PERSPECTIVES ON TEACHING

What Becoming Pilot-in-Command Taught Me about Teaching Adults

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Abstract

This essay outlines the key lessons I re-learned about teaching adults when I decided to earn my private pilot license. I faced a steep learning curve and needed to conquer my fear of falling from the sky when learning required flight maneuvers. The lessons are not about adult development or learning theories or instructional techniques. The lessons are more basic and central to our daily work as educators. These lessons are about empathy, understanding, and building relationships in order to enhance an adult learner's motivation to learn and foster a passion for continued learning.

The private pilot license is the first in the series of ratings and certifications for all levels of piloting. The license is awarded upon passing a check-ride with a Federal Aviation Administration (FAA) examiner. Advancing to the check-ride requires completion of ground school and flight training. Minimally, the student pilot must log 40 hours of flight time that includes 20 hours of flight training from a certified flight instructor (CFI) and 10 hours of solo flight. Certified flight instructors facilitate and assess student pilot learning during each phase of the training required to obtain the private pilot certificate. Pilot-in-command is the aviation term for the pilot operating the plane and fully responsible for the controls and the safe pilotage of the aircraft. Gaining the private pilot license is a pre-requisite to becoming pilot-in-command.

I live and teach in Alaska. The state of Alaska, with a population of 655,435 people, covers 571,951 square miles of land mass (U.S. Census, 2004). Only 13,628 miles of public road connect the villages and cities of the state's population. Air travel is central to supporting the Alaskan economy and connecting residents to one another and to needed services. There are "over 1,100 airstrips and airports in Alaska, almost 10,000 registered aircraft and almost as many pilots" (Alaska Department of Community and Economic Development, 2003, p. 48).

Stories of courageous bush pilots, men and women, are an integral part of the history and mystique of Alaska. "Flying began in Alaska ten years after Orville and Wilbur Wright made their historic flight at Kitty Hawk on December 17, 1903" (Fratzke, 2004, p. 7). Each year many Alaskans, motivated by these stories and drawn to the possibilities of visiting the most remote parts of this beautiful state, choose to complete training and instruction to become private pilots.

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I moved to Alaska in 2001. The draw for me, like many Alaskans, was the remote wilderness so quickly accessible from a major metropolitan city. My first summers exploring Alaska found me climbing in and out of small single engine planes and landing on remote airstrips or lakes to camp, fish, and hike. Taking responsibility for my safety in remote wilderness meant that I needed to know more about these planes and piloting them. My initial learning goal was to complete a private pilot ground school course. Eventually, I decided to continue with flight instruction and earn my private pilot license.

This essay traces the lessons I learned or re-learned about teaching adults along the way, or should I say along the flight path, from ground school to my check-ride for the private pilot license. The lessons also include insights gleaned from informal interviews I conducted with certified flight instructors about their instructional experiences with students on the ground and in the air. I have used pseudonyms throughout this essay.

Lesson 1: Show Students That You Are There to Help Them Learn

I walked into the ground school course and found a classroom filled with about 25 students, men and women, ranging in age from 18 to at least 48 years (my age). No instructor was in sight. One minute after class was scheduled to start, the instructor walked into the room and headed to the front looking neither right nor left. He turned to the class, stated his name, and said he was passing a piece of paper around and we were to sign-in for class. We were to do this for each class session. Promptly, 50 minutes later, he ended his lecture and left the room immediately. In that first class session, he made it very clear that he did not want to know our names, we were not to interrupt his lectures to ask for clarification, and that he did not intend to stick around after class to answer any questions. That remained true for the duration of the semester. Exams were given on a regular basis, but never returned. Scores were posted, but learners never had a chance to review and learn from their mistakes on the tests. I watched the class size dwindle every week. I finally decided to drop out. This was not working for me. I re-enrolled the following semester with a different instructor.

The class size and composition in this new class were about the same. I entered the classroom and recognized a few students from the previous semester. We nodded at one another. The instructor was already in the room. He walked over and introduced himself to me. He asked briefly about my interest in flying before turning to welcome another student to the class. He opened the first class session by telling us about his experiences as a pilot and flight instructor, emphasizing his passion for flying and his concern that we learn to be safe pilots. He welcomed questions before, during, and after class. Tests were returned and reviewed. The class size remained steady throughout the semester. And, we all received a passing score on the test required to proceed to flight instruction!

