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Specialized Accreditation in Collegiate Aviation: A Case Study On Evaluative Inquiry Practices Required by the Aviation Accreditation Board International

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Introduction

Collegiate aviation programs offer students unique educational experiences despite their limited availability compared to other traditional academic disciplines (Prather, 2007). These programs have been traditionally viewed as a viable path to obtain professional aviation credentials and earn a college degree concurrently (Fullingim, 2011). There are 105 higher education institutions in the United States, offering students a baccalaureate degree with aviation concentrations (University Aviation Association [UAA], 2020). The success of collegiate aviation programs is strongly influenced by students' perceptions, traditional academicians, the public at large, and the aviation industry (Johnson, 2005; Radigan, 2011; Sherman, 2006). Johnson (2005) offered that the aviation industry targets aviation graduates before others because these programs operate beyond simply training pilots to educate them for the rigors of industry, and the relationship between these collegiate programs and the aviation industry should be kept harmonious to ensure equal footing with traditional academic degree programs. Further, there have been numerous market changes in the aviation industry during the past 20 years that have increased the demand for certificated pilots worldwide (Bjerke et al., 2016; Christensen, 2013; Fullingim, 2011; Mangan, 2000; Smith et al., 2017).

For example, the Colgan Air 3407 aircraft accident (National Transportation Safety Board, 2010) on February 12, 2009, resulted in the Federal Aviation Administration (FAA) and the United States Congress investigating if airline first officers were adequately prepared to fly at the regional airlines based on their existing hiring standards (Bjerke et al., 2016; Smith et al., 2010; Smith et al., 2013; Smith et al., 2017). In response, a pre-law Pilot Source Study (PSS) was conducted in 2010 (Smith et al., 2010) and 2012 (Smith et al., 2013), which sought to identify the source characteristics (e.g., background and flight experience) of pilots who were hired by regional airlines between 2005 and 2009. The goal was to make proactive recommendations to federal lawmakers in preparation for potential federal regulation changes. Specifically, the studies intended to evaluate if these characteristics related to pilots' success in regional airline training programs. Smith et al. (2010) and Smith et al. (2013) found that pilots experienced fewer extra training events and non-completion during airline training when pilot applicants (a) graduated from a flight program accredited through the Aviation Accreditation Board International (AABI), (b) earned an aviation-related degree, (c) completed advanced flight training in a collegiate program, (d) held an FAA Certificated Flight Instructor certificate, and (e) logged 501-1,000 total flight hours.

During these initial PSS explorations, the FAA issued the Pilot Certification and Qualification Requirements for Air Carrier Operations, formerly Public Law 111-216, in July 2013 (Bjerke et al., 2016). This new regulation increased the requirements for pilots who fly in regional airlines by requiring all aspiring airline

pilots to (a) be at least 23 years old, (b) have at least 1,500 hours total flight time, (c) complete a newly designed Airline Transport Pilot Certification Training Program, (d) have 50 hours of multiengine experience, and (e) possess an aircraft type rating (Smith et al., 2017). Despite this increase to airline hiring minimums, the final ruling did provide a faster path to the airlines for 21-year-old pilots that graduated from an FAA-approved bachelor's degree program and had accrued 1,000 hours of total flight time. Using the pre-law studies as a benchmark, similar data were collected in three post-law studies as part of an ongoing PSS to compare the source characteristics of pilots (Bjerke et al., 2016; Smith et al., 2016; Smith et al., 2017). In the end, the PSS results represented the most comprehensive investigation of entry-level airline pilots ever conducted (Smith et al., 2017).

The sweeping changes to the pilot hiring environment by the Pilot Certification and Qualification Requirements for Air Carrier Operations reinforced Johnson's (2005) position by permitting students graduating from approved bachelorette aviation programs to be hired at regional airlines sooner when compared to students graduating from associate degree programs or earning a bachelorette degree from an academic discipline outside of professional flight (Bjerke et al., 2016; Smith et al., 2016; Smith et al., 2017). Subsequently, the demand for collegiate aviation programs within the United States increased exponentially as these programs offered an advantage to students seeking employment as professional pilots by potentially awarding early hiring decisions to these graduates within an industry-based exclusively on seniority (Bjerke et al., 2016; Fullingim, 2011; Johnson, 2005; Mangan, 2000; Smith et al., 2010; Smith et al., 2013; Smith et al., 2016).

The academic and flight training programs within the collegiate aviation community have always strived to meet aviation workplaces (Fullingim, 2011). Interestingly, the mission of the AABI is to advance quality aviation education (AABI, 2019b). However, only 29% of all higher education institutions in the United States, offering a four-year aviation degree program, maintained specialized accreditation through the AABI in 2019 (AABI, 2020). Previous academic explorations of pilot background characteristics and aeronautical experiences have shown value in the AABI-accredited collegiate aviation experience (Bjerke et al., 2016; Smith et al., 2010; Smith et al., 2013; Smith et al., 2016; Smith et al., 2017). Smith et al. (2017) confirmed that graduates of baccalaureate aviation programs accredited by the AABI were more successful in their initial employment as professional airline pilots under 14 Code of Federal Regulations Part 121. Thus, effective assessment programs should be prioritized at the programmatic level and are essential if collegiate aviation education is to progress continually toward excellence (Johnson, 1996). Furthermore, sustained scrutiny of higher education aviation programs is needed because the aviation industry demands continued

competency from college flight program graduates regardless of existing pilot shortages or changing federal mandates (Fullingim, 2011; Mangan, 2000).

Background of Problem

In 1990, the UAA sought and obtained recognition from the Council on Postsecondary Accreditation and established the Council on Aviation Accreditation (Lindseth, 1996). In March 2006, the name changed to the AABI to further its commitment to advancing quality aviation education worldwide through aviation accreditation and leadership (AABI, 2019b). AABI is the only specialized aviation accrediting organization recognized by the Council for Higher Education Accreditation (Council for Higher Education Accreditation [CHEA], 2020). According to AABI (2020), higher education institutions offering AABI accredited aviation programs must demonstrate that their specialized programs meet defined quality criteria. These criteria serve as the basis for evaluating the quality of the educational programs offered and holding the programs accountable to academia, the aviation industry, and the public.

Under current quality criteria, AABI evaluates: (a) students, (b) program mission and educational goals, (c) student learning outcomes, (d) curriculum, (e) faculty and staff, (f) facilities, equipment and services, (g) institutional structure and support, (h) aviation safety culture and program, (i) relations with industry, and (j) continuous assessment and improvement. In July 2019, the AABI Criteria Manual was revised to expand the section titled Criterion 3.10 Continuous Assessment and Improvement. According to AABI (2019a), the process of program assessment should include (a) assessment timelines, (b) what, how, and from whom data are collected, (c) how assessment results are used and by whom to document successes and shortcomings, (d) how plans are established to address shortcomings, and (e) how the assessment results are used to improve program effectiveness. Programs' compliance with AABI criteria, including their continuous assessment and improvement processes, are evaluated by an AABI visiting team every five years; however, certain assessment data must be evaluated and reported to AABI annually and published on each program's website (AABI, 2019b).

After formal evaluation by AABI, recommendations may be cited for program weaknesses or failure to comply with a "MUST" statement in the AABI Criteria Manual (Form 201) and the AABI Policies & Procedures Manual (Form 225). Collegiate aviation programs pursuing initial accreditation or a reaffirmation of their existing accreditation through AABI are cited for non-compliance predominately within the area of continuous assessment and improvement (AABI, 2020). These continuous assessment and improvement requirements may be accessed under AABI Criterion 3.10 within the AABI Criteria Manual (AABI, 2019a).

Statement of the Research Problem

According to AABI (2019a), the purpose of their established criteria is to strengthen programs, promote ethical and professional practices, and serve as collegiate aviation's primary vehicle for quality assurance and self-regulation. Of note, AABI accreditation demonstrated value to students (Bjerke et al., 2016; Christensen, 2013; Prather, 2007; Radigan, 2011; Sherman, 2006; Smith et al., 2010; Smith et al., 2013; Smith et al., 2016; Smith et al., 2017), but contextual factors may influence the sustainability and efficacy of evaluative inquiry (Christensen, 2013; Elliott & Goh, 2013; Parsons, 2002; Staub, 2019). Further, educational leaders in collegiate aviation may not be able to manage their organizational practices using a standardized approach as collegiate aviation programs commonly exhibit distinct attributes, educational credentials, and professional experiences (Ison, 2009; Lindseth, 1996; Smith, 2002). Therefore, the purpose of this study was to investigate the value of continuous assessment and improvement practices, specifically AABI Criterion 3.10, as perceived by collegiate aviation administrators and faculty at AABI-accredited collegiate aviation programs.

