

COVID-19 Attitude Correction: Rather than Crash in the Crisis, the Author Corrected Attitude and Began to Fly

Scott Wasmer

University of Alaska, Anchorage
sawasmer@alaska.edu

Abstract: The author, an assistant professor in an aviation maintenance technology (AMT) program, teaches future aviation maintenance technicians at the University of Alaska Anchorage (UAA). Certified by the Federal Aviation Administration (FAA), the AMT program is a pathway to becoming a licensed aviation maintenance technician and offers an AMT Associate of Applied Science (AAS) degree as well as three certificates. The AMT program's FAA certification requires an FAA-approved curriculum (subjects and learning objectives) as well as adherence to regulatory standards for teacher–student contact hours. The university's AMT program consists of a combination of didactic and hands-on teaching/learning styles, including student performance of aviation maintenance tasks (e.g., aircraft inspections and engine overhaul). The 2019 coronavirus disease (COVID-19) pandemic required UAA faculty to convert courses to a suitable online delivery format and change the curriculum of an entire semester of courses. The author's initial response: It would be impossible to accomplish the conversion and still maintain FAA requirements. Canceling the program until after the pandemic was discussed. This was not an option, as current students would lose FAA-mandated credits and hours, and the AMT program could be closed permanently because of state funding issues. So, the complicated conversion began, and online learning commenced midsemester. As the semester progressed, the author began to embrace the online modality and champion an effort to complete conversion of the entire program. Through this experience, the author realized the tremendous benefits of online teaching: a greatly improved learning and lifestyle experience for the students as well as economic benefits to a financially challenged institution. The online program creates a learning environment that more closely matches the students' future technology-driven careers and increases the knowledge and skills they will gain. Pandemic gathering restrictions have limited the number of students allowed in labs and field activities. Though this was initially a concern, students have benefitted through increased student–teacher contact and learning opportunity during these activities.

Keywords: change theory, educational philosophy, online education strategies

Blissful Ignorance

March 9–13, 2020 was spring break at the University of Alaska, Anchorage (UAA) and I spent the time in Kodiak, Alaska, doing a part-time side job. I was installing an upgrade to the radios of a de Havilland DHC-2 Beaver aircraft. I teach in the Aviation Maintenance Technician (AMT) Program at this university. I am a certificated airframe and powerplant mechanic (known as an A&P) and do some jobs during school breaks. It helps me to stay current with the ever-changing technology and I have found that students relate and connect well with professors who are current in the industry.

Kodiak is a small town on an island about 250 air miles from Anchorage (equivalent to the distance between Chicago and Columbus, Ohio). Alaska itself is something of an island, separated from the contiguous states by distance, culture, and time. So now I was on an island of an island. I was not paying a lot of attention to things happening around the world. Of course, I had heard of the

coronavirus and knew it was wreaking havoc in Italy. However, Italy is a long way from Kodiak, and the virus seemed hardly likely to influence my day-to-day life. I was very wrong.

On Wednesday, March 11, I began receiving emails from the Aviation Technology Department director stating we would complete the semester teaching online. We were given an extra week before classes resumed to get organized and change our curriculum to an online format. My reaction was to immediately approach a local air carrier about employment. I was initially certain we would not be able to teach entirely online. I thought there was a very good chance our program would be cut, as online teaching of the subjects seemed impossible.

Our program is approved by the Federal Aviation Administration (FAA) under Title 14, Part 147 of the Code of Federal Regulations. This approval allows graduates of our program to take the tests for certification as an A&P. Without this FAA approval, our students have no reason to participate in our program. Part of the FAA approval includes our curriculum meeting certain standards and contact hours between instructor and students.

During this time, the university was conducting program review. I knew cuts were coming, including cuts to entire programs as a result of state budgetary concerns. I feared that if we had to close for a semester or more, the financial burden would simply be too large, and our program would get axed. Calling me pessimistic about the future is an understatement.

