

The Association Between Student Pilot  
Stress and Flight Instructor Training:  
A Study of Perceptions

by  
Irene Henley

A Thesis

Submitted in Partial Fulfillment  
of the Requirements for the Degree of  
Master of Education

in

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In December 1941, John Gillespie Magee, a nineteen-year-old American Pilot Officer serving with the Royal Canadian Air Force, was killed when his Spitfire collided in cloud with another aircraft. This sonnet, he scribbled on the back of a letter while on course in Farnborough, expresses the exaltation that flying can give.

#### HIGH FLIGHT

Oh! I have slipped the surly bonds of Earth  
And danced the skies on laughter-silvered wings;  
Sunward I've climbed, and joined the tumbling mirth  
Of sun-split clouds,--and done a hundred things  
You have not dreamed of--wheeled and soared and swung  
High in the sunlit silence. Hov'ring there,  
I've chased the shouting wind along, and flung  
My eager craft through footless halls of air. . . .  
Up, up the long, delirious, burning blue  
I've topped the windswept heights with easy grace  
Where never lark, or even eagle flew--  
And, while with silent, lifting mind I've trod  
The high untrespassed sanctity of space,  
Put out my hand and touched the face of God.

John Gillespie Magee

## ABSTRACT

Research has shown that learning to fly is a stressful experience and that stress impedes learning, impairs performance, and interferes with decision making processes. In addition, researchers have identified the flight instructor as being the weakest link in the flight training process, and sometimes the most feared element by the student pilot.

In view of the above, this study was undertaken to show the association between student pilot stress and flight instructor training. To gain an understanding of these two problem areas, twenty student pilots and sixteen experienced flight instructors were interviewed. Given that the central thrust of the research was to be a description and an interpretation of how student pilots and flight instructors felt about their training, the most appropriate strategy was deemed to be the qualitative/naturalistic approach.

Testimonies from student pilots clearly established that feelings and emotions play an important role in flight training and that psychological stress is frequently instructor-induced, and can indeed be quite debilitating. Students claimed that their flight instructors were all competent and skillful pilots, however, the teaching skills of many were considered to be seriously lacking. Flight instructors, on the other hand, indicated that while their training provided them with content expertise, proficiency in piloting skills, and some prescribed "patter" or "recipe"

approach to teach flying manoeuvres, it did not equip them with basic teaching skills and knowledge relative to the learning process, nor did it dwell on the role played by the affective domain in the learning situation.

What was made evident from the data was that the whole approach to flight training is technical or mechanistic. In other words, teaching is approached as technology and modeling. Within this flawed approach to teaching, flight instructors fail to recognize basic teaching practices. A mechanistic approach to teaching basically views students as disembodied intelligences or learning machines, which in turn leads to an insensitivity to students' feelings and emotions, and a failure to recognize individual differences and the condition of the teaching situation. It also fosters stress-producing attitudes and behaviors along with faulty instructor expectations. Some flight instructors, however, through personal insight, experience and natural pedagogical abilities, are able to transcend this technical and mimetic approach to teaching and develop more effective methods of teaching and more humanistic ways of dealing with students. It was thus possible to establish a profile of a "positive" instructor in juxtaposition to that of the "negative" instructor.

Much of what plagues flight instructor training and as a result, basic flight training, originates with the lack of training and competence of the teachers of flight instruc-

tors, that is, Class I flight instructors. They, however, are not to be blamed since they were never trained for their role as teachers of instructors. They are simply the product of an unsatisfactory system of flight training.

In view of the research findings, it is imperative that teaching practices and human factors, including psychological stress, no longer be ignored in flight training. Flight instructors must be taught to be effective teachers as well as skillful pilots. Traditionally, the emphasis has been on flying skills more than on teaching practices. Ideally, the aim should be for a "parity of esteem".

