Aviation Academic Training Bottlenecks: A Perspective from Part 141 Flight Training School

By: Matthew "Monty" Montgomery
Department Head, Department of Professional Aviation
Louisiana Tech University

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1. Background.

1.1. University Overview:

1.1.1. Louisiana Tech University is a selective-admissions, comprehensive public university. Louisiana Tech is committed to quality in teaching, research, creative activity and scholarship, public service, and workforce/economic development. Louisiana Tech maintains as its highest priority the education and development of its students in a challenging environment within a safe supportive, diverse community of learners. Louisiana Tech University is categorized as a Four-Year selective admission research university awarding bachelor's, master's, and doctoral degrees.

1.2. Aviation History at Louisiana Tech University:

1.2.1. Louisiana Tech University is a pioneer in academic professional aviation and was the first Louisiana flight school to offer a Bachelor of Science degree in Professional Aviation in 1967. The program was expanded to include a Bachelor of Science degree in Aviation Management in the Fall of 1999. In 2024, Louisiana Tech University's latest expansion now offers a Master of Business Administration with an Aviation Management Concentration to support working airmen.

1.3. Department of Professional Aviation overview:

1.3.1. The Department of Professional Aviation is one of only two programs within Louisiana Tech University that is selective enrollments. This is due to the Department's self-regulating enrollments owing to the availability of aircraft, aviation professors, and Certificate Flight Instructors (CFI). The Department currently does this by having an American College Test (ACT) or Scholastic Aptitude Test (SAT) and Grade Point Average (GPA) requirement that is above entry requirements into Louisiana Tech University. These requirements are 23 ACT (1130 SAT) and 3.0 GPA. Once the Department has all the perspective students listed, they will be stacked via ACT/SAT and GPA requirements and taken from the top-down approach. The number taken each year is determined by Flight Operations as an estimate on how many more students it can accept based on open pilot slots (from dropouts and graduations) and CFI attrition rates. This process is under review in Summer 2024, as ACT and GPA doesn't appear to forecast effective pilots.

1.4. Aviation Accreditation Board International (AABI). Louisiana Tech University is an AABI accredited university. This accreditation allows better continuity and training across member institutions ensuring standardization and harmonization of aviation training. Accreditation facilitates transfer of accreditation and credits across member universities and institutions. This provides airmen with the flexibility of increased options when transferring schools. Additionally, any institution accredited by AABI, ensures flight schools maintain standards and quality of training to include contracted flight. It is our opinion that all Part 141 aviation training schools should be accredited by an independent accrediting body such as AABI to ensure quality of training, ensure compliance with regulations, and give institutions a second opinion on their program. Lastly, accreditation ensures aviation classes offered towards a degree, are at an acceptable standard and quality.

2. Aviation Academic Bottleneck Problems:

2.1. Enrollments / Recent Demand for Aviation:

2.1.1. In 2023, Louisiana Tech University had 270 applicants for the B.S. Professional Aviation (fixed-wing flight) degree. In 2024, that number increased to over 370 applicants. Our intake of new students is directly related to the number of aircraft we have on hand, aviation professors, and available CFIs. In 2023, we had 35 flight slots available and in 2024 we increased those available flight slots to 65 due to scheduling effectiveness changes. With our current fleet, professors, CFI population, and scheduling effectiveness we are at a maximum production capacity.

2.2. Scheduling Effectiveness.

2.2.1. Active scheduling is paramount to ensure aircraft are utilized at an effective rate. Lack of scheduling effectiveness will see resources sitting on the ramp and will extend periods of training to unacceptable levels. If a program has an effective schedule, schedulers will actively monitor aircraft usage, weather conditions, cancelations, and maintenance. If a Private Pilot cannot fly due to weather, the scheduler will work to fill the time slot with pilots who can. Without an active scheduling process, bottlenecks will be produced in training and resources will be wasted.

2.2.2. Additional factors in scheduling effectiveness that create bottlenecks in the production process, are weather and time of day. Private Pilot students cannot fly in many weather conditions and cannot fly at night. Active planning to maximize aircraft utilization is often "thrown out the window" due to weather conditions. This is the nature of flight training and is unavoidable, however, it remains a common problem when training airmen and can throw the best scheduling into disarray.