I focused on completing the work on the Beaver and flew home thinking I was likely moving to Kodiak and returning to full-time mechanic employment. I had mixed feelings around that. On the one hand, I very much enjoy the hands-on work as a mechanic. The air carrier in Kodiak is a well-run and well-funded company. The job would be enjoyable and small-town life in Kodiak was appealing. The isolation of living on a semi-remote island during a pandemic seemed like a good idea, also. On the other hand, I love teaching. Watching and helping students achieve their goals is an indescribably wonderful experience. I did not want to give that up.

Return to the Storm

I returned to work with the rest of my team in the AMT program and began to look at the situation. Most of our courses have a strong hands-on component. About one third are two cooccurring classes with a theory and a lab class. At the time, I was teaching three of those courses, half theory and half lab. The lab portions are not experimental-type labs but application labs. One of the classes was Aircraft Fuel Systems and Aircraft Fuel Systems Lab. In the theory portion, I teach theories of carburetion, for example, and in the cooccurring lab class, students overhaul actual aircraft carburetors using the identical process and tools they will use on the job as an A&P.

Our initial plan was to suspend the lab classes until later, when we could all meet face-to-face. We would finish the semester by teaching only the theory classes online. I was skeptical these theory classes could be taught effectively online.

I had taken online courses before and had a very positive experience with online learning. I received my undergraduate degree online through a large National Collegiate Athletic Association Division I school. I did well in school, earning my degree while simultaneously owning/running an aircraft repair and modification business. While getting my degree online, I also taught some classes in the AMT program at my current university as an adjunct professor. So, I was in favor of online learning for certain subjects and programs. Aviation maintenance was not one of those programs.

My initial suggestion was that we simply stop the entire program and pick it up in the fall 2020 semester, if we were still around. Fortunately, cooler heads prevailed and we began the process of seeking FAA approval to teach our curriculum online. I began to analyze the courses by goals and requirements and to contemplate how to leverage technology. I had some experience developing technical training online as the maintenance training manager for a large regional airline in the

Midwest. I had also been employed in various maintenance management roles for air carriers here in Alaska. I reflected on those experiences as I looked at the courses and thought about what exactly the airline industry expects of newly minted A&Ps and how to deliver that.

At this time, the UAA Academic Innovations Department held some remarkable training on technology tools and resources, namely, the ubiquitous Zoom. I began to see the task was possible. I thought back to my undergrad experience and what had been effective and what not so effective. That university as well as UAA use Blackboard as the instructor–student web interface. Like every other web-based or software tool, it is not perfect and has limitations. However, it is the tool I had, so I began to learn more and attempt to become proficient with it. I had not been using it extensively in my courses prior to this time. I mainly used it as a repository for assignments and technical data. Fortunately, I had been using the grading function already and was proficient with that.

As part of our FAA approval, we maintain records of student grades. For each course we are required to file them in a specific format. Consequently, using the gradebook and grading features of Blackboard is an extra layer of complexity in course administration. I had previously learned to use the gradebook so that students could always and easily see their grades and status in the class. This turned out to be a visionary move and I was able to train colleagues in this skill.

As I progressed in switching classes from in-person to online, I realized the paradigm shift is much greater than simply delivering course material into a webcam rather than in front of the classroom. I have long believed a great advantage to online learning is the flexible schedule. I have since found other advantages. I also realized the entire concept of thinking in terms of a static “class time” had to be thrown out.

I learned course material had to be thought of as “chunks” of information, and effective online chunks ought to be delivered in smaller pieces (Blackboard, n.d.). I strive for 10- to 15-min chunks. I base that more on my experience and gut feeling than hard, empirical data. However, I can't be far off. It appears to me many popular YouTube and other social media videos are less than 10 min.

Setting Out in the Storm

We recommenced the classes and my first task was to teach the students how to learn online. I was using new tools in the middle of a semester, such as Blackboard discussion boards, shareable content object reference model modules of self-paced learning, and other resources. Not only did I have to navigate this new world, I had to lead the students in these uncertain skies. For the students, simply checking Blackboard online a few times per week was one of the first paradigm shifts they had to master, and a change I had to encourage and foster.