Significance of the Research Problem

This research study contributed to the existing body of knowledge by updating previous studies and exploring contextual variables that may influence continuous assessment and improvement (i.e., evaluative inquiry) among AABI-accredited collegiate aviation programs. Of note, a single external event, perception, or change triggers innovative approaches to services (Elliott & Goh, 2013; Wheeler & Holmes, 2017). In this case, this research study was conducted after AABI transitioned to outcomes-based standards in 2007 and the Pilot Certification and Qualification Requirements for Air Carrier Operations in 2013, formerly Public Law 111-216.

Additionally, the nature of evaluative inquiry favors a more continual, circular form of organizational learning (OL) and change (Dixon, 1999; Parsons, 2002; Preskill & Torres, 1999). Beginning with Weber et al. (1947), OL strategies have received growing interest as a way to make improvements within many organizations (Argyris & Schön, 1996; Dixon, 1999; Senge, 1990), but organizational change strategies had not been specifically linked to specialized accreditation and evaluative inquiry until recently (Elliott & Goh, 2013). Thus, a greater understanding of the value that program administrators and faculty place on accreditation, as well as any contextual variables that may influence their continuous assessment and improvement practices, would benefit educational leaders and AABI in adapting to the singular needs of their stakeholders in an

evolving educational environment (Christensen, 2013; Hohner & Tsigaris, 2012; Johnson, 2005; Smith et al., 2017).

Research Questions

The following research questions guided this study:

1. What contextual factors influenced compliance with AABI Criterion 3.10 at AABI-accredited collegiate aviation programs?
2. How did AABI Criterion 3.10 influence continuous improvement at AABI-accredited collegiate aviation programs?

Design

To explore these contextual factors and to investigate the relationship between sustainability and evaluative inquiry (i.e., AABI Criterion 3.10) at AABI-accredited collegiate aviation programs, a qualitative research strategy was used. Of note, a qualitative strategy emphasizes contextual factors by integrating observation, interview, and document review as primary data gathering tools (Elliott & Goh, 2013). Moreover, a social constructivist theoretical framework supports a qualitative multisite case study design by facilitating OL at all levels by stimulating and supporting the ongoing process of asking questions, the collection and analysis of data, and using what is learned from an inquiry to act on important organizational issues (Preskill & Torres, 1999).

The purpose of a case study is to conduct an intensive analysis of a specific individual or specific context (Trochim & Donnelly, 2008). According to Stake (1995), a case represents a specific, functioning element but cannot be defined due to the diverse practices existing among disciplines. He offered that a qualitative case study explores the particularity and complexity of a single case, coming to understand its activity within a unique operating environment. In other words, a case study represents an exploration generating insights into an area of interest by seeking an understanding of underlying motivations, attitudes, and perceptions. These insights help explain realities that are multiple, constructed, and holistic.

Furthermore, Merriam (2009) believed that the definition of a case study was traditionally established from the uniqueness of its research purpose. She emphasized that the questions asked and their associated relationship to the result remained essential to a case study's overall design. The design required flexibility to achieve what Stake (1995) referred to as the concept of particularization. Thus, a researcher emphasizes knowledge not primarily about how it is different from others but what it is, or more specifically, what it does. In this study, a multisite

case study design yielded a more compelling interpretation due to greater variation across the cases (Merriam, 2009).

Sample of the Study

The sample of the study consisted of full-time faculty or administrators involved with AABI program accreditation processes, specifically continuous assessment and improvement required by AABI Criterion 3.10, representing 29% of all higher education institutions in the United States offering a four-year aviation-related degree accredited by AABI (AABI, 2020; UAA, 2020). Of these select programs, 12 programs were invited via e-mail to join the study. Four programs did not reply to the initial invitation, and one program recused itself from participating because their institution was closing the aviation program within one year. So, two full-time faculty and two administrators were selected as key interviewees to participate in the study based on their recurrent activity with the AABI organization and their diverse academic and aviation experiences.

Before the interviews, permission from the Institutional Review Board and the selected programs were obtained. Then, informed consent forms were sent to the participants. The informed consent form upheld confidentiality and participant anonymity. All participants submitted a signed consent form. The interviews were conducted via Zoom due to a COVID-19 pandemic that suspended in-class operations for most higher education institutions across the United States. Zoom was selected as it offered a robust video conferencing and collaboration platform compatible with most computer operating systems and mobile platforms. All the interviews were audio-recorded through Zoom with the interviewee's permission.

The four participating AABI cases (AABI A-D) represented the Southeast and Northeast regions of the United States. AABI's initial recognition of the programs varied. For example, AABI D was first accredited by AABI in 1992, and AABI C finalized the initial accreditation for their flight-specific program in 2019. AABI B and AABI C completed initial accreditations during their most recent on-site visits. AABI A and AABI D completed a reaffirmation of two or more degree programs. Table 1 outlines select salient characteristics of the participating collegiate aviation programs. Additionally, the academic experience and aviation credentials varied among participating key interviewees, maximizing the diversity of responses. Table 2 outlines the key interviewees' roles and experiences during their programs' most recent AABI initial accreditation or reaffirmation of existing accreditation as applicable.

Table 1

Program Summary

	AABI A	AABI B	AABI C	AABI D
Geographic region	Southeast	Northeast	Southeast	Southeast
Initial accreditation year	2003	2018	2019	1992
Date of Self-Study Report	Jun. 2018	Mar. 2017	Nov. 2018	Nov. 2016
Date of on-site visit	Sep. 2018	Sep. 2017	Mar. 2019	Mar. 2017
Year of accreditation or reaffirmation	2019	2018	2019	2017
Number of AABI programs	2	2	1	5
Faculty size (FT)	18	23	10	18
Student enrollment	491	243	618	1000

Note. Data reflects the 2019-2020 academic year and was collected from interviewees.

Table 2

Interviewee Summary

	AABI A	AABI B	AABI C	AABI D
Academic role	Program Coordinator	Department Chair	Dean	Associate Professor
Employment status	Full-time	Full-time	Full-time	Full-time
Tenure status	No	Yes	No	Yes
Gender	Male	Female	Male	Female
Terminal degree	Ph.D.	Ed.D.	M.B.A.	M.S.
Aviation credentials	Flight Instructor	Private Pilot	A&P, Private Pilot	Flight Instructor
Aviation discipline	Flight	Management	Maintenance	Air Traffic Control

Note. Data reflects the 2019-2020 academic year and was collected from interviewees.

Data Collection

Case studies involve the exclusive use of qualitative data sources (Stake, 1995). Additionally, case studies do not claim any specific data collection methods or analysis (Merriam, 2009). There are several similarities and differences between qualitative and quantitative data gathering techniques (Stake, 1995). Both techniques plan carefully, reinforcing the categories or kind of case activities that represent the issues. Quantitative strategies work to develop collections of coded data leading to numerical comparisons and statistical inferences. Qualitative strategies work with episodes of unique relationships to fashion a story or a unique case description. Also, quantitative approaches normally include many repeated observation situations to get a representative, or generalizable, coverage of the relationships for a case. Conversely, a more qualitative approach usually means finding good moments to reveal a particular case's unique complexity.

However, qualitative data collection must be systematic to be as structured and unbiased as possible (Lodico et al., 2010). Data will be collected until reaching saturation (Merriam, 2009). She described saturation as seeing or hearing the same things repeatedly, and no new information surfaces with new data collection. Qualitative researchers may use various tools but prefer observations, interviews, and document analyses in their processes (Lodico et al., 2010). For this study, interviews, documents, and online data collection were used to take advantage of the current relationships that have been established among participants before beginning this study. These relationships were based on trust and mutual respect developed between the researcher and the AABI community over the past nine years.

Interviews

Most qualitative research includes interviews as the primary data collection tool when interest behaviors cannot be easily observed (Lodico et al., 2010). Interviews are a challenging yet rewarding form of qualitative measurement (Trochim & Donnelly, 2008). However, the interview structure is a critical consideration (Lodico et al., 2010). A structured interview requires a predetermined list of questions and will not deviate from those questions. The characteristic lack of flexibility associated with a structured interview tends to favor a semi-structured or unstructured interview in most cases.

