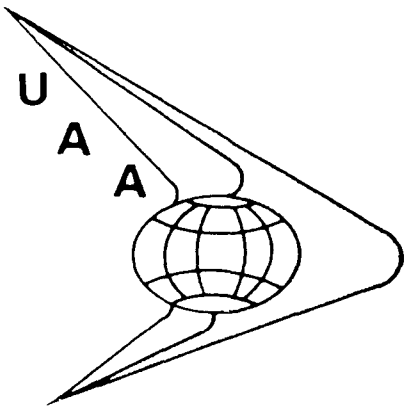

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Each paper published in the Collegiate Aviation Review has been blind-reviewed by at least three peer-evaluators. The evaluation process provides complete papers sanitized of both author and university identification to reviewers. The identity of the reviewers also is protected and remains confidential. The reviewers are instructed to evaluate each paper judging whether it meets acceptable standards in terms of quality in content, research methods, format, and writing style for a national/professional publication.

C. Elaine McCoy, Ph.D.
Chair, Publication Committee

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THE EXPERT WITNESS IN ACADEMIA

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Abstract

This paper relates how the activities of the expert witness contribute to overall effectiveness in the academic assignment. It defines the term "Expert Witness" and presents the qualifications, functions, and specific duties entailed. The characteristics of a successful expert witness are presented and discussed. Based on these discussions, the experience as an expert witness is related to the academic assignment, as well as providing some insight as to its merit as a professional and scholarly effort.

Introduction

Does serving as an expert witness enhance one's effectiveness in the academic assignment? Is being an expert witness a scholarly activity? Is service as an expert witness a professional activity? These questions are periodically asked concerning candidates for tenure and promotion at universities across the nation, particularly in technical disciplines. The answer is "yes."

Many universities require that professors demonstrate effectiveness in their academic assignment plus achievement in scholarly or professional areas for tenure or promotion consideration. Generally, some methodology for quantifying these achievements is developed to evaluate the effectiveness of such achievements in teaching. Such considerations as service to the students and university provide further information concerning overall effectiveness in the academic assignment. The evaluation of scholarly or professional achievements, however, can be much more difficult to quantify.

For the person who is active in publishing, a long list of articles in refereed journals may provide a basis for evaluation. A person who is active in professional organizations at local, state and national levels may provide a list of positions held as a basis for evaluation. Probably the most difficult professional activity to evaluate is that of the expert witness or consultant.

This paper relates how the activities of the expert witness contribute to overall effectiveness in the academic assignment. In other words, how does being an expert witness make a better teacher. The process of quantifying these contributions initially requires a definition of the term "expert witness" and an understanding of his specific duties. Based on these discussions, the experience as an expert witness is related to the academic assignment, as well as providing some insight as to its merit as a professional and scholarly effort.

The Expert Witness

WHAT IS AN EXPERT WITNESS ?

It is common knowledge that a "witness" is someone who possesses firsthand information concerning the facts about a particular event. There are two kinds of witnesses commonly used in litigation today -- "lay" witnesses and "expert" witnesses. A lay witness is a person who has physically observed the event or events in question and is allowed to relate only what she/he actually saw, heard, felt or even smelled. She/He is not allowed to relate what others have said or even her/his opinion on the subject.

Regarding "expert" witnesses, "If something can break, bend, crack, fold, spindle, mutilate, smolder, disintegrate, radiate, malfunction, embarrass, besmirch, infect or explode, there is someone, somewhere

who can explain how and why" (Poynter, 1987, p. 11). When such people are invited to participate in legal proceedings they are called "experts" and may come from virtually any discipline as appropriate to the given situation.

The expert witness is allowed to express an opinion on any relevant issue within the scope of his/her expertise. It is not necessary for her/him to have been present when the event occurred and she/he most probably was not. Further, an expert witness is called to the witness stand not only for what she/he concludes (based on the facts in the case), but for what she/he knows about general practices that can illuminate the matter at hand. It is presumed that the expert is an impartial, disinterested party whose only objective is to explain how and why the event occurred.

The expert must first investigate the facts of the case, and then she/he must explain the technical details to the attorney. Later the expert explains or teaches the subject to the judge and jury. Until the time of trial, the expert acts as a consultant and in many cases as a researcher. When depositions are requested or the trial begins, the expert becomes an "expert witness."

QUALIFYING THE EXPERT WITNESS

For a person to qualify as an expert witness, she/he must have something unique to contribute to the case. Such qualifications may be academic or operational, local or national, general or specific. Such a qualification may be based upon an individual's background, experience or knowledge. Most cases involve difficult questions; therefore, extreme competence is desired. Initially, according to Poynter (1987, pp 18-19) the attorneys judge the expert's ability based upon such public qualifications as:

- Education, training or practical experience;
- Professional and technical expertise;
- Job position and function;
- Recognition by professional associations (awards);
- Publications: books or articles;
- Licenses or registrations held;
- Memberships in professional societies;
- Accomplishments; and
- Research in the field.

Additionally, the attorneys, judges and juries will consider the courtroom rapport, performance under duress (cross examination), delivery and confidence in their evaluations of the expert witness.

WHAT ARE THE FUNCTIONS OF THE EXPERT WITNESS?

According to The Expert Witness Handbook expert witnesses provide four types of services.

1. "They investigate the particular case at hand, research everything available on the subject, run tests, and then analyze and evaluate their findings." (Poynter, 1987, p. 15). In general, this is work based on research and entails theory, analyses, interpretation, explanation and demonstration.

2. "They evaluate the merits of a potential claim and may document the work completed in a written report on their findings. They also express their opinion about the cause of the problem and the merits of the claim." (Poynter, 1987, p. 15).

3. "They recommend certain aspects of litigation strategy." (Poynter, 1987, p. 15). For example, experts may suggest a redirection of the suit or they may suggest other areas for investigation or testing. In many instances, they may know the opposing expert and can project the arguments that he or she may use. These recommendations alone make the expert a valuable asset to the attorney.

4. "They testify in depositions and at trial to explain and then defend the technical conclusions they have reached." (Poynter, 1987, p. 15).

In addition, the expert must explain to the attorney (and later to the judge and jury) such things as:

- the scientific and technical issues involved;
- issues concerning practice in the trade;
- the meaning of certain terminology or jargon; and
- damage issues--estimating the lost value or profits caused by the defendant's wrongful conduct.