My original learning goal had been to complete the ground school and have a better grasp of the mechanics of flying. However, I had enjoyed the ground school and become more curious about flying. I decided to take flight instruction. I contacted a local flight instructor, an older woman, Shirley, whose planes were tied down at a local airport close to my home. We flew together several times and lessons 2 and 3 were quickly reinforced.

Lesson 2: Student Time is Just as Valuable as Instructor Time

I would schedule a time to fly with Shirley, usually in the morning. I would arrive promptly at 9 am. Invariably, she would rush up to her pilot shack, apologizing for being late. Then, she would have to run some sort of errand, make calls to other students, or order aviation gas because the fuel tanks were empty on the plane. Every 2-hour lesson became a 3- or 4- hour ordeal as I waited to get into the plane by 10 or 11 am for the 2-hour lesson.

My students on campus work full-time and attend school part-time at night. They are parents, community volunteers, workers, and so forth. They lead busy lives. I am scrupulous about being on time, being prepared for class, and being there when I say I will be there for student appointments. I have observed faculty "forget" appointments with difficult students. I have even heard of a faculty member who forgot to put class in her calendar and failed to show up! I like to believe that these faculty are the exception, not the rule. But, their behavior conveys an arrogant message: "Instructor time is important; student time is not."

Lesson 3: Don't Just Tell Me to Do It; Help Me to Understand Why It is Relevant

Flight instruction at the private pilot level is designed to build skill and proficiency in performing the basic maneuvers for safe flight (e.g., stalls, short field take offs and landings, turns around a point, steep turns, emergency landings, etc.). Back on the ground after these maneuvers I would attempt to identify when knowing these maneuvers would be put to use during flight. These maneuvers are at the core of basic pilot proficiency for safe flight and must be competently performed during the check-ride with the FAA examiner.

One day, I was flying with Shirley. We were practicing slow flight, which is one of the basic maneuvers. Slow flight is excruciating! Setting up to fly in slow flight requires pulling the power back and pitching the nose of the plane up to a near stall attitude. Power is used to maintain altitude. The stall warning horn remains at a soft screech in the cockpit during this maneuver; however, if the nose of the plane is pitched up too much, this becomes a loud screech. The plane is always at the edge of falling into a stall during slow flight. Physically, the plane feels as if it is barely hanging in the air.

Try as I might, I could think of no good reason for becoming proficient at slow flight. At what point in flight was slow flight relevant? I asked Shirley when, as a pilot, I would find myself using this particular maneuver. Shirley replied that I did not need to know why: I just needed to be able to do it to get my private pilot license.

Leaving the airport after enduring another of Shirley's tirades (I was a captive audience as we flew together in her Cessna 150) about the FAA, former students, local airplane mechanics, and being tired of working as a flight instructor, I decided to look for instruction that might fit better with my expectations and my learning style. Fortunately, Anchorage has several flight schools and numerous flight instructors. I visited a local flight school and inquired about their curriculum and services, the number of single engine planes available for instruction, and so forth. Little did I know I was about to encounter a long standing problem of the flying industry: the high turnover of certified flight instructors.

Flight instructor is not the first choice for a career in aviation. Aspiring pilots are aware that "since the advent of commercial aviation, instructors have become the least paid of all pilot positions" (Fratzke, 2004, p. 51). Instead, the position of flight instructor in a flight school pays the bills as the pilot builds the hours of flying time required to obtain the better paying and more desirable position of commercial pilot. On average, flight instructors working for a flight school receive $27/hour. The costs associated with offering instruction (a plane, insurance, tie-down fees, maintenance, etc.) further reduce the odds that pilots intentionally elect to become CFIs as their primary aviation career.

The flight school assigned me to Pete. Pete was young and enthusiastic about flying. Two weeks later, I arrived for my lesson only to learn that Pete had been hired on by a local airline as a commercial pilot. I was assigned to Jim. The next week I arrived for my lesson and was told that Jim had quit. He had accepted a position as a commercial pilot. In quick succession, I was assigned to Julia, Chris, Curtis, Dave, and, finally, Roger. Equally, as quickly, they found their desired job as a commercial pilot and had moved on. I learned lessons 4 and 5 from them.