The use of a semi-structured, open-ended protocol provided the flexibility needed to maximize variability across responses (Elliott & Goh, 2013). Attempts were made to recruit faculty members from different aviation disciplines to maximize the diversity of responses. All interviews were conducted via video conference due to the distances between programs. These conversations were

guided by the underlying research questions and Bolman and Deal's (2003) four quality assurance frames. Interviews were digitally recorded with permission from the interviewees, and transcripts were produced to enhance data analysis.

Documents

Documents and artifacts produced by participants may include familiar things like public records or reports, minutes from meetings, personal letters, or instructional materials (Lodico et al., 2010). According to AABI (2019a), documents can support the criteria in many ways because the published criteria are broad statements embracing several areas of expected institutional performance. However, there is not a full and detailed description of the document database because the documents available from each program may vary significantly. Therefore, participants provided documents at their discretion or by request from the researcher to supplement the other data collection methods. These documents included letters, e-mails, memoranda, minutes from meetings, accreditation reports, and other AABI-related supporting documentation.

Online Data

Interview and document data were supplemented with online data collected from program websites. Conveniently, these online data are required to be published following AABI Policy 3.4 (AABI, 2019b, 2020). Specifically, AABI provides the following public release policy within its Policies and Procedures Manual:

> 3.4.2 For each AABI-accredited aviation program, institutions MUST accurately publish on the program's public website a report of student achievement data including the following information, updated annually:
> - The objectives of each accredited program
> - Program assessment measures employed
> - Graduate rates; and
> - Rates and types of employment of graduates (AABI, 2019b, p. 10)

Of note, applicable programs may have their accredited status suspended for failure to comply with Policy 3.4 continuously. Therefore, these online data were readily available to the researcher for collection and analysis.

Data Analysis

Strategies for the subsequent analysis and interpretation of qualitative data may be approached by researchers using recommendations found across existing research methods (Trochim & Donnelly, 2008). Specifically, case study data

influence the analysis and interpretation strategies differently due to their vivid explorations of interrelationships between a phenomenon and the associated contexts that they represent (Merriam, 2009). In a specific case, data analysis is a matter of giving meaning to first impressions and final compilations (Stake, 1995). There is no standardized approach for a case study researcher to take.

Stake (1995) reinforced this apparent research incongruity by offering that researchers need, through experience and reflection, to find the forms of analysis that work for them. The large amount of data associated with a case study makes attention to data management critical (Merriam, 2009). Despite the sheer volume of potential data collected through interviews, field observations, and documents, Stake (1995) offered that the qualitative researcher should concentrate on the instance, trying to pull it apart and put it back together again more meaningfully. Thus, a case study researcher searches for meaning through patterns. These patterns are initially collected from the individual instance and later collated from an aggregate of instances until something can be said about them as a group. In other words, the simultaneous "coding" of this raw data and the construction of associated categories may result in a unified description across cases; therefore, results can lead to categories, themes, or typologies that conceptualize the data from all the cases (Merriam, 2009).

In response, data analysis was performed in two Phases (Elliott & Goh, 2013). The data from individual cases underwent a within-case analysis (Merriam, 2009) with the aid of QSR NVivo 12, a qualitative software analysis tool. All data (verbatim transcripts from interviews, documents, and online data) were read, reread, and coded according to the dominant themes that emerged. Upon completing the coding process, that data were further analyzed and summarized to generate a draft case profile report (one for each AABI program). Multisite case analysis was performed when all the individual case profiles were completed and validated.

Overall, the qualitative analysis was inductive and comparative in developing common themes or patterns of categories across data (Merriam, 2009) and was performed concurrently with data collection. With the assistance of NVivo 12, this iterative process consisted of three steps, performed concurrently – data reduction, data display, and conclusion drawing and verification (Miles & Huberman, 1994). The first two steps were facilitated by NVivo's querying function, which generated matrices. The matrices were combined across all four AABI programs and assessed for patterns, differences, contradictions, and unique findings using a cross-case analysis (Merriam, 2009). Finally, conclusions were made, summarized, and documented.

Research Bias and Assumptions

Discrepant case analysis was conducted to yield supporting evidence for alternative ways of presenting the data or contrary explanations (Merriam, 2009). Additionally, investigators are encouraged to explain their bias, dispositions, and assumptions regarding their research to understand better how researchers' values and expectations influence the study's conduct and conclusions. As recommended by Lincoln and Guba (2000), a personal reflexivity reinforces this study's ethical considerations. This research topic was very important to me as I have worked as an aviation educator with an AABI-accredited collegiate aviation program for the past decade. I have witnessed firsthand, as a tenured faculty member, Department Chair, AABI Special Appeals Board member, and AABI Board of Trustees member, the amount of commitment required from our staff as well as the significant department, college, and university resources needed to maintain accreditation through AABI – the only collegiate aviation accrediting organization in the world. To that end, I hoped to understand better the specific contextual variables and potential sustainability challenges present at other institutions to help us achieve our greatest potential through program assessment and improvement practices required through our evolving accreditation processes.

Presentation of the Findings

This section contains the presentation of the study findings. The findings were based on the coding process that generated themes connected with the research questions concerning the value of continuous assessment and improvement practices required by AABI and the contextual variables that may influence program compliance. The data analysis revealed two primary categories of findings among the four programs (AABI A-D): accreditation support and accreditation impact. Each category will be described in the following sub-sections.

Accreditation Support

Within this unique academic environment, what was the nature of support for AABI accreditation? The participants were asked to describe the AABI process and their respective role(s) and their stakeholders' involvement in answering this. Official AABI documents were also reviewed (e.g., SSRs, institutional responses, annual reports, institutional responses, interim reports) to provide additional data on the process and validate the interviewees' recollections of the events transpired. While the AABI accreditation process is fairly prescribed (AABI, 2019a, 2019b, 2020), there were variations and commonalities across programs that emerged – in terms of how AABI managed collaboration as by the programs themselves. Overall,

three main categories emerged. These included: program support, institutional support, and industry support. Each of these factors served to influence the impact and subsequent consequences of AABI accreditation.

Program Support

Many faculty members within higher education value assessment as a benchmark of quality and program improvement (Bellack et al., 1999; Pucciarelli et al., 2016; Zammuto, 2008), and faculty from AABI-accredited programs are no exception to this (Prather, 2007; Sherman, 2006). At AABI A, their assessment plan was successfully written and implemented by the faculty to meet requirements set forth by AABI and [university], despite their Program Coordinator stating, "Well, it's kind of only me right now." Weekly faculty meetings were customary at AABI A and AABI C to advance their departments' mission and discuss accreditation activities. When asked about any challenges with faculty collaboration, AABI A's Program Coordinator commented that they had been very fortunate in that regard. Based on their professional and military experiences, all of their faculty were very responsive to requests by their administration to produce deliverables. This compliance mindset benefited the department across all levels of the institution. Of course, there were always a few stragglers at the end that submitted requests at deadlines. Their process appeared to be efficient, and the Program Coordinator mentioned that by proactively assigning tasks early, they could adjust for the high faculty workload experienced by all of their personnel.

However, faculty may initially resist assessment or communicate an uncertainty regarding the process (Romero, 2008; Staub, 2019; Van Kemenade & Hardjono, 2010). The faculty resistance challenge was evident during AABI B's initial accreditation activities, having recently been awarded their initial AABI accreditation for two programs in 2018. The Department Chair at AABI B stated that since they had committed to assessment, it made the assessment piece much easier. AABI B offered that there was great value in knowing what assessment required. To achieve this, the Department Chair involved every single faculty member in the assessment. It started formally assessing its programs against AABI criteria almost five years before applying for accreditation, and this process resulted in initial resistance. Over time, however, they successfully transitioned to routine evaluation of their programs each semester. The faculty no longer complained anymore and operated with a purpose. With associated faculty buy-in, the meeting frequency streamlined the assessment process, and their implementation strategies developed to the point where it was no longer a major undertaking. Of note, AABI B started building assessment processes almost a decade before formally applying for program accreditation. This experience supported previous claims by Parsons (2002) and Rust et al. (2005) that assessment processes required equal engagement

and active participation as any other learning process to yield favorable results. When asked about the collaboration, AABI B said that everyone was willing to share what they had found successful. The Department Chair even had to tell certain faculty members to hold back as they were doing too much by assessing such small details that results almost started to lose their meaning. Supporting Staub's (2019) claims, AABI B attributed this favorable outcome with the amount of time that their assessment plan had been designed, implemented, and evaluated before committing to program accreditation.

