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Re-Imagining STEM-Based Aviation Education Through Alternative Knowledge Creation

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Boeing's workforce study suggests that the aviation industry is going to need over two million more people in the role of pilots, technicians, and cabin crew. Yet, according to the Federal Aviation Administration Civil Airmen Statistics, the number of women who hold the certificate required to fly for a major airline is still just above 4%. These two challenges, a potential shortage in individuals pursuing aviation careers and an industry that struggles to attract and retain underrepresented individuals, have the potential to be addressed if we re-imagine collegiate aviation education. This peer-reviewed practice article leverages a case study performed by Morrison and McNair (2023) to suggest new pedagogical strategies that would support the recruitment and retention of minoritized students to the industry. This analysis of the case study is supported by existing research into why the aviation industry continues to struggle to become more socially just and equitable and how collegiate aviation education is positioned to respond to that struggle.

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According to the Federal Aviation Administration (FAA) Civil Airmen Statistics, a little over 4% of women hold the certification that is required to be able to fly for a commercial airline (e.g., United, American Airlines, etc.) (Federal Aviation Administration [FAA], 2021). This number has remained similar over the past five years, with any small, incremental changes being almost statically insignificant. More importantly, these are not the only numbers that describe the ways in which the aviation industry is underrepresented by a (very few) number of minoritized groups. Sisters of the Skies (2024) indicates that less than 1% of pilots are Black women, and Lutte (2021) describes how the aviation industry, as a whole, is underrepresented by women. Her research describes how this is not just a problem with pilots but is impacting positions like air traffic controllers, maintenance professionals, and management, among others. Lutte describes what other researchers have noted, which is the aviation industry is both lacking representation by minoritized groups and is challenged to recruit and retain these individuals.

Howard and Kern (2019) note that careers requiring a STEM education are going to continue to grow, “Estimates indicate 75% of the fastest growing jobs will require STEM skills and more than one million additional STEM graduates will be needed over the next ten years” (p. 1136). Aviation is but one example of a Science, Technology, Engineering, and Mathematics (STEM) industry that is also growing exponentially. According to Boeing (2024), over two million pilots, technicians, and cabin crew will be needed over the next 20 years in order to keep up with the global demand for air transportation or air travel. If these are the needs of STEM industries (including fields like aviation), then finding ways to attract talent that has historically been underrepresented is critical. It is evident that there is a need for more people, but that the recruitment and retention of minoritized individuals is slow to progress and will not keep up with the rate at which the industry needs these professionals.

In response to this demand for an increased number of professionals, a growing number of researchers suggest that outreach and education will enable the recruitment and retention of more diverse groups in the field of aviation. However, aviation education encounters many of the same challenges that are faced by the industry as a whole. An overreliance on performative efforts rather than substantive change is a challenge that both education and the industry contend with. Howard and Kern (2019) write, “Schools are entrenched in larger systems that mirror what society values; therefore, teachers implement content, skills, and underlying values that are influenced by their administration, policy, and society as a whole” (p. 1136). In other words, despite the fact that collegiate programs are needed in the effort to create a more socially just workforce in aviation, they may not be prepared to undertake these efforts. In order for collegiate aviation programs to be a part of the solution of creating and sustaining an industry that is socially just, equitable, and addresses the workforce challenges identified by Boeing, it is incumbent for these programs to reflect on the ways in which they currently and historically continue, to reinforce systems of oppression which strengthen barriers to access for minoritized groups.

One way that aviation education might be able to undertake this issue is through the pedagogical strategies it uses in its classrooms. Imagining a different way of approaching the pedagogical practices in aviation and STEM education has the potential to impact the industry by introducing young professionals who have new ideas and are prepared to be innovative in their approach to working in the industry. This paper presents a position on what aviation and STEM

education might look like if it were to consider alternative forms of knowledge and knowledge creation as part of its educational practices. By applying feminist pedagogical practices to a field that has predominantly relied on Western Enlightenment thinking and similar strategies to educate some and minoritize others, there is the potential to create an educational system that is more equitable and socially just and addresses the future workforce challenges.

