

***The Current State of Flight Instruction
and Flight Training in the United States:
A Call for Industry Action***

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NOTE: The views and opinions in this document are solely those of the author and do not represent the policies of any organization or other person.

Author Qualifications and Disclosures

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From October 2005 until February 2009 Mr. Wright served on the board of directors of the National Association of Flight Instructors (NAFI). He resigned from the NAFI board, and his NAFI membership, on February 2, 2009, in order to better serve the interests of flight instructors and flight instruction. He is now a member of the Society of Aviation and Flight Educators (SAFE).

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I. Introduction

This paper was prepared to generate discussion and debate regarding the current state of flight instruction and changes that might be needed to address a variety of issues and respond to external events.

The author postulates that several key external events have occurred or are in process that makes this an opportune time to discuss these issues. The key external events include changes in the general aviation industry, general economic conditions, political and related changes affecting the FAA, the continuing evolution of aviation technologies, and the creation of a new flight instructor organization, the Society of Aviation and Flight Educators (SAFE). In particular, the creation of SAFE provides a timely opportunity for the flight instructor community and aviation education organizations to have a greater influence over some of these external events, especially involving the FAA.

This paper is not intended to be a comprehensive treatise for the issues which it identifies. Rather, it is intended to be a catalyst for further discussion and debate. This paper will briefly discuss the following factors and issues, concluding with some general recommendations on how the flight instructor community might proceed, especially as regards to the creation of SAFE and a proactive agenda for the new organization.

- The state of the current flight training markets and related industry state
- The potential influence of long term economic and other issues on flight instruction
- Safety issues and their impact on flight instruction
- The evolution of flight training doctrine, standards, and methodology
- The influence of FAA doctrine, standards, and oversight
- Flight instructor training, qualification, professional standards, and accreditation
- Flight instructor status and working conditions
- The role of other industry elements and organization
- Overall recommendations and suggested next steps

The results of further discussions on these and other issues will serve as a platform for creating a proactive agenda for the flight instructor community and follow-on advocacy of that agenda.

II. Current Industry State and Flight Training Markets

As this paper was being prepared, it is clear that near term economic issues are negatively affecting the general aviation industry and community. The economic recession is depressing demand for new aircraft and other products, as well as reducing the level of flight activity, including flight instruction. Although general aviation demand and activity levels are historically cyclical, the current recession could be more severe than previous cycles.

Regardless of the overall level of aviation economic activity, the general aviation flight training market seems to have evolved into the following three broad sectors, each of which is affected differently by external factors.

- Professional – This sector specializes in training pilots to fly as crew members, for hire, to fly for air carriers, corporate flight departments, charter companies, and other entities providing air services. This training sector is a world-wide activity and, despite the current economic downturn, is still experiencing high demand and activity. Most of this training activity takes place in organized flight training schools and training centers and in college and university programs.
- Business and personal transportation – This flight training sector serves individual owners and pilots who use turbine and piston engine aircraft for transportation. This activity takes place in a wide spectrum of training venues, ranging from individual free lance flight instructors to large training centers. This sector has been negatively affected by current economic conditions that have reduced personal and business aircraft sales, yet it may continue to have excellent long term prospects as individuals and businesses seek an alternative to the deteriorating airline hub and spoke system.
- Recreational – This flight training sector serves owners of legacy recreational and personal aircraft and newer products such as the Light Sport Aircraft (LSA). It also includes specialized training markets for activities such as aerobatics. The training activity mostly takes place in small flight schools or with free lance flight instructors. This segment may be the most severely affected by current economic conditions.

Each of these sectors has different issues with regard to the flight training topics discussed throughout the balance of this paper. It should be emphasized that a flight instruction organization will need to address the issues of all three segments in order to fully succeed.

III. Influence of Long Term Economic and Other Issues on Flight Instruction

The flight training market is subject to the broad economic factors that were noted in the previous section. The market is also affected by specific economic and related issues that will be peculiar to aviation and related transportation trends. The following areas are not meant to be exclusive but represent areas of both potential concern and opportunities for the flight instructor community.