With this change I saw a lot of fear among the students that this would not work, and they would not learn the subjects. I noticed some institutional fear among faculty and staff about whether this would work. As I stated above, I was among the most fearful, initially. Add to this all our generalized fears about life and our futures while in the early stages of the global 2019 coronavirus disease (COVID-19) pandemic. That is a lot of fear and I believe fear kills. I see fear killing spirit, drive, and hope. People's reaction to fear varies. However, I observe the nearly universal reaction to fear is control. Nothing scientific or quantifiable here but think on a common experience we have all have had or seen. Imagine you are in an airplane flying at high altitude across the country. We often encounter some turbulence, even on a bright clear day. What is the reaction of people, perhaps yourself if you are afraid of turbulence, or even of flying itself? Nearly everyone will grip their seat or seatmate tightly.

Think on this for a moment, and on the absurdity. First, we are in a perfectly safe and airworthy craft. We are enjoying incredible travel that is beyond the imaginations of our grandparents when they were children. This travel is in an industry tightly directed and regulated and has a deeply entrenched

culture of safety and performance. The fact is air, at altitude especially, has a lot of wind and movement. It is entirely reasonable that, at times, it should be as rough as an old washboard gravel road. Now, if we are frightened as this “washboard air” bounces our airplane a bit, we don’t instantly think through these logical, plausible, and positive facts. Rather, we grip the seat as if we could somehow hold a 60-ton airliner traveling at nearly 550 mph and keep it from bouncing up and down or side to side in response to the “bumpy” air. To me, this gripping of the seats points to a very deep, perhaps primal desire or instinct for control in the face of fear.

My own reaction when I first heard we were going to teach online is another example of this. I like to think of myself as being compassionate and altruistic. And in fact, I exhibit these characteristics often. Yet, when I first heard of teaching online, I did not think of the logical and plausible facts. I did not immediately consider the likelihood of the FAA having to become flexible and interpret their guidelines broadly. I did not consider the state’s need for and interest in the success of the Aviation Technology Department or even that closing a college or program requires years to occur. I honestly admit that I did not even think much, at first, about the implications or the real health concerns for others, my family, and friends. My very first fear-driven thoughts and actions were to secure employment in the event my job ended.

The actual antidote to fear I believe is to relinquish control. Reflect with me again on the image of the 737 flying in turbulent air. When I experience turbulence, I now take different actions. I slightly loosen my lap belt, sink back into my seat, take a few breathes. I relax and let go, and the fear subsides. I can literally feel my heartbeat slowing down and my breathing become more regular. In the absence of fear, I can begin to think logically about windy, bumpy air, airline safety, mechanical strength of forged aluminum wing spars, and so on. I can only let go by faith. In the case of the turbulence, I take these actions to let go because I have faith they work. My faith is based on my experience. The first time I tried to relax, it was because somebody I trusted suggested I try it. I did not have a lot of faith in the idea, yet I trusted and had faith in my pilot friend and his experience. My faith in him and his advice allowed me to let go and enjoy a flight and the miracle of modern airline travel. Since then, I can let go and have the fear dissipate in turbulence.

In this pandemic, with the initial fears my students and coworkers were experiencing, I knew letting go would be the key to displacing the crippling fear. One of my daily goals, in addition to the simple lecturing on facts, was to try and instill some faith. In each of the classes, I decided to foster an environment where faith could grow while teaching the students how to use the discussion boards. The first assigned threads in each class asked them to share what positive things they could foresee with switching to online learning. Each student was required to list ways they thought this switch to online learning could be positive. They were then to comment on at least two other students’ posts. Reading and grading these posts was very enjoyable. I got some new ideas and saw more silver linings in these cloudy skies. I began to call them “COVID silver linings.” These began to change my attitude as well.

