PROPOSED IMPROVEMENTS IN COLLEGIATE AVIATION EDUCATION

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Abstract

This paper presents findings related to proposed improvements in four-year aviation education programs as indicated by nation-wide survey instruments conducted in summer of 1993. Aviation education programs directors of four-year non-engineering collegiate aviation programs were contacted to provide input as to methods of improving the quality of aviation education programs. Key information obtained was then paraphrased into a written instrument that was categorized in order of importance by the program directors.

The improvement of both faculty and facilities and to provide more student internships were the most recommended improvements in this study. This paper provides multiple nationwide-ranked proposed improvements in aviation education, and describes peer-suggested methods of improving student attainment of knowledge, competency, and proficiency in aviation education.

Proposed Improvements in Collegiate Aviation Education

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Data were collected in the summer of 1993 to ascertain the perceived quality of four-year and higher aviation education programs throughout the nation. The following information was part of the author's doctoral thesis in which a multitude of information was acquired. This information was obtained from program coordinators, department heads, or similar individuals at the various institutions throughout the United States (N=68). A copy of the telephone interview questionnaire is found in Appendix A. Objective and subjective data were obtained from program directors in this study. Demographics as well as opinions were acquired. Key factors concerning aviation education were then organized into a second instrument. Aviation department heads were mailed the instrument and asked to rank in importance the various key factors. This instrument is found in Appendix B.

The University Aviation Association membership list was used to identify four-year and higher non-engineering aviation education programs offered in the United States. Aviation programs less then four years were not considered in this study. The UAA April 1992 Membership List contained the names of 106 member institutions of which 68 were found by the survey to offer four-year and greater aviation programs. (University Aviation Association, 1992). In the process of calling all 106 member institutions an updated number (68) of institutions that offer four year and higher aviation education programs was obtained.

The first questionnaire requested information of both a quantitative nature and a subjective nature. Student number, faculty demographics, future educational plans, aviation equipment and facilities, intra state student accessibility, and student recruiting were surveyed. More difficult questions were asked of the program\department chairs in which program quality, ranking against a national norm, current program status, factors contributing to quality aviation education, and which institution was considered to offer the best aviation education program in the United States.

The second questionnaire asked aviation program directors to rank key quality factors from most important to least important. These key factors were obtained from the most frequent responses in the telephone interview questionnaire.

Operational Procedures

All of the 68 identified member institutions were contacted by phone to conduct a structured phone interview. Confidentiality was assured to all participants. All institutions were contacted a minimum of four times to maximize responses. If a program director was unable to respond after four attempts, the institution was deleted from the survey. This was strictly random with no bias on the part of the telephone interviewer.

A telephone questionnaire technique allowed subjects to be more open in their responses, and if needed to ask for clarification concerning questions. The telephone technique also encouraged more detailed responses and provided for greater participation than mailed format questionnaires. This procedure may be considered successful if it has greater than the success rate accepted by research authorities of 55% (Perry, 1988).

The telephone questionnaire was written and submitted for evaluation to the researcher's doctoral committee. The recommended changes were then incorporated into a second draft, then it was presented to experts in questionnaire design, and modifications were adopted. The questionnaire was also presented to experts in English and Grammar at Wichita State University, Next it was presented to several program directors at member institutions for input. Finally the final draft was again presented to the doctoral committee. A small pilot group was then selected and a phone interview was conducted. After several interviews small changes were adapted to clarify and to improve understanding of the questionnaire. One additional question was also added (number 21) as per suggestion of a member of the pilot group. The second (written) instrument underwent a similar process and was approved by the doctoral committee before it was mailed.

The pilot group consisted of a former director of an aviation education program, a member of a nationwide aviation study, and several of the doctoral committee members. The revised final drafts were then presented to the researcher's committee chairman for final approval. Developmental and validation processes were then completed for this instrument.

Research Design and Analysis

The findings of this study, drawing on its qualitative and quantitative data, are presented in a descriptive design. Findings included program age, curriculum offered, future curricular plans, faculty demographics, equipment and aviation facilities, student recruitment, CAA membership, and follow-up of graduates. This information although obtained will not be presented in this paper. Subjective responses recorded on aviation program quality, factors that constitute a high quality aviation education program, and methods of improving quality of aviation education will be presented in this paper. Findings were organized in a descriptive and summarizing format to assure confidentiality to all participants.