Positionality Statement

The project of transforming education and its systems requires that researchers invest their time in the process of self-reflection. Imagining and transforming STEM education is not possible without considering the ways in which individuals' identities impact or influence the research questions they develop and how they engage with the research process itself. This is particularly important and valuable in fields where there is a long history of minoritizing certain groups and individuals. In order to overcome and transform those systems, researchers, educators, and professionals must have the ability to self-reflect on their own positions (within the aviation industry). Without this self-reflective work, one cannot begin to imagine the possibility of 'doing things differently.'

Holmes (2020) argues, "Positionality describes an individual's worldview and the position they adopt about a research task and its social and political context" (p. 1). He indicates that our values and beliefs about where knowledge comes from, who creates it, our interactions with the environment, and the process of conducting research itself all influence research practices. Because of this, it is important for researchers to reflect and acknowledge the ways in which their position influences decision-making within the research process.

To that end, the author is a white, middle-aged, cisgender, heterosexual woman with a spouse who works for a major airline in the United States. They hold multiple graduate degrees, including a doctorate in the field of Education, Policy, and Leadership. These are certainly not all of her identities, but they have influenced the ways in which she engages with the topic of aviation education, the kinds of questions they find themselves asking about, and what it means to imagine a different approach to how we teach in collegiate aviation programs. Being the beneficiary in a system that has prioritized Western Enlightenment thinking and pedagogical practices that value assessment and "rote memorization," The author acknowledges that she has to continue doing her own work of imagining new methods and pedagogical practices that would enable education and specifically aviation education, to be more accessible to groups who have historically been underrepresented.

The author wishes to acknowledge that while their position has afforded them a great deal of access and the ability to research and publish on a variety of topics, they have also found themselves to be limited in access. The author does not have a traditional (or "acceptable") aviation background, and in fact, not having the 'credentials' of a pilot's license or dispatch certificate or some form of certification in the industry has often been a limitation. Aviation, as a field, really struggles to find value in people, experiences, and ideas that do not come from traditional aviation backgrounds. This is what has led to her research and interest in creating a more socially just aviation industry and her desire to see more diverse voices within the industry.

The History of Aviation in the United States: The 30,000 ft. View

The story of the Wright brothers and their first flight is a piece of history that is well-known and understood by the general public. What is less known or understood by the general public is the ways in which the United States has used aviation as a means to ensure or solidify its own authority globally. Van Vleck (2013) writes, “The airplane, of course, was also a conduit of power-military, economic, and ideological-and the nation’s worldwide infrastructure of commercial air routes, along with its hundreds of overseas air bases, proved critical to its twentieth-century ascendancy” (p. 3). The commercial enterprise of aviation was slow to take off, yet the role of aviation and the airplane in the United States military is one that found its roots almost immediately.

It can be argued that this connection of the airplane to the military (and perceived global power and authority) is one of the reasons why commercial aviation, and in particular, airport spaces, remained one of the last to truly desegregate in this country. This is troubling because of the ways in which airports and airplanes were connecting and shaping consumers. Ortlepp (2017) writes, “America’s increasing reliance on air travel as a mode of mobility expressed shifts in consumer culture, left an imprint on material culture and the built environment, and contributed to the formation of individual and collective identities” (p. 3). Commercial air travel was not just about the ability to travel from point A to point B more effectively; it was also a mindset and a way of engaging with American life as a consumer. The impact of airplane and air travel on consumerism and capitalism was not unlike the advent of the Ford Model-T, where the ability to participate in the economy as a consumer grew dramatically.

Unique to the development of the airplane and air travel was its simultaneous connections to the military and global power and authority. Air travel, while it had a significant impact on consumer culture, was also deeply connected to notions of the superiority of Western cultures and ideals. Van Vleck (2013) continues:

America’s views of foreign peoples and places, then, did not necessarily change after the airplane allowed them to see and to know the foreign firsthand. In the case of the Army pilots, the diplomatic and military officials who assisted them, and the journalists who covered their travels, encounters with the foreign tended to confirm preexisting beliefs. (p. 39)

In spite of the globalizing effect of the aviation industry, which brought access to people and places around the world, colonial and settler colonial attitudes are still deeply embedded within the aviation industry. As Van Vleck identified, the creation of the airplane served to reinforce the belief that American ideals, particularly those around capitalism and the free market, were important to export around the world. Commercial air travel would ultimately leverage these ideas as it expanded to the general public.

