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A Comparison of the Success of Ab-Initio and Transfer Private Pilots at Southern Illinois University Carbondale: Revisiting a 2008 Study

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Abstract: This article reports the findings of a study examining the comparative success of ab-initio and transfer flight students in addition to the effectiveness of a transition course designed to support transfer student integration. This study expanded on prior research at the same institution comparing ab-initio and transfer flight students to determine whether the two groups differed in their ability to complete subsequent flight training following private pilot certification. This study also surveyed transfer flight students to collect their feedback about their experience in taking a transition course designed to successfully transition them into the university flight training environment and validate aeronautical knowledge and piloting skills. Quantitative data from students who completed the commercial pilot course were analyzed and, as found in the earlier study, no statistically significant differences were found between ab-initio students and transfer flight students in either course completion rates or days-to-commercial completion, indicating that the transition course effectively integrates transfer flight students into the flight program. Qualitative survey responses in this current study revealed that, while the transition course is working as intended, course flexibility and enhanced flight instructor awareness of the customizable aspects of the course could enhance student satisfaction. Overall, the findings suggest that a transition course can serve as an effective leveling experience for students, enabling them to succeed in the next phases of their flight training at rates comparable to their ab-initio peers.

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Introduction and Background

University programs use a variety of ways to integrate transfer students who already hold a Private Pilot Certificate into their flight programs. As confirmed by a 2024 survey of University Aviation Association (UAA) member schools, approaches used in accepting and working with transfer flight students range from single-event assessments such as an evaluation flight or a written exam, to multi-event assessments such as semester-long, highly structured, courses (Avendaño & Wilkins, 2024).

With no formal regulatory guidance regarding how to best transition students into existing curriculum, university programs are permitted to decide which assessment and integration methods, if any, work best for them in bringing students into their programs and in setting them up for longer-term success. The numerous options provide flexibility for programs, but the lack of guidance leaves programs uncertain about which efforts yield the best results.

As university programs consider transfer policy options, a variety of factors should be considered relating to admitting students into flight programs, evaluating their previous flight training experience, and determining if any supplemental actions should be taken to successfully integrate students into an established flight education curriculum.

In this research, we revisit a study that examined the outcomes of students who began instrument training at Southern Illinois University Carbondale (SIUC) between fall 1998 and summer 2003. That study, which was published in 2008, compared the success rates of ab-initio students, defined as those students who initiated their flight training at SIUC, and transfer flight students, those who were admitted into the program already having completed a Private Pilot Certificate. We also compared the effectiveness of having transfer flight students complete proficiency training prior to beginning flight training at SIUC versus those who did not—referred to as "direct entry" transfer students (Robertson & Harrison, 2008).

Two different transfer private pilot student groups were included in the 2008 study: students who completed up to ten hours of informal proficiency training prior to starting the instrument curriculum, and those who did not. The primary goal of the study was to find out if there were any differences between flight course completion rates and degree-completion timeframes between these two student groups and the group of students who completed their private pilot training at SIUC, referred to then as "native" students. The study found "no statistically significant differences between native and transfer private pilots [and]...A private pilot's transfer status does not appear to be a good indicator of student success in the Aviation Flight Program" (Robertson & Harrison, p. 89). It is important to note that we use different terminology in this paper, referring to "native" students as "ab-initio" students. In both cases, these are students who completed their private pilot training at SIUC.

The findings that were published in 2008 contributed to the implementation of AF 199, an eight-week, structured course at SIUC that was specifically designed to be a leveling and transition course for transfer flight students. The course continues to be offered today and is comprised of 8 hours of dual local flight instruction, 1.5 hours of dual cross-country time, and .8 hours of instrument flying. It also includes 17 hours of ground instruction and a stage check that

is modeled after the Private Pilot Practical Test. Ground knowledge topics include learning about program-specific procedures and a review of the following topic areas: applicable federal regulations and documents, applicable subjects of the Aeronautical Information Manual, weather and weather products, operation of aircraft systems, performance factors and calculations, prevention and recovery from stalls and spins, aeronautical decision making, and required preflight actions.