The function of the expert witness or consultant relating to litigation of aviation cases, for example, has become very research-oriented. Even the most trivial assertion must be thoroughly researched for viability and factual basis. In some cases, the data are relatively easily researched and an opinion rendered. With the sophistication of many aircraft accidents, however, extensive research of the available literature, data and known facts are often not sufficient for a clear-cut opinion based on presentable, indisputable facts. In such situations, tests must be developed and performed to obtain sufficient documentation to demonstrate the facts of the case. In many cases, actual flight tests must be performed to obtain the data needed to properly present the case. Tasks such as these are usually left to the expert to develop, implement and document the results.

CHARACTERISTICS OF AN EXPERT WITNESS

Assuming a person has the appropriate experience and education, what qualities or abilities are desirable to be a valued expert? Poynter (1987, pp. 16-17) lists seven characteristics which appear to be applicable:

1. "Inquisitive." A person should want to know why things happen, enjoy doing library research and running tests. Access to reliable and current sources of information is a necessity. The ability to absorb and evaluate what is learned is the hallmark of a good investigator.

2. "A writer." The ability to express thoughts clearly and put them in writing is frequently required.

3. "A good speaker." The ability to think under duress and being able to express an opinion, responding quickly to defend a position, is a strong asset. The expert must respond to the pressure of cross-examination by thinking clearly and being articulate.

4. "A teacher." The expert must show counsel, the opposing side, judge and jury why his findings are correct. He must be a good performer and must be able to persuade his audience. He must be creative to provide a fresh prospective on the case to the attorney.

5. "Mediagenic. There is a difference between honesty and believability." Truth and knowledge of the subject are not sufficient to convince his audience. The expert must be believable to be convincing.

6. "Able to reason." Experts must be able to deduce correct inferences from hypothetically stated facts or from facts involving scientific or technical knowledge.

7. "Credibility." This comes from expertise in the specific subject, qualifications such as a degree or title, integrity, knowledge and speaking or teaching ability.

Analyzing the characteristics above versus those required to be an outstanding teacher, one finds them to be much the same. In fact, one could observe further that the difference between an average teacher and an outstanding one might very well be described by those very characteristics. The person educated to teach may already have some of them, but others may have to be learned or developed. Experience is sometimes a most valuable aid in such learning or development.

The characteristic of inquisitiveness is most likely one with which a person is born. However, a teacher who is mildly curious may have his interest peaked by investigating the facts of a case. Often, this is just enough to bring out the natural inquisitiveness possessed and inspire greater investigative activity. This may also broaden the background or data base from which a teacher may enhance his classroom presentations.

A teacher is often requested to provide written presentations through his participation in departmental or school management activities. Grant proposals, new course development and a host of other such activities require written reports. The techniques of report writing for a legal investigation may provide a useful tool in such activities. Sometimes, the case at hand may provide the basis for a paper to be published. Occasionally, publication is encouraged, especially if representing the plaintiff's case. For the expert working for the defense, such publication is difficult to get approved. The information obtained is considered to be proprietary and, as such, must be approved not only by local counsel but by the legal staff of the persons or company represented. Normally, however, the material may be used in the classroom as investigative data.

Some teachers are not really good speakers, and they tend to falter under the press of questions from the audience (students). The courtroom environment creates a pressure all its own, and the expert must be very precise in what he says. Once he masters the thought process under such circumstances and develops the clarity of presentation necessary to be successful, that process and presentation technique will carry over into the classroom. The result is that greater spontaneity is achieved in answering detailed questions. Further, it will be applied in discussions with peers and management.

Honesty and believability are both required of the teacher. Any experience which enhances credibility is a real asset. Like a good salesman, the teacher must not only present the material, but must make it believable by the students as well. The expert witness must quickly learn techniques which enhance this salesmanship characteristic. This is also carried to the classroom and other academic activities.

The ability to reason is one which can be enhanced by practice. The application of reasoning and deduction to the legal case can further be carried to the classroom, staff meetings, committee meetings and personal advising to the individual students. This is especially useful when advising the student who has not decided what his/her goals are.

Above all, the teacher must have credibility. This implies not only academic qualification, but real-world experience. Serving as an expert witness, properly executed, keeps the teacher closer in contact with the field and newer, more current techniques and equipment. These may be directly related to the students.

Conclusion

Participation in the research required of a legal investigation will broaden both the technical and general knowledge of the educator and provide a better feel for the real-world environment which faces his/her students. This could lead to more effective course development or modification to keep abreast of current needs in the industry. It can stir his/her interest in the subject matter involved and expand upon whatever level of inquisitiveness he possesses. The opportunity is presented to improve his/her written presentations and often can lead to publication. The rigor of the courtroom encourages him/her to improve the speed of his/her thought process, spontaneity of response and improve the clarity of his/her oral presentation. Through studying and analyzing the facts of a case, the reasoning process is exercised, leading to greater productivity in problem solving. Further, each case worked provides another case history, another real failure analysis and the opportunity to present the eventualities of such malfunction or malpractice.

Frequently, an educator will have the education and experience to serve as an expert witness, but may be considered only adequate as far as teaching is concerned. By learning and exercising the skills required of the expert, the educator can improve his teaching ability. This, in itself, will then further improve his performance as an expert witness. The research activities provide a broader base of personal knowledge and contact with real-world problems, providing current examples for use in the classroom. Thus, a synergistic response is obtained in which the activities in each area of endeavor enhance the performance in the other.

The activities of the expert witness require research and entail theory, analysis, interpretation, explanation and demonstration. Thus, exercising the skills required of the expert witness meet the general requirements of professional activity, and, can often lead to scholarly publications. Accordingly, activities of the expert witness should, on their own merit, support tenure/promotion candidacy.

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ARTICULATION: A PROPOSAL TO MAXIMIZE EXCELLENCE IN COLLEGIATE AVIATION EDUCATION

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Abstract

The purpose of this study was to gain insight into articulation and transfer arrangements between two-year and four-year higher education institutions. As a means towards this end, a thorough review of literature supporting articulation was conducted. A presupposition on which this study focused was that aviation associate degrees are not intertwined with baccalaureate degree programs. This obstacle places a burden on students' abilities to complete both the associate and baccalaureate degrees within an economical four-year time period. Few institutions have developed articulation agreements for aviation programs with other institutions. A content analysis methodology was applied to the catalogs and schedules of all institutions of higher education in Oklahoma. Potential opportunities for articulation were examined and the results presented. Recommendations for action toward this goal were proposed.