I, myself, began to search for some positives in this environment. I had already known the old teaching paradigm of a “Sage on the Stage” who pours out information is not the most effective teaching method. At least it is not the most effective in all cases. I had wanted to incorporate more technology-driven, interactive activities in the pre-pandemic didactic courses. As for so many other ideas and plans, I simply never found the time to learn and use these tools. Now, I was going to be forced to learn these things.

I had always hated grading exams. Within my department, we traditionally use a lot of multiple-choice questions. We have a good reason for this, namely, that when the students graduate their first step toward becoming certificated mechanics is to take a series of FAA-administered exams. All are multiple choice. I do not “teach the test.” However, I strongly believe I ought to be helping them prepare for this, their first objective after graduation. Additionally, most of our subjects and topics are

concrete facts, such as Ohm's law, or the strength of aluminum alloys, or how to properly service a turbine engine, to name a few. These topics and outcomes work well with multiple choice. When testing in Blackboard, the multiple-choice questions are automatically graded. Another COVID silver lining.

We have another odd paradigm in our testing: using closed-book exams. We stress to the students they must always use the books and manuals on the job. We stress listing references in homework and in the labs. Yet, we traditionally gave closed-book tests. I never liked that and believe open-book tests are a better idea. Again, this was something I had never found the time to implement. Now, I was going to have to make the time and learn how to effect this change. After all, with students taking tests online and at home there is no simple, practical way to proctor closed-book exams. It is much simpler to make the exams open book.

I began to learn something about open-book tests. I had always heard they should be timed. Reflecting on my own online learning experience, I recalled they were all timed. I began to think on and look for research regarding effective time limits. I honestly did not find much; however, somewhere I got the idea of 2 min per question. I am not certain where this comes from, but it works if I design questions well. I gave my first exams and the grades were down significantly. I did more research, found articles that made sense and lined up with my own undergrad experience in taking open-book exams, and shared these with the students (Lundin, 2019; Silverman, 2018).

Again, I was teaching them how to do online learning. I realized also I had to rewrite exams. That did not bother me a lot. The process I used is simple, but time consuming. I had to rethink how I measured learning objectives. Rather than ask the students to recall facts, such as "define Ohm's law," I had to rewrite questions that measured their application and understanding of those facts. A little effort was needed, but the result was a much better exam and test of their learning, an exam that could be used in the traditional, face-to-face environment as well. Another COVID silver lining.

Riding Out the Turbulence

This was one of the big breakthroughs for me in moving from acceptance of the online teaching to championing it. I was forced to literally rewrite not only the exams, but all the course material. The basic outline and flow remained, yet the delivery tools obviously changed. I had been teaching primarily with a very traditional model and I was not especially content with it. Each course taught had two class periods per week. And, as previously mentioned, many also had a cooccurring lab course. My old model had been to primarily make an outline of the textbook that supported the learning objectives and then lecture from that. My lectures were typically a PowerPoint presentation with some YouTube videos for emphasis. There were usually homework assignments to support the learning.

This method is okay for simply teaching facts, of course, but it is not effective for teaching and exploring critical thinking skills. In my opinion, critical thinking is a particularly important skill for a successful mechanic. A&Ps work within a very rigid box of regulations and standards. Yet, within this box we typically have wide latitude. Take any nine mechanics and no two of them are likely to skin the proverbial cat the same way. This aspect of the job is what so many mechanics find appealing.

With my old way of teaching I was effective at describing the box, and even some of my own personal "cat-skinning" techniques (so to speak). But I was not doing much to encourage the students to think for themselves. I believe developing critical thinking, coupled with resources, ought to be the advantage and reason for enrolling in a university program such as ours to obtain the A&P certificate. The FAA offers two paths for this certificate. One path is to apprentice under a certificated mechanic for 3,000 hr and then pass a test series. The other path is to attend and complete a course at a school approved under Part 147 of the Code of Federal Regulations and then pass the identical test series.