2.3. Aviation Professors:

2.3.1. Most universities have a difficult time hiring experienced pilots and mechanics to teach. This is due to:

- The pay gap between education and industry and certified mechanics.
- A significant portion of pilots and certified mechanics do not pursue a graduate degree.

2.3.2. Specifically, the pay gaps are:

2.3.2.1. For pilots, IAW the Bureau of Labor Statistics the average Pilot pay is $171,210 (BLS.GOV, 2023). Per the latest Aviation Program Salary survey completed by Aviation Accreditation Board International (AABI) in 2022, the average pay for an Aviation Professor is $74,285 to $100,690 depending on location and rank.

2.3.2.2. For Aviation Mechanics, IAW the Bureau of Labor Statistics the average pay for Airframe and Powerplant (A&P) Certified Technicians (Scheduled Air Transportation) is around $96,470 (BLS.GOV, 2023). AABI 2022 Survey indicated Aviation Mechanic Professors' average pay is around $60,000 to $80,000 depending on rank and location.

2.3.3. This discrepancy creates a barrier to hiring qualified and experienced personnel in education, as we cannot pay what the industry is providing. In many cases, we must hire what we can afford, which can negatively impact the quality of the aviation program. Additionally, once we have grown our own professors (students work their undergraduate degree, decide to stay and

teach, and then earn their graduate degree), we lose them to higher paying industry jobs or to other universities fighting over the same limited resources pool.

2.3.4. With that said, a notable deviation is for those universities/flight schools with a military installation nearby. This proximity gives schools an additional hiring pool of retiring pilots, mechanics, and other airmen who want to stay local. This hidden gem allows Louisiana Tech to potentially get around the high market prices and obtain highly qualified airmen, due to our location near an airbase. This is further a benefit as most airmen leaving military service have completed an undergraduate degree and most Senior Non-Commissioned Officers (SNCO) and all retiring officers have their graduate degree.

2.3.4.1. Louisiana Tech University is lucky enough to have Barksdale Air Force Base near it. This gives us a large pool of potential experienced airmen to hire for aviation positions. However, we still need to get potential experienced airmen to travel 1 to 1.5 hours to Ruston to teach and then we are still competing against civil service, contractor, and industry offerings.

2.4. Certificated Flight Instructors (CFI).

2.4.1. Louisiana Tech's CFIs are a proven resource and are in high demand for training. We have seen many of our CFIs being actively recruited by Part 61 and Part 141 schools across the nation. This is further validated with GAO report 18-403. Specifically, "Flight instructor retention: Nearly all (16 of 18) selected school representatives cited difficulty recruiting and retaining flight instructors as a great or moderate challenge for schools' ability to train pilots. According to most school representatives (15) and other selected stakeholders, instructors who aspire to be airline pilots are rapidly accruing the flight hours necessary to qualify and are obtaining employment as soon as they are eligible. In addition, regional airlines have recently increased hiring, generating high turnover among flight instructors, who are traditionally their main source of new pilots." (GAO, 2018)

2.5. Chief Flight Instructor.

2.5.1. Chief flight instructor position, as indicated in the 14 CFR Part 141, Section 35 indicates the Chief Instructor must have the following qualifications (CFR, 1997):

"*(1) Hold a commercial pilot certificate or an airline transport pilot certificate, and, except for a chief instructor for a course of training solely for a lighter-than-air rating, a current flight instructor certificate. The certificates must contain the appropriate aircraft category and class ratings for the category and class of aircraft used in the course and an instrument rating, if an instrument rating is required for enrollment in the course of training;*

(2) Meet the pilot-in-command recent flight experience requirements of § 61.57 of this chapter;

(3) Pass a knowledge test on—

(i) Teaching methods;

(ii) Applicable provisions of the "Aeronautical Information Manual";

(iii) Applicable provisions of parts 61, 91, and 141 of this chapter; and

(iv) The objectives and approved course completion standards of the course for which the person seeks to obtain designation.

(4) Pass a proficiency test on instructional skills and ability to train students on the flight procedures and maneuvers appropriate to the course;

(5) Except for a course of training for gliders, balloons, or airships, the chief instructor must meet the applicable requirements in paragraphs (b), (c), and (d) of this section; and

(6) A chief instructor for a course of training for gliders, balloons or airships is only required to have 40 percent of the hours required in paragraphs (b) and (d) of this section.