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## Chapter 1 - The Problem for Study

## INTRODUCTION

Few urges have so inspired and frustrated mankind as the desire to fly. . . . For centuries, the fantasy of soaring, of breaking earthly bonds and mastering the winds, has exerted so fundamental a drive that it seems somehow woven into the fabric of humanity. In art and literature, in mythology and religion, man has pondered and marveled at--even worshipped--the phenomenon of flight. (Moolman, 1980, p. 6)

Since the ancient Greek myth of Icarus and Daedalus, man has been fascinated with and envious of the ease with which birds cruise the celestial spaces. The conquest of the air, however, was achieved only in the early years of this century. It was less than eighty-five years ago, on December 17, 1903, that Orville and Wilbur Wright made the world's first successful sustained, controlled flights in a power-driven, heavier-than-air flying machine, later called an aeroplane, at Kill Devil Hills, Kitty Hawk, North Carolina.

Of necessity the first emulators of the birds were self-taught. One of the most daring and difficult tasks of the would-be aviator was to make the initial test flight of his newly built aeroplane on his own first solo flight! Having built his flying machine and having installed an adequate motor, the pioneer pilot quickly had to teach himself how to keep his powered contraption aloft once it was in the air. In a few sensation-crammed seconds or minutes, he had to learn how to manoeuvre the aircraft so he

could safely come back to Mother Earth. Frank Ellis (1954), one of Canada's pioneer pilots, gives a vivid account of such a flight:

All through the early tests, the first short hops, and above all, on the longer ones, one experienced the same feelings. First, the thrill of acceleration--the feeling that there's power enough behind you to thrust your machine up into the blue and out on the other side of it. Then you are concentrating: watching the ground to gauge your speed--for there was then no other method--listening continually to the rhythm of the engine, hoping not to detect a warning cough, your tension mounting as the ground goes by at a faster clip. She's lifting, you think--yes!--no!--yes, she's up! And so you are concentrating for your very life as the ground falls away and you try to remember simultaneously everything you've ever learned about what to do in the air--that's high enough--don't push your luck!--level off.

You look down now at the prairie below, suddenly aware of the height you've gained, and how flimsy your perch. Then a gentle forward pressure on the controls, and you're coming down, easing your foot off the throttle--down--down, take it easy--the ground gets closer--closer--you level off, touch, and bounce a bit too much perhaps, touch and bounce again, a wing comes up for a split second of panic, then the wheels are on the ground together, the front one settles too, and you cut the throttle completely, by pulling the ignition switch, and roll to a standstill. It's all over!

There is no experience in the world like the surge of relief that comes over you then . . . you feel a relief and a terrific exhilaration. (pp. 42-43)

Each short flight or hop was a learning experience, giving valuable information about the use of the controls, about the maneuverability of the aircraft and about the skills required to handle the aeroplane. Accordingly, training in those early days of aviation was very much a do-it-yourself, trial and error effort.

Flight instruction, like aviation itself, began with Orville and Wilbur Wright. On July 30, 1909, after the Wright brothers had ameliorated their aeroplane and the techniques to fly it, the United States Army purchased one of their aircraft. As part of the original contract, Wilbur Wright agreed to teach two officers to operate the machine. "In 1909, Wilbur Wright trained Lieutenants Lamb and Humphreys at College Park, Maryland, thereby becoming America's first flight instructor" (Cessna Pilot Center, 1979, pp. 1-3). Of necessity, Wilbur Wright was a self-trained instructor as well as a self-taught pilot.

The men trained by Wilbur Wright became instructors within the Army Corps and continued teaching small groups of Army officers. Once a person had acquired the skills and the knowledge to fly, it was assumed that he could, without additional training, teach someone else to fly.

Civil flight instruction, however, truly began with the barnstormers. As the aircraft became more common, some adventurous souls no longer wanted to go just for a ride; they wanted to learn to fly. So the barnstormers began to teach one or two of these intrepid individuals the rudiments of flight. The methods of instruction were very elementary: one person was learning how to fly the airplane, while the other was learning how to teach the neophyte to fly the aircraft by trial and error. The colorful barnstormers were thus the early flight instructors who pioneered the flying

training of young aviation enthusiasts across Canada and the United States.

There were no government restrictions on flying in Canada at that time and no licence or proof of competence was required to fly or to teach flying. "Anyone with the urge, and the money could buy a plane and fly away in it if he could or 'try if he couldn't" (Ellis, 1954, p. 143).