Introduction

As the United States prepared for war in the late 1930's, colleges became an important part of flight training under the Civilian Pilot Training Program initiated by Congress in 1939. Under this program, colleges and universities taught many pilots to fly as the Nation prepared for and entered World War II. Following World War II, numerous colleges and universities provided aviation courses and programs for many returning veterans. Later, a few higher education institutions offered aviation programs, but most of the flight training shifted to non-college flight schools during the mid-twentieth century. Once again, many colleges and universities are offering aviation.

The advantages to students who might efficiently transfer from a college with low-cost flight training to a university with an aviation baccalaureate program are obvious. For example, the tuition cost of lower-division courses at Oklahoma two-year colleges in the fall of 1990 was $27.30 per hour versus $47.05 per hour at Oklahoma four-year institutions. The tuition savings alone would amount to $296.25 per semester. The flight training costs might be less as well. For example, the cost for flight instruction and airplane rental for training through the commercial pilot certificate with an instrument rating at one two-year college was $6,340 versus $10,250 at a four-year university. This example is potentially accurate for numerous other states.

In many instances, aviation associate degrees do not intertwine with the baccalaureate degree programs to allow students to complete both the associate and baccalaureate degree requirements within a four-year period. For example, in Oklahoma a student who has graduated from a two-year college and enters an Oklahoma four-year university is sometimes treated as an entering freshman for the first semester at the university. The two-year college graduate is not credited the status and awarded privileges of other juniors who have previously attended the university. These students are not only excluded from such things as purchasing preseason football tickets, but also may not have the

opportunity to enroll in the most desirable class times because previously enrolled university students may be allowed to enroll before transferring students. These culturally shocking changes could be alleviated through more effective articulation.

The purpose of this paper is to determine ways to improve the articulation and transfer for aviation students graduating from two-year colleges and continuing toward aviation baccalaureate degrees. Another purpose of this effort is to explore ways of connecting the two-year and four-year programs to allow the aviation student to complete both associate and baccalaureate degrees in an economical four-year time period.

Articulation: a Perspective

Since the beginning of the junior college movement early in the twentieth century, transfers of students from two-year to four-year institutions of higher education have been significant. Most of these transfer arrangements have been informal. The literature concerning articulation and transfer became prominent in the 1960's as higher education expanded to meet the exploding demand. Transfer and articulation continued to appear in the literature frequently through the 1980's and into the last decade of the twentieth century. Collegiate aviation education is experiencing new support for articulation with transfer agreements emphasized by the FAA's Airway Science Program. As higher education continues to become more competitive, articulation will become vital to institutional survival in the 1990's and beyond.

In The Junior College: Progress and Prospects (1960), Dr. Leland L. Medsker reported the results of a study of the 1952 entering class in 63 cooperating two-year colleges that enrolled 17,627 students in September, 1952. Medsker found that a median of 35% graduated, 33% transferred, and 56% of those who graduated, transferred. Medsker studied the performance and retention of the transfer students. In general, the transfer students did somewhat less well than the native students in the first term after transfer. By the end of the senior year, however, the transfer student's grades closely approached the native student grades and tended to have not more than a 0.3 grade point differential. The retention rates for transfer students was markedly lower than for native students. The percentage of students receiving baccalaureate degrees at the end of the second year after transfer was much lower than for the native students. Only 40% of the transferring students received baccalaureate degrees by the end of four years after they entered junior college. Institutions reported a greater number of transfer students who completed degrees later, however.

Dorothy M. Knoell and Leland L. Medsker (1964) reported the results of their research of the performance of transfer students in 43 colleges and universities in Factors Affecting Performance of Transfer Students From Two- to Four-Year Colleges. Located in ten states selected on the basis of geography and type of statewide control, these colleges and universities were divided into five categories: major universities, teachers' colleges, other state colleges and universities, private colleges, and technical schools. Junior college students who transferred in 1960 were included in the study group as well as a sample of native students who graduated in 1962 which were used for comparison.

Knoell and Medsker (1964) found that 45% of the students who transferred after two years in junior colleges earned baccalaureate degrees about two years later. Another 31% were still enrolled at the end of two years and eligible to enroll in the next term. After transfer, the average grade-point drop was 0.3 in the first term. However, the averages for the transfer students increased each semester from 2.27 for the first semester to 2.68 for the fourth semester after transfer. The transfer students earned higher averages than the native students in lower division, but the native students earned higher averages in the upper division (Knoell & Medsker, 1964, pp. 174-181).

Nearly half of the students lost no credit in transferring from junior college. About 20% lost the equivalent of a three-hour course. Less than 10% lost substantial amounts of credit, such as a semester. The students probability of graduating on time was significantly related to the choice of major and the choice of four-year college. Students majoring in teacher education had a high incidence of graduating on time while those majoring in engineering had high attrition and a low probability of graduating in two years. Transferring students were just as efficient as native students in terms of the number of semesters attended and units earned toward the baccalaureate degree requirements. However, higher percentages of native students maintained continuous enrollment through graduation. (Knoell & Medsker, 1964, pp.174-181).

Knoell and Medsker (1964) found that practices in awarding credit for junior college courses appeared to be fairly arbitrary and varied randomly among the colleges. In general, approximately one-half of the baccalaureate degree requirements as well as only the lower division courses would be considered for transfer credit. A better rationale is needed. There is gradual obliteration of the distinction between upper and lower division courses. Considerable amounts of advanced standing credit are awarded to entering freshmen. The findings imply that a rationale for awarding transfer credit should be based on the principle of what is in the best interest of the student, rather than an arbitrary division of responsibility between the two-year and four-year institutions (Knoell & Medsker, 1964, p. 183).

Frederick C. Kintzer, in The Multidimensional Problem of Articulation and Transfer (1983), stressed that the transfer of students can no longer be considered only in the terms of linear progression from community colleges to four-year institutions. He defined transfer as the movement of students and their academic credits from one school to another. Kintzer then defined articulation as services for transfer students and identified six categories of transfer students: articulated vertical; reverse (from a four- to a two-year college); vocational; lateral; international (foreign); and nontraditional (drop-outs, industry, government, and experimental learning). Kintzer suggested that further research is needed to develop uniform identification and counting systems.