- Consumer and business preferences – Aviation will be affected by long term consumer preferences as they relate to both travel and recreation. The increasing influence of the internet, including techniques such as virtual meetings and virtual reality travel, will affect consumer demand for aircraft travel and recreation and this will be aggravated by declines in travel convenience, increases in travel costs, and continuing stagnation in real consumer disposable income. This will affect general aviation and flight instruction if our community fails to recognize that, in order to grow, aviation must have elements that appeal to the broader public, rather than just enthusiasts.
- Fuel price and availability – The current recession has only delayed what may be the greatest threat to aviation and travel and mobility in general. As the world economies return to growth, we will again experience pressure from availability and prices for conventional fuel sources. There is also a separate issue for piston engine general aviation aircraft, as the availability of 100 octane low lead aviation gasoline becomes uncertain. Future fuels may be limited to jet fuels and auto fuel derivatives. The source of these fuels may also change from petroleum to a variety of bio-fuel alternatives (hint: think algae). One can only speculate what the cost and supply impacts will be from these changes. All of them could have important effects on flight instruction markets, such as more emphasis on business travel and less on recreation, as well as on flight instruction methods, such as greater use of simulation.
- Value issues – Even if consumer preferences and external factors such as fuel did not become issues, aviation could suffer if it fails to address the basic value equation. That is, people tend to look at products not only by what they cost but how much utility and other benefits they provide. General aviation demand continues to suffer because the prices of general aviation aircraft and other products continue to increase at rates higher than the general inflation rate. The suppliers that fail to offer product benefit changes will progressively fail while those can increase perceived consumer value and benefits may hold their own or grow. Flight instruction will be affected by the same value equation. Some instructors command \$100 per hour because of the value of the product they offer. A proactive effort by the flight instruction community is needed to address value issues and the answers are imbedded in every aspect of the provision of instruction, from doctrine, to technology, to marketing. Needless to say, there will be numerous opportunities for those who can capitalize on this issue.

- Demographics – Flight instruction will be affected by numerous demographic trends but the most important of these will be continued population dispersal and an aging population. Although media attention focuses on inner city renovation, the real population shifts continue southward and westward, and to exurbs beyond the current suburbs. With the coming of fuel price and availability issues, the jobs may follow the population shifts to create small or medium population centers where people will be close to their jobs and commuting will be reduced. Telecommuting will greatly expand but people will still need access to distant locations for business and personal reasons and they may now be far removed from the nearest airline hub. The bottom line is that the need for on-demand air transportation may increase, especially for the owner-pilot market, and this could create opportunities for flight instruction. This trend will be supported by an aging population with greater disposable income allowing them to spend discretionary income on charter, business, and personal aviation.
- Future National Airspace System (NAS) – The next generation air traffic system (NEXGEN) is currently being designed to accommodate air transportation demands for 2020 and beyond. This system will incorporate new technologies such as automatic dependent surveillance broadcast (ADS-B) and required navigation performance (RNP). These technologies will require new operating procedures and therefore will affect pilot training – including new requirements for existing pilots. These will generate opportunities for flight instruction, beginning in about five years. Some of these opportunities are already being realized by instructors who specialize in technically advanced aircraft (TAA). The TAA label itself is rapidly becoming obsolete as the glass cockpit becomes the standard in general aviation but there will always be new technologies emerging (synthetic vision, etc.). Further technology changes will likely require flight instructors with specialized knowledge in advance of formal FAA requirements, hence the need for professional certification programs.
- Environmental issues – General aviation will need to be responsive to the green movement. Issues such as fuel efficiency, emissions, noise, and other issues will continue to emerge and grow. This is one area that may not enable new opportunities for flight instruction but if they are not addressed other opportunities may not be realized. The rest of the general aviation community, especially manufacturers, needs to be responsive to this issue. There is a pressing need for power plants that burn alternative fuels and for new aircraft designs that emphasize fuel efficiency.

The above issues do not represent the complete list of those that will affect the instructor community. A proactive flight instructor organization that evaluates these and other issues will have a greater chance of influencing external events and highlighting resulting opportunities for their members.