This focus on what aviation could do for the economy is one of the reasons that the industry continues to rely on performative measures of advocating for diversity, equity, and inclusion. The struggle to really understand and implement equitable practices is the direct result of how air travel was valued for its importance and impact on the economy. It is also the reason

why the industry remains challenged to bring more women and other minoritized groups into aviation careers. Education has the ability to transform these attitudes upheld by the industry. To continue to educate in ways that have upheld systems of oppression, without imagining how education could indeed be transformative, is a method by which inequitable ideals are reinforced and upheld. Imagining new and innovative pedagogical strategies is what will push the industry toward a more equitable future.

How Diversity Efforts (Can) Reinforce Oppression (Especially within Higher Education)

Higher education institutions face significant challenges when it comes to the idea of implementing diversity and inclusion efforts. Since the murder of George Floyd in the summer of 2020, institutions are making a more significant effort to become more diverse, inclusive, and equitable – or so they claim. However, saying that change in the institution needs to occur is not the same as actually making that change a reality. Unfortunately, many higher education institutions have fallen into the business of “performative” diversity. To be performative suggests that change need not occur within institutions. It just needs to give the appearance that it has changed or that change is on the horizon. Brayboy (2003) writes:

To advance the agenda of diversity, institutions that truly value diversity must move towards considering wholesale changes in their underlying structures and day-to-day activities, especially if they are committed to refocusing the historical legacies of institutional, epistemological, and societal racism that pervade colleges and universities. (p. 74)

What Brayboy acknowledges is that real, systemic change is something that takes work, dedication, and, often, a complete overhaul of a system that has long been in place. It is not enough to simply say that diversity is important to the institution. Brayboy (2003) also recognizes that the tendency of predominantly White institutions (PWI) is to look at the numbers of faculty and students of color across campus and to make assumptions and judgments about their diversity efforts based on those numbers. The response is often that the institution needs to hire more faculty of color in order to demonstrate support for diversity and inclusion efforts. What Brayboy understands is that with these hires comes the commodification of the faculty of hire. These individuals become the ones responsible for implementing and managing diversity efforts, often to the detriment of their own promotion and tenure. Focusing on the implementation of diversity efforts is a type of “hidden curriculum” that higher education institutions disproportionately assign to faculty of color and is, more often than not, a service that is not counted towards their tenure and promotion (Brayboy, 2003). It ultimately becomes labor that is expected of them (as representatives of a minority group) but for which they do not receive any credit or acknowledgment of having performed.

Part of the difficulty in implementing diversity and inclusion initiatives is the desire of institutional spaces to maintain the status quo. Many of these organizations will make claims to the importance of diversity and inclusion without also desiring to make fundamental, long-term changes to the system. Ahmed (2007) echoes this by acknowledging how universities have come to focus their efforts on the documentation of diversity and inclusion. She talks about how

documents become ‘things’ that circulate within institutions. In this way, the document – and the act of documentation become another mechanism of performativity that organizations have come to rely on. Ahmed (2007) writes: “I want to consider how documents become forms of institutional performance in two senses. They are ways in which universities perform an image of themselves, and they are also ways in which universities perform in the sense of ‘doing well’” (p. 594). Ahmed recognizes that the implementation of diversity through its documentation often turns into another way in which an institution can maintain the status quo. The document becomes something that an organization can point to and claim ‘success.’