Lesson 4: Don't Forget That You Were Once a Novice in Your Field

Qualifying to take a check-ride requires a minimum of three logged hours of night time flying. I arrived to meet Roger, my latest instructor, for our scheduled night flight. This was a short cross-country flight from Anchorage to Kenai and back again. I filed our flight plan and plotted our course on the Anchorage flight sectional (map). I thought I was prepared. We got into the plane and I quickly realized that I had a problem: the cabin light was inadequate for reviewing my preflight check list! It was also inadequate for reading the course I had plotted on the flight sectional. I pointed this out to Roger (a brusque and arrogant 19 year old pilot) as he climbed into the plane. "Well, duh!" he exclaimed, "Everyone knows you are supposed to bring a red light for night flights." Obviously, this was my last flight with Roger.

Lesson 5: If You Don't Like to Teach,
No Amount of Training will Make You an Effective Teacher

The FAA asserts that "the keystone of the present-day training concept is the flight instructor - a professional who should assume full responsibility for all phases of a student pilot's flight and ground instruction" (Federal Aviation Administration, 2003, para.10). Endorsements of readiness are required to be entered into the student's flight logbook by the CFI before solo flight is allowed. Instructor endorsements of readiness are also required to be entered in the logbook before the knowledge exam and before the practical test exam or check-ride with an FAA examiner.

The FAA outlines and assesses very specific knowledge and skill requirements for the privileges of private pilot certification. The FAA provides equally specific requirements for additional pilot ratings and certifications beyond the initial private pilot certification, including certification as a flight instructor. According to FAR 61.183 (Federal Aviation Administration, 2006), the general eligibility requirements for a flight instructor certificate or rating are: 18 years of age, able to speak, read, and comprehend English, hold a commercial or transport pilot certificate, pass the fundamentals of instructing test, pass an aeronautical knowledge exam,

receive a logbook endorsement from an authorized instructor on operations, and log 15 hours as pilot-in-command in the specific class and category of aircraft for which an instructor rating is sought.

The flight instructor must have deep knowledge of all aspects of flight and flight operations. The FAA emphasizes that the

> successful instructor must meet qualifications far beyond those required for certification as a pilot. An instructor must have a thorough understanding of how learning occurs, and how to apply teaching methods that best foster learning. The most important factor is the instructor's own attitude toward instruction that determines the effectiveness of the teaching method. By understanding the teaching and learning processes, instructors will be better qualified to produce pilots who are able to operate safely with the National Airspace System (NAS). (Federal Aviation Administration, 2003, para. 10)

The knowledge test on the fundamentals of instruction consists of 50 multiple choice questions. The minimum passing score on the test is 70%. The content covered on the test includes: the learning process, elements of effective teaching, student evaluation and testing, course development, lesson planning, and classroom training techniques. According to one local FAA examiner, passing the 50 question fundamentals of instruction exam requires about an hour of study the night before the exam. In addition, the content is dated and does little to prepare a new instructor to be an effective teacher (Local FAA examiner, personal communication, February 28, 2006).

It was always very evident that Pete, Jim, Julia, Chris, Dave, and Roger were passionate about flying. It was also fairly evident that they were not equally as passionate about teaching. Obtaining a commercial pilot position requires, in some instances, that a minimum number of flying hours, typically 500 hours, have been logged as pilot-in-command. Young pilots can accomplish this by paying to rent a plane. A far superior arrangement is teaching someone to fly. Thus, the student pays the plane rental!

In late spring, I was assigned to fly with Eric, the latest addition to the instructor staff at the flight school. I quickly noticed that Eric was always there on time and ready to fly. He created a folder with notes about the work we had covered together. He always had plans for our flight time. He would brief me before we got into the plane on the day's maneuvers. We would debrief when we got on the ground. During flight he would quiz me about procedures and instruments. He was totally engaged. One day he told me that if he could make a living teaching flying, that is what he would do. He loved to fly *and* he loved to teach.

Later that summer after my check-ride had been completed, I often thought about Eric's passion for teaching and flying. I decided to do a small study interviewing certified flight instructors (CFIs) about how they taught students to fly and what they knew about instruction or had learned about teaching adults. I was curious about the experiences that had shaped and informed their understandings of teaching adult learners and what they felt to be effective methods of instruction for adult learners. I asked them how they prepared for a typical instructional session and how they thought adults learn best.