IV. Safety Issues

The safety record for general aviation has been stagnant for the last decade and it continues to be the silent Achilles heel limiting potential GA growth beyond the enthusiast community. Participation by the larger general public is needed to grow the pilot population and provide opportunities for commercial operations for smaller general aviation aircraft such as those that were envisioned by the NASA Small Aircraft Transportation System (SATS). The safety expectations of the general public with regard to GA aircraft are likely much higher than those of most current GA participants.

Flight instruction can, and must, have an influence on both the actual GA safety record and public perceptions. Before specific actions can be taken to address safety improvements, such as changes in instruction methods, we as a community need to understand the taxonomy of accident analysis, especially for fatal accidents, and question the conventional wisdom, if necessary.

Past FAA analyses of accidents claim that “skill accidents” outnumber “decision making” accidents for both fatal and non-fatal accident causes. The author believes that this analysis is faulty because it uses National Transportation Safety Board (NTSB) proximate probable causes to determine whether an accident was caused by faulty skills or faulty decision making. For example, a “loss of control” accident cause is most likely to be labeled as a “skill” accident. Yet, the NTSB rarely delves into the root cause of most GA fatal accidents to determine the “why” (i.e. why did the pilot lose control?).

The author believes that most GA fatal accidents are essentially risk management accidents. Analyzing 29 fatal accidents for a popular GA TAA aircraft, I concluded that 25 of them could likely have been prevented if the pilot had followed fundamental risk management procedures (identify, assess, mitigate), or effectively used other higher order pilot skills, such as single pilot resource management. In my opinion, after reviewing the accident data, I concluded that only 4 of these accidents were the result of the pilot’s lack of, or misapplication of, conventional “stick and rudder” airmanship skills.

The author does not deny the importance of traditional “stick and rudder” skills but suggests that we as a community need to consider how flight training emphasis should be rebalanced to address accident causality and work with others in the community and the FAA to address such issues. This analysis only scratches the surface of the larger discussion that needs to take place regarding safety. I also do not deny the importance of non-fatal accidents, many of which are skill-based and the result of faulty “stick and rudder” skills or faulty basic airmanship. The big picture, however, will be dominated by fatal accidents, since these are the ones that have the biggest impact on the general public and are partly responsible for retarding GA growth.

Any discussion of safety is linked inextricably to the subjects of flight training doctrine, standards, and methodology, including FAA standards. These subjects will be addressed in the next three sections of this paper.

V. Flight Training Doctrine, Standards, and Methodology

Flight training doctrine addresses the “what” and “why” of the content we teach during flight instruction. For those who believe that these decisions are already made by the FAA or by FAA proposals, I submit that the flight instruction and larger GA community needs to be the driver for doctrine development. The FAA does not deliver these products in the training environment and their in-house expertise in these matters has been declining for some time, especially at the management and executive level. It is incumbent on the flight instruction community to take a lead role in this discussion since it has an enormous impact on safety and other desirable outcomes.

The current GA flight training doctrine in place has only partially evolved from that developed during the 1939-1941 period when the Civilian Pilot Training program was implemented in advance of World War Two. It is maneuvers-based, with prescribed amounts of training time, and very much “top-down” (i.e. “spoon fed” by the instructor). Job function training is poorly integrated into most curricula and completion of training programs is driven almost entirely by the FAA knowledge and practical tests. That is, we teach to the test. To the extent that FAA knowledge and skill standards do not reflect the “real world” largely determines the effectiveness of the training program. The need to be competitive seldom allows training entities to exceed minimum FAA standards. All of these legacy training doctrine concepts are poorly suited to the modern GA operating environment and products.

The airline community dealt with these issues decades ago by pushing for the adoption of the Advanced Qualification Program (AQP) and Line Oriented Flight Training (LOFT). These programs are data driven and the airlines had enough clout to force FAA into adopting them. The AQP concept, especially, allows airlines to develop and rapidly implement real-world training as an alternative means for complying with the very prescriptive training rules in 14 Code of Federal Regulations (CFR) Part 121.