Now that this course has been implemented for several years, sufficient data exist that allow for researchers to evaluate the overall effectiveness of the AF 199 course and, more specifically, find answers to these research questions.

1. Is there a difference in the successful completion of commercial flight training between students who earn their Private Pilot Certificate at the university and those who complete their private pilot training elsewhere?
2. Is there a difference in days-to-commercial flight training completion between students who complete their private pilot certificate at the university and those who complete their private pilot training elsewhere?

Along with flight training and academic data, a survey of students who had completed AF 199, or who were actively enrolled in AF 199, allowed researchers to consider this third research question as well:

3. What are the best practices to implement into a course intended to best meet transfer flight students' needs?

It is helpful to note here that the 2008 study focused on instrument and multi-engine rating completion and "days to degree" for its research questions. In this study, we determined that using the initial Commercial Pilot Certificate completion and length of time to complete would be a better measure of flight-focused success outcomes. At the time of the 2008 study, students completed their Commercial Pilot Multi-Engine Add-On (Multi) Certificate to complete the degree requirements. Today, students have the option to complete either the CFI or Multi. While the commercial course is not the final flight course in SIUC's curriculum, it is the final flying course that all graduating students take before tracking into two different completion pathways (Multi-Engine or Certified Flight Instructor).

In terms of measuring the amount of time it takes for a student to complete a flight course, a "days to completion" measure instead of a semester-limited timeframe, allows for increased accuracy because SIUC's flight courses (and many other university flight courses), are not limited to semester start and end dates. This approach is validated by similar research that also studied flight course completion research questions in smaller increments such as days or months (Hewitt, 2023; Leonard, 2019; McFarland, 2018; and Osman, 2022).

In summary, too many external factors, not related to aviation education or flight training, impact a student's ability to graduate (days to degree), whereas the Commercial Pilot Certificate is a more standardized, near end measure that also allows for better comparison with other Part 141 collegiate flight programs.

The overall purpose of this research is multi-faceted: to find out how well the transition course is working within the SIUC program, to model how other programs might use assessment data in evaluating the effectiveness of their own policies for transfer flight students, and, finally, to provide guidance to other flight programs as they make their own admissions, evaluation, and curriculum decisions regarding transfer flight students.

Literature Review

Related Studies

The 2008 published article by Robertson and Harrison, on which we base this work, found no statistical difference between any of the three pilot groups studied, suggesting little to no difference in instrument completion or graduation outcomes, whether students were ab-initio or transfer. The researchers state, "When comparing days-to-degree, instrument rating completion, and degree completion, there were no statistically significant differences...A private pilot's transfer status does not appear to be a good indicator of student success in the Aviation Flight Program" (p. 89).

The researchers also called for further investigation, suggesting that "future research should be conducted on the effectiveness of the current Private Pilot Transition Course (AF 199) as a transitioning tool for transfer private pilots in the flight program. Further research should be conducted on factors that affect program completion and time-to-degree for collegiate aviation flight students" (Robertson & Harrison, 2008). This updated research, then, is a response to that call, specifically, an attempt to determine if the AF 199 course is working as intended, and to determine if ab-initio or transfer students ultimately progress through commercial training at different rates.

Additional research that most closely aligns with this study looked at three questions (Hewitt, 2023).

- RQ1: Is there a difference in the number of repeated Training Course Outline (TCO) training units of collegiate and non-collegiate trained private pilots (CTP and NCTP, respectively) during initial commercial pilot training?
- RQ2: Is there a difference in the total training times of collegiate and non-collegiate trained private pilots who complete initial commercial pilot training?
- RQ3: Is there a difference in the successful completion rates of collegiate and noncollegiate trained private pilots during initial commercial pilot training?

With a sample size of 254 students whose training records spanned from 2020 to 2023, Hewitt (2023) investigated the number of repeated training units, the number of training hours, and the successful completion of stage one of the Commercial Pilot TCO in determining if there was a difference between CTPs and NCTPs. Hewitt's study concluded that NCTP students required "a significantly higher average" of repeated training units (p. 90-91), "a significantly higher number of ground hours," (p. 93), "a slightly higher average number of FSTD hours" (p. 93), and a significantly higher average for ground training time. Hewitt (2023) observes, "The NCTP average ground training time grossly exceeded the planned time allotted in stage one of

the TCO and therein lies the most important finding of this study" (p.95). In looking at the successful completion of stage one in the commercial course, Hewitt found a completion rate of 98% for CTPs and 90% for NCTPs (p. 96).