Overall, AABI D appeared to have the lowest level of program faculty engagement for several reasons. First, AABI D stated that their department leadership required all faculty to contribute to their continuous assessment plan by submitting "at least a paragraph for each class every semester. That way, we keep going through all of our classes." Second, there was an exhaustive national search for a new Department Chair during the most recent reaffirmation of its five aviation-related programs. Without consistent leadership to champion the process, the current Department Chair led the effort but had little incentive/support to involve others in a meaningful way. AABI processes became just another administrative task on top of their already full workload. When asked about proactively seeking additional internal support among full-time faculty, AABI D offered that assessment was more appropriate for non-tenured faculty. Furthermore, programmatic assessment activities were completely voluntary. Classes and workshops were available through the institution for those faculty members interested in participating, but their faculty participation was not significant.

Conversely, the process at AABI C appeared to be more inclusive but slightly fast-tracked. AABI C's Dean attributed this pace to external pressures from administrative leadership within the institution resulting in less time to encourage widespread participation. Leadership changes within the program and institution also impacted the accreditation timeline. Their Dean stated that they had gone into candidate status twice. Several years earlier, they initially went into candidate status, and then their [regional accreditation] came up.

Further, their institution experienced some administrative leadership changes, and a new institutional administrator pulled the aviation program out of candidate status. Later, AABI C applied for program accreditation again. Still, many stakeholders within the program and institution questioned whether program accreditation was worth the time and effort when regional accreditation seemed to be effective enough. However, due to the AABI SSR, the "naysayers" quickly learned that the aviation program was not in compliance with the aviation-specific criteria. Subsequently, their personnel enthusiastically committed to compliance with AABI mandates.

Institutional Support

Organizational culture, or buy-in, can be improved by providing institutional stakeholders with an opportunity to actively participate in developing their programs (Lejeune & Vas, 2009; Sivrais & Disney, 2006). This participation starts with meaningful dialogue among its educational leadership and delegating critical responsibilities to achieve total participation in organizational improvements (Nitta et al., 2009). Effective collaboration with institutional support stakeholders was evident across several administration layers at AABI B, including the department, college, and institution. They benefited from an organizational structure that actively supported the whole continuous assessment and improvement process. In response to multiple assessment-related non-compliance citations received during their last [regional accreditation] inspection, their Associate Provost served as an assessment coordinator for the entire campus, including 26 separate departments. The Associate Provost focused on the individual departments' assessment processes and met individually with each Department Chair. These conversations' primary focus was outlining the importance of assessment and providing programs with a framework to develop their assessment plans. In the end, the Associate Provost used AABI B's assessment process as a sample for other programs to follow.

The aviation industry's unique nature and limited degree offerings for collegiate aviation across the United States may yield favorable support or undesirable consequences from higher education institutions (Prather, 2007). For example, AABI C benefited from institutional buy-in and stated that they were fortunate to have an institution that recognized that they were the only program that set them apart from other public universities in [state]. So, the institution "kind of hung their hat on aviation" at [institution]; subsequently, they placed a great deal of emphasis on the aviation program through financial assistance and other AABI-related support. Conversely, AABI A's aviation management program began to see a reduction in course offerings due to organizational changes and the addition of a new university core curriculum in the early 1990s. In 1999, the university decided to move the [first college] aviation management program to the [second college]. A new [degree title] was created, and the aviation management curriculum was redesigned to align with the new [second college] standards. The new curriculum encompassed a business core designed to qualify for AACSB accreditation, under the [second college] AACSB accreditation umbrella.

Later, following the Colgan Air Flight 3407 commercial airline accident in 2009, the FAA established the First Officer Qualification (FOQ) rule. This federal mandate raised the minimum aeronautical experience standards to become a professional airline pilot while establishing a 500-hour flight time waiver for select collegiate aviation program graduates (Christensen, 2013). As both AABI A

curricula emphasized business and university core curriculum requirements at that time, their students did not fully benefit from the proposed flight time waiver. In response, the aviation program was ultimately moved to the [fourth college] to facilitate the addition of more aviation-specific courses and provide the program with the flexibility needed to expand academic programs and enhance the collaboration among its stakeholders.

AABI A believed that communication was good among applicable stakeholders throughout the accreditation process. However, the three times that the aviation program was moved to different academic colleges within the institution proved challenging with institutional stakeholders due to the aviation academic experience's unique nature. AABI A's Program Coordinator offered that when they were in the [second college], which was extremely "busy," they felt that the support was relatively non-existent. Then, when AABI went to [third college], they were essentially the only Department that did not have any assessment processes in place. When the [third college] moved to the [fourth college], there were large disparities between organizational structures, leadership styles, and accreditation experience. In response, AABI A built their assessment processes and enhanced them using methods of trial-and-error. The AABI on-site visiting team confirmed that communication had improved among all institutional stakeholders during AABI A's most recent campus visit when the aviation program relocated to its current position within the [fourth college] in 2018. The improved communication among stakeholders facilitated increased collaboration and support for the program and its accreditation requirements by better harmonizing the program's unique mission and educational goals with the objectives of the college and institution.

Industry Support

Support from external stakeholders is critical to the success of an aviation program's continuous assessment process (AABI, 2019a). Industry support emerged as a critical influencing factor in the continuous assessment process across all programs. Although industry involvement with program continuous assessment processes is required for accredited programs (AABI, 2019a, 2020), most programs (75%) maintained an active and involved industry advisory board with few non-compliance associated areas with AABI industry relations criteria during their last on-site visit. AABI B commented that their program involved their advisory board on some areas of their comprehensive assessment plan. Most recently, AABI B revised its programs' mission statements and program goals integrating all of the feedback received from their advisory board. AABI B reported that every stakeholder was onboard, and the process seemed to "run itself" once they got it established. At AABI D, a remarkably strong and diverse industry board of 23

members supported the department. Each area of academic concentration was represented among the industry members. Their involvement included assisting faculty and staff with curriculum evaluation for relevance and development, mentoring students in-person and virtually, providing lectures to students and faculty, generating internships, and offering extensive employment opportunities.

Additionally, regular meetings were conducted biannually at most programs, and there was evidence of active engagement of the industry advisory board with the department leadership, faculty, and institution. AABI A and AABI B demonstrated similar industry involvement activities despite maintaining smaller membership numbers within their advisory boards. AABI C reported inconsistent industry advisory board activities and an absence of goals to integrate within their continuous assessment plan.

Accreditation Impact

Participants at each of the four AABI programs were asked to describe the general impact of AABI accreditation. This included concrete, observable actions taken as a result of accreditation and less tangible benefits. As part of the cross-case analysis, these accreditation effects were organized categorically. Despite the myriad environmental forces impinging upon these four programs over the past 20 years, and despite the unique blend of historical and technical factors that influenced these programs throughout the accreditation period, six impacting factors emerged. These accreditation outcomes were the most salient in terms of AABI accreditation's resulting consequences and included assessment knowledge, human resources, infrastructure, outreach, safety, and students. Each will be described below.

Assessment Knowledge

Each AABI-accredited collegiate aviation program must have an assessment process that includes a written plan with documented results, the evidence used to assess the program regularly, and how assessment results were used (AABI, 2019a). In 2018, AABI discovered during a formal on-site visit that assessment findings, actions, and follow-up from AABI A and AABI D were not well documented. In response, AABI A compiled an internal annual report that documented assessment activities per a newly revised comprehensive assessment plan. This report served as a benchmark for the program’s continuous improvement efforts and supported the AABI SSR due every five years as part of their accreditation reaffirmation efforts. Their assessment findings generated ongoing discussions with the faculty as part of the overall continuous improvement process. Specifically, AABI A reported that the new [Department name] was established in

Fall 2017 in the [second college], and then moved to the [fourth college] in Spring 2018. Academic assessment reports were submitted to the [institutional office] in both 2017 and 2018. The new [Department name] was maturing and establishing baseline data during this period.