In the general aviation training community, there is a pressing need to adopt “AQP-like” and “LOFT-like” training concepts. During the period 2002-2005, in his last FAA position, the author created the FAA Industry Training Standards (FITS) program to initiate the process of training reform in general aviation. The FITS program was intended to encourage concepts such as scenario-based training, student-centered learning and grading, and training of higher order pilot skills such as risk management, single pilot resource management, and automation management.

The FITS programs have slowly made headway, largely in raising awareness of the need for reform, but also in the slow evolution of FAA doctrine and standards (see next section). Many innovative training providers are already adopting FITS principles and creating innovative training products, such as the integrated Private-Instrument pilot training curriculum. Further progress in instituting training reform may depend on how well the flight instructor community adopts this doctrine and influences FAA to continue and accelerate changes in FAA doctrine and standards.

It is beyond the scope of this paper to provide an in-depth analysis of changes needed in flight training content and methodology. The effort to accomplish this should occur in a workshop setting led by SAFE and other organizations, with broad participation from the instructor community and the FAA. The author suggests, however, that the following examples may indicate some of the areas that need to be explored.

- New airmanship skills – As indicated earlier in this paper, pilots need to master higher order skills that will enable them to avoid fatal accidents. At a minimum, these would include risk management, single pilot resource management, and automation management. These skills need to be taught in both theoretical and practical contexts and applied during actual flight instruction.
- New teaching tools – Knowledge training should make even greater use of the web than currently occurs, and students should be expected to master knowledge requirements before progressing to the next training phase. Instructors should make greater use of simulation, especially before proceeding to actual airplane instruction. The author postulates that maximum use of even low level training devices, even without FAA credit, could reduce airplane training times to near FAA minimums.
- New training methodologies – Flight instruction needs to rapidly evolve from the prevalent instructor “spoon fed” approach to one that encourages greater student participation and responsibility, and decision making. This would include adopting student centered learning and grading, and scenario-based training. For example, make the student responsible for briefing each “mission” and structure dual cross country flights such that most of them will terminate with a simulated diversion or abort at other than the planned destination.
- Better integrated curricula – Training programs should be tailored to the needs of the student, rather than creating a “one size fits all” approach. For example, for students planning on using aircraft for business transportation, an integrated private-instrument curriculum would be more appropriate than the current decoupled private and instrument curricula. Experimental work done at Middle Tennessee State University led by Dr. Paul Craig has validated the combined curriculum.
- Revision of training time requirements – Although it would require time consuming FAA regulatory action, changes in flight time requirements should be explored. The author postulates that more quality dual instruction and simulation time with instructors using student-centered learning, and less solo aircraft time, may be a desirable change. Also, both the industry and the FAA need to consider proficiency based standards rather than the accumulation of a fixed number of training hours.
- Knowledge requirements – More emphasis is needed on understanding of subjects rather than rote memorization.

VI. Influence of FAA Doctrine, Standards, and Oversight

There is no doubt that the FAA can be a key enabler, or obstacle, to flight training reform. The agency holds the “keys to the kingdom” in the form of the CFR, regulatory guidance, regulatory training doctrine (especially FAA handbooks), knowledge testing standards content, and practical test standards (PTS). The FAA also oversees compliance through Flight Standards District Offices (FSDO).

While some reform has already occurred with FAA training doctrine and standards, most of this has happened under the auspices of the FAA/Industry Joint Safety Committee (JSC). Unfortunately, the organized flight instructor community has only sporadically participated in this process. Also, there are some FAA organizations and individuals that are resisting change and, in fact, deny that they are part of the training community or training solutions. It is true that FAA has an oversight mandate and must always be conscious of its regulatory responsibility. In the real world, however, it has been demonstrated that FAA’s responsibilities are more effectively accomplished through active partnership with the regulated community. This validated fact has been ignored in recent Congressional hearings on FAA oversight by grandstanding Congressional members belonging to an institution whose public effectiveness rating hovers in the single digits. Neither FAA nor industry has come forward to defend their partnership strategies.

As previously stated, the flight instructor and training community, not the FAA, should be leading the evolution of training doctrine and standards. It is, however, more desirable for FAA to be an active partner in this process. The process should focus on the following three elements.