By the mid 1920s, practically no training was being done in Canada, except on a free-lance basis by barnstormers. Commercial companies were having to obtain trained personnel from the Old Countries, and even the Royal Canadian Air Force was recruiting pilots in England. As the demand for pilots became more pressing, it was realized that a source of supply must be found to fill the need. The Dominion government, through its Civil Aviation Branch, then administered by the Department of National Defence, decided on a program of assistance in the formation of flying clubs which would help to stimulate aviation and provide training facilities for prospective pilots (Ellis, 1954, p. 290). The flying clubs were then developed along the general lines followed in Great Britain.

Conditions for the organization and entry of members to clubs were covered by an Order-in-Council:

Any community that pledged itself to provide the services of an instructor, an air engineer, a licensed aerodrome and adequate accommodation for the housing and maintenance of the machines, would be issued with two light aircraft in the first

year. (Royal Canadian Flying Club Association, p. 15)

Thereafter, for every additional aircraft that the club purchased, the Government would donate one. Furthermore, the Government agreed to pay \$100.00 for each ab initio\* pupil who qualified for the private or commercial pilot's certificate.

Enthusiasm throughout the country surpassed all expectations. In 1928, the first year of the club movement, sixteen clubs began active operations and before the close of the year one hundred and eleven pupils had earned their private pilot's certificate, and twenty-eight their commercial licence. The most active clubs were the Toronto Flying Club, the Winnipeg Flying Club, the Montreal Light Aeroplane Club and the Ottawa Flying Club.

With the demand for more clubs or schools for people to learn to fly came the demand for more effective techniques to teach them. The United States provided the lead by forming the Committee on Selection and Training of Civilian Aircraft Pilots in 1939. The Committee was composed of scientists, psychologists, physiologists, physicians, engineers, experienced pilots, administrators, Army and Navy representatives and experts in the analysis of vocational aptitudes.

---

\*Terms that are particular to aviation or nebulous and indefinite terms, such as stress, are defined in Appendix "A".

At first in accord with the needs of the time, major emphasis was placed on selection and classification of pilots, but as these processes stabilized, emphasis shifted to research in training. Here the Committee entered an area which was largely uncharted and where its investigation represented pioneering efforts that provided data of inestimable value, not only to the CPTP [Civilian Pilot Training Program] and the services, but to aviation generally. (Strickland, 1971, p. 74)

One of the members of the Committee, Dr. E. Lowell Kelly of the Department of Psychology, Purdue University, undertook a study of flight training methods, about which little or nothing was recorded. Until then flight instructors had been left to use their own imagination and resources in the teaching of flying skills. Kelly recorded the in-flight conversation of students and instructors to evaluate the flight training methods being used. "For the first time in history, flight instruction, hitherto conducted in isolation, was observed and evaluated in the light of scientific and educational principles" (Strickland, 1971, p. 74). From this research, it became apparent that instruction should not be confined to the air where the student could pay only partial attention to what was said because he or she was busy controlling the airplane. Kelly concluded that the instruction could be given more effectively on the ground immediately before and after each flight where the student would not be distracted by other tasks and when the subject was uppermost in the minds of both the instructor and the student. Kelly also found that

all instructors, while professional pilots, were not professional teachers. Not every pilot possesses the skills and temperament to impart knowledge efficiently.

Kelly concluded that flying instruction needed some degree of standardization. This novel approach to flight instruction produced two aviation education best sellers, both written by Kelly. The first manual, Fundamentals of Basic Flight Maneuvers, was aimed at the prospective pilot describing what should be known about the specific manoeuvres that would be learned during the lesson. The second volume, entitled Patter for Elementary Flight Maneuvers, was a guide for the instructor giving word-for-word conversational "patter" which could be used to explain every manoeuvre correctly, simply, and succinctly as it was demonstrated in the air. (Whether the provision of a "patter" is an asset or a deficit to flight instruction will be discussed in Chapter 6).

Kelly's research, culminating in the publication of these two manuals, was instrumental in introducing definite methods, techniques and procedures to flight instruction. From this model and from techniques and procedures copied from the military and from the United States Federal Aviation Administration has emerged, grosso modo, Transport Canada's Flight Training Manual (1979) and Flight Instructor Guide (1978). However, since Kelly's initiative, systematic research in the field of primary flight

instruction has commenced in the United States but has remained virtually dormant in Canada. As Roscoe (1980) points out:

Flying has developed so rapidly that little time has been devoted to a serious study of the science of flying and flight training. . . . The problem of training new pilots and retraining current pilots . . . is just beginning to be recognized. (p. 174)

One of the exceptions is the present research on pilot decision making being conducted by Transport Canada in co-operation with the Federal Aviation Administration (FAA) and the General Aviation Manufacturers Association (GAMA).

