectures students are able to review and watch portions of the lecture multiple times. As a result, student anxiety level will more than likely decrease and result in increased learning (Egbert, 2005).

This course also provides an online lab component, where students complete online modules using the *TCS Learning System* ™ (TCS). Students are guided by a classroom instructor in the "Read it!" and "Watch it!" phases of TCS. After students have been introduced to the essential vocabulary and have had sufficient in-class practice, they will then go to a lab where they can complete simulation exercises on the maneuver they have been studying (Bedard, 2014).

This course, taken as an aviation elective, does not affect the curriculum already in place but enhances the current Bachelor of Science in Aeronautical Science program, as it provides

support for non-native English speakers while possibly decreasing the total cost of flight training by reducing the likelihood of extended flight training.

An overall goal of this course is for the student to obtain a minimum level of operational proficiency as measured by the International Civil Aviation Organization (ICAO) Language Proficiency rating scale before beginning aeronautical coursework.

Benefits and Lessons Learned

Safety is paramount in flight training programs. Thus key objectives of the new Aviation English course are to enhance 1) critical understanding of flight operations and procedures, 2) situational awareness in a variety of flight scenarios, and 3) the ability to clearly and understandably communicate with flight crew and air traffic control during flight.

For the university, this course also enhances retention, especially among our international students. Retaining one student per semester is worth a greater value than the multiple new starts who may attrite out of the program. The processes and procedures of lessons learned will be shared in the Best Practices Roundtable with the intent of helping our international students be successful which, in turn, can help advance student retention in other Collegiate Aviation Programs.

The Aviation English course was taught for the first time in Summer 2016 as a non-credit course for six of our international aviation students, three of whom were non-flight students. There are 8 international students enrolled in the class (which now is a 3-credit course) for Fall 2016. Preliminary results from the summer indicate that this course is already a success in helping the students professionally by giving them a good start toward their career goals in aviation.

Next Steps

Results are forthcoming, but next steps may include tracking the students through their flight training and conducting a needs analysis on continued areas of weakness and to assess the learning outcomes. The presentation for the Best Practices Roundtable will include rich examples of this new resource for our international students.

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Appendix A
MASTER COURSE OUTLINE FOR

Course No: AS 195XX   **Title**: Aviation English
Cr. Hrs: 3
Lecture Hour: 3   **Laboratory**: 0

COURSE DESCRIPTION:

This course will introduce non-native speakers of English to introductory level aviation terms and concepts. There will also be additional emphasis on pronunciation of critical phraseology, and extensive practice with listening and speaking in regards to radio communications in routine and non-routine situations.

GOALS:

This elective course will provide students with an opportunity to practice vocabulary, both in listening and in speaking, while applying their knowledge to routine and non-routine situations. A goal of this course is for the student to obtain a minimum level of operational proficiency as measured by the ICAO Language Proficiency rating scale before beginning aeronautical coursework.

LEARNING OUTCOMES:

On successful complete of this course, students in Aviation English will be able to:

1. Be able to speak English clearly and understandably in an aviation environment.

2. Use appropriate communicative strategies to comprehend basic ATC-pilot transmissions.

3. Understand basic runway and navigational instructions given to the pilot by ATC.

4. Communicate effectively in ATC-pilot transmissions where speech is at an appropriate
    tempo; speech may be inconsistent in fluency, but will not inhibit effective
    communication.

5. Understand and apply basic knowledge of flight fundamentals to flight maneuvers in a
    simulated environment.

6. Understand, analyze, and explain airport operations, and local airspace.

7. Identify emergency procedures and apply knowledge of aviation to problem solve in
    emergency situations within a simulated environment.