Similarly, one of AABI D's degree programs was not implementing an assessment plan that produced evidence, an analysis of assessment results, or specific plans to improve program effectiveness based on the preceding analysis. Recognizing this area of non-compliance, AABI D offered that their Department Chair recognized this lack of compliance, and the current [Program] Coordinator was repeatedly counseled and encouraged to comply. Still, a behavior change was not able to be achieved. The [Program] Coordinator position was re-assigned to [new incumbent] effective Summer 2017. As noted by AABI, the [program] concentration as a whole was found to need considerable revision to meet accreditation requirements. Discussions regarding the industry requirements of students graduating from this concentration, along with the curricular changes that were needed to meet these requirements, were discussed in great detail at the [biannual] Industry Advisory Board meeting.

AABI D's Industry Advisory Board concluded that the current curriculum was too shallow, and the four current focus areas diluted the degree curriculum considerably. Their suggestion was to offer two tracks, [first degree] and [second degree], each with more depth than currently available. The [Program] Coordinator and Department Chair worked closely to prepare a revision to the curriculum as recommended by the Industry Advisory Board. A proposal of those revisions was made to both the Department Curriculum Committee and the Industry Advisory Board during Fall 2017, with submission to the University Curriculum Committee in January 2018. This timeline ensured the new curriculum was in place for students by Fall 2018. AABI D's new curriculum resulted in the approval of two specific capstone courses, and the learning outcomes achieved by students in the new curriculum aligned with AABI requirements.

Human Resources

As required by AABI, opportunities for an appointment at all institutional ranks and opportunities for promotion and tenure must be consistent with those for full-time faculty across other institutions (AABI, 2019a). Additionally, programs' administration must provide for an adequate number and quality of instructional and support staff. Of note, AABI A did not employ any tenure-track or tenured faculty members during their most recent accreditation cycle. AABI A stated that they needed to get a tenured Department Chair established as [incumbent] had been the interim since they moved out of [second college]. At the time of the study, AABI A was going through a Department Chair search process internally within

[institution]. Also, in response to AABI, the program needed to establish a process to tenure its faculty. AABI A had not had a tenured Department Chair or a tenured faculty member in the aviation program in over ten years. AABI A's new tenure and promotion supplemental guide was submitted to the [fourth college] in November 2018. However, final approval was put on hold by their administration until their new full-time tenured Department Chair was in place. That new administrator was expected to be in place by Summer 2020. In June 2020, their Program Coordinator stated that they still had not found a new Department Chair and so no tenure-track positions were available. However, the Program Coordinator recognized the importance of AABI on the availability of vertical development for faculty and personnel quality among its accredited programs. In the end, AABI A's Program Coordinator remained hopeful that new personnel would be available and hired soon.

Additionally, all participating AABI programs lacked an appropriate number of qualified and appropriately rated instructional personnel to ensure the delivery of the laboratory component of required flight courses. This situation is experienced across most collegiate aviation programs due to accelerated airline hiring rates (Bjerke et al., 2016). However, AABI A received university approval to hire two additional full-time assistant chief flight instructors and convert line flight instructor employment classifications to part-time positions. The latter allowed each flight instructor to work approximately 110 additional hours each year, significantly improving the capacity to deliver the laboratory component of flight courses. AABI D acknowledged that a formal assessment item should exist specifically evaluating flight instructor needs. To that end, their professional pilot coordinator, in cooperation with other key department administrators, actively assesses the current state and forecast needs of the flight concentration regarding flight school equipment by December of each year. This information is conveyed to the Department Chair as part of the annual continuous assessment process.

AABI B and AABI C evaluated if enough financial support was sufficient to provide a well-qualified faculty for continued professional development. Beginning with the 2016-2017 budget cycle, AABI B's budget was increased by $2,000 to provide additional funding for faculty professional development. Several additional funding sources were made available with applications to various federal, industry, and institutional organizations. Similarly, AABI C allocated $500 per fiscal year for faculty professional development opportunities. Incoming faculty are trained and encouraged to apply for these new development funds annually.

Infrastructure

AABI-accredited collegiate aviation programs must establish and assess facilities, equipment, and services goals to ensure continuous improvement of these

resources' quality and performance as they provide the basic operational framework for most collegiate aviation programs (AABI, 2019a, 2019b, 2020). In 2017, AABI B was required to conduct a detailed needs assessment for aircraft fleet and simulator replacement/upgrade to provide evidence that the replacement/upgrade met the program goals and provided students with equipment appropriate to support current industry practices. In response, AABI B initiated a plan to purchase additional aircraft and simulator equipment incorporating new glass-cockpit technology. Their periodic phase-in of new [aircraft make/model] with glass cockpit technology was their best strategy to provide students with the equipment most appropriate for current industry practices. To consider another aircraft make would be counter-productive to the [flight center], requiring cross-training of their technicians, professional flight staff, and, most importantly, their students. Students' safety was a primary concern in the purchase plan, and having students switch back and forth between different aircraft manufacturers presented unnecessary risks. Most importantly, AABI B noted that the number of aircraft and simulator equipment purchased was dependent on funding availability. Similarly, AABI C conducted an unsolicited needs assessment for new aircraft in response to planned program admission criteria revisions effective in the 2019-2020 academic year.

AABI D maintained an aviation maintenance training facility that was reported by AABI to be undersized. Both classrooms and the hangar were extremely overcrowded and did not lend themselves to a positive learning experience. Additionally, an available microfiche room was extremely crowded, making it hard to do meaningful research. In response, they established a task force consisting of the maintenance management coordinator, all maintenance management faculty, and appropriate representatives from their industry advisory board. In the end, the identification of space requirements for present and future needs proved to be a more difficult and time-consuming process than the program had originally planned. However, the task force membership added the flight and unmanned aircraft degree programs to evaluate facility requirements. That decision resulted in a more robust and holistic approach to the issue. In the end, the aviation program was able to communicate its infrastructure needs to all applicable stakeholders effectively.

Outreach

An aviation program must show evidence of a relationship between the program and the practicing professionals within the aviation industry (AABI, 2019a, 2020). To achieve this, programs are required by AABI to establish and assess industry-relations goals to ensure continuous improvement of the relations between the program and industry consistent with the mission and educational goals

of the program and institution. Further, this assessment must be reported as part of the comprehensive assessment plan and process outlined in AABI Criterion 3.10. AABI A and AABI C were cited for non-compliance in this area during the on-site visit in September 2018. In its formal institutional response submitted to AABI in early 2019, AABI A reported that in the spirit of continuous improvement, the program challenged their advisory board to increase membership diversity (i.e., gender, race, age, aviation discipline) and revise its bylaws to reflect the aviation program's move to the [fourth college] and the many emerging fields of employment in aviation. As a result, the board expanded its membership to reflect a more diverse population. At its fall meeting in September 2019, the board revised its bylaws with the stated organizational purpose of providing guidance, expertise, and networking to support the department's mission of excellence in aviation instruction, research, and outreach.

Similarly, AABI B expanded its industry advisory board membership to 15 members and committed to meeting biannually. Their advisory board provided meaningful input regarding revision(s) to their flight-specific learning outcomes criteria, mentoring and internship opportunities, and suggestions on harmonizing the program mission statement to reflect better the college's educational philosophy, purposes, and general intent. AABI C established three industry-relations goals consistent with the aviation program and the institution's mission and educational goals. Furthermore, with assistance from the institution, they developed an assessment plan that included objectives and benchmarks supporting the overall program's continuous improvement.

Safety

All AABI programs must integrate a formal aviation safety program that involves all applicable operation stakeholders, and their safety program must be integrated into the programs' comprehensive assessment plan (AABI, 2019a). In response to their non-compliance, AABI C and AABI D developed and implemented a verifiable safety program that involved students, faculty, and staff for operations involving flight, maintenance, avionics, air traffic control, and aviation laboratories. Their newly revised Safety Management System (SMS) and its associated programs included development and safety policy, safety risk management, safety assurance, and safety promotion. Also, AABI C established a [title] position that monitors safety policy and procedures throughout the year, including scheduled and unscheduled maintenance inspections. Additional responsibilities of their [title] included:

- Implementing management systems that establish and maintain safe work practices

- Collecting safety data and conducting an assessment of the safety program
- Serving as Chair of the department committee
- Conducting necessary safety training; and
- Coordinating with the university risk manager to align department/university policy.

To support the department safety program's continuous improvement, institutional resources at AABI C were allocated to fund an external safety auditor who will provide annual evaluations of the safety program and its associated procedures.