- Continue and accelerate the updating of doctrine. Crucial FAA documents such as the Aviation Instructors Handbook have recently been revised and are improvements on previous editions yet further revisions are still needed. These revisions should be preceded by interactive workshops, not just listening sessions, with both FAA and industry participation.
- Begin the revision of testing standards. Both knowledge and practical tests should reflect real world flight training issues. A workshop process should be employed here also. The next section will discuss flight instructor testing in more detail.
- Modify FAA oversight processes and communication. The FAA needs a more hands-on approach to communicating with and overseeing the flight instruction community. Recent initiatives by the FAA Safety Team (FAAST) in this area are encouraging.

An expanded FAA/industry effort to modernize doctrine and standards, led by the flight instructor community, would be a huge step forward in advancing flight instruction.

VII. Flight Instructor Training, Qualification, and Accreditation

Assuming that flight training doctrine and standards are changed to reflect real training needs, it is then important to look at how flight instructors and other aviation educators are trained and qualified to perform their critical role. As with the training of pilots, we are currently training flight instructors to pass FAA knowledge and practical tests. In fact, the failure rate on the flight instructor initial practical test exceeds 50 per cent, an appalling figure that would be considered unacceptable in any other industry.

The reason for the high failure rate has not been properly analyzed but likely rests squarely on FAA's shoulders. Consider that pilot schools and instructors are already certificated by FAA to teach new instructor candidates. The high failure rate means that FAA has either not properly certificated or not adequately overseen these entities; or, equally likely, FAA is not providing adequate feedback to the community on practical test failure causes. Regardless of the root cause, the only proper remedy for this condition is close communication and partnership between the FAA and the training community to identify the causes and fix them.

The instructor community should take the lead in developing initial flight instructor training programs and curricula and work with FAA to create an industry standard for such curricula that would gain immediate acceptance from the FSDO community. It may also be possible for a professional instructor organization, such as SAFE or a university, to conduct accreditation of such schools that would result in automatic FAA approval.

Beyond initial FAA certification, there is clearly a gap between the minimum FAA certification standard and what customers and employers want instructors to know and how they want them to perform in the real world. This need clearly calls for some kind of professional accreditation of instructors that would be voluntary but would clearly improve their credibility and employability in many flight instruction venues.

The Master Instructor (MI) program offered through Master Instructors LLC is a successful accreditation program that serves as a model for future efforts. This program is comprehensive and far exceeds FAA requirements for flight instructor renewal and continuing education. What is needed to complement the MI program is an "entry level" industry accreditation standard that would fill the gap between basic FAA certification and the MI program. Such a standard could emphasize the entry level skills needed to be a working instructor and would improve the employability of new instructors.

The instructor community should also take a more active role in shaping FAA policy and criteria for flight instructor renewal clinics (FIRC). The instructor community, not the FAA, should take the lead in proposing what the renewal standard should comprise (i.e. what instructors need to know to continue performing their job effectively after initial FAA certification). The instructor community should emphasize broader knowledge of subjects that are relevant to current teaching and safety issues, not rote memorization and repeating basic subject material that was part of the original certification requirement.

VIII. Flight Instructor Status and Working Conditions

The role of flight instructor is often a brief steppingstone to a more prestigious and lucrative job in commercial aviation. It is unlikely that any industry program would be able to reverse this situation quickly but an effective flight instructor organization that represents the profession and advocates for working instructors could make a difference.

A big step would be to create an accreditation infrastructure such as the one discussed in the previous section. This would confer greater status on working flight instructors than merely holding the basic FAA certificates. It could also provide instructors with better tools and supporting materials than they currently have. Much of the development required for these tools could be accomplished by commercial courseware providers working in conjunction with a professional instructor organization, such as SAFE, as well as other organizations in the aviation education community. Although this is done today on a limited scale, a larger effort that provided more comprehensive tools could improve the instructor's status and working conditions. An effective mentoring program, such as the one currently being developed by SAFE, could also allow new instructors to more quickly be assimilated into the real world of instructing. A more rapid transition from theoretical knowledge about teaching to the practical side will not only benefit student pilots but can also accelerate the instructor's earning potential.