Hewitt (2023) noted that the university which he studied offers a standardization and indoctrination course for NCTP students, which he asserts, helps lower the differences in success outcomes between both cohorts, but despite that, the NCTP students still required over 13 additional hours of ground instruction in the commercial course, on average, than the CTP students. Hewitt research offers two key recommendations for the university: "Move the need for additional aeronautical knowledge ground training into the core content of the standardization class," and provide additional training to flight instructors in order to better standardize flight lesson grading (2023, p. 98-99).

Hewitt's research provides additional confirmation of the value of a transitional, or standardization, course for transfer flight students, particularly if it is focused on "foundational aeronautical knowledge" (2023, p. 101).

Validation of Course Completion as a Success Measure

The primary role of educators is to facilitate student success. Depending on the field of research, various definitions and measures of student success exist. Science education researchers Weatherton and Schussler, for example, examined academic articles published in a life sciences journal over a period of five years "to explore how success was defined and measured and what frameworks guided the definitions of student success" (2021, p. 1). They note that the lack of explicit definitions in most of the articles suggest that the definition of student success is already generally understood. In the cases where the term "student success" was defined, definitions were categorized as being *academic*, such as grades or GPA; *persistence-related*, such as remaining in school or in a major; *career-related*, such as employment following graduation; or *social*, in the case of "one paper explicitly defining success as it was related to students becoming leaders in their communities." Indeed, most student success definitions in the studies they reviewed, 52%, used academic or persistence measures as indicators of success (p. 4).

Federal reporting guidelines and accreditation requirements also support the use of academic and persistence-related measures of student success. The Integrated Postsecondary Education Data System (IPEDS), the well-known data collection system that tracks information from any institution that receives federal funding, is part of a long-standing system of tracking key educational information in the United States going back to 1869 (Miller & Shedd, 2019, p. 47).

Used initially by researchers to benchmark institutions, IPEDS data tracks information such as student enrollment totals, number of degrees awarded, and many other datapoints to "provide policy makers information on the condition of higher education in the United States" (Miller & Shedd, 2019, p. 48). Miller & Shedd provide a good summary of the history and changes to required data reporting in the book, *National Postsecondary Data*. They observe that data reporting has evolved to become more readily available to prospective students and parents

and is now intended to "allow parents and students to make informed college choice decisions" (p. 50). Failure to report IPEDS data can result in significant fines, and any accrediting agency recognized by the Council for Higher Education Accreditation must meet accountability and transparency standards as described in Standard 2 B: "The accrediting organization implements and upholds standards, policies, or procedures that require accredited institutions and programs to provide current, readily accessible, accurate data to the public regarding student learning outcomes and/or achievement data" (CHEA, 2021, p.9).

Following the guidance of CHEA, the Aviation Accreditation Board International also asserts that "accredited programs MUST provide the following, publicly available information...to include student retention and graduation rates, including the percentage of students enrolled one year after starting the program, [and] the number of degrees granted each year" (AABI, 2024, p. 18). These sources all validate the view that course completion rates and other persistence measures are validated and widely accepted benchmarks of student success in higher education.

Validation of Time to Complete a Course as a Success Measure

In flight education, measuring how quickly a student completes a certificate or rating is also a logical and standard measure of success. To illustrate, one study examining the differences between students who completed their Private Pilot Certificate in a collegiate environment compared to those who completed their private pilot training outside of a collegiate environment used "time spent completing commercial and instrument flight courses," as one of two key measures (Cihak, 2021, p. iii).