(b) For a course of training leading to the issuance of a recreational or private pilot certificate or rating, a chief instructor must have:

(1) At least 1,000 hours as pilot in command; and

(2) Primary flight training experience, acquired as either a certificated flight instructor or an instructor in a military pilot flight training program, or a combination thereof, consisting of at least—

(i) 2 years and a total of 500 flight hours; or

(ii) 1,000 flight hours.

(c) For a course of training leading to the issuance of an instrument rating or a rating with instrument privileges, a chief instructor must have:

(1) At least 100 hours of flight time under actual or simulated instrument conditions;

(2) At least 1,000 hours as pilot in command; and

(3) Instrument flight instructor experience, acquired as either a certificated flight instructor-instrument or an instructor in a military pilot flight training program, or a combination thereof, consisting of at least—

(i) 2 years and a total of 250 flight hours; or

(ii) 400 flight hours.

(d) For a course of training other than one leading to the issuance of a recreational or private pilot certificate or rating, or an instrument rating or a rating with instrument privileges, a chief instructor must have:

(1) At least 2,000 hours as pilot in command; and

(2) Flight training experience, acquired as either a certificated flight instructor or an instructor in a military pilot flight training program, or a combination thereof, consisting of at least—

(i) 3 years and a total of 1,000 flight hours; or

(ii) 1,500 flight hours.

(e) To be eligible for designation as chief instructor for a ground school course, a person must have 1 year of experience as a ground school instructor at a certificated pilot school."

2.5.2. This specific position represents the biggest of our bottlenecks for personnel hiring and one exceedingly harder to fill. Discussions with several Louisiana State schools and a Texas University indicated these schools want to bring on a flight curriculum in their region however cannot due to the inability to hire a Chief Flight Instructor due to the pay differences with industry. The above certificates, ratings, and flight time are the biggest hiring barriers to starting programs within the

U.S. due to the pay gap between what pilots with these types of qualifications and flight hours make within the industry and what Universities/Colleges can pay. With the quality of the flight program mainly in the Chief Flight instructor's hands, most schools are forced to increase pay for this position, which turns into increasing flight costs for students or hiring within and accepting the lack of industry experience.

2.6. Funding;

2.6.1. Our university's flight program funding is covered by student flight fees. These fees cover leases of aircraft, maintenance, insurance, flight instructor pay, and flight operations overhead (rent, electrical, internet, etc.). Since no other sources of funding are utilized, our flight fees are expensive and create a large barrier to entry for a majority of U.S. households. Currently, on average Louisiana Tech's flight costs are $72,000, to earn a Private Pilot Certificate, Instrument Rating, Commercial Rating, and Certificated Flight Instructor endorsement. This is on top of a 4-year college tuition.

2.6.2. With these figures in mind, funding assistance isn't only needed for aviation schools. The average U.S. wide drop out rate for Private Pilots is 70% to 80% (AOPA.ORG, 2010). Louisiana Tech's Private Pilot dropout rate is historically at 68.2%. From our research, the primary root cause of the high dropout rate is that most Americans cannot afford the price of learning to fly. Many of our students try to work full time, go to school full time, and then spend their week's pay on a couple hours of flight training. Most students quickly lose hope in flight as they cannot make enough money to afford flights and to live. While student loans are available, many students do not qualify due to parents' income requirements or use most of their student loans to pay for classes, books, and fees. The FAA Reauthorization Act of 2024 increase in student loan maximums will significantly help, however, if we can get aviation students more help to pay for flight, it will decrease the dropout rate and increase production (S. 1939, 2024).