Similar to AABI A's response to setting goals for industry outreach, AABI C also established safety goals to ensure continuous improvement of the safety culture and program consistent with the aviation program and institution's mission and educational goals. First, the program will maintain a relevant and up-to-date policy that ensures the safety of all students, faculty, staff, and the general public. Second, the program will maintain effective risk control that ensures the safety of all students, faculty, staff, and the general public. Finally, the program will foster a strong safety culture that includes and positively impacts students, faculty, and staff. To evaluate their new program, the program developed an assessment plan for its safety program that included objectives and benchmarks to ensure continuous improvement of the safety program in compliance with AABI Criteria 3.8 and 3.10.

Finally, AABI D's maintenance management and technology programs did not fully participate in the department's formal aviation safety program. AABI D noted that efforts to establish a safety program's foundations in the past had focused primarily on the flight school. While the [program title] program had previously participated in the Department's aviation safety program, the [program title] program had not. Also, with the establishment of a [program title] concentration, the [program title] concentration needed to be brought into the safety program. In the end, AABI D included students representing all academic concentration in all safety events within the Department. Recognizing that a change in safety culture takes time, the program noted an initial increase in safety reports from the [program title] students and faculty. Additionally, the program administered a survey to quantitatively evaluate any change to the safety culture across academic disciplines. Survey results indicated that the [program title] program's inclusion and the increased emphasis across disciplines generated a more favorable perception of safety among stakeholders.

Students

The academic performance and success of collegiate aviation students and graduates are critical considerations in evaluating any aviation program (AABI,

2019a). At AABI A and AABI C, an inadequate academic advisor network, was available to respond to student requests concerning curriculum and program-related issues. With AABI A's move to the [fourth college] in 2018, an additional dedicated full-time aviation advisor was assigned to the Department to help handle the rapidly increasing student load. The Department now maintains two dedicated academic advisors who have a clear division of roles and responsibilities. This personnel change resulting from AABI assessment processes resulted in improved response time to student requests. Additionally, as a result of industry support, AABI A created a significant culminating upper-division student learning experience for flight students. This new capstone course included classroom instruction and simulator experiences in a new $4 million fixed-based jet aircraft procedure trainer.

To increase student retention and graduation rates, all programs implemented some form of new admission standards for the flight program to ensure newly enrolled students' academic readiness and that flight training resources (i.e., aircraft, simulators) could support total student enrollment. For example, AABI C stated that within the last two years, student enrollment had increased exponentially. In response, they changed their admission process for incoming students. The new admission criteria require students who want to enroll in flight training to complete over nine semester credit hours in aviation-specific coursework and pass a computerized FAA Private Pilot Knowledge Test. AABI C's Dean offered that this change to their admission process was in response to the overwhelming student demand for their program within [state]. Although their administration was initially very reluctant to turn away tuition-paying students attending a public university, AABI C's institutional leadership now recognizes the program's needs and its unique operating requirements compared to traditional academic programs. Ultimately, the Dean believed that the new admission standards, combined with a larger fleet, will support students more effectively. Also, they received authorization to hire an additional professional advisor to reduce advising caseloads and provide a more thorough and personalized advising experience for students. Their program assigned all students to a Department advisor and faculty mentor with whom they regularly discussed academic progression.

Limitations of the Study

This study was bounded by several limitations, which should be considered in the interpretation of its findings. First, only four AABI-accredited collegiate aviation programs participated in the study. A purposeful sampling strategy supplied participants with key knowledge and experience related to the purpose of the study (Lodico et al., 2010). This unique focus generated findings applicable to accreditation collegiate aviation programs but may not be appropriate for other

types of organizations and accreditations. Second, it may not be appropriate to generalize the results of this study across all AABI-accredited programs. In this study, a qualitative case study methodology was selected to reveal each case's unique complexity (Stake, 1995). Data were collected systematically to be as structured and unbiased as possible (Lodico et al., 2010). By studying four different program contexts in which assessment was implemented, there was an opportunity to explore both the particularity and commonality of experiences, thus enabling an analysis seeking emerging patterns, convergences, and discontinuity (Stake, 1995). Third, the role of the researcher must be considered, as well. Following Lincoln and Guba (2000), I presented a reflexivity and strategies used to mitigate researcher bias. Fourth, each program administrator or faculty member that joined the study volunteered to participate. This situation may have presented a possible bias in the participants' responses. Administrators and faculty could have potentially interpreted interview questions differently based on their personal and professional experiences with AABI. Finally, this study was delimited to AABI educators whose names I collected from previous AABI meeting rosters. I did not solicit interviews or participants that had not attended previous AABI conferences within the preceding two years.

Synthesis of Findings

While answering the specific research questions, four themes emerged in the data analysis connected with the research questions: application of criteria, faculty experience and workload, industry involvement and environmental adaptability, and expanded social interactions.

RQ1: What Contextual Factors Influenced Compliance with AABI Criterion 3.10 at AABI-Accredited Collegiate Aviation Programs?

An amalgamation of findings answered what contextual factors influenced compliance with AABI Criterion 3.10 at AABI-accredited collegiate aviation programs. First, every program studied had an accreditation support network exhibiting varying degrees of activity from student, faculty, institution, and industry stakeholders. This existing network of stakeholder support emphasized a primary goal of AABI to increase the credibility, integrity, and acceptance of collegiate aviation programs within higher education institutions and all aspects of the aviation community, including industry and the public at large (AABI, 2019a). In the case of AABI B, most faculty members in the program were involved with implementing an effective, comprehensive assessment plan that had previously demonstrated compliance with diverse requirements defined by their regional, institutional, and program-specific accreditation criteria. In the case of AABI A and

AABI C, strong institutional and state-level support resulted from specific program improvements generated from their accreditation compliance efforts; however, stakeholder participation with assessment activities among programs was more limited at AABI A, AABI C, and AABI D. Overall, programs had at least one Department Chair or administrator that owned the process. However, larger programs experienced a lower level of active involvement with assessment activities among faculty and a higher number of assessment-related recommendations cited by AABI.

Second, current industry trends influenced programs' ability to conduct collaborative assessment activities. All programs reported an inability to include more faculty in their accreditation efforts due to hiring trends within the aviation industry. Over the last several years, airline companies have been unable to hire the number of aviation professionals needed to support their services. These companies responded by actively recruiting current aviation students, program graduates, and faculty by promoting higher salaries, better lifestyles, and significant travel benefits. The resulting mass exodus of personnel across all programs yielded undesirable consequences for their accreditation efforts. For example, three programs responded to the diminishing candidate pool by hiring internally or recruiting military retirees to distribute responsibilities among faculty and sustain their operations more evenly. However, the lack of academic experience with accreditation and continuous assessment common among these fledgling academicians required significant training and program resources that may not have been adequate or available to them.

Third, programs demonstrated a lack of assessment knowledge within at least one criterion area by not successfully implementing assessment activities using clearly described plans, initial actions, and follow-up (i.e., closing the assessment loop). For example, program-level learning outcomes were commonly shared between one or more additional programs, thereby potentially excluding each degree's unique learning experience. Additionally, as required by AABI Criterion 3.10.2, the assessment plan, process, and implementation must include measurable goals for each of the areas in AABI Criterion 3.10.1 (AABI, 2019a). Although not required at the time of their last on-site visit, specific assessment goals were not created or evaluated in critical areas such as relations with industry, safety, and facilities. If completed voluntarily by faculty, professional development activities supplemented existing assessment efforts by attempting to bridge the gap between programs' knowledge of assessment and the application of their assessments to yield substantial program improvements. Beyond professional development, the amount of experience each program had with assessment activities varied considerably. Of all the programs, AABI B demonstrated the most comprehensive understanding of AABI Criterion 3.10 based on the limited assessment-related issues noted by AABI in 2018. Interestingly, AABI B started

building its assessment plan almost a decade before applying for accreditation and committing to the process.

RQ2: How Did AABI Criterion 3.10 Influence Continuous Improvement at AABI-Accredited Collegiate Aviation Programs?