In Cihak's research, which specifically looked at "the sum of graded lesson objectives in each course, the ground and flight hours completion for each course, and the number of lesson attempts in each course" (2021, p. iii), they found the "non-collegiate trained pilots' required significantly more ground instruction in comparison to the students who earned the Private Pilot Certificate with a collegiate flight program. They also found that additional lesson attempts were required in the commercial course (Cihak, 2021, p. iv). The other key measure used by Cihak was "pilot performance," found by calculating a "required proficiency level score," using the sum of flight instructor scores on every line item of a flight lesson. (Cihak, 2021, p. 1).

Cihak's and Hewitt's research, then, both concluded that foundational ground knowledge is lacking in students who transferred into a collegiate flight training environment, despite holding a Private Pilot Certificate.

Reasons to Accept Transfer Flight Students

A high number of students who intend to earn a Private Pilot Certificate do not ultimately obtain one. While the exact number is difficult to ascertain, one 2011 study, conducted by Plane and Pilot, reported that only about 40% of Student Pilot Certificate holders go on to complete private pilot training and pass the practical test leading to certification.

Significance of Research

Despite our research being focused on the transition course and transfer policies at one university, the findings have widespread implications for nearly all other collegiate aviation programs. Previous research on this topic indicates that as many as 40% to 50% of students hold a Private Pilot Certificate when enrolling in a new collegiate flight program (Avendaño & Wilkins, 2024), and complementary research examined a student group where almost 53% of the students were transfer flight students (Hewitt, 2024, p. 6).

Observations made by Cihak also suggest that it is a "widespread practice within the collegiate aviation community of accepting previously held FAA certifications or ratings" (Cihak, 2021, p. 23). Hewitt's research confirms this as he asserts that there is "an ever-increasing number of students who hold a Private Pilot Certificate prior to enrolling [in the program on which his study is based]" (2024, p. 3). Hewitt further shares the observation that in the program he researched, "It has been widely acknowledged by both flight instructors and flight school management that the NCTP students usually require additional training to demonstrate the required knowledge and flight skill proficiency of their CTP peers" (Hewitt, 2024, p. 5). Research data and anecdotal observations indicate a significant number of students are choosing to complete flight training outside of the university environment.

Affordability of Higher Education

In addition to confirming that a high percentage of students are transferring into collegiate flight programs after already holding a Private Pilot Certificate, the student survey detailed later in this article, found that a primary reason most of them do so is to save money.

Research across disciplines examines the ways students are attempting to graduate on time, or early, in order to make college more affordable. Students, for example, might take advantage of earning college credit by taking high school courses that award college credit, by "testing out" of various college-level courses, or by taking a higher-than-average course load, as an attempt to reduce the time spent in college. Huntington-Klein & Gill (2020) point out that "increased time-to-degree from post-secondary institutions in the United States has taken a prominent position along with low completion rates, access, affordability, and mounting student debt as a major public-policy concern in higher education" (p. 623). Aviation students are perhaps even more sensitive to the costs of higher education, coupled with flight training costs, and, as confirmed by the student survey conducted for this research, are completing private pilot flight training before entering a college degree program in order to save money and time.

Desire to Improve Graduation Rates

As universities seek to improve graduation rates, flight programs will presumably continue to accept or start accepting outside flight training for academic credit. Data from the National Center for Education Statistics (NCES), for example, reports the 2020 six-year graduation rate for four-year degrees as being 64 percent; and the three-year graduation rate for two-year degrees as being only 34% (NCES, n.d.). The findings of our continued research, then, are readily transferable to a significant number of other collegiate programs, particularly as

universities are asked to be more transparent in publishing timely graduation rates and other student achievement data.

Methodology

This mixed-methods study was approved by Southern Illinois University's Institutional Review Board (IRB) in March 2024. Existing student data related to course registration and pilot training records were utilized to measure commercial pilot training completion and days-to-completion for research questions 1 and 2. An IRB-approved student survey was administered to address research question 3.

Data Collection

The researchers identified the study population as students registered in Aviation Flight (AF) 203 between fall 2009 and summer 2022. AF 203 is the first course students take in preparation for earning the Commercial Pilot Certificate. Pilot training records from the software used for scheduling and tracking, Talon ETA, were reviewed to identify three key data points: (a) if private pilot training was completed at SIUC; (b) the date of the first AF 203 (Commercial Pilot) unit; and (c) the completion date of the Part 141 Commercial Pilot Course.