2.6.3. Lastly, this data is supported by the GAO Report 18-403. Specifically, "*High cost of training: Nearly all (16) selected schools' representatives identified the cost of a professional pilot degree program as a great or moderate challenge to recruiting and retaining pilot students. High education costs are not unique to these programs. Nonetheless, in addition to tuition, flight training fees alone often exceed $50,000, well above the cap for federal financial aid available to eligible students.*" (GAO, 2018)

2.7. Aircraft Availability and Cost:

2.7.1. Louisiana Tech has 10 Cessna 172S, *Skyhawks*, 1 Cessna C172R, and 2 Piper PA-28, *Arrows*. To increase our offerings and add more students, we would need additional aircraft. Currently obtaining additional aircraft is at $500,000 to $627,000 depending on which aircraft and which instruments are attached. If we want a dual-engine aircraft, the Diamond 42 is around $1.2 Million. The Cessna manufacturer (Textron Aviation) is backed up for Cessna 172's by a little over 3 years and others are 1-2 years out. If Louisiana Tech wants to remove selective enrollments by adding more aircraft, we will require 8 - 10 Fixed-wing aircraft to grow the program. This will cost us at least $5 Million to procure the added fleet required. The $5 Million could be added to our monthly overhead costs, like current aircraft, however, the flight costs are still a large barrier to flight training for most Americans. Additionally, if the pilot hiring takes a turn for the worse, we will not be able to afford the leases on the aircraft, which increases our risk to unacceptable levels.

2.8. Airframe and Power Plant Program.

2.8.1. For aviation mechanics, we need specialized tools, trainers, maintenance handling equipment, and facilities. All come at a great cost. As stated above, we cannot compete against industry pay in academia. We need mechanics as the supply and demand curve is flipped on us, forcing our maintenance bills higher and higher each year. As indicated in previous paragraphs, this cost is passed onto students, pushing aviation more and more outside of the average American's ability to pay.

2.8.2. In summary, selective enrollments are a large bottleneck in our processes, however, it is in place due to the limited availability of aircraft, professors, and CFIs. Other bottlenecks of funding, aircraft availability, and limited supply of experienced graduate degree airmen willing to take less pay to teach all greatly affect the academic production of airmen.

2.9. Other Factors:

2.9.1. Designated Pilot Examiner (DPE). DPEs are hard to find in Louisiana. When we do find them their costs are high and their time is limited in supporting our Part 141 operations. Due to existing regulations, our university is no longer able to obtain self-examining authority due to our pass rates falling below 90%. However, we are actively engaged with the DPEs we know of and ensuring we get maximum time for when they are in Ruston, LA.

2.9.2. Hiring Trends. Hiring trends for Louisiana Tech airmen have been positive for flight students. We currently have a 100% placement rate for students completing their B.S. Professional Aviation degree. Our students obtain positions performing Flight Instructing, Corporate Aviation, Regional Aviation, Military, and various other piloting positions. Louisiana Tech has partnerships with Southwest Airlines Destination 225, United Airlines Aviate, Cape Air, Republic Airlines, and SkyWest Airlines. While students have seen increased lead time into the major airlines, they are employed and building Pilot-In-Charge time with little problems. Most of our CFI-rated pilots are hired in-house and train new students until they reach around the 900 PIC hour mark. At that point, the instructors will move on to the regional partners. Lastly, we have seen a number of CFIs moving to other flight schools due to better pay or locality to home locations. This is a large indicator that our airmen are in high demand and jobs are presented to them across the region.

2.9.3. However, recent information provided by several of our industry partners gives large indicators that hiring is slowing and some airlines are cutting back routes and letting go of pilots. Specifically, Mesa Airlines indicated “The transition to a single fleet operational environment, combined with drastically reduced pilot attrition, has resulted in a temporary surplus of pilots at Mesa.” (Lotter, 2024) This information combined with other indicators, like aircraft delivery backlog/problems, airlines cutting back routes due to manufacturer delays, and pay raises keeping senior pilots longer increases the chances that our pilots may not be able to walk in airline positions like they have in the past 5 to 10 years. Our prognosis is that airline positions will be tougher to obtain due to this, however, the job market is changing in nature. As the Large-Unmanned Aerial Systems (L-UAS) market expands, the theory is certificated, and rated pilots will transition to these platforms changing as the market demands. Based on this theory, Louisiana Tech is opening discussions on supporting Unmanned Aerial Systems and partnering with Houma-Terrebonne airport to provide pilots, training, and support for their future L-UAS operations.

2.10. Aviation Medical Examiners (AME). While there are no AMEs within Ruston Louisiana there are several 30-to-60-minute drives from our location. We currently do not see any major issues with AMEs and the FAAs website is easy to use and helps potential students find AMEs

close to home. Historically, we have seen some students not understand the medications/problems they encountered when they were young and get surprised when ADHD drugs, Color Blindness, and heart conditions restrict them from flight. Due to this, we ensure all potential students applying for Professional Aviation are briefed on the AME processes and where to find the information.