An examination of the existing aviation education structure and its present curriculum reveals a "business as usual" approach and a traditional training operation where little evidence of research or progress is noticeable. Mac McClellan (1987) points out that "the majority of pilots receive training that has changed little in 40 years" (p. 73). He adds, "a typical primary student learns to fly the way pilots did in 1946" (p. 74). Mold (1982), a retired Air Force pilot who undertook recurrent training in 1982, also attests to this stagnancy:

The training has not changed very much over the years. The exercise, the instructor's "patter," the technique, are much the same as they were when I first took my flying training back in England in 1946. (p. 6)

In addition, flight training in Canada has suffered from a lack of legislation specifying standards, procedures and course syllabi for flying schools and flight instruction

according to Justice Charles Dubin (1982) in the Report of the Commission of Inquiry on Aviation Safety. The report notes that "this major shortcoming is instrumental in letting some negligent instructors and schools graduate poorly trained pilots" (p. 883). As a result of the Dubin Commission, a recent issue in aviation education in Canada has been the quality and effectiveness of existing flight training approaches, procedures and methodology.

A malaise with the anachronistic character of flight training provided the stimulus and the incentive to review the literature dealing with flight training and to seek the opinions of student pilots and seasoned flight instructors with regard to the adequacy and effectiveness of their training.

#### The Problem for Study

Experience in flight training, supported by a review of the related literature, indicates that psychological stress, that is, stress related to social and emotional factors and stress associated with mental and physical workload, plays an important role in flight training. A good number of student pilots initially feel quite anxious before flight or before new untried manoeuvres and some are afraid of appearing clumsy or stupid in front of their flight instructor. According to Rogers (1977), one of the major obstacles to learning faced by adult learners is the development of

emotional blockages which are often caused by fears about the new situation, fear of the unknown, their unwillingness to expose what they regard as their ignorance or lack of ability, or by "their anxiety that they might be making themselves look foolish, or that they might be exposing themselves to failure" (p. 33).

In addition to stress related to social and emotional factors, student pilots often experience stress due to mental and physical workload (Sekiguchi et al., 1978). Piloting an aircraft is a complex skill requiring accurate and appropriate reactions and movements within a limited time frame. Pilots must develop the ability to grasp numerous perceptions simultaneously, interpret the information and convert that into immediate and precise reactions. Piloting tasks must be performed in combination with differentiated and integrated responses corresponding to visual, auditory and kinesthetic cues received from inside and outside the aircraft while at the same time navigating a course, analyzing a problem or having to make a decision without all the necessary information. Smode, Hall and Meyer (1966) describe the pilot's tasks thus:

The responses of the pilot include relatively simple procedural or discrete acts (e.g., positioning levers, switches, and controls; communicating verbally; etc.) and continuous manual control movements requiring small forces and a sensitivity to pressure exerted on the controls. A premium is placed on the integration of responses, coordination and timing, time-sharing, decision-making, and judgmental processes. (p. 12)

In other words, the student pilot must acquire the ability to discriminate cues, interpret their meaning, decide upon the appropriate action required, manipulate the controls to accomplish the desired action, and monitor the success of his or her action in achieving the desired aircraft performance. This must be done continuously, rapidly, and correctly or the task load will increase as the situation deteriorates, and less time will remain to make the necessary correction(s). Furthermore, any mistake by the student pilot could lead to a serious accident or at least to a dangerous situation. Therefore, the student pilot can be considered to be under stress a high percentage of the time (Melton and Wicks, 1967). Indeed, "being a flight student is anxiety arousing" (Bucky, Spielberger and Bale, 1970, p. 276). Accordingly, student pilot stress and its effect on learning was identified as the problem for research in this study.