With regard to pay and benefits, flight instruction has traditionally been near the bottom of the aviation professional hierarchy. There is no quick answer for this, but the solution may require a value proposition such as was mentioned earlier in this paper. There are instructors today who command a three figure fee for each hour they instruct because they offer a specialized product not available elsewhere or a product which reduces training time, provides customer convenience, or creates some other kind of value.

One way to determine how to improve instructor working conditions is to begin a dialogue between the instructor community and pilot schools and training centers that employ instructors. This dialogue could be facilitated by SAFE and be used as a starting point for identifying steps that would mutually benefit instructors and their employers. Marketplace conditions may facilitate this dialogue. The world wide demand for pilots in the air carrier industry has created an instructor shortage, as pilot training activity increases and the instructors themselves are hired by the carriers, even those with minimal experience. If this shortage trend continues, it should inevitably result in better pay and working conditions for instructors.

Finally, as currently occurs, instructors must have access to products such as liability insurance that are more cost effectively provided through a group plan sponsored by a large organization. These products will tend to be more effective as the professional organization sponsoring them becomes larger.

There are no easy solutions to these issues but they must be considered by a professional flight instructor organization, along with more global issues.

IX. Role of Other Industry Elements and Organizations

This paper has emphasized the role played by a professional flight instructor organization in addressing the issues identified. There are other organizations and entities in the general aviation community that will be crucial in ensuring that a professional flight instructor organization, such as SAFE, can be effective. It would therefore be desirable for a new instructor organization to make early overtures to the following communities. In the following cases, the immediate benefit could be either direct sponsorship of the new organization and/or access to markets.

- Aircraft and avionics manufacturers (OEM) – The OEM community, especially airframe OEM's, needs to be more supportive of the flight instructor community and consider increased sponsorship of a professional member-based flight instructor organization, namely SAFE, as a wise investment. The flight instructor is the primary interface for new customers of OEM products and any enhancement in flight instructor professionalism would benefit these companies.
- Courseware providers – Although it already occurs to some extent, the instructor community and courseware providers need to make common cause in tackling the issues identified in this paper. Such an alliance would be useful in influencing FAA action and creating better training products.
- FAA/industry forums – SAFE should participate in key FAA/industry forums and other venues that affect flight instruction. This would include full participation in the current Joint Safety Committee, Personal Aviation subgroup. These activities provide the venue for most current FAA activity related to doctrine and standards reform.
- Trade Associations – SAFE should explore partnership opportunities with key organizations such as AOPA and other organizations where there is an intersection of interests.
- Training Centers and Universities – Since large amounts of flight training are conducted by these entities; it would be mutually beneficial for both SAFE and these institutions to collaborate on a variety of issues.

The above list of organizations and communities is not complete but is representative of the need to partner with numerous general aviation and other institutions to leverage resources and extend the reach and effectiveness of SAFE.

X. Overall Recommendations and Next Steps

The need to establish a formal organization and infrastructure will dominate SAFE resources and plans initially. When resources and circumstances permit, SAFE should consider the following actions as priorities and next steps.

- Upon completing initial organizational, membership promotion, and other set-up priorities, SAFE should seek resources and volunteer support to address key long term issues and programs such as those identified in this paper. To support accomplishment of these goals, it would be most desirable for the organization to have a small core full time professional staff and an extensive volunteer network, such as already been created.
- As a second priority, SAFE should seek support and create alliances with one or more companies or organizations whose interests intersect with those of SAFE. The initial focus should be on OEM's and courseware providers but should also reach out to the broader aviation education community to seek mutual benefit.
- Following these initial formation activities, SAFE should identify key FAA and industry venues affecting its members and begin to fully participate in these efforts. This would include the FAA/Industry JSC and other activities.
- SAFE should also seek rapid FAA approval of a SAFE sponsored Master Instructor program that improves on the one currently sponsored by NAFI. These discussions should also explore the possibility of creating an intermediate accreditation program for an entry level instructor.
- To create a focused long term agenda and address professional issues such as those identified in this paper, SAFE should plan and conduct appropriate workshops that include the instructor community, FAA, and other industry organizations. SAFE should seek sponsorship for this effort from those who would most benefit from changes in the current flight training infrastructure.