The notion that institutions and higher education institutions, in particular, are somehow better equipped to respond to issues of creating and sustaining spaces that are more socially just is challenged by Ahmed (2012) in her book *On Being Included: Racism and Diversity in Institutional Life*. Ahmed is critical of the assumption that diversity and inclusion efforts are necessary to make the kind of transformative change to its systems that will result in more equity and social justice. Her research suggests that there is a fine line between making substantive changes and the performance or appearance of support for diversity and inclusion efforts. She (2012) writes, “For these scholars, among others, the institutional preference for the term ‘diversity’ is a sign of the lack of commitment to change and might even allow organizations such as universities to conceal the operation of systemic inequalities” (p. 53). In other words, the term diversity can become a mechanism by which organizations are able to maintain and sustain the status quo. Between the documentation and the performative ‘efforts,’ institutions are able to point to something that allows them to feel comfortable in their inaction. Suddenly, diversity and inclusion are a means to continue the systemic inequality rather than introducing transformative change, which is necessary to create a more equitable and just workforce.

If little substantive change comes from these efforts, the question becomes, “what is the point.” In aviation (like in higher education), diversity and inclusion are concepts that the industry continues to place a priority on (CNN, 2022). Yet, if no transformation, if no substantive difference is being made, what is the point? Ultimately, I argue that the ability to lean on performative efforts *is* the point of diversity and inclusion activities. Performative efforts enable the university to appear as though it is making a difference without the accountability of having to make any substantive changes.

The aviation industry, not unlike higher education, uses performative measures to suggest that they are supportive of diversity, equity, and inclusion efforts. Morrison (2023) argues that an overreliance on performative measures can be a challenge because it does not offer substantive change in relation to the experiences of minoritized groups. As noted previously, with the potential for workforce shortages, understanding how to recruit and retain more minoritized individuals is imperative. Therefore, a reliance on performative measures is not enough of a step for organizations to take. Real change needs to occur in order to respond to workforce challenges.

One way of responding to the performative is to consider the pedagogical practices of aviation education. This has the potential to introduce new methods that would generate a more diverse, inclusive, and equitable aviation industry. How we educate the students who wish to

pursue careers in the industry is connected to the ways in which they engage with the field and their understanding of what it means to be an aviation professional.

Re-imagining Aviation Education

Given the challenges that both the aviation industry and higher education institutions face, how can aviation education programs approach the project of reimagining their pedagogical practices to support diversity and inclusion efforts that would transform the industry? One consideration might be to understand the methods that the industry currently relies on and how these methods do or do not support creating and sustaining a more equitable industry.

Education, as it currently functions in the United States, has a tendency towards favoring Eurocentric norms, which have a long history of minoritizing certain groups of people. This is where the project of decolonizing education systems can be useful. Sappleton and Adams (2022) write:

First, we consider decolonization as both a global geopolitical and an intellectual process. Both processes are engaged in dismantling cultural, economic, and political artifacts within previously colonized and settler colonial areas. It entails confronting, interrogating, resisting, and disrupting colonial endeavors (physically, psychologically, and ideologically). This includes a paradigm shift away from favoring Eurocentric norms, views, and embedded social structures to (re)centering the experiences and voices of the historically marginalized. (p. 45)

Aviation, as an industry, was founded on the premise that airplanes could enable the United States to access the world and spread its ideals through colonialism (Van Vleck, 2013). This attitude within aviation, which embraces expansionism, is directly connected to its challenges in trying to effectively implement efforts focused on diversity, equity, and inclusion. Embracing diversity, equity, and inclusion requires that organizations are self-reflective and able to deconstruct the ways in which (their) institutions continue to maintain systems of oppression. Colonial and settler colonial attitudes embrace the belief that ‘the West,’ in this case, the United States, is within its rights and authority to leverage aviation in ways that maintain the oppression or minoritization of certain individuals. The outcome of decolonization is to transform spaces (for example, education) so that they no longer operationalize systems of inequality.