Factors Contributing to the Quality of Aviation Education

One question asked of program directors in this survey was what factors did they feel constitute a good aviation program. The question was completely open ended. For brevity similar responses were combined. The following, in order of number of times mentioned, is listed on the next page:

Factors Associated with the Quality of Aviation Education

(Listed in order of number of times cited)

High Quality Faculty

Good Overall Program

High Quality Facilities

High Quality Students

Strong Flight Simulator Department

Academic Support

Concentration of Aviation Studies

Networking with Aviation Industry

Student Job Placement

Blend of Liberal Arts Curriculum

Student Oriented Faculty

Professional Program

General Business Background

Internships in Industry

Good Communication Skills

New Curriculum

Adequate Funding of Program

Program Safety

Other Factors*

*Eight other responses recorded in survey mentioned only once, and are not listed in above factors.

The next survey question asked the respondent to comment on factors that make a high quality aviation education. The question was, "What do you feel is necessary in order to provide excellence in Aviation Education?" This is similar to the preceding question, however the word excellence was emphasized by the interviewer. Some of the same responses occur in the next list, however it is interesting to note that many different responses were obtained when excellence was in fact substituted for good.

Necessary Factors to provide Excellence in Aviation Education

(Listed in order of number of times cited)

High Quality Faculty

High Quality Facilities

Networking with Aviation Industry

High Quality Aviation Program

Academic Support

Adequate Funding of Program

Professional Program

Conduct Research in Aviation

Program contain Interested Students

Variety of Aviation Courses Offered

Student Oriented Faculty

Industry Involvement in Curriculum

Provide Job Placement Services

Greater Emphasis on Aviation Safety

Promote Critical Thinking Skills in Students

Provide Internships in Aviation Industry

Provide More Financial Aid To Students

Other Factors*

*Seven other responses recorded in survey mentioned only once, and are not listed in above factors.

Program directors were then asked, "If you had unlimited resources, what three changes would you make in the Aviation Education program at your institution?" The most answered response was to improve facilities. The following list describes the responses given:

Proposed Improvements in Aviation Education

(Listed in order of number of times cited)

Improvement of Facilities

Improvement and Addition of Flight Simulators

Increase Faculty Number

Increase number of Available Aircraft

Improve Teaching Aids

Increase number of Aviation Programs

Increase Student Recruitment

Increase Marketing Budget

Increase number of Hands-On Activities

Provide More Student Internships

Increase Faculty Travel

Improve Student Placement System

Increase Industry Involvement

Add Masters Degree Program In Aviation

Increase Library Resources

Initiate Research Center

Increase Number of Field Trips

Offer Additional Scholarships

Increase Faculty Development Programs

Other Factors*

*Five other responses recorded in survey mentioned only once, and are not listed in above factors.

The top 12 responses of each of the three preceding lists were then organized into a written questionnaire (see appendix B.) which was mailed to the UAA member institutions with four-year degree programs. These three questions were considered to be of greatest importance to establishing the norm of quality aviation education throughout the United States. The top 12 responses were chosen to make the ranking

by the program directors less difficult. All responses that were recorded more than twice on the original survey were included. The ranking of each of the top 12 groups of responses in a written format allowed for both a reaffirmation of previous oral responses and the opportunity to rank the other respondents opinions.

Forty two program directors returned the survey. This is a response rate of 61.8%. When asked to rank the factors of a high quality aviation education the following responses were obtained. (See Table I) The following method was employed to determine rank. A point system was used in the following manner. When a factor was ranked first, twelve points were awarded to this factor. If that factor ranked second, eleven points were awarded. This system was applied down to the lowest rated factor, which received only one point. By using this method rank can be established, by noting the factor that obtains the highest number of points. The factors are also listed in order from highest to lowest. The following table summarizes the responses. (Table I)

TABLE I

FACTORS OF HIGH QUALITY AVIATION EDUCATION PROGRAMS

Statement	Points
High Quality Faculty	437
Good Overall Program	350
Student Oriented Faculty	334
High Quality Students	319
Academic Support	316
Professional Program	272
High Quality Facilities	260
Networking With Aviation Industry	258
Concentration Of Aviation Studies	204
Student Job Placement	196
Blend Of Liberal Arts Curriculum	191
Strong Flight Simulator Department	143