For the purposes of our study, post-private pilot training was measured based on enrollment in AF 203, the first course taken immediately after students either earn their Private Pilot Certificate or complete the private pilot transition training course, AF 199.

The course description for AF 203 – Flight Basic reads, "Beginning course in preparation for the Commercial Certificate. Major emphasis is upon solo cross-country flight, with ground instruction in conjunction with each training flight and other flight-related topics" (SIUC, 2025).

The course description for AF 199 – Intermediate Flight/Program Transition reads, "This course is for the first time entry-level student who was certified and trained outside SIUC. It provides orientation training in the areas of SIUC flight procedures and standards, SIUC flight training aircraft, local airspace, and airport environments...Upon successful completion with a grade of C or better, credit will be posted for AF 201A and 201B [Private Pilot Certification] and the student will be able to enroll in AF 203" (Southern Illinois University Carbondale, 2025).

Internal program policies dictate that AF 203 may be started at any time during the fall, spring, or summer semester, except for the last two weeks of a semester. This requires the start date to be measured when training in the course actually begins, not on the first day of the start of the semester. When measuring days to Commercial Pilot Certificate, any non-flying days such as campus closures during holiday breaks, or instances when flights were not permitted for other reasons, were not removed from the days-to-completion calculations. Researchers chose to uniformly measure days to completion for all study participants based on total time progression without attempting to deduct any days that would be considered not available for flying or taking into account flight cancellations for any reason.

Survey

To help answer the third research question, a 10-question survey was administered using Survey Monkey. The survey link was sent via email to 110 students who were enrolled in AF 199 from summer 2021 through spring 2024. This timeframe was selected to maximize participation from students currently or most recently enrolled in the course. The survey remained open for 15 days. Sixty-four students responded, resulting in an overall 58% response rate. Survey questions were optional, and not all students chose to answer all questions. For this reason, the summary of responses that follows includes response rates for each question.

The first eight survey questions were multiple-choice, with the ability to add additional, or clarifying, comments. The final two survey questions were open-ended, which required a thematic analysis of the responses to identify recurring themes. For those two questions detailed below, themes were identified using a color-coding strategy in order to discover consistent or recurring themes. This thematic analysis approach is substantiated by a number of academic researchers who suggest this as a viable way to work with open-ended survey responses (Rouder, et.al., 2021).

Commercial Course Completion Data

Study Population

There were 671 students who began Commercial Pilot training between fall 2009 and summer 2022. Table 1 shows the total enrollment of students in AF 199 and SIUC private pilot training courses prior to commercial training, including a year-by-year breakdown. During the study period, an overall average of 32.04% of students who began Commercial Pilot training at SIUC had completed their private pilot training outside of SIUC. The percentages of students who transferred in with the outside flight training ranged from a low of 14.89% in 2010-2011, to a high of 47.50% in 2017-2018.

Table 1

Percent of Students who were Ab-Initio Versus Transfer Students Between 2009-2021

Year	Transfer	Ab-initio	Percent transfer
2009-10	8	29	21.62%
2010-11	7	40	14.89%
2011-12	8	33	19.51%
2012-13	13	40	24.53%
2013-14	18	27	40.00%
2014-15	15	37	28.85%
2015-16	20	43	31.75%
2016-17	18	31	36.73%
2017-18	19	21	47.50%
2018-19	15	25	37.50%

2019-20	13	29	30.95%
2020-21	31	41	43.06%
2021-22	30	60	33.33%
Total	215	456	32.04%

Commercial Pilot Training Completion

Of the 671 total students who began commercial pilot training during the scope of this study, 539 (80.33%) completed their commercial training. Overall, 360 (78.95%) students who completed private pilot training at SIUC (AF 201B) successfully obtained the Commercial Certificate, while 179 (83.26%) who transferred in with a completed Private Pilot Certificate successfully obtained the Commercial Certificate.