One of the ways that decolonization, or the critical engagement with settler colonial attitudes, can occur is through the evaluation and analysis of educational or pedagogical practices. So, what does it mean to reimagine the pedagogical practices of education? Howard and Kern (2019) write, “Schools are entrenched in larger systems that mirror what society values; therefore, teachers implement content, skills, and underlying values that are influenced by their administration, policy, and society as a whole” (p. 1136). In other words, one does not simply change schools and the pedagogy of how we do “schooling” in the United States. It is deeply connected to our society, and the system itself is much larger and has a greater impact than any one individual school. In the case of aviation education, as it relates to the larger project of STEM education, Howard and Kern (2019) are clear about the ways in which this education

has been designed to reinforce certain values and belief systems that are the result of colonial systems of oppression.

While the United States government, educational institutions, and society at large have placed an emphasis on increasing interest and performance in STEM, it is worth noting that particular variety of STEM that is generally valued, and therefore taught in schools, is Eurocentric in nature and containing ‘distinct neoliberal values.’ (p. 1136)

They articulate how there has been an increased push, particularly from the United States government, to support initiatives that desire an increase in the number of students who are pursuing STEM degrees. Despite the goal of getting more students into STEM fields, the most frequently used approach to teaching in STEM is decidedly Eurocentric. There is an overemphasis on assessment, memorization, and not valuing knowledge creation or generation that does not rely on these methods. Experience and other forms of qualitative knowledge are often less valued, or they are seen as secondary to more quantitative methods. This reliance on Eurocentric or Western Enlightenment approaches to education is in direct contrast with the desire to attract and retain minoritized students.

The reliance on one model of teaching does not enable STEM disciplines to become more inclusive or to incorporate different or alternative types of knowledge. By leaving these ideas and ways of knowing out of a STEM education, students are being exposed to these fields from one kind of knowledge base – that has its foundations in Western Enlightenment thinking. Howard and Kern (2019) reinforce this, writing, “and we would also argue multiple ways of knowing/being/ valuing in STEM is a vital component to success. Indigenous ways of knowing are simultaneously ancient and contemporary and inform cultural understandings of community and place” (p. 1139). Instead of only relying on the success that is defined in terms of assessment through grades, Howard and Kern are making an argument for the importance of alternative ways of knowing and understanding within STEM fields.

One of the ways in which the project of reimagining aviation education might be advanced is through what Sappleton and Adams (2022) describe as concepts that are adjacent to or include decolonization, “Second, while decolonization is an older and much broader tradition than the relatively new antiracism emphasis, we consider these less as distinct or unrelated concepts. Rather, we view the latter as a mechanism for advancing the former” (p. 46). Morrison (2019) reinforces this, “If we want engineering education as a field to be innovative in how it researches and engages with the student experience, then it cannot just shift the default for education research; it must consider both its methodological practices and pedagogies” (p. 3). To transform STEM and aviation education, more consideration needs to be given to the totality of the student experience within the field. Imagining new ways of teaching and learning in the field will enable aviation education to become more socially just and equitable. In other words, the pedagogy that we use must reflect and value the many ways that knowledge is created and shared.

Feminist Pedagogical Practices as Alternative Teaching Methodology

Considering new methods for how (and what) is taught in schools is a component of ‘alternative knowledge creation.’ By ‘alternative,’ feminist and Indigenous scholars refer to knowledge creation that does not rely on the methods that arise from the more traditional Western Enlightenment thinking.

One way of imagining new pedagogical strategies can be done by looking at the work of Black Feminist scholars. These scholars have long written and theorized about education and its role in the liberation of individuals. Bell Hooks has written extensively about the ways in which education can (and should) have a transformative power with its students and within societies. Hooks (1994) writes:

To educate as the practice of freedom is a way of teaching that anyone can learn. That learning process comes easiest to those of us who teach who also believe that there is an aspect of our vocation that is sacred; who believe that our work is not merely to share information but to share in the intellectual and spiritual growth of our students. (p. 13)

Hooks describes a kind of education that was collaborative and invested in transformation and liberation. The kind of education she is describing is one that resisted the “banking model” of education. The banking model of education relies on teachers pouring information into their student’s heads and hoping that they might be able to recall that information. It is a model of education that supports systems of assessment and accountability. It also supports the treatment of the individual as a worker in a capitalist society, not someone who is going to act in ways that support transformative change within institutions. The ‘banking model’ is not a form of pedagogy that necessarily supports innovation and creativity.