The survey responses indicated that a high quality faculty is the number one response by a large factor. This was the most cited factor and was ranked by the mail survey also as the number one factor. A good overall program was the second highest cited response, and it was also second highest in the mail survey. However, the third ranked response was student oriented faculty which ranked eleventh in the phone survey. Fourth place in the mail survey was high quality students, with academic support following. The top ranked six responses are as follows:

Factors of High Quality Aviation Education Programs

(Top Six Responses)

High Quality Faculty

Good Overall Program

Student Oriented Faculty

High Quality Students

Academic Support

Professional Program

Survey respondents were then asked to rank the necessary factors to provide excellence in aviation education. The following table provides the results by the use of the point system as previously described. (Table II)

TABLE II

NECESSARY FACTORS TO PROVIDE EXCELLENCE
IN AVIATION EDUCATION

Statement	Points
High Quality Faculty	430
Student Oriented Faculty	372
High Quality Aviation Program	333
Adequate Funding Of Program	322
Academic Support	311
Professional Program	287
Program Contains Interested Students	250
High Quality Facilities	220
Industry Involvement in Curriculum	213
Networking with Aviation Industry	206
Variety of Aviation Courses Offered	204
Conduct Research In Aviation	101

High quality faculty was the number one ranked response in both the telephone survey by citation and in the mail survey by ranking. The second highest cited response high quality facilities did not make it to the top six responses falling to eighth place in the mail survey ranking. The mail survey ranked a student oriented faculty as the second highest response which barely made the top twelve factors of the original list. The top six necessary factors to provide excellence in aviation education are as follows:

Necessary Factors To Provide
Excellence In Aviation Education

(Top Six Responses)

High Quality faculty

Student Oriented Faculty

High Quality Aviation Program

Adequate Funding of Program

Academic Support

Professional Program

Finally program directors were asked to rank twelve proposed improvements in aviation education. The following table represents by the aforementioned point system the rank established by the mailed survey: (Table III)

TABLE III

RECOMMENDED IMPROVEMENTS IN AVIATION EDUCATION

Statement	Points
Provide More Student Internships	348
Increase Faculty Number	345
Increase Number Of Hands On Activities	332
Improve Teaching Aids	318
Improve Student Placement System	302
Improvement Of Facilities	300
Increase Student Recruitment	274
Improvement And Addition Of Flight Simulators	240
Increase Marketing Budget	233
Increase Number Of Available Aircraft	207
Increase Faculty Travel	168
Increase Number Of Aviation Programs	159

Surprising to the author the number one ranked response was to provide more student internships. Not that this is not a good response, but it almost did not make the top twelve cited list, coming in at tenth place. Also improvement of facilities the number one cited response fell to sixth place in the mailed survey. The following list represents the top six ranked proposed improvements in aviation education:

RECOMMENDED IMPROVEMENTS IN AVIATION EDUCATION

(Top ranked six factors)

Provide More Student Internships

Increase Faculty Number

Increase Number of Hands on Activities

Improve Teaching Aids

Improve Student Placement System

Improvement of Facilities

This study provided a peer-referenced national-based group of proposed improvements in collegiate aviation education. It is the hope of the author that this work will provide a basis for such improvements. Obviously some improvements are more practical to initiate than others, however with the peer-referenced priorities as established in this study the program director may be guided in decisions involving improvements in educational quality.

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AVIATION EDUCATION TELEPHONE SURVEY
APPENDIX A

Institution name_____

Street Address_____

_____

Contact person_____

Title_____Phone_____

Date_____Time_____

1. What is the size of your parent institution?_____

2. How many Aviation education students are currently

enrolled? AS_____, BS_____, MBA_____, MS_____,
Ed.D._____, Ph.D._____,
Other_____ (if so, please specify)

3. What is the highest aviation degree offered?

Circle one: AS BS MBA MS Ed.D Ph.D

4. Within the next two years, does your institution plan to offer any higher level Aviation education degrees than presently offered? Yes_____ No____. If yes what? (circle) BS, MBA, MS, Ed. D., Ph. D., Other _____

5. What year was your aviation program established?_____

6. Faculty demographics:
Number of full time aviation faculty_____
Number of part time aviation faculty_____
Number of minority aviation faculty_____
Number of women aviation faculty_____
Number of aviation faculty with degree higher than baccalaureate_____
Number of aviation faculty with degree higher than masters_____

7. Using a scale of 1 to 5 with 5 being highest quality how would you rate your aviation program as compared to other similar programs? 1 2 3 4 5

8. How do you feel your aviation program would rate against a nationwide norm?

_____One of the best
_____Better than most
_____Average
_____Somewhat below the norm
_____One of the worst

9. Does your institution offer any aviation education scholarships? Yes No If so, what types?

_____

_____

10. Would you characterize your aviation education program as growing, remaining constant, or declining in student number? (circle one) What factors do you attribute this to?