Table 2

Number of Students Starting and Percentage of Students Completing Commercial Flight Training by Program Entry Method

	Transfer			Ab-Initio			Total		
Year	Started	Finished	Percent	Started	Finished	Percent	Started	Finished	Percent
2009-10	8	6	75%	29	26	90%	37	32	86%
2010-11	7	6	86%	40	26	65%	47	32	68%
2011-12	8	5	63%	33	21	64%	41	26	63%
2012-13	13	11	85%	40	31	78%	53	42	79%
2013-14	18	12	67%	27	22	81%	45	34	76%
2014-15	15	11	73%	37	21	57%	52	32	62%
2015-16	20	17	85%	43	34	79%	63	51	81%
2016-17	18	16	89%	31	30	97%	49	46	94%
2017-18	19	14	74%	21	17	81%	40	31	78%
2018-19	15	14	93%	25	19	76%	40	33	83%
2019-20	13	13	100%	29	26	90%	42	39	93%
2020-21	31	26	84%	41	38	93%	72	64	89%
2021-22	30	28	93%	60	49	82%	90	77	86%
Total	215	179	83%	456	360	79%	671	539	80%

Days-to-Commercial

The overall mean days-to-commercial completion was 716.88 with an average of 727.47 days for students completing private pilot training elsewhere (transfer students) and 711.62 days for students completing the Private Pilot Certificate at SIUC. The longest yearly mean was 813.63 for students beginning commercial training in the 2010-11 academic year, while academic year 2018-19 had the second longest mean days to CPL at 811.00. The 2014-15 academic year students had the least mean days to CPL of 623.72 days.

Table 3

Mean and Standard Deviations of Days to Commercial Pilot by Location of Private Pilot Training

	Transfer students		Ab-initio students		Total	
Year	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*
2009-10	763.33	357.53	706.77	141.18	717.38	192.86
2010-11	690.50	127.05	842.04	180.79	813.63	180.48
2011-12	871.80	343.35	721.57	278.66	750.46	290.91
2012-13	748.82	164.55	703.10	181.53	715.07	176.43
2013-14	694.08	185.06	707.05	133.97	702.47	151.25
2014-15	619.18	159.57	626.10	109.60	623.72	126.39
2015-16	658.82	133.93	638.15	125.20	645.04	127.21
2016-17	723.06	236.16	657.83	130.76	680.52	174.92
2017-18	801.14	363.96	671.41	383.43	730.00	374.33
2018-19	768.93	295.70	842.00	211.07	811.00	248.85
2019-20	778.00	308.65	806.65	241.33	797.10	261.89
2020-21	742.50	236.68	700.63	201.58	717.64	215.69
2021-22	699.64	223.44	690.20	172.05	693.64	190.93
Total	727.47	242.60	711.62	201.01	716.88	215.62

Survey Design and Results

In addition to examining the student flight training and course completion data obtained from Talon ETA, survey results provided more nuanced, qualitative data, providing helpful information as the program evaluates how well the AF 199 course is working.

Types of Training

Following the first question of the survey, which asked students to indicate their consent to participate in the research, the next four survey questions sought to learn more about the type of flight training experiences students had while completing their Private Pilot Certificates.

Part 141 v. Part 61

Sixty-one students answered the second survey question asking how structured their private pilot flight training was, with 80.4% saying they trained in a Part 61 program, 11.8% saying they trained in a Part 141 program, and the rest (7.8%) answered, “unsure or a mixture of both.”

Provider

Fifty-one students answered the third survey question that asked them to describe where they completed “at least the majority of your private pilot training.” The most common response

(49%) indicated that they trained at a Fixed Based Operator (FBO). The second most common response (25.5%) was "with an independent flight instructor, family member, or family friend who is a CFI." Tied at 11.8% were students who trained at a different university and students who trained at a non-university, non-FBO program.

Airport Environment

Fifty-one students also answered the fourth survey question that asked, "Which best describes where you did the majority of your private pilot training?" Fifty-one percent trained at a non-towered airport, 25.5% trained at a towered airport without radar services, and 23.5% trained at a towered airport with radar services.