AABI Criterion 3.10 influenced continuous improvement at AABI-accredited collegiate aviation programs in several ways. First, the continuous assessment helped increase industry involvement within programs. In the case of AABI A and AABI B, their industry advisory boards were challenged to increase membership diversity (i.e., gender, race, age, aviation discipline) to comprehensively represent the diverse positions and emerging fields available to students upon graduation. Subsequently, their boards expanded their membership and revised their bylaws to provide guidance, expertise, and networking to support the program's mission of excellence in aviation instruction, research, and outreach. At AABI A, five distinct committees were organized to assess and improve scholarship, strategic planning, alumni relations, public relations, and capital development. At AABI B, their industry advisory board provided input in revising the program's mission statement to harmonize better the program's educational philosophy with the needs of the industry. AABI C established industry-specific goals for their advisory boards that accurately assessed academic policy, curriculum, safety, and industry partnerships. Overall, AABI D incorporated the most active industry advisory board. AABI noted that their board was knowledgeable, engaged, and represented a diverse cross-section of the aviation industry supporting the program and its students. The board helped develop and evaluate each of the program's five undergraduate aviation programs and provide internships and jobs for graduates. In response to assessment findings, the board was involved with a significant program change for one of its undergraduate concentrations resulting in the approval of two separate tracks offering students a more in-depth, focused learning experience.

Additionally, the continuous assessment helped expand training infrastructure (i.e., flight training equipment, academic buildings). During this study, all programs operated an FAA-approved Part 141 flight-training program as part of their academic degree(s). Although the number of students varied significantly among programs, all collegiate aviation students require safe, reliable, and well-maintained training aircraft and academic spaces. In the case of AABI B, they operated an older, analog-equipped fleet of 22 training aircraft representing over five distinct models with an average age exceeding 15 years. In response to non-compliance with AABI Criterion 3.10, they concluded that an upgrade was necessary to better prepare their graduates for their likely use in their professional pilot careers. So, they implemented a new purchase plan that involved a sole source

supplier, thereby integrating digital cockpit technology and reducing the training fleet's average age. Further, a periodic phase-in of new aircraft from a sole supplier reduced the cross-training of maintenance technicians, professional flight staff, and students. Having students and flight instructors switch back and forth between different aircraft models presented an unnecessary risk to their personnel.

The evaluation of academic building quality was also conducted in response to non-compliance with AABI Criterion 3.10 at AABI D. The identification of space requirements both currently and in the future proved to be a more difficult and time-consuming process than they had originally imagined. For example, when initially evaluating the space requirements of one specific degree program as required by AABI, the program decided to include the infrastructure needs of two other degree programs concurrently during their assessment. This strategy added an unintended degree of complexity, but the assessment resulted in a more robust and holistic approach to addressing their infrastructure challenges. Given the current increase in proposed construction activities by other entities at their local airport, the assessment also protected space that the program anticipated would be needed in the future by facilitating meaningful discussions from stakeholders impacted by the planned changes. While the new assessment added length to their planned timeline, the process yielded a more accurate assessment of space requirements than a potentially shorter process involving less stakeholder feedback and support.

Another finding related to the influence of AABI Criterion 3.10 on continuous improvement at AABI-accredited collegiate aviation programs was the development of improved safety initiatives. For example, all programs participating in this study were required to implement a safety program built upon the four pillars of safety management defined by AABI criteria. These comprehensive safety programs were required to integrate areas, including flight, maintenance labs, airport spaces, and personnel. Additionally, designated committees within programs frequently oversee the safety program while receiving institutional risk management offices' guidance. Although the program and institution representatives had oversight of the safety program, each faculty, staff, and student involvement in flight and maintenance operations was considered by AABI to be a vital member of the overall safety system. This person should have complete authority to identify safety issues and ground aircraft for maintenance or other safety-related concerns. Overall, personnel across all programs were able to report safety hazards via an anonymous reporting system that facilitated meaningful dialogue between the operators and their administrative leadership. However, although demonstrating compliance with many safety criteria, AABI C had not established or assessed safety goals and the resources dedicated to safety were not adequate to ensure a comprehensive safety program. In response, safety goals were established that emphasized current safety policy, risk control, and safety culture.

The program also appointed a designated safety officer that monitored safety policy and procedures throughout the year. Institutional financial resources were allocated to fund an external safety auditor to supplement their routine continuous assessment and improvement efforts. At AABI D, there was an absence of documentation verifying that one of its degree programs participated in the safety program. Recognizing that their safety efforts had focused exclusively on the flight school, AABI D responded by (a) adding safety program information in all applicable syllabi, (b) visiting classes to increase the visibility of the program among applicable students, and (c) funding additional faculty training opportunities exploring the implementation of viable safety programs.

Finally, another influence of AABI Criterion 3.10 on continuous improvement at AABI-accredited collegiate aviation programs was students' subsequent benefit. Programs' assessment efforts resulted in several faculty and staff adjustments in support of its students. For example, academic advising services were expanded to improve student access. Flight instructor positions were recategorized from temporary appointments to part-time positions, which reduced curriculum progression challenges associated with undesirable gaps in the flight training continuity among students. A specific assessment of flight training resources was integrated into current continuous assessment plans to support student success in many cases. Additionally, in several cases, accreditation criteria were used as leverage by programs to develop a tenure and promotion process for faculty, hire much-needed flight training staff, or receive approval to appoint a new program chair. In the end, these responses were executed with the primary goal of improving the student learning experience by expanding the resources available to them.

Theme 1: Programs' Application of AABI Criterion 3.10 Will Not Comply with New Accreditation Requirement

This theme connects with the first research question. AABI Criterion 3.10 was revised in July 2019, integrating a more robust, single-loop organizational learning opportunity for AABI-accredited collegiate aviation programs (AABI, 2019a). The original criterion required programs to establish and assess each program area (e.g., students, mission and educational goals, learning outcomes, curriculum, faculty, and staff). The revision in 2019 added the requirement to report such goals as part of the comprehensive assessment plan and process, as initially outlined in AABI Criterion 3.10.

All programs in this study were not required to comply with the revision. All had submitted applications for initial accreditation or a reaffirmation of existing accreditation before the AABI Criteria Manual was revised. However, in this study, most programs were not in full compliance with the old criterion. The majority of

programs (75%) were cited at least once by AABI for a failure to establish goals and continuous improvement processes for the areas of industry relations, facilities, or safety. Interestingly, the largest and longest-running AABI-accredited program failed to include quantitative evidence of assessment and how it was collected and analyzed across all undergraduate programs. Preskill and Torres (1999) believed that it was highly unlikely to find an organization ever fully positioned to support evaluative inquiry. However, with a previously demonstrated commitment by accredited collegiate aviation programs to achieve a higher level of quality and improvement through program accreditation (Christensen, 2013; Connolly, 1991; Fullingim, 2011; Prather, 2007; Radigan, 2011; Sherman, 2006), these AABI-accredited programs must address these cited assessment deficiencies before attempting to comply with a more demanding criterion required during their next accreditation cycle.

Theme 2: Participants Believed That Faculty Experience and Workload Most Influenced Assessment Practices

This theme also connects with the first research question. Program accreditation efforts have been used as a point of leverage to improve program faculty resources (Elliott & Goh, 2013). This strategy was not possible with most participants. Academically qualified faculty have significant academic preparation relevant to teaching in a given area (Elliott & Goh, 2013). In contrast, professionally qualified faculty have significant professional experience and preparation that applies to the academic discipline (Romero, 2008). Across most cases, professionally qualified faculty (i.e., military retirees, retired airline pilots) were hired when available to expand course offerings in response to the sudden increase in student demand for collegiate aviation programs (Bjerke et al., 2016; Fullingim, 2011; Smith et al., 2013; Smith et al., 2016). However, the faculty hiring pool was significantly reduced as the industry hired academically and professionally qualified personnel faster than the collegiate aviation programs could hire them (Smith et al., 2017).

With the revision of AABI Criterion 3.10 in July 2019, these programs were required to expand their comprehensive assessment processes without a complete complement of faculty available that demonstrated the academic (i.e., accreditation, assessment) experience and time availability needed to achieve a higher level of proficiency and subsequent compliance. Moreover, faculty may resist assessment (Harvey, 2004; Julian & Ofori-Dankwa, 2006; Romero, 2008; Van Kemenade & Hardjono, 2010), or communicate an uncertainty regarding the process (Staub, 2019). Contrary to Harvey (2004) and Pucciarelli et al. (2016), all participants valued the overall accreditation experience and its associated benefits, which was evident through the findings of support for AABI accreditation across faculty,

institutions, and the public-at-large. However, three programs' education leaders communicated an initial ambivalence among their personnel regarding mandated assessment activities. Similar to Julian and Ofori-Dankwa (2006), one participant offered that, as a result of industry changes, their program seemed to be simply going through the motions of data collection and analysis without adequate consideration of its actual meaning. This program was cited the most for non-compliance with AABI Criterion 3.10. In the end, the unique characteristics of the aviation discipline (Ison, 2009; Smith, 2002) and the needs of the aviation industry (Bjerke et al., 2016; Christensen, 2013; Fullingim, 2011; Smith et al., 2017) inadvertently limited programs' ability to adapt to the singular needs of their stakeholders (Hohner & Tsigaris, 2012) by restricting the faculty resources available to them.