I interviewed 22 current CFIs (7 women; 15 men) ranging in age from 23 to 80 years. They obtained their private pilot licenses between the ages of 16 and 47 years and their CFI rating between the ages of 18 and 50 years. At the time of the interviews (fall 2005/spring 2006), they had logged from 21 to 18,000 hours of instructional time and 294 to 28,000 hours of flight time. All teach at the private pilot level and provide flight instruction in two-passenger, single engine planes with dual controls (student and instructor have rudder, yoke, and brake controls). I learned the following lessons from the insights they shared with me

Lesson 6: Instructing is a Form of Apprenticeship

Many of these CFIs pointed out that aviation is one of the few professional fields where the least experienced professionals teach the next generation of professionals. We have all heard it said that if you truly want to learn something, teach it to someone else. Steve told me, "I wanted to become a better pilot and when you teach someone something, you understand it 100-fold more . . . you will notice things you never imagined that you would notice … even in the more simpler tasks from taxiing or running the radios".

Lesson 7: The Classroom Can be a Dangerous Place

The flight instruction classroom is the cockpit and the surrounding airspace. Each CFI reported on the dangers of teaching flying. Many provided examples of recovering from stalls, spins, and near accidents during landings due to student errors during dual instruction. According to Judy, "the students will put you in predicaments lots of times that you wouldn't put yourself in and you have to be fast enough to appreciate that and save the airplane and teach them not to do that again." Creating a safe space for learning and learners is a common theme in adult education. Yet, we rarely discuss how students impact the safety of that learning space for us and for their peers. Both novice and experienced adult educators are faced with students that can put us into a predicament that requires quick thinking to turn it into a learning opportunity. Yet, we have to balance lessons 7 and 8.

Lesson 8: Ease up on the Controls and Let the Student Fly

In a small single engine dual control plane used for instruction, both student and CFI have a stick or yoke and rudders. Inexperienced CFIs, such as Susan (20 hours logged as a CFI) and Ann (185 hours logged as CFI) told me that initially they were 'heavy handed' on the controls. They gradually became aware that they needed to let go in order for their students to become pilot-in-command:

> I had one student where I had taught him, and I think I taught him well, and it was actually him having to say to me "I can do this now" and me having to let go a little bit . . . . I had to learn to do that . . . you shift from being on your guard or being – well, you shift from you being the pilot-in-command to them being the pilot-in-command and trusting that they're going to do what you've taught them to do (Susan).

> I'm a little bit still *on* the controls. At first I was a lot more on the controls like the first month. And coming down to land I was like, I won't do anything but my hands are right

> here. I keep my feet, especially when we get near the ground, I move my feet onto the rudder pedals and I keep my hand toward the steering column. But I've just been able to check things a little bit more when the landing looks like it's going to become something where we need to go around or that I'll have to take control like if they're coming in really fast. . . . At first - a bouncy landing isn't something bad - you can land it and bounce a little bit - and with the first students I was like, right away, that was unacceptable. I was like "wow, this is a bouncy landing", but now I'll let them do that (Ann).

Most of the CFIs reported a gradual easing up as they learned through experience the various indicators of student readiness to take over the controls (e.g., taking directions from the tower, relaxed grip on the yoke, taking corrective actions to maintain level flight or regular visual scanning of the airspace). Marie (3,350 hours logged as CFI) describes the importance of staying off the controls and letting students fly the plane even when a mechanical failure occurs, especially when she considers it to be a good learning situation for the student:

> I do know that I'm sure I did a lot more, not necessarily grabbing of the yoke but just touching it and helping correct or [putting] my feet on the rudders and over the years I've learned to be more relaxed and be able to sit back and be confident that they're going to be okay. And just sometimes, if you know you can control it, you've got to let them get into a little bit of trouble and understand how they can get out of it because if you're always helping someone out of trouble, they'll never figure it out. . . . A student and I were doing a night flight and we went from Fairbanks to Nenana and the electrical went out on us on the way to Nenana . . . We had no flap operation and no radio or anything but we had our flashlight and we were all set and my student said, take it and I said no, I don't think so. I think you can do this. I'll hold the flashlight and at the time when you feel totally that you can't do it, just let me know and by me saying that, she kind of thought okay - okay and [acted] grimly determined. I held the flashlight and she did just fine. Had I been a new instructor I would have said yeah, maybe I should have taken the controls from her and then she would have never known if she could have done it or not. So over the years I've just - not that I'm totally laid back but I'm better able to relax and now my experience lets me know what's a good learning situation and what's not.