Despite such evidence for the claim that learning to fly is a stressful experience and that stress impedes learning, impairs performance, and interferes with decision making processes, flight instructor training has concentrated mainly on the acquisition of psychomotor skills and on the acquisition of knowledge in the cognitive domain, while the affective domain, which includes feelings and emotions, and the realm of student-instructor relationships seem to have been neglected or entirely overlooked. Hence,

there appears to be a mismatch in current flight training practices between this lack of attention directed to the affective domain and the fact that psychological stress is ever present in the flying situation. Consequently, the effectiveness of flight instructor training was identified as a related realm of interest.

Rapidly escalating costs of flight training coupled with a disturbingly high student pilot drop-out rate (Telfer, 1983) in an increasingly austere flight training milieu necessitate the search for or the development of more effective and efficient training methods. A review of the literature suggests that one component of a more effective and efficient flight training program is clearly the reduction of student pilot stress. The flight instructor should be able to assist students in reducing their feelings of stress should that stress level be detrimental to learning. This implies that flight instructors:

- (a) know the potential stress patterns which student pilots can experience;
- (b) recognize the symptoms of the stress patterns;
- (c) know about possible ways to assist the student to reduce feelings of stress during flight training;
- (d) can actually implement techniques which will result in reduced student pilot stress; and
- (e) are cognizant of behaviors and attitudes on their part that student pilots find stress-producing.

Unfortunately, research in the field of flight training (Krahenbuhl et al., 1980; Haward, 1968) and testimonies from student pilots (see Chapter 4) reveal that flight instructors are often unaware of the development of emotional blockages to learning due to stress and that instead of alleviating stress they frequently impose additional stress on the student pilot. Yet, are flight instructors solely to blame? If flight instructors are indeed incognizant of their students' psychological stress and if flight instructors at times even contribute to student pilot stress, it could be that "they are the product of an unsatisfactory system of flying training" (Spark, 1980, p. 41).

Thus, the purpose of this study is to show that there is a discrepancy between (a) the fact that psychological stress is ever present in the flight training situation and can interfere with learning, and (b) the fact that the role of the affective domain, which includes feelings and emotional barriers to training, and the realm of student-instructor relationship are usually ignored in the training of flight instructors. To obtain data regarding the problems for study, the following questions were developed and used as guides for the interviews:

1. What is the perception of student pilots with regard to:
  - (a) their flight instructor's awareness of/or sensitivity to their psychological stress during flight

training; and

- (b) the manner in which flight instructors contributed to their stress?
2. What are the behaviors and attitudes of flight instructors that student pilots perceive as stress-producing?
  3. What are the behaviors and attitudes of flight instructors that student pilots perceive as stress-reducing?
  4. What is the perception of flight instructors with regard to the adequacy of their training:
    - (a) to prepare them for their role as teachers;
    - (b) to help them recognize and reduce student pilot stress?
  5. What is the perception of Class I flight instructors with regard to their preparation and their competency in training other flight instructors to become teachers and to recognize and reduce student pilot stress?

This study is based on certain assumptions about the effect of stress on learning, performance, and decision making processes, and about the effect of flight instructor attitudes and behaviors on student pilot stress levels, specifically:

1. learning to fly is a stressful experience;
2. stress can impede learning, impair performance, and interfere with decision making processes;
3. given adequate training, flight instructors could

recognize and reduce student pilot stress in flight training;

4. the reduction of student pilot stress could improve learning efficiency, could make flight training more enjoyable, could possibly motivate student pilots to continue their training, and ultimately could improve aviation safety.

As will be demonstrated in Chapter 2, the review of the literature lends support to these assumptions.

#### Organization of the Study

With these concerns in mind, research was undertaken to show the association between student pilot stress and flight instructor training. A review of the literature, presented in the following Chapter, shows that emotional or psychological stress plays an important role in flight training. Chapter 3 explicates the methodology used to obtain and analyze testimonies of student pilots and flight instructors with regard to the adequacy and effectiveness of flight training. In Chapter 4, student pilots express their views as to whether they felt their flight instructors were aware of emotional barriers to flight training. Behaviors and attitudes of flight instructors which student pilots perceived as stress-producing or as stress-reducing are identified to establish a profile of a "positive" instructor in juxtaposition to that of a "negative" instructor. Chapter 5 gives an account of how flight instructors feel the training

they received as flight instructors prepared them for their role as teachers, especially as teachers having to impart flying skills in an environment that may be threatening and stress-producing. Chapter 6 analyzes the data and Chapter 7 clarifies the implications for flight training and future research, making suggestions to address problem areas identified in the study.