Karen Doyle Walton, in "Articulation: Transfer Agreements, Minimum Grades Acceptable on Transfer Courses, and Transferability of Associate Degrees," published in the Community/Junior College Quarterly in 1984, surveyed 1,000 two- and four-year institutions to examine transfer agreements and transferability of associate degrees in 1982. Articulation agreement was defined as: "A specific written agreement between two institutions (frequently between a two-year institution and a four-year institution) whereby student transfer is facilitated (and often guaranteed). The agreement assures the transferability of credits taken at the first institution into a program or course of study at the receiving institution." (Walton, 1984, p. 171). The majority (57.7%) of all institutions had no written agreement about transfer. Only 20.7% of the responding four-year institutions have articulation agreements with two-year colleges, and 20.1% have course transfer lists. Walton found that institutions with higher percentages of transfer agreements to be public rather than private colleges, two-year rather than four-year, large, and located in the West.

Walton (1984) also found that the majority (68.1%) of the four-year institutions do not accept the Associate of Arts and the Associate of Applied Science degrees without evaluating courses individually. Of the four-year institutions that accept associate degrees without evaluating courses individually, 16.5% accept both the Associate of Arts and the Associate of Applied Science, 14.2% accept the Associate of Arts only, and 1.1% accept the Associate of Applied Science only.

In the Articulation/Transfer Phenomenon: Patterns and Directions (1985), Frederick C. Kintzer and James L. Wattenbarger defined articulation as "the generic term referring to the entire range of processes and relationships involved in the systematic movement of students inter-institutionally and inter-segmentally throughout postsecondary education." (Kintzer & Wattenbarger, 1985, p. iii). They defined, "Transfer--

the mechanics of credit, course, and curriculum exchange--is one of the processes." (Kintzer & Wattenbarger, 1985, p.iii). Transfers from community colleges to baccalaureate degree programs have been declining in the last decade. Reasons include deteriorating articulation services for transfers, competition for minorities, lack of uniformity of credit acceptance in multiversities, and shift from academic to occupation career interests. Transfer students will not regain a preeminent role until 2000. The proportion of transfer students had slipped from 66% to 43% by 1973. Of all credit students, 63% are in occupational programs. (Kintzer & Wattenbarger, 1985, pp. 1-3).

Kintzer and Wattenbarger (1985) reported articulation trends across the nation. In Illinois, associate in arts and associate in science graduates performed better than native students in retention, baccalaureate degree completion, and grade point average. The Oklahoma State System Plan was discussed and reported to require 33 hours of general education. They wrote, "Although occupational education is not directly mentioned in the agreement, graduates of community college career programs are encouraged to include major courses to meet baccalaureate requirements." (Kintzer & Wattenbarger, 1985, p. 31). Courses classified as junior level yet open to sophomores in Oklahoma four-year institutions may be transferred from community colleges. The community colleges are a part of the university system in Kentucky and Nevada. Two-plus-two programs are used in Oregon and Texas. In North Carolina, the bachelor of technology degree provides for exchanges between the two-year and four-year schools. Upper-level universities are found in 11 states. There are a total of 25, and more than one-half are located in Texas. The number of states formulating articulation and/or transfer policies has not increased substantially in the last fifteen years. Some state legislatures have required that transfer agreements be made.

Frederick C. Kintzer evaluated statewide articulation and transfer agreements in 1985. He defined articulation as referring, "... to services provided students transferring from high schools-- to community colleges-- to universities and the reverse, and laterally throughout higher education." (Kintzer, 1985, p. 1). He defined transfer as, "... course and credit equivalency exchanges." (Kintzer, 1985, p. 1). His focus was on a taxonomy of types of agreements.

The original taxonomy of 1972 contained 22 states and this was expanded to 37 states in his taxonomy of 1976. Kintzer's study of 1985 targeted 21 states where statewide articulation and transfer had changed in character and where multiple types had appeared. Each of the taxonomies was divided into four types of agreements (Kintzer, 1985).

The group of states with Formal and Legal-Based Guidelines and Policies traced their authority to the state constitution, legislature, education code, or master plan. The states in this group that was the focus of Kintzer's research in 1985 were Florida, Illinois, Massachusetts, Nevada, Rhode Island, South Carolina, and Washington. Associate degree completion was the basic qualification for transfer although credits for individual courses were usually accepted. Articulation services are included, and general education requirements are presented in detail. (Kintzer, 1985).

The second group includes states that have State System Policies. The states in this group that were the focus of Kintzer's research in 1985 were Arizona, Hawaii, Maryland, New Jersey, New York, Oklahoma, Virginia, and Wyoming. The State System Policies emphasized credit transfer, show less attention to articulation services, place responsibility in a state official, often in the university system, and give substantial power to the responsible agency. Kintzer included Oklahoma in the group of States with this type of agreement.

The third group of states have Voluntary Agreements Between Institutions or Within States. Kintzer focused his 1985 research on California and Pennsylvania. In this group, decisions were reached as

transfer cases arise. The small number of transfer applicants in some states postpones the need for formalized agreements. About one-half of the 50 states were included in this group.

The fourth group included States Specializing in Vocational-Technical Credit Transfer. Kintzer focused his 1985 research on Michigan, North Carolina, Ohio, and Oregon in this group. Included in the group are the long-standing technical institute/senior college-university baccalaureate packages. The newest are four-year programs that tie the final two Tech Prep years in high school with the associate degree years in two-year colleges. Many states had multiple types of statewide agreements and would be listed with more than one group. (Kintzer, 1985, pp. 3-5).

The first statewide articulation agreement, the Florida Formal Agreement Plan was approved in 1965 and reconfirmed in 1971. The original Florida plan was significantly changed in 1985 by adding the following: a statewide common course numbering system; a common calendar; College-level Academic Skills Test; and a common entry test. The Oklahoma Plan became operational in 1977. A recent change was that senior institutions may require additional general education to graduate. However, this must be upper-division course work. Another provision of the Oklahoma Plan provided that, "courses classified as junior-level yet open to sophomores at senior institutions even though taught at a two-year college as sophomore-level courses, are transferrable as satisfying that part of the content area requirement." (Kintzer, 1985, p. 29). This was a major breakthrough for community college education. This indicated that two-year college faculty have integrity in terms of degree application of courses, at least in Oklahoma.