_____

_____

11. What factors constitute a good Aviation Education program?

_____

_____

_____

_____

12. What do you feel is necessary in order to provide excellence in Aviation Education?

_____

_____

_____

_____

13. If you had unlimited resources, what three changes would you make in the Aviation Education program at your institution?

_____

_____

_____

_____

_____

14. What options are available in your Aviation Education program? (Check those that apply)

Aviation Management Program_____

Flight Training_____

Aircraft and Powerplant Training_____

Airway Science:

Airway Science Management_____
Airway Computer Science_____
Aircraft Systems Management_____
Airway Electronic Systems_____
Aviation Maintenance Management_____

Other_____

15. What institution in your opinion offers the best aviation education in the United States.

In four year programs?_____

At masters level or higher?_____

16. How would you rate your institution in relation to one or more of the preceding best institutions on a scale of 1-5 with 5 being the aforementioned institution? 1 2 3 4 5

17. How many of the following are available in your program?

Flight training aircraft_____
Flight training simulators_____
Certified Flight instructors_____
Certified Ground instructors_____
Aviation Scholarships_____

18. Would you describe your program as being accessible to

students from other states? Yes_____ or No_____. If yes, to what degree do you rate your institution's accessibility?

Very accessible_____
Somewhat accessible_____
Limited accessibility_____

19. Do you actively recruit students? Yes _____ No _____.

If so, how? _____

_____

20. Do you follow-up on graduates? Yes _____ No _____.

If so, how frequently? _____

_____

21. Is your institution currently a member of The Council on Aviation Accreditation? Yes_____ No _____ Do you plan to join in the future? Yes _____ No _____

APPENDIX B

FOLLOW-UP WRITTEN QUESTIONNAIRE

Robert M. Kuhns
125 S. Hillside
Wichita, KS 67211
316 682-1921

February 26, 1993

Dear Colleague:

Early this summer I contacted you by phone to participate in my doctoral dissertation study about aviation education. Those of you that participated in the previous study provided me with some interesting results. Three key questions of the survey have been paraphrased below with their most frequent responses. Please rank (1-12) the responses in order of importance (1 being the most important) and return your response to me in the self addressed stamped envelope.

Statement: Factors of High Quality Aviation Education Program

Rank (in order of importance)

_____ Concentration of Aviation Studies
_____ Blend of Liberal Arts Curriculum
_____ High Quality Faculty
_____ Professional Program
_____ High Quality Facilities
_____ High Quality Students
_____ Strong Flight Simulator Department
_____ Academic Support
_____ Good Overall Program
_____ Networking with Aviation Industry
_____ Student Job Placement
_____ Student Oriented Faculty

Statement: Necessary Factors to provide Excellence in Aviation Education

Rank (in order of importance)

_____ Variety of Aviation Courses Offered
_____ Professional Program
_____ High Quality Facilities
_____ Networking with Aviation Industry
_____ High Quality Aviation Program
_____ Academic Support
_____ Adequate Funding of Program
_____ Industry Involvement in Curriculum
_____ Conduct Research in Aviation
_____ Program contain Interested Students
_____ High Quality Faculty
_____ Student Oriented Faculty

Statement: Proposed Improvements in Aviation Education

Rank (in order of importance)

_____ Increase number of Hands On Activities
_____ Improve Teaching Aids
_____ Improvement and Addition of Flight Simulators
_____ Increase Faculty Number
_____ Increase number of Available Aircraft
_____ Improve Student Placement System
_____ Increase number of Aviation Programs
_____ Increase Student Recruitment
_____ Increase Marketing Budget
_____ Improvement of Facilities
_____ Provide More Student Internships
_____ Increase Faculty Travel

In order that I may complete my doctoral dissertation research in a timely manner please respond as quickly as possible. A control number has been assigned so that I may track responses. Your response will be kept confidential.

Thank you,

Robert M. Kuhns