Among the Part 147 schools, some are purely a vocational-technical type that can complete the FAA required subject matter and minimum 1,800 contact hours in a calendar year or less. Our program requires five semesters with no summer sessions. That is a substantial investment of time and money for our students (2.5 years and substantial tuition costs), when they could obtain the same certificate in 1.5 years while getting paid as an apprentice. We have to offer a good reason for people to make that choice—an advantage. In my opinion the significant advantage to students in our program is being taught to think critically and have opportunities to practice that skill.

Students get some opportunity to develop critical thinking skills during lab periods. I had wanted to do more of this development in the regular class periods. The traditional teaching model, “Sage on a Stage,” provides limited opportunities for critical thinking. If the “Sage” has excellent in-class questioning technique this provides a great opportunity. As we know, there are limitations to this, in addition to the problem of variable questioning skills. I was forced to rewrite tests and course material. I had to learn new skills using technology for the purpose of generating interaction with students. These course rewrites could also be incorporated into the traditional, face-to-face classes if we return to that. In this milieu of change and paradigm shift, I began to see opportunities to develop critical thinking skills where online learning is more effective.

For example, I use Blackboard’s discussion boards to ask a question about the application of a technical course concept. The students are required to answer these with a minimum number of words and also post responses to two classmates’ answers. I design the forum such that each student must create their own post before being able to see other students’ posts. This prevents simply copying others’ ideas. I also set a maximum number of responses to each initial post, so that if a thread already has two replies, students cannot reply to it for a grade. Surprisingly, many students make three to four replies weekly, though only two are required. Using online tools such as this, student interaction and idea sharing is happening more than I have seen in the traditional classroom setting. Another COVID silver lining.

Flying Above the Storm

The last area that changed my attitude about online learning for aviation mechanics is mostly economic. As I mentioned above, UAA, like many universities, is facing significant fiscal challenges and the leadership is forced to make difficult decisions regarding budget cutting. If we examine only the business side, there are obviously two choices. A business in hard times must either cut expenses or raise net revenue if it is to survive. Gross revenue is only helpful to the extent there are not also significant cost increases. I began to imagine the possibility of an entire paradigm shift in our program and the incredible opportunity for increased net revenue. Our pre-pandemic model is captive to the old paradigm of college education, namely, classes forced into static periods and lab sessions. Practical application and critical thinking development are also locked into these static periods.

For example, the Aviation Fuels Course I taught last spring (2020) met Monday and Wednesday afternoons and was scheduled for 1.5 hr of lecture followed by 1.5 hr of lab. When we began to study aircraft carburetors the lab was to overhaul an aircraft carburetor. The first day on this subject students do not have the knowledge to even begin the overhaul. Typically, I teach this topic with a few double class periods followed by a few double lab periods. This works, to a point. The actual task of the carburetor overhaul typically takes 6 to 8 hr including researching documentation. With the old paradigm, a student might start this project on a Wednesday afternoon and then must stop at an arbitrary point no matter how disruptive to the learning process. The student then resumes this project 5 days later at an arbitrary time. The impediments to learning and inefficiencies are self-evident.

I began to imagine a new model where students spend time learning the theory of operation and principles of carburetion. They would learn with a variety of instructional methods including Zoom lectures, online group peer discussions, reading, videos, and other web-based interactive activities. Then, after completing these assignments, they would have the opportunity to physically come into our building and be given 8 hr dedicated to exploring and overhauling carburetors.

This paradigm could be extended to the entire AMT program where students enroll and are scheduled to attend the physical building only on certain dates. On these dates, they would have 4- or 8-hr lab periods. With the lengthy tasks such as turbine engine overhaul, they would be given lab periods on several consecutive days.

This model has some obvious benefits to learning. However, I also saw significant financial opportunity for the university. We could double enrollment without having to double the faculty. The FAA has strict standards regarding class size and instructor to student ratio. We typically have enrollments near that limit. Under the traditional teaching model, if we are to expand and increase enrollment, we need to double the faculty. This has many problems, including finding qualified professors as well as a significant investment before the increased revenue of double enrollment is realized. Additionally, there is of course no guarantee of doubling enrollment. With a new model and vision, we could double enrollment without adding faculty. Or at least without doubling the faculty. This requires a complete paradigm reversal and significant investment of time to rework our program.