Dr. Louis W. Bender, a consultant from Florida State University, in Transfer and Articulation Among the Public Institutions of Higher Education in New Jersey (1987) wrote that less than 50% of county community college graduates who transfer to the New Jersey state colleges have all credits accepted. He found that only 25% of all undergraduates transfers at state colleges are at the junior or higher class level. He concluded that the Full-Faith-and-Credit Policy, upon which the study focused, "is more myth than reality." (Bender, 1987, p. iii).

Bender (1987) found a noteworthy exception in the New Jersey Institute of Technology (NJIT) which recognizes associate degree graduates as juniors, and has a program to orient transfers. NJIT faculty taught transition courses on county college campuses as a part of the last year of the associate degree programs.

Bender (1987) made several recommendations in his report to the New Jersey Chancellor of Higher Education. He recommended a 2 + 2 program, and services comparable to lower division entry including recruitment, admissions, orientation, scholarship incentives, and advisement. He also recommended a computerized data bank, and an official articulation/transfer office at each college. Bender stated that, "The community colleges should strengthen their capability to provide students with accurate information on transferability of all of their degree programs, including clarification of the AAS as an applied/practical education program that only should interface with baccalaureate level applied/practical programs." (Bender, 1987, p. ix).

Jim Palmer, in Bolstering the Community College Transfer Function (1986), viewed transfer as a multidimensional problem of student flow from high school through the baccalaureate level, not simply a matter of credit articulation. He would focus on the transferability of competencies as well as credits. This could be accomplished by the proper academic rigor and expected competencies of students; temporary appointment of community college faculty as visiting instructors at four-year institutions to reacquaint them with university students and the rigor at the upper division level; or by exit tests for transfer students. Problem areas that remain include identifying potential transfer students, tracking them, and providing information for students.

In "2-year institutions under pressure to ease transfers," published in the Chronicle of Higher Education on February 7, 1990, Beverly T. Watkins stated that streamlining the transfer process is critical to increasing the achievement of minority students. One-third of the students enrolled in two-year colleges plan to continue, but no more than one-quarter transfer. Transferring is a tough bureaucratic task for students. (Watkins, p. A37).

Watkins (1990) reported that currently the National Academic Achievement and Transfer Project at the American Council on Education is striving to improve articulation. The project will try to make lower division offerings compatible at twenty-four pairs of two-year and four-year colleges so that community college students can transfer to baccalaureate institutions without having to repeat courses. This is a $1.2 million project with support from the Ford Foundation.

Watkins (1990) reported other efforts to improve transfers. The United Negro College Fund has just completed a pilot project with 16 universities and 10 community colleges in the South to increase the number of black students who complete baccalaureate degrees. A second project is underway with five universities and seven community colleges. Elsewhere, the National Effective Transfer Consortium of 28 community colleges is conducting research on transfer practices. Another project designed to show that disadvantaged students can get a liberal arts education and a baccalaureate degree, "Exploring Transfer," takes about 50 black and Hispanic students from the City University of New York's Fiorello H. La Guardia Community College to participate in a summer program at Vassar College.

Articulation and the Airway Science Program

The Airway Science Curriculum is designed as a four year baccalaureate program. The Airway Science Curriculum Committee encourages community colleges to offer courses within the airway science curriculum that are considered lower division courses. Community colleges are encouraged to make articulation agreements with four-year institutions having Airway Science Curricula. Community college students should be advised to take only courses considered to be lower division by the four-year institution. These students should then be encouraged to complete an associate degree although this will usually not be in aviation, but rather an associate in arts, associate in science, or general studies. The community college student should be advised to make certain that he/she will be able to meet the four-year institution's residency requirement, which may be approximately one-half of the degree requirements. (Curriculum)

Course titles vary considerably among colleges. The University Aviation Association has published the College Aviation Accreditation Guidelines. (UAA, 1976). The guidelines recommend course titles and semester hours but do not recommend which courses should be upper division level.

The Airway Science Curriculum Guidelines For Community Colleges list 70 semester hours of lower division core courses. Among these courses are Introduction to Aeronautics (may be Private Pilot Ground School), Air Traffic Control, and the National Airspace System. Among the lower division courses from the area of concentration in Aircraft Systems Management are Private Pilot Certification (Ground & Flight), Commercial Pilot Certification (Ground & Flight), Instrument Rating (Ground & Flight), Meteorology, Air Transportation, and one elective for a total of 24 hours in this area of concentration. Air Transportation is also included among the lower division courses in the Airway Science Management concentration. (Curriculum).

Recommendations for Action

(1) The Oklahoma State Regents should revise the articulation policy to allow graduates of two-year aviation programs to transfer the entire general education requirements for lower division. Thus, institutions should coordinate general education requirements.

(2) The State Regents should approve two-year aviation programs as associate in science degree programs as well as associate in applied science degree programs. The State Regents' policy would also have to delete the requirement that the majority of the course work in addition to the required 37 hours of general education should be in courses classified as liberal arts and sciences. These policy changes could place the two-year associate degree programs within the state articulation agreement.

(3) Universities with aviation baccalaureate degree programs should change more aviation courses to lower division level. This should enhance articulation and transfer possibilities between two-year and four-year aviation programs, and would likely reduce student costs. This could only be accomplished if the number of upper division hours exceed the minimum requirement.

(4) Aviation program heads and coordinators should meet annually to discuss articulation and transfer among Oklahoma colleges and universities. The author will attempt to coordinate such a meeting in central Oklahoma in the fall of 1991.

(5) Aviation program heads and coordinators should take action to standardize course titles and numbers.

(6) Aviation program heads should review this study and make recommendations on how to improve articulation and transfer to the author.

(7) Universities should assign graduates of two-year aviation programs who are transferring to baccalaureate aviation programs directly to the aviation department of universities. Additionally, transferring graduates should be immediately assigned to faculty advisors who are members of the aviation departments.

FUTURE PROMISE FOR ARTICULATION

In 1988, Dale Parnell stated, "Core Curriculum will be as valid for technical education students as it is for the liberal arts students" in The Future of the Community College (Parnell, p. 7). He also warned that university professors must accept the advantages of allowing specialized training to be conducted along with the lower division core curriculum rather than after the lower division experience. Parnell predicted that, "By 2010 every state will have developed coherent collegiate student transfer agreements, coordinated academic calendars, common course numbering, and sequential curriculum planning. The fabric of schools, community colleges, and universities will look much more like a seamless garment than it does today." (Parnell, 1988, p. 11),

Summary

This study attempted to determine the nature of the curriculum for each of the collegiate aviation programs in Oklahoma. Catalogs and schedules were analyzed to determine the contents of each program. A survey was conducted to confirm data obtained from published sources, and to gain insight into articulation and transfer arrangements between the two-year and the four-year higher education institutions. The Oklahoma State Regents of Higher Education policies were researched to discover guidance and restrictions for articulation between aviation programs.