3. What is Louisiana Tech doing to help?

3.1. Pilots:

3.1.1. We are seeking partners with local Part 141 non-university flight schools to increase our availability of flight training. We are currently building a partnership with Petroleum Helicopter International (PHI), Metro Aviation, and Part 141 non-University flight schools to start training rotary-wing pilots in Lafayette and Shreveport, Louisiana. These partnerships should increase the supply of rotary-wing pilots in the Gulf region that are in high demand with perceived low supplies. If these efforts are successful, we will expand this program into fixed-wing operations in these locations. Several Community Colleges are willing to support our students in these locations and will aid in our expansion efforts to fulfill regional pilot requirements.

3.1.2. Additionally, to provide other ways students can become airmen, we have developed a backup process for the flight program. This process allows students who were not chosen for the flight program to pursue an academic major in Aviation Management. These Aviation Management students will be prioritized as flight program candidates based on a review of their academic performance (College GPA) and will backfill flight slots as we have students change majors or graduate from the flight program throughout the year. This process is designed to give students hope to get into flight, even if their High School years were less than stellar or their testing wasn't competitive. While they wait for an open flight slot, they can still complete the basic General Education Requirements and non-flight Professional Aviation classes.

3.1.3. Lastly, we are actively waiting for the FAA Aviation Workforce Develop Grant to open for 2024. Our hope is to be awarded grants to support buying new aircraft and equipment and supplement growth opportunities. The opportunities the 118th Congress has established in the FAA Reauthorization Act of 2024, will help us out significantly if we can ensure we apply for and support grant applications within the University.

3.2. Mechanics:

3.2.1. Louisiana Tech Aviation Industry partnerships within the state. Currently, we are working with PHI and potentially Metro Aviation to have their mechanics train our students to obtain their Airframe and Powerplant certifications in tandem with Louisiana Tech's B.S. Aviation Management degree. This new partnership should help those companies by training our students to their standards and providing a ready-trained force at their fingertips. Additionally, the new credentialing helps Louisiana Tech by our industry partners providing the training, equipment, and engines/aircraft to allow our academic program to offer our degree with an aircraft maintenance focus, making our Aviation Management degree more valuable to students.

3.3. Air Traffic Controllers:

3.3.1. We have submitted our application to the FAA for the Air Traffic-Collegiate Training Initiative at the standard level. This opportunity will make our B.S. Aviation Management degree more valuable and allow our students to get into the pipeline to the FAA training center, with 5-weeks off their training. If we can get funding for ATC simulators and get an ATC Professor, we

intend to expand this program into the enhanced version. However, as previously stated, the pilots and mechanics industry pay gap will be another barrier to hiring highly qualified ATC professors.

3.4. MBA with Aviation Concentration. Louisiana Tech University has partnered their College of Business with the Aviation Department to generate a graduate-level aviation degree at Louisiana Tech. If demand for this program is great, we plan to use this as a springboard to establish a Master of Science in Aviation Management degree.

3.5. Unmanned Aerial Systems (UAS).

3.5.1. 14 CFR Part 107. Louisiana Tech's Department of Professional Aviation is building proposals to start a Minor and Certification in Small-UAVs. While this project has just started our goal would be to provide the grounds schools, aviation weather, and aviation law classes to support any degree within the University adding a Minor in Small-UAVs. Initial interest in the program is high and we hope to expand this program to include any state agency that wants to get their first responders Part 107 certified. Once the program is established, we will work on accrediting a B.S. in Aviation Management with a Concentration in Small-UAVs, a Minor in Small-UAVs, and a Concentration in Small-UAVs.

3.5.2. Large-UAS (L-UAS). Louisiana Tech University is currently developing a CEA (Cooperative Endeavor Agreement) with the Houma-Terrebonne Airport Commission (HTAC) and the UAS Gulf of Mexico Center of Excellence (UGC) to provide L-UAS support. This support will provide certified pilots to assist with the certification of L-UAS, build a new flight pipeline for L-UAS certified pilots at Louisiana Tech, and share training equipment with HTAC & UGC in developing the next generation of L-UAS airmen. Once this program is established, we expect to offer a B.S. Professional Aviation (Large-UAS) degree.