Lesson 9: Help Students Learn From Mistakes

The CFIs described a number of strategies they developed or implemented to improve the effectiveness of their instruction: pre-flight briefing, talking-it-through when introducing new maneuvers, sharing the controls, and post-flight debriefings. These strategies, frequently described by the CFIs as just common sense, developed from a process of reflection on action (Schön, 1983) to make meaning of their instructional practices and improve them and, thus, to improve student learning. Handing over the controls of the plane to the student and letting students make mistakes emerged as key instructional strategies especially when CFIs intentionally helped students reflect upon their mistakes. Instructors demonstrated reflection in action and reflection on action as they gained confidence in handing over the controls and letting students make mistakes. Several instructors described specific actions they took to help students reflect on mistakes or mishaps during flying and to anticipate and make corrections while in

flight to prevent mishaps (stall, spin, unsafe landing, etc.). Although, nearly all instructors believed strongly that students needed to be allowed to make mistakes, not all instructors could articulate how they helped students learn from their mistakes.

Experienced instructors reported greater confidence than novice instructors in their ability to recover the plane from serious student errors indicating a greater ability to reflect in action (Schön, 1983):

> That may be the toughest thing about being an airplane instructor: trusting your instincts and your reaction time to save a dangerous situation as opposed to recognizing this as a hard landing or a squirrelly landing but not an unsafe landing and letting them make mistakes. If I had to give you one statement of what makes this a challenge that is it. I think with my confidence and my experience, I think I can tell when something is not safe and then I react differently. I'm very quick on the controls if I think it's a dangerous situation. . . . But I think based on the student's experience and where we are in the training, I tend to let them make their own mistakes as much as I can. (John)

> I think mostly it's that I know I can get us out of it and put the plane down or make a go around out of it without hurting anything. I think that is the biggest thing for me because I am more confident in my experience. (Ed)

Flying requires development of technical expertise and consistent technique or what Schön (1987) refers to knowing in action, but pilots need to develop the ability to reflect in action and reflect on action. Several CFIs described the actions they took to help students learn from their mistakes.

> We talk immediately. In fact, I had one person who made a mistake, a fairly significant one and I made her pull off the runway and I said let's talk right now because I didn't want to wait until later in the day or after the lesson. So I try to be firm or stern without being mean or angry or upset and I always try to direct it back to safety. (John)

> I think a bigger issue is to teach them to recognize stuff and to correct things because you learn right away that you're just going to make mistakes. You're always going to make mistakes and so instead of trying to teach someone to not make mistakes, it's more important to teach them to recognize and correct the mistakes. If you can teach them to analyze and think critically then they are going to get back safely or more likely. (Susan)

The CFIs seem to have intuitively adopted a constructivist view of experiential learning, helping students to actively make sense of the experience and connecting it to prior learning (Fenwick, 2003) from the ground school.

Lesson 10: Provide Meaningful, Timely, and On-Going Assessment

One of the critical milestones in learning to fly is the first solo flight. My first solo flight happened with Gabe and with no warning. We had been practicing "touch and go's" (landing and taking off immediately). Gabe directed me to tell the tower that my next landing would be a full

stop and that we would taxi over to the flight school. On the ground, he directed me to park the plane, give him my log book, and wait in the plane. He returned shortly, handed me my log book, and told me to go and do two touch and go's and a third landing to a full stop….by myself!

I called the tower and requested permission to taxi to the runaway. I reached the runway and called the tower for permission to take off. I indicated that I was a student pilot flying solo. The plane quickly lifted off the runway and rapidly gained altitude, more rapidly than ever before! I realized the load had been lightened by about 200 pounds when Gabe had gotten out of the plane. I turned in the traffic pattern and took my hand from the throttle to put down the flaps to prepare for landing. My hand, as it moved from throttle to flap handle and back to the throttle, shook violently. I quickly finished my three landings and taxied to the hangar. The flight school staff and other students came out to greet me and take my picture as, still shaking, I fell out of the plane. Was I ready to solo that day? My instructor thought I was. I'm still not so sure.