Similar to bell hooks, for Freire (2018), education and pedagogy, in particular, are key to transforming systems of oppression and creating more socially just societies. He (2018) writes, “This pedagogy makes oppression, and its causes objects of reflection by the oppressed, and from that reflection will come their necessary engagement in the struggle for their liberation. And in the struggle, this pedagogy will be made and remade” (p. 48). Freire articulates that education and pedagogy, when created in collaboration with the oppressed, have a higher likelihood of leading to liberation. It was through this kind of liberation that (we) could collectively come to the humanization of those who had historically been marginalized. Both Hooks and Freire advocated for an education that led to liberation – and that it was only through this education that the individual could move away from systems of oppression.

The challenge to imagining innovative pedagogical strategies is that these are not the ways in which education is currently valued and or executed. Vergès (2018) correctly articulates that pedagogy “had been progressively contaminated by the corporate lingo of ‘outcomes’” (p. 92). Arguably, the focus on outcomes and assessment is a means for maintaining and promoting the status quo. In the same way that institutions utilize performative efforts to demonstrate support for diversity and inclusion, the focus on assessment and outcomes in current pedagogical practices is a method that is used in educational systems to maintain systems of oppression. A focus on outcomes and assessment limits the pedagogical practices of educators, which

reinforces the status quo and limits systemic change. This is why both Hooks and Freire argue that education needs to be rooted in its transformative abilities to liberate the oppressed. Vergès continues on to write about a pedagogy of emancipation. All of these terms, emancipation, transformation, and liberation, describe a system of education that does not maintain the status quo but is an active method by which we might reimagine education – and aviation education.

Alternative Knowledge Creation and the Value of Experience

Feminist scholars also tend to support the idea that experience is a means of knowledge creation or generation. It is this belief in the value-added and consideration for an experience that contributes to the creation of knowledge through alternative means. The incorporation of pedagogical practices that support innovations in knowledge creation enables more individuals who have historically been marginalized to contribute to their respective fields. Educators in STEM fields and aviation might consider other ways of teaching subject matter that would encourage individuals who have long been minoritized or marginalized by the industry. The question is how we move towards a pedagogical practice that is more inclusive in order to support individuals and the industry. There is evidence that supporting educational practices that do not rely on traditional Western methods have the potential to transform the industry. Elkin Mohler (2017) wrote:

Students have been mainly educated in the Western tradition within the United States education system. Despite differences in their ethnic, cultural, and socio-economic backgrounds, most of my students have neither been exposed to non-Western modes of thought nor have they spent time critically analyzing their own biases. One of my goals is to give my students some tools with which to begin to consider what one's worldview and how it impacts one's life and other" (p.93).

Mohler describes the importance and relevance of educating students in a way that brings others' experiences and worldviews into conversation with their own. She describes how only being exposed to one kind of education can be limiting for students. Without being introduced to other ways of thinking and experiencing the world, students can become limited by their own biases.

Edwards (2017) writes about her own experiences as a student and her instructors' emphasis on learning through Indigenous ways of knowing. "As an educator, it reminds me to reach beyond the narrow confines of pedagogy imposed by the Western obsession with standardized curriculum and assessment. As a researcher, it encourages me to examine education in ways that honor Indigenous modes of inquiry, despite deep-rooted institutionalized biases towards positivist methodologies" (p. 66). This type of knowledge creation places a high value on the individual's experience as a contributor to how they engage the world around them, rather than relying solely on the scientific method, assessment, and other more traditional methods of knowledge creation.

Morrison (2019) argues that incorporating the pedagogical practices of other fields, including art education, or specifically Indigenous art education, is one strategy for enabling alternative knowledge creation and supporting the education of minoritized individuals. Research

and experience in the classroom demonstrate that an overreliance on standardized testing, assessment, and traditional Western pedagogy does not enable students to become well-rounded professionals. This, in turn, has a limiting effect on who pursues and is retained in the aviation industry.