Theme 3: Participants Assigned Value of Assessment to Increased Industry Involvement and Environmental Adaptability

This theme connects with the second research question. Organizational culture can change through comprehensive assessment plans by providing industry members with an opportunity to actively participate in program development (Lejeune & Vas, 2009; Nitta et al., 2009; Sivrais & Disney, 2006). Like Nitta et al. (2009), many programs made critical program developments resulting from increased dialogue with industry members and delegating critical responsibilities to achieve a higher program success level. Unlike Prather's (2007) findings, the participating programs' industry members demonstrated a higher level of participation and recognition of AABI, subsequently improving its perceived value of AABI accreditation.

Additionally, the continuous assessment processes required by AABI 3.10 yielded favorable outcomes across programs by facilitating essential environmental adaptation strategies in response to the rising student demand and diminishing personnel resources. As noted by Jennings (1989), these strategies served as mechanisms of accountability and demonstrated a favorable renewal process leading to program improvements and enhanced student learning experiences. Thus, AABI Criterion 3.10 helped programs better manage the conditions that influenced their respective environments (Parsons, 2002). Also, Lejeune and Vas (2009) suggested that the benefits to accreditation may benefit the overall image of programs while not improving quality; however, increased industry involvement with program development, as well as the addition of flight instructor resources, helped to ensure a more efficient, higher quality learning experience for students.

Theme 4: Organizational Improvements Generated Expanded Social Interactions Among Stakeholders

This theme also connects with the second research question. Through evaluative inquiry, organizational learning is continually evolving, and underdeveloped or underutilized communication channels and systems supporting program improvement influence the efficacy and sustainability of accreditation initiatives (Preskill & Torres, 1999). Through a social constructivist lens, these communication channels are active, co-constructed social processes of organizational development (Parsons, 2002; Preskill & Torres, 1999; Rust et al., 2005; Vygotsky, 1962). In this study, findings suggested that organizational improvements in response to non-compliance with AABI criteria generated increased social interaction among disparate stakeholders. For example, three programs increased the industry's interaction with their programs' continuous assessment and improvement plans by including alumni and industry representatives in their decision-making processes. One program hired an external safety auditor to supplement the continuous evaluation of its safety program.

Smith (2002) noted that many leading collegiate aviation programs in the United States might lack institutional support due to traditional administrators' unfamiliarity with the collegiate aviation discipline and its specific requirements. This situation was not present here, as findings revealed that the most consistent social involvement and support for these programs came from their respective institutions' administrative hierarchy. For example, strong support for AABI accreditation was noted from the president and provost and the academic assessment offices across all programs. Institutional professional development (PD) courses were also available and utilized by faculty during programs' preparation for AABI initial accreditation and reaffirmation efforts. PD budgets were increased to expand these development opportunities outside of the institution in many cases.

Further, the aviation programs were considered institutional strengths by their administrations and received substantial funding when required to comply with AABI requirements. In several programs, this financial support contributed to multimillion-dollar infrastructure and equipment upgrades. Serving as an exemplar of effective collaboration practices, one program designed and implemented a very successful continuous assessment process consisting of student, faculty, staff, institution, and industry representatives resulting in no specific weaknesses noted by AABI or their regional accrediting organization.

Implications

Based on the previous research studies (Bjerke et al., 2016; Christensen, 2013; Prather, 2007; Radigan, 2011; Sherman, 2006; Smith et al., 2010; Smith et al., 2013; Smith et al., 2016; Smith et al., 2017) and the results of this study, several recommendations can be made to the stakeholders involved with AABI accreditation. First, the results of this study have implications for educational leaders of AABI-accredited collegiate aviation programs. At the time of this study, most programs did not comply with AABI Criterion 3.10. This finding is significant for currently accredited programs. It will potentially make compliance with the revised criterion even harder during their next accreditation cycle without implementing proactive adjustments. The continuous assessment process yielded favorable outcomes for each program, and continuous assessment plans benefited from regular communication among program faculty and administrators. Recognizing that faculty workload (Bellack et al., 1999) and environmental uncertainty (Christensen, 2013) may restrict the involvement of faculty, the inclusion of industry stakeholders is critical to bridge this potential gap by placing them in a position to help program leaders advance the quality of programs' services and better meet the needs of their workplaces (Fullingim, 2011). As required by AABI Criterion 3.9 and 3.10, involving industry in the continuous assessment process provides evidence of a relationship between the aviation program and the industry's practicing professionals. In working collaboratively with industry, programs can more effectively establish and assess industry-relations goals to ensure continuous improvement of the relations between the program and industry consistent with the program and institution's mission and educational goals.

Second, the results of this study have implications for AABI policy. Reasonable accreditation standards must be reviewed and revised periodically to ensure that external factors and societal changes are integrated appropriately into published criteria (Pucciarelli et al., 2016). Due to the recent worldwide COVID-19 pandemic and demonstrations of civil unrest across the United States, colleges and universities may need to adapt as a result of (a) distance delivery challenging the traditional on-campus collegiate experience, (b) financial fragility forcing a rethinking of institutional management and operation, and (c) greater emphasis on success in addressing race and equity (CHEA, 2020). All of these external factors may influence future stakeholders' expectations of quality in higher education. Also, as in this study, AABI should review the impact that the Pilot Certification and Qualification Requirements for Air Carrier Operations legislation have on AABI-accredited programs. With AABI Criterion 3.10 being cited most often for non-compliance among programs (AABI, 2020), the findings suggest that the programs' non-compliance with AABI Criterion 3.5 is likely, if not inevitable.

Specifically, programs may not employ faculty in sufficient numbers as determined by student enrollment and programs' expected outcomes. Additionally, programs may be unable to provide for an adequate number of technical, flight, and ground instructors whose academic credentials are consistent with programs' needs.

If AABI truly wishes to promote continuous improvement, the organization needs to consider introducing strategies to facilitate sustainability and institutionalization of continuous improvement practices much sooner. In my experience with AABI, program representatives are only exposed to opportunities discussing continuous assessment best practices at biannual AABI conferences through one-day workshops. This frequency of exposure is inadequate. One strategy to address this problem is revitalizing the current AABI policy by assigning volunteer mentors (i.e., senior AABI representatives, board members) to programs after they apply for initial accreditation or a reaffirmation of existing accreditation. During the one-year SSR process following application, mentors could regularly provide suggestions and best practices on maximizing the enabling effects of continuous assessment by focusing conversations on the specific outcomes of previous on-site visits at other institutions. This study's findings provide AABI with several topics for future discussions, including establishing goals for industry-relations and safety, needs assessment, and assessment follow-up (e.g., data analysis, application).

Finally, the results of this study have implications for future research. First, this study focused on aviation program administrators and faculty of AABI-accredited collegiate aviation programs. Future research should include additional qualitative analyses of recent graduates to provide information on AABI accreditation value. Second, while Prather (2007) discussed AABI's transition from criterion-based criteria and Radigan (2011) explored students' perceptions of accreditation, this study only looked at program administrator and faculty perceptions of AABI accreditation. Future research is needed to determine if the employers of AABI-accredited program graduates value AABI accreditation in similar ways. Third, a second study should be conducted after the full enactment of Public Law 111-216. Replicating this study to find additional information on continuous assessment and improvement would benefit the profession. Previous research has made definite strides to identify barriers to accreditation (Christensen, 2013; Elliott & Goh, 2013; Lejeune & Vas, 2009; Nitta et al., 2009; Prather, 2007; Sherman, 2006; Staub, 2019). While this research did look at contextual variables across these cases, it would be of interest to the profession and AABI to explore what barriers (e.g., contract flight training, department culture, program cost, program location, program reputation, program size) to specialized accreditation may exist across other AABI-accredited programs in the current outcomes-based, post-Public Law 111-216 era.

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