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STATUS REPORT: AN AIRLINE-UNIVERSITY COOPERATIVE PILOT CAREER PROGRAM

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Abstract

A descriptive study of the United Airlines--Southern Illinois University at Carbondale Cooperative Agreement in Aviation Flight and Aviation Management was accomplished in order to detail the selection, training, and hiring results of the agreement. This study showed that there have been over 100 SIUC student participates since 1987 in the short and long internships that were provided for in this agreement. The 93 short internship participants had the following average interning qualifications: 445 total flight hours, 30.0 multi-engine hours, and a 3.32 grade point average on a 4.0 scale. Furthermore, of the 93 short internships, 41 or 44.1 percent were selected to proceed on to a semester-long internship at various United Airlines Flight operation locations around the nation. Of those SIUC students successfully completing the internship, a total of 19 have been hired by United Airlines as Flight Officers since such hires began in 1989. Most of those hired are working as Boeing 727 Flight Engineers. Some have already upgraded to Boeing 737 First Officer positions. While the agreement is successful in many ways, the reasons for United not hiring successful long internships should be carefully studied in future research efforts. Also, the characteristics of a successful SIUC long internship (for example, of those hired by United) should be more completely identified by United at the time of employment.

Introduction

The purpose of this paper is to present the results of a descriptive study of the United Airlines (United)--Southern Illinois University at Carbondale (SIUC) Cooperative Program in Aviation Flight and Aviation Management. Started in July 1989, this agreement is the longest-standing formal linkage between a major U.S. airline and a university. The goals of this presentation of data are to: 1) Describe the United--SIUC agreement (including the internships); 2) Describe the selection, training, and hiring results of the agreement to date; 3) Describe the benefits of the agreement to date (to both the airline and the university); and, 4) Present some concluding remarks about the results and benefits of the agreement to date.

Background

The United States domestic airline industry expanded overall hiring significantly since the late 1970's. For example, the total number of airline industry employees grew from 329,303 in 1978 to 545,809 in 1990, or an overall growth of 65.7 percent (Air Transport Association). As part of this overall expansion of employment, airline industry pilot hiring has also grown. In 1978 the airline industry employed 28,336 pilots and flight engineers while by 1990 this figure had grown to 47,131, or a 66.3 percent increase (Air Transport Association). This expansion influenced two seemingly contradictory phenomena: (1.) the shrinking "pool" of quality, qualified pilot applicants, including minority applicants; and, (2.) increasing interest among people in general in a career with the expanding airline industry, particularly in the

cockpit-related flying positions. This interest was reflected in a broad resurgence of enrollments at university, college and community college-based flight degree programs.

The airline industry's search for an answer to the need for qualified, quality pilots to become part of this expansion was complicated by two other events.

1. The increasing number of potential pilot retirements due to a merging of the mandatory "Age 60" retirement rule and a significant "bulge" in airline hiring during the late 60's. This merging of events will, for example, force 125 to 350 pilots to retire each year through the year 2000 from United Airlines alone (Kennedy, 1988).

2. The increasing difficulty in hiring significant numbers of military-trained pilots due to the small size of the U.S. Military in general (as compared to the Vietnam War era) and the efforts of the military to hold on to their trained pilot assets for as long as possible. Since the military has been a significant historical source for new hired airline pilots, some airlines began looking for additional sources of pilots.

One of the airline industry's responses to this situation was to turn to the nation's university aviation programs for a partial answer to the question of developing a new "civilian" source of pilots for the nation's airlines. At least three of the nation's major airlines at one time entered into some form of agreement or program in conjunction with the nation's university aviation program.

Airline	University Partners
1. United Airlines	A. Southern Illinois University at Carbondale (July 1987) B. Florida Institute of Technology (1989) C. Embry-Riddle Aeronautical University (1991) D. At least fourteen other universities involved with no formal written agreement.
2. Northwest Airlines	A. University of North Dakota (Grand Forks) (Agreement terminated 9/89)
3. Eastern Airlines	A. Miami-Dade Community College, Florida B. Jacinto Community College, Texas

At least two other U.S. domestic airlines, American and Trans World Airlines, have looked into some form of university-related programs. At this junction, only United remains committed to a university-related program.

Goals of the United--SIUC Agreement.

United Airlines ("United") and Southern Illinois University at Carbondale ("SIUC") have established a close working relationship to form the Aviation Flight/Aviation Management Cooperative Program ("Cooperative Program") for selected SIUC students. The purpose of this program is to provide corporate assistance to the University and its students, while at the same time providing a well-trained pool of future Flight Officer applicants to help meet United's needs. The following paragraphs describe what United and SIUC hoped to derive from the agreement when it was signed.

United, first of all, hoped to improve its supply of quality flight officer candidates by tapping a source of civilian pilot candidates not previously tapped. Second, United hoped that such agreements would be a tool for minority recruitment since they were "under the gun" to improve such recruitment due to mandates from the federal government. Third, United was impressed with the overall quality of the aviation program at SIUC (Kennedy).
SIUC, for its part, hoped to gain valuable training experience through a major airline for as many of its undergraduate students as possible. These experiments were two "short" internships of one to two weeks twice a year (20 students total), a "long" internship (a full semester) for selected "short" interns, and a 727 type rating for all long interns (upon the successful conclusion of the long internship). Second, SIUC hoped to obtain some training experiences for faculty through the agreement. Third, SIUC hoped to benefit through the exchange of training information with the staff of the United Airlines Flight center. And, finally, even though United was not hiring pilots at the time of the signing of the agreement in 1987, SIUC hoped that the agreement would ultimately result in the hiring of some of its graduates as United Airlines flight officers (United Airlines, Inc.).

Description of the United--SIUC Internship Process

Central to the success of the United Airlines--Southern Illinois University Cooperative Agreement, to date, has been the two levels of internship experience provided to student participants in the agreement. The first level of internship, labeled as the "United Airlines Off Campus Study Program" in the "Working Guidelines" of the agreement (or "Short Internship" by the participants), is a one-to-two week training program held at the United Airlines Training Center in Denver, Colorado.