Type of Aircraft

Fifty-one students answered the fourth survey question that asked, "In which type of aircraft did you complete all or the majority of your training?" Of the respondents, 68.6% trained in a Cessna, 31.4% trained in a Piper, 3.9% trained in a Diamond, and three students named other aircraft: Vans RV-12, a Remos G3-600, and a Beechcraft.

Reasons for Training Decision

The next section of the survey sought to learn more about the reasoning behind the decision to begin flight training before enrolling at SIUC. Fifty-two students answered the sixth survey question, asking, "Why did you complete your private pilot training outside of SIUC?" Students were invited to select all applicable answers and were not limited to only one response.

By far, the two most common responses were related to interest and motivation (75%), and the desire to save money (61.5%). Five students (9.6%) started training at another university and then transferred into the SIUC program, and two students (3.9%) chose the answer, "SIUC resources were too limited to allow me to start flying when I first enrolled." In these cases, students chose to register for academic courses at SIUC but fly with a local FBO. An "other" response option allowed three students to share that they also decided to begin flight training outside of SIUC because it would save time.

Level of Satisfaction About Training Decision

Overall, (78.9% of survey respondents) expressed satisfaction with their decision to complete the Private Pilot Certificate before coming to SIUC, 13.5% were indifferent, and 7.7% wished they would have completed it at SIUC.

Feedback about AF 199

All survey responses were evaluated by first determining if the overall sentiment of AF 199 was positive, negative, or neutral. After that initial review and color coding, comments were sorted based on the most common themes that emerged.

Positive versus Negative Sentiment

The final survey question asked, "What feedback can you share about AF 199? What was helpful and what would you change?" The responses to these questions required the use of thematic sorting to evaluate the sentiments. Researchers evaluated all 48 responses and determined that the majority of responses (35) expressed a positive, mixed positive, or neutral sentiment about the course and the transfer experience. Twelve were considered mostly negative.

Common Themes and Overall Sentiments

Using a modified Braun and Clark framework for thematic analysis of qualitative data, we independently reviewed the survey results in their entirety, then used color coding to sort related sentiments. Once the responses were color coded to indicate "negative," "positive," and "neutral or mixed" sentiments, we collectively identified and came to an agreement on more focused themes that emerged from each of the sentiments. Then, we independently assigned those more focused themes to the survey responses. Further discussions allowed us to come to a consensus about how each survey response (or portions of survey responses) should be categorized. This approach allowed us to identify common themes while making an effort to limit individual biases.

The most common feedback (23 of the 48 responses, or about 48%), indicated that students felt as though the transition course met the intended purpose. Thirteen comments suggested that the course should be shorter, with reasons primarily related to unnecessary cost due to redundancy, and one suggested the course should be longer. Three suggested that the same objectives could likely be met through direct enrollment into the instrument course, and eleven thought the course needed to offer more flexibility. More than half of the respondents felt as though AF 199 was beneficial, with negative critiques mentioning cost, lack of flexibility, and the need for improved communication.

The twelve comments mentioning lack of flexibility and/or the need for better communication, suggesting a need for better training for the instructors who teach this course. The course, as designed, is meant to offer a great deal of flexibility, based on individual student needs, and not all elements of the course need to be delivered. Student feedback included, "I believe the course could have been shorter, as it is a transitional course," and "...it might be helpful if instructors were given freedom to tailor the course to each students *[sic]* knowledge gaps." For whatever reason, not all flight instructors chose to eliminate the portions of the course that were not needed for their students.

Research Question 1

Is there a difference in the successful completion of commercial flight training between students who earn their Private Pilot Certificate at the university and those who complete their private pilot training elsewhere?

Table 4

Chi-Square for Commercial Pilot Training Completion by Transfer Status

Transfer status	Count	Completed	Incomplete	Total
Ab-Initio	Observed	360	96	456
	Expected	366	90	456
Transfer	Observed	179	36	215
	Expected	173	42	215
Pearson Chi-Square	1.716			

A Chi-Square Goodness of Fit Test was performed to determine whether the proportion of commercial pilot training completions was equal between the two groups of students. The observed and expected commercial training completion frequencies of ab-initio and transfer private pilots in the flight program were compared using chi-square in Table 4. Chi-square was calculated to be 1.716 (significance of 0.19), which is less than 3.84 that is required to be significant ($p<.05$). Therefore, there is no statistically significant difference in commercial training completion rates between ab-initio and transfer private pilots in the flight program.