Community-Based Learning Group: A Case Study of Women Pursuing Aviation Careers

What is alternative knowledge creation? What does it involve, and how does it contribute to reimagining an entire system or pedagogical style of education for a particular field, and why is this consideration important? In the case of STEM and aviation education, there is a long history of valuing one kind of education over another, a preference for one kind of knowledge creation. In response to this, Morrison and McNair (2023) designed a study that worked with a cohort of collegiate women who were pursuing an aviation career from a variety of fields (public policy, engineering, geography, etc.). The primary purpose of the cohort was to understand how a cohort of women might experience and articulate their sense of self-efficacy as it related to their choice to pursue an aviation career and the challenges they had experienced while pursuing a degree in that career.

What the research team found in collaborating with these young women was that many of them felt more confident in pursuing a career in a predominantly male industry when they had the opportunity to connect with other women who were pursuing a career in the same field. In other words, the cohort was ultimately about their experiences and the ability to share those experiences with one another. This connectivity is what was valuable to their sense of self-efficacy. (Morrison and McNair, 2023) These young women expressed gratefulness for being a part of a community that they felt was going to support them in this pursuit of an aviation career and articulated how challenging it could be to work towards a career in an industry where they were part of a minority group. Through the cohort, the participants were gaining knowledge about working in the aviation industry that originated from the community (alternative knowledge generation). One woman stated:

The challenge I foresee is that this field is very much male-dominated. I am concerned with having to deal with a lot of gender and age bias. There are times in my job now that I really struggled with older male individuals that tried to tell me I was wrong when I knew why the issues was occurring and how to fix it. (Morrison and McNair, 2023, p. 45)

Women in aviation careers expressing feelings of being ‘othered’ is not uncommon and was echoed in the work of Lutte and Morrison (2022), who discovered that many women considered leaving the aviation industry and their careers because of how they were made to feel that they were not welcome or included in that industry. One woman, describing her experience working in the aviation industry, was told by a colleague: “You’ll never really be one of us.” (p. 7). Their project discovered that one of the primary reasons that women have considered leaving or have left the aviation industry was because of the existence of a “good old boys’ network.” (Lutte & Morrison, 2022)

This project also discovered that outreach to young women played a role in their recruitment. Further, mentorship, by either women or men, had a role in an individual’s retention

within the industry. These findings support what Morrison and McNair (2023) found with their cohort of women, that both outreach and mentorship have a role to play in the recruitment and retention of women in the aviation industry.

In other words, finding a way to create and support a community for minoritized groups is one way in which they might be both recruited and retained in the industry. Community is a means by which individuals can feel support when challenged by working in industries that have not traditionally been supportive of minoritized groups.

Conclusion

Thinking critically about pedagogical strategies and how educators are engaging with students in aviation programs is going to be one method by which aviation higher education programs respond to the continued workforce challenges faced by the aviation industry. In order to address the workforce shortage challenges, it is necessary to consider how to create a more equitable and socially just workforce environment. To do so requires aviation higher education to engage in reflective practices that consider the ways in which (they) are maintaining the status quo and reinforcing barriers to entry, which prevent the recruitment and retention of minoritized individuals from pursuing this field.

By considering which pedagogical strategies are used in the classroom – and utilizing those that would support all students in the classroom, aviation education can become a method by which the industry is able to address its workforce challenges. Consideration for innovative teaching methods would have the potential of retaining more students who would eventually enter the aviation workforce.

One example of a potentially successful strategy that aviation higher education might consider is creating more opportunities for students to build or establish a community. The chance to create community provides an opportunity for students to engage with peers and see the ways in which community – and a sense of belonging - can reinforce and support their long-term goals.

The challenges to the aviation workforce, namely those related to retention and equity, cannot be addressed by the industry alone. Higher education institutions also have the opportunity to make positive contributions to the aviation workforce by evaluating the traditional systems of education, which have not resulted in either 1) a more equitable workforce or 2) one that can keep up with the critical need for more personnel. It is through this collaborative effort – and a willingness to self-reflect on long-accepted practices, which will ultimately address workforce challenges and be more likely to create something that is equitable and socially just.

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