In order to be selected for the United Airlines--Southern Illinois University at Carbondale cooperative program "short internship," a student must:

1. Have successfully completed at least two flight licenses at SIUC's FAR 141 flight training program;
2. Hold a Commercial Pilot's License with an Instrument Rating in Multi-Engine Aircraft;
3. Be currently enrolled in SIUC's Aviation Management program (graduates of the program are not allowed to apply);
4. Have at least a 2.75 overall grade point average on a 4.0 scale; and,
5. Apply during one of the two applicant periods held each year in November and April.

Applicants are required to submit:

1. A letter of interest;
2. A resume, including flight hours;
3. A photocopy of all FAA flight licenses and medical certificates;
4. Their latest SIUC transcript;
5. Their latest SIUC grade report (to verify grade point average).

Applicants for the "short internship" are then ranked individually by a total of six SIUC faculty members, three from the Aviation Flight program and three from the Aviation Management program. The ranking is based on each faculty members individual perception of how the candidates meet the program criteria. The applicants were ranked in the following manner: #1 is best, #2 is next best, etc. All applicants are ranked by each faculty evaluator. All six scores for each student are added together. The ten lowest

scoring (therefore, the highest ranked applicants) applicants are the successful candidates. Interviews are not normally held. The "short internship" consists of:

1. All or portions of any ground school (typically 727 or 767);
2. A practice flight officer employment interview;
3. Lectures on such topics as Cockpit Resource Management, wind shear and other airline flight safety and training issues;
4. A walk-around/pre-flight of a United Airlines aircraft on the ramp at Denver Stapleton International Airport;
5. Participation in a group study project related to hypothetical future planning issues for United Airlines; and
6. Depending upon training resources at the time of the "short internship," 1 to 2 hours of simulator time in one of United's full-motion aircraft simulators.

At the conclusion of the "short internship" all of the participants are evaluated and ranked by United Airlines for selection in the "Long Internship" (also called the "United Airlines Occupational Internship" in the working guidelines of the original United--SIUC agreement). The "long internship" consists of being assigned to one of four locations in the United Airlines system for a semester-long (4 1/2 months) internship. The four locations are the Flight Training Center in Denver, Colorado; the Executive Offices in Elk Grove Village (Chicago area), Illinois; the Chicago Chief Pilot/Domicile offices at Chicago-O'Hare International Airport and, Washington-Dulles-International Airport. The students are assigned a specific supervisor in a specific area of the airline (such as Flight Dispatch, 747-400 Training Fleet Captain, etc.). In addition to working for that supervisor, each student is given the opportunity for simulator time, facility tours, and other learning experiences. Once a student finishes the "long internship" and graduates with the B.S. degree in Aviation Management from SIUC, then the student is eligible for a flight officer employment interview at United assuming the student meets the minimum qualifications for flight officer employment at United Airlines. Those students not selected for the long internship, but who successfully completed the short internship, are eligible for a flight officer employment interview when they reach 1000 PIC (Pilot in Command) time and their B.S. degree in Aviation Management. This latter arrangement was implemented in 1991 so no hiring results are available so far.

RESULTS OF THE AGREEMENT

Selection Results. The purpose of this section is to report the entering qualifications of the students in the United--SIUC "Short" and "Long" Internship groups. As already noted in a previous section of this paper, the applicant process to this program is competitive with minimum criteria. As reflected in Table 1, the entering qualifications of each short internship group varies somewhat with average total flight hours ranging from a low of 304 to a high of 530. The average multi-engine flight hours of each entering group of short interns ranges from a high of 63.0 to a low of 11.1. Finally, the average overall grade point average (on a 4.0 scale) of each short internship group ranges from a high of 3.46 to a low of 3.26. The overall average measure for 8 of the 9 groups to date are 445 total hours of flight time, 30.0 multi-engine hours and 3.32 overall grade point average on a 4.0 scale.

TABLE 1
UNITED--SIUC SHORT INTERNS ENTERING QUALIFICATIONS BY GROUP
1987-1991

Group #	N	Average Total Flight Hours	Average ME Hours	Average GPA
1	9	512	20.9	3.26
2	12	425	11.1	3.29
3	11	429	30.3	3.42
4	11	354	N/A*	3.28
5	10	516	63.0	3.33
6	10	N/A*	N/A*	N/A*
7	10	491	18.2	3.46
8	10	530	52.0	3.16
9	10	304	14.7	3.36
Cumulative Totals/ Averages	93	445	30.0	3.32

*N/A = Not Available

Training Results. A total 93 SIUC students have, or are, participating in United Airlines "short internships." Of these 41 (or 44.1 percent have gone on to "long internships." Of those on long internships (See Table 2) an additional 11 were selected to go on "long internships" before there was a "short internship" in place (prior to Fall 1988). This explains why there are a total of 52 "long interns"--only 41 were selected from the "short internships" and the rest were selected before the short internship was in place.

Of the 52 "long interns" 29 (55.8 percent) have served or are serving in Denver (DEN) at the Flight Training Center, 16 (27.3 percent) at United Executive Offices (EXO) in Chicago, 5 (11.5 percent) at the Chief Pilot's/Chicago Domicile office (ORD), and 1 (1.9 percent) at the Washington-Dulles International Airport Chief Pilot's Office (IAD). It should be noted that, as more possible long internship sites have been added, fewer SIUC long interns are serving in Denver each semester. This has had a tendency to diminish the "training value" of the long internship in exchange for increasing the overall airline "learning value" of the internship. For example, in Denver the long interns can frequently get simulator time. On the other hand, interns in the other locations are involved in the daily operations of the company and can frequently obtain passes to fly throughout the United System as "jumpseat" passengers. While the experiences are both valuable, the fact that the internships can now vary considerably in terms of content raises questions about the consistency of the long internships with the original goals of the United--SIUC agreement.