I asked flight instructors to tell me how they decided someone was ready to solo. Their answers ranged from "a gut feeling" to "the works". Dave told me, "It's almost kind of a gut feeling I guess you could say. If you feel like you can trust them with the airplane and they're not going to hurt themselves or anybody else." Andy said, "If they can go up and get in the pattern two times in a row and they can give me three out of five landings that are pretty good and if they don't scare me, then they're probably ready for solo." But others put a bit more structure into the assessment of readiness to solo, including Sandra:

> . . . when I feel a student is ready for solo, I'll send them up with another instructor and that second instructor will go up with them and do checks and balances there and if two of you are in agreement that the student is ready and you feel comfortable, you didn't have to take over the aircraft at any point and you didn't have to walk him through each of the steps and if both of you are in agreement then the student is ready.

Fred enlists the aid of the air traffic controllers in the tower:

> I do something called the works and we go to the practice area and we do stalls and spins and cut the engine out procedures and then we come back into the pattern here and I have a code word worked out with the tower and it's called the works. . . . the tower will give the student the works and it's - we get so used to coming in, left traffic for 25 . . . so I have the tower give them the works, okay go around, enter left downwind for 34, full stop, turn around, take off on runway 17, enter right downwind for runway 25, okay, make a 270 back to 25, exit the pattern and then they get light signals. And, so as long as they can - I mean, it's everything non-standard that they could possibly get thrown at when they're up there as a student pilot. So if they can do all that - and you see people break down at this point and they get sensory overload and then they sometimes forget to fly the airplane so it really turned up the pressure cooker here and if they can communicate with the tower and fly the airplane and follow the instructions and keep it all together then they're definitely ready to solo.

Lesson 11: Don't Ignore the Ethical Dilemmas of Teaching

I asked the CFIs if anyone could learn how to fly. For the most part, they all responded that, yes, anyone could learn how to fly. But, I quickly learned that they did not think everyone *should* fly, but they admitted to feeling stymied about how to prevent a student from getting their pilot license. For example, Andrew said "I know a person right now that I feel very bad about. He's a bad pilot. He shouldn't be flying. But he does. Somehow he got through the process." James explained, "I've had students that I've told - I haven't flown with them because they make bad decisions and I've told them they shouldn't be in an airplane." "Generally if they're not getting it and it's taking too long they'll just run out of money", said Shirley.

John told me the following story:

> D*** had me fly with this one guy for his check-ride. . . I told D*** I don't want to recommend him. Sure he's got the skill but he's not using his head. He's not going to be safe. D*** told me, that's not your responsibility and can he pass the test? It wasn't but about two weeks later he killed his whole family and he survived. So that's where I learned inside of me you trust your instincts. If you don't feel good about it, you don't do it.

Implications for Adult Education Practice

I have gone to school for many years and I feel very comfortable in the formal classroom setting. I have also enrolled in the occasional community education course on skiing, bread baking, or wine appreciation. However, none of those learning environments presented me with a learning curve as steep as the pilot ground school and flight instruction. All of the topics and aviation jargon were foreign to me from day one (e.g., the physics of flight, airport operations, cross country navigation). This was also the first learning environment where I felt both physical fear and occasional airsickness. Recovering from stalls and turning the plane in slow flight made my stomach drop and the simulation of IFR (Instrument Flight Reference) flight conditions (the instructor puts a mask over your eyes and you must perform maneuvers as directed relying only on the instrument panel) left me green and dizzy.

Learning to fly was a humbling experience that deepened my empathy for adult students who are stretching out of their comfort zones to enter learning environments where the learning curves are steep and the process of learning can be scary when it feels akin to falling out of the sky. We know the learning curves and challenge are not equal for every adult student. What we don't always know is how steep the curve or how fearful the environment for a particular student. I think the lessons that I learned or re-learned apply to every student and every learning environment.

Although most adult educators practice in classrooms and educational spaces less confining than the cockpit of a single engine plane, the instructional strategies of handing over the controls so that students can truly learn to fly and the artistry of knowing how far to let a student go and be safe in making a mistake metaphorically resonate with our goals as adult

educators for our students to begin to fly solo in their learning, to learn the process of critical reflection, and to eventually be pilot-in-command of their own learning.

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