3.5.2.1. L-UAS will affect our production of fully qualified pilots. This is due to current standards for L-UASs (over 55 lbs.), requiring a waiver certificate from the FAA until Beyond Visual Line of Sight (BVLOS) becomes the certified norm by FAA. From past experiences, the FAA required the pilot (under the Part 333 Program) to be a certified on Private Pilot. This added program will require more aircraft and CFIs, increasing the resource and financial strains on our aviation program. Moreover, educating and training our students on this emerging technology.

4. Where Louisiana Tech University Needs Help.

4.1. Funding. Louisiana Tech's aircraft leases, maintenance, and flight operations overhead is covered solely by student flight fees. Any increases in cost due to maintenance increases, professor/instructor pay increases to retain, and overhead increases (rent, utilities, etc.) is directly passed onto our students. U.S. residents are already struggling with the high cost of flight training and most cannot afford it. Any assistance to bridge this financial gap will help us reduce flight costs and open up aviation to more citizens.

4.2. Aircraft Purchasing. Any financial support in the procurement and payment plans designed for state universities/colleges is needed and would be appreciated.

4.3. Professor Pay Assistance. Assistance to level the pay gap is needed to retain highly qualified pilots to train the next generation of pilots. Whether this support comes from assistance from the aviation industry paying back the training pipeline through providing pilots from their pools or

from finding new innovative ways to fill the pay gap, we need external resources that avoid further pushing additional financial burdens onto students.

4.4. Future aviation research and data sharing. We need better forecasting methods in aviation training to be able to project positions at least 4-years out. Effective forecasting would allow universities to efficiently project student enrollment we need to attain while simultaneously lowering schools' risks and ensuring schools are meeting industry demands. This forecasting should include Unmanned Aerial Vehicles Pilots (both Small and Large), Fixed-Wing Pilots, Rotary-Wing Pilots, Airframe and Powerplant Mechanics, ATC controllers, and aviation management. Without data-driven forecasting, we risk ~~a~~ misappropriating significant resource on aircraft, airport improvements, equipment, and personnel based on immediate needs, when in 4-years we may not have the same demand, wasting an extensive amount of resources. This potential waste of resources exposes schools to a significant financial risk of not being able to pay for the leases, overhead, and annual maintenance if/when demand turns downward. For this, we recommend the establishment of a training forecast body to anticipate demands and communicate that information to our flight schools to better provide training needs.

5. Summary

5.1. In closing, Aviation training pipelines need assistance to properly meet U.S. demands. We need to forecast better; we need additional funding assistance to procure aircraft and equipment, we need additional assistance filling in the pay gaps, and students need assistance in funding their dreams of flight. Correcting these problems will remove bottlenecks in the production of airmen and better set up the U.S. training pipeline to fill projected needs.

5.2. Lastly, I wanted to thank each and every one of you who worked on this Act on behalf of all the airmen you have helped and will be helping. We needed help and you valiantly heard our call. So, on behalf of every pilot, mechanic, air traffic controller, and general aviation airmen, Thank you.

References

AOPA.ORG. (2010, October). *The Flight Training Experience* . Retrieved from https://download.aopa.org/epilot/2011/AOPA_Research-The_Flight_Training_Experience.pdf

BLS.GOV. (2023, May). *49-3011 Aircraft Mechanics and Service Technicians* . Retrieved from U.S. Beruea of Labor Statistics : https://www.bls.gov/oes/current/oes493011.htm

BLS.GOV. (2023). *Airline and Commercial Pilots* . Retrieved from Bureau of Labor Statistics : https://www.bls.gov/ooh/transportation-and-material-moving/airline-and-commercial-pilots.htm

CFR. (1997). 14 CFR Part 141 Pilot Schools .

GAO. (2018). *Collegiate Aviation Schools; Stakeholders' on Challenge to Initial Pilot Training Report #18-403.* US GAO.

Lotter, A. (2024). *Pilot Information Letter.* Pheonix, Arizona .

S. 1939. (2024). FAA Reauthorization Act of 2024. Washington, DC.