TABLE 2
UNITED--SIUC "LONG" INTERNSHIP GROUPS

Group	Semester	Number in Group	Location of Internship DEN	EXO	ORD	IRD
1	Spring 1987	1	1	-	-	-
2	Summer 1987	2	2	-	-	-
3	Fall 1987	2	2	-	-	-
4	Spring 1988	3	3	-	-	-
5	Summer 1988	3	3	-	-	-
6	Fall 1988	2	2	-	-	-
7	Spring 1989	3	1	2	-	-
8	Summer 1989	4	1	3	-	-
9	Fall 1989	5	3	2	-	-
10	Spring 1990	5	3	1	1	-
11	Summer 1990	5	3	1	1	-
12	Fall 1990	4	2	1	1	-
13	Spring 1991	4	1	2	1	-
14	Summer 1991	5	1	2	1	1
15	Fall 1991	4	1	2	1	-
	Totals	52	29	16	6	1
	Percent	100.0	55.8	30.8	11.5	1.9

Hiring Results. One of the most gratifying results of the United Airlines--Southern Illinois University at Carbondale linkage has been United's hiring of SIUC graduates who had previously participated in the Cooperative Program. As reported in Table 3, a total of 19 UA/SIUC Cooperative Program participants have been hired as flight officers by United after graduation from SIUC. All of these graduates were hired as second officers, or flight engineers, largely on the Boeing 727. Initially, 3 of the 19 were assigned to other aircraft as flight engineers (one each to the DC-8, the DC-10 and the B-747). Also, at least two of these graduates have upgraded to first officer on the Boeing 737 from the initial B-727 assignment.

TABLE 3
SIUC GRADUATES WHO WERE UA/SIUC COOPERATIVE PROGRAM PARTICIPANTS HIRED BY UNITED AS FLIGHT OFFICERS
1989-1991

Year	Number of SIUC "Intern" New Hires
1989	7
1990	6
1991	6
Totals	19

Source: "Hired SIU Interns AS of 03/22/91," United Airlines printout (plus updates) provided by Roger Vesely of Flight Officer Employment, United Airlines.

While the SIUC long interns have been more successful than the 10-15 percent "interview success rate" reported by United for "off the street" candidates, interview failure is still a concern. While United Airlines considers flight officer employment processing (especially for specific candidates) a matter of proprietary information, some generic categories of "knockout factors" have been identified after two years of SIUC intern processing:

1. A lack of maturity displayed during the interview process.
2. Basic flying skills such as flying holding patterns, instrument approaches, etc., as demonstrated in a Frasca simulator setup with jet reference speeds.
3. Hours flown from graduation to the time of the interview process at United (little or no flying represents a lack of interest in the career field as far as United is concerned).
4. Frequent employment changes with no good rationale (Bauserman & Vesely, 1990).

Findings and Conclusions

Based on a review of the qualifications of 83 of the 93 "short" interns, SIUC has provided United with students holding the following average qualifications:

1. 445 average total flight hours.
2. 30.0 average multi-engine flight hours.
3. A 3.32 average cumulative grade point average.

Of the 93 students participating in the "short" internship, 41 (or 44.1 percent) have participated in the "long" internship. An additional 11 SIUC students participated in the long internship prior to the initiation of the short internship, for a total of 52 SIUC "long" intern participants to date. This also means that a total of 102 SIUC students have participated in the United--SIUC Cooperative Education Program in Aviation Flight and Aviation Management since 1987. This is an average of about 25 students per year. This means that the original goal of 20 SIUC student participants per year has been exceeded.

Of the 52 SIUC "long" interns, 29 have served in Denver at the United Airlines Flight Center, 16 have served in Chicago (Elk Grove Village) at the United Airlines Executive Officers, 6 have served in Chicago at the Chief Pilots Office at O'Hare Airport and 1 has served in Washington, D.C. at the Chief Pilots Office at Dulles Airport. At the beginning of the "long" internship, all "long" interns served in Denver. However, as new locations for "long" interns were developed by United, increasing numbers of SIUC "long" interns have served at locations other than Denver. This has had the effect of removing the non-Denver located "long" interns from the "training" environment and putting them into the daily operational environment of the airline. This has been paralleled by an inability of United to provide all long interns with the 727 "type" rating that the company originally thought it could provide. The reason for this is that United Airlines' training resources have been devoted to training line pilots with little "extra" space left over for interns. The result of both of these events is that not all of SIUC's long interns have had equal or even similar experiences with United as "long" interns. Therefore, it is increasingly difficult to evaluate the reasons for success or failure of SIUC interns in the flight officer interview process. As more data becomes available, further research will be accomplished to find out if there are differences in the interview success rates of "long" interns serving in different locations.

Since early 1989, the results of the agreement began to exceed SIUC's expectations with the hiring of 19 former SIUC long interns (through July 1991) as flight officers. This step of employing former interns added a tremendous amount of credibility and recognition to the program. Also, this step takes the program beyond just a vehicle for training--it is now a "bridge" to airline industry employment for fairly young, university-age students.

The other original SIUC goals of the program, the provision of SIUC faculty with training experiences at United and the exchange of training information, have been partially met. In many cases, SIUC faculty had been given the opportunity to have training at United, but could not participate due to schedule or travel problems.

An examination of the information presented in this paper suggests that the United Airlines--Southern Illinois University at Carbondale Cooperative Program is yet another derivative of the ab initio, or "from the beginning," flight training program. In this case, there are two parts to this particular version of ab initio: a university handles the "primary" flight training portion (from private licensing to certified flight instructor) and an airline handles the airline transport aircraft type-related training portion. A major difference between this airline-university agreement and "pure" ab initio programs, such as those operated by Lufthansa or Japan Airlines, is that United Airlines does not use this agreement as a primary source of pilots. Rather, it is a supplement to its regular flight office employment process.

Another observation about this agreement is that it has given United Airlines a chance to carefully screen what are relatively low-time pilots to them, but what are relatively high-time pilots in the SIUC aviation flight/aviation management program. The result is that United is getting an early opportunity to discover whether the "best" SIUC has to offer will match the requirements of United Airlines. And, it gives SIUC students a chance to begin a long association with a major airline as a flight officer early in their careers.

The United Airlines-Southern Illinois University at Carbondale relationship has evolved significantly from its original form and content. However, there are still significant benefits to both the airline--in terms of "free" (non-paid) "long" intern assistance and high quality flight officer candidates--and the university--in terms of exposure to a major airline's training and/or operations environment and the possibility of full time employment as a flight officer. As long as this "win-win" situation continues, the agreement should continue. With United intending to take delivery of significant numbers of new aircraft throughout this decade, and with continuing "forced" retirements of senior United pilots at age 60, it will be important that United keeps all available recruiting "doors" open.

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