Returning to the business case, I believe if any business were told of a system that would double gross revenue without increasing expenses, they would want to learn more. Once it was explained that the system required them to learn new skills and make a small investment in technology, they would ask for more information. When told it required a focused effort to learn new skills and acquisition of technology that could be used across their entire company, they would all ask for help in seeing this new model and learning these skills.

In the AMT program, we can double enrollment without doubling faculty by simply reassigning duties. Those who are technically inclined and motivated to learn these skills could teach and develop the online courses. Those faculty who are technology challenged typically have a lot of practical, hands-on experience. They are great at the lab periods and they could focus on teaching them. I can easily teach two sessions of my online classes without doubling my labor hours per week. A professor focused on the lab classes could hold multiple lab periods in a week, perhaps repeating Monday and Tuesday labs on Wednesday or Thursday. Reworking the schedule while maintaining FAA mandates is not simple, but the payoff is immense.

Online aviation maintenance, rather than becoming the death knell of the university AMT program, may be the savior of the program. Yet another COVID silver lining.

Clouds Have Silver Linings

At the time of this writing, the fall 2020 semester has begun. We are teaching a modified format with a hybrid of face-to-face time for lab and online classes for the didactic portions. It is not the entire paradigm shift I envisioned and hoped for, but it is a step. Systems and groups take time to change course. Sometimes, like on the naval aircraft carriers I served on in stormy weather, a gentle course correction is safer than a hard-over, immediate turn.

A couple of weeks ago, I was feeling sick with several COVID-19 symptoms including fever. This was a Saturday. I went for a test (negative, thankfully) and self-quarantined while waiting on results. I had an in-person lab period scheduled for later that week. Suddenly, all these terms such as “contact tracing” and “contingency plans” were very real. Thinking of how to continue teaching this fall if I were sick was a dark and cloudy vision. I had some doubts and fears about the implications. The fear came back, and I was at first tempted to try all sorts of control measures such as announcing

schedule changes and implementing a new course syllabus. Then I was able to remember how so far this had all worked out well despite the storms. I remembered how resilient the students had been, and how helpful my coworkers were in these times. I was able to reflect on these silver linings and lean back and relax in faith that this would all work out fine. Yes, I did come up with a few contingency ideas, but I kept them to myself and did not allow them to distract me from what were immediate tasks and student needs.

These are cloudy and fearful times for us all. President Roosevelt in his first inaugural address said “the only thing we have to fear is fear itself—nameless, unreasoning, unjustified terror which paralyzes needed efforts to convert retreat into advance” (Roosevelt, 1933). Are these times not like the conditions of 1933? Uncertainty and doubt about the future are all about us, in the headlines and coffee shop conversations. This is the ideal breeding ground for fear. I have already stated my belief that faith, not control, is the proper response to fear.

All these clouds have silver linings. I look for COVID silver linings everywhere. They add to the faith, which is the antidote to the fear. I try to share them with friends, coworkers, even strangers. When it comes to teaching, there are many, and they make cloudy days beautiful.

References

- Blackboard. (n.d.). Are your courses exemplary? Retrieved March 17, 2020, from <https://www.blackboard.com/resources/are-your-courses-exemplary>
- Lundin, E. (2019, March 26). How to study for (and take!) open book exams. Retrieved April 1, 2020, from <https://collegeinfo geek.com/open-book-exam/>
- Roosevelt, F. (1933). "Only thing we have to fear is fear itself": FDR's first inaugural address. Retrieved September 23, 2020, from <http://historymatters.gmu.edu/d/5057/>
- Silverman, R. (2018, October 15). Exam preparation: Strategies for open book exams. Simon Fraser University Library. Retrieved April 1, 2020, from <https://www.lib.sfu.ca/about/branches-depts/slc/learning/exam-types/open-book-exams>