Research Question 2

Is there a difference in days-to-commercial pilot completion between students who complete their Private Pilot Certificate at the university and those who complete their private pilot training elsewhere?

A Mann-Whitney U test was performed to evaluate whether days-to-commercial differed by transfer status. The Mann-Whitney test was selected because the days-to-commercial measure was not normally distributed. The result indicated that there was no significant difference between the days-to-commercial of ab-initio and transfer students, $U = 32609.5$, ab-initio $N = 360$, transfer $N = 179$, $p = .819$. Therefore, there is no statistically significant difference in days-to-commercial between ab-initio and transfer students (private pilots) in the flight program.

Research Question 3

What are the best practices to implement into a course intended to best meet transfer flight students' needs?

Student responses that apply to any university flight program include the need for a strong emphasis on what makes the university's program unique in addition to focusing on the institution's equipment, training tools, and expectations. Additionally, universities should be aware of the need for flexibility to meet an individual student's needs and not spend time on areas of instruction that are already mastered. When students feel as though they are paying for unnecessary flight instruction, they likely think the course is not the best use of their time and resources.

Areas for improvement that were specifically SIUC-focused include the need for more rigorous instructor standardization, a request for additional procedures, navigation, and pilotage instruction, and improved understanding among instructors as to the flexible nature of SIUC's transition course.

To further explain the flexible nature of AF 199 survey results reminded us that we need to make sure students and instructors are aware that not all course components are required. The course is intended to be individualized and flexible, depending on each student's needs, but survey responses indicated that not all flight instructors seemed to be willing to omit any portions of the transition course, or allow students to test out of the course altogether.

Limitations of Study

In any study that uses data from only one institution, there may be concerns about the limited scope or non-generalizability of the research. The variability in quality of private pilot training external to the university, too, is likely to impact student learning outcomes and levels of student satisfaction. In any survey that has a less than 100% completion rate, self-selection bias should be acknowledged. Furthermore, this study does not take into account the many other variables that create barriers that impact a student's ability to complete a flight course in a timely manner. Finally, this research would be stronger if it could have compared the success measures between transfer flight students who complete AF 199 and students who do not; in other words, those who transfer directly into the next sequential flight course without any supplemental training. During the study period, SIUC did not offer a direct entry option for transfer flight students.

Discussion & Conclusions

This research answered all three research questions, confirmed the AF 199 course is working as intended, and validates the benefits of accepting transfer flight students into a flight program as long as some sort of differences training or orientation actions are conducted. Specifically, this research found there was no statistical difference between ab-initio and transfer flight students either in terms of completing the commercial course, or in terms of the time it takes for them to complete it. This research also provides valuable qualitative feedback in assessing student satisfaction of the AF 199 course as the program continuously makes improvements to course content and flight instructor training.

While our study focused on a single institution, the results show that by having formalized transition training for incoming private pilots, the students can be successfully integrated into a collegiate flight program with similar completion rates and timeframes compared to ab-initio students. We hope this research will help institutions decide on their own best practices in onboarding transfer private pilots into a university flight program.

Recommendations & Further Research

Based on this research, other collegiate flight programs who are considering whether or not to accept transfer flight students who hold a Private Pilot Certificate, can be assured that

doing so does not have to negatively impact students' ability to successfully complete subsequent flight training as long as they implement a similar transition course to the one described in this study. In fact, the literature review findings suggest that accepting transfer flight students could be a good decision for other programs if they are looking for ways to manage limited resources, increase student retention rates, and expand their pool of potential flight students.

Other collegiate programs are encouraged to replicate this research at their own institutions and find additional ways to increase student support and student satisfaction at all phases of the flight training process. Further research should learn more about any differences in the type of previous flight training a student completes before attending a university program in order to see if some types of training are better predictors of success than others. Further research should also look at additional or more detailed measures of student success that are more attributable to factors directly related to piloting skills and aeronautical knowledge.

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