## Chapter 2 - Review of the Literature

The literature reviewed in this Chapter claims that psychological stressors (emotional factors and mental workload) are as significant in their potential to impede learning, impair performance, and interfere with decision making processes as both physical stressors (temperature, noise, "G" forces) and physiological stressors (fatigue, lack of physical fitness, missed meals). Further, psychological stresses provide even greater problems than physical or physiological stresses because they are more ubiquitous, often more insidious, and probably occur more frequently (Henley, 1985). It is extremely interesting to note that Melton, Hoffman, and Delafield (1969) found that stresses in private pilot flight training are equivalent in intensity to those of combat pilots and astronauts.

Research has shown that during high stress periods the efficiency of an individual can be impaired severely (Selye, 1956). In fact, fear and anxiety have been identified as the major determiners of success or failure in flight training:

Experience with training cadets to fly has shown that fear and anxiety are importantly related to success in the program. While anxiety symptoms are demonstrated by most trainees, significant correlations between failure rate and heightened anxiety have been observed over many classes in military flying schools. (Smode, Hall and Meyer, 1966, p. 85)

More recent studies (Krahenbuhl et al. 1980; Eysenck, 1976; Haward, 1968; and Melton and Wicks, 1967) reveal that not

only does a high level of stress reduce efficiency but it actually produces interfering responses which cause decrements in both learning and in performance. Under stress, a person can experience reduced cognitive capabilities to such an extent that even simple tasks are adversely affected: "Under stress, adding two plus two and other simple mental tasks become major hurdles" (Sanders and Ethell, 1986, p. 9). The incompatibility between high levels of stress or anxiety and maximum intellectual functioning has long been recognized (Haward, 1969).

Some tasks are inherently stressful because they require the student "to attend to too many things at a time, or to perform too many operations at once" (Lazarus, Deese, and Osler, 1952, p. 298). At such times, a person's capacity for attention may become overloaded. Bond et al. (1968) explain how overloading occurs:

One of the important things the student pilot learns is to shift the focus of his attention sufficiently, so that he will be able to attend to all the elements in the real-time situation. Shifting of attention can be applied both to sensory inputs from displays and to outputs of controls.

Of course, there is a limit to the effectiveness of attention shifting in real-time control. It is possible to sample only a finite amount of information in a fixed time interval, or to make only a finite number of control actions. If the time interval is not within permissible time-late tolerances in the situation, the pilot will be overloaded. (p. 4-3)

One example of such a situation is the landing phase. Initially too many demands may be placed upon the learner at

one time. Landing an airplane requires that the student be able to fly straight and level, perform coordinated turns, and fly a gradual descent, constantly keeping the airspeed properly adjusted while compensating for crosswinds or gusts. In the operational aircraft, these actions must all be performed concurrently, they cannot be broken down as separate tasks; they happen simultaneously as complex concurrent operants. Thus, the student's ability to attend to all the tasks can often be taxed. Haward (1968) points out that:

Without doubt, landing is the most difficult flying task the student pilot is called upon to execute calling for greatest concentration, skill, and sensorimotor co-ordination. It is the phase when cognitive efficiency is at a premium, yet, as the data show, is the phase when stress is highest. (p. 22)

As stress builds up in a task, performance often breaks down because the pilot trainee is required to handle too much information at once or must perform within critically short time periods (Smode and Meyer, 1966). The stress created by the limited time factor is underscored by Bailey and Hughes (1980):

What makes the task unusual is that decisions and responses must be made so rapidly and flawlessly, since either a delayed response or an incorrect judgment could be fatal. It is this latter element, no doubt, that puts such stress on the pilot and which probably makes acquisition of the motor skills in the aircraft itself so labile. (p. 10)

In flying there often is not enough time for cool consideration of alternatives or for lengthy deliberations:

The aviator is part of a complex of ongoing processes whose speed affords him little or no time to ponder about what he should do next, or to use mathematical tools to help him make his decisions. A correct decision made too late can be just as disastrous as an incorrect decision made soon enough. Furthermore, the decision usually has to be made, since default may also be disastrous. (Bond et al., 1968, p. 7-5)

In addition to stress created by the time-press tasks and by the concomitant potential mental overloading, further stress is added by the possibility of bodily-harm or damage to the aircraft. Krahenbuhl, Marett and King (1977) found that Power-on-Stalls, Spin-Recoveries and First Solo flights resulted in the most pronounced stress responses, i.e. excitement, confusion and feelings of helplessness. Since these exercises are not physically demanding, they suggest that a large portion of the stress experienced by the students emanated from psychological sources. Students perceived Power-on-Stalls, Spins, and First Solo flights as being potentially dangerous or threatening which in turn adversely affected their flying proficiency. Davis (1964) points out, however, that "to suppose that the most important source of fear is physical danger is far too simple a view" (p. 12). He suggests that the fear most pilots experience is more complicated than a primitive fear of death or injury, it usually contains elements which include a fear of letting someone down, or a fear of failure, as well as the fear of being unable to achieve a goal or an objective. He states that "in whatever terms they were described, these

elements amounted to an uncomfortable awareness of factors which endangered the successful attainment of an objective" (p. 12-13). Steininger (1964) concurs:

Anxiety about flying and the associated fear of having an accident plays an insignificant part because, as a rule, students have embarked on flying voluntarily. However, throughout training the student displays numerous feelings of anxiety for other reasons and these may severely handicap the display of his capacity or even ruin it. Among them is the fear that his achievements may be graded below standard, the fear that he may be embarrassed due to inadequate ability with consequences on his further career, or the fear, due to various reasons, of his instructor. The hidden and unconscious fear too, often leads to lack of efficiency, the deeper causes of which are not always immediately evident. In addition to this, flight errors are favoured by insufficient confidence towards the flying instructor or his way of teaching, or towards the system of training or towards the flight equipment. (p. 34-35)

In short, skills tend to deteriorate and errors made when a student is apprehensive and emotional blockages emanating from stress "are likely to arise whenever the outcome of a task in which a person is highly motivated appears to him to be in doubt--that is, at times of uncertainty, insecurity or impaired confidence" (Davis, 1964, p. 13). Lazarus, Deese and Osler (1952) agree that "stress occurs when a particular situation threatens the attainment of some goal" (p. 295).

Stress or anxiety does not only affect a student's intellectual efficiency adversely, but can also create confusion which hampers his or her control movements. Steininger (1964) specifies that,

Disorder of sensorimotor skill is usually a

distinct symptom of anxiety. In flying training it can be seen as a mix-up of control movements during visual flying as well as instrument flying, especially during recoveries from unusual attitudes. (p. 36)

Bond et al. (1968) add that "impairment of performance often takes the form of vacillation, apparent stupidity, rigidity, and fixation. These symptoms are characteristic of stress . . . and there is no doubt that psychological conflicts and flying are a poor mixture" (p. 8-10).

Tension can also cause the student to overcontrol the aircraft as in overbanking, skidding, uneven or erratic control handling during the approach and landing or overcorrection during stall and spin recoveries. Steininger (1964) notes:

Progressive overcontrol develops coarse control movements, causes tenseness and consequently overstrains the kinaesthetic sensitivity. This does not facilitate the student's learning the correct control pressures and movements required for corrective action. (p. 40)

He further specifies:

The student's most noticeable and typical anxiety behaviour is shown in his fear of the ground. When approaching the airfield he tends to round out too soon and consequently holds off too high, the result being too hard a landing. Similar reactions are observed in students during the take off run when they tend to pull back too early in order to get the aircraft off the ground or to overfly obstacles in the take-off sector, or when, in the case of an engine failure, they start turning at a low altitude. (p. 35)

Grandchamp (1971) refers to the decrements produced by stress as blockages that would lengthen the learning period if stress is high. The positive effects of mild stress and

the negative effects of severe stress are related to performance in a curvilinear fashion, according to Grandchamp.

In the field of flight training, excess fear or stress as an intervening variable has a curvilinear relationship to performance, with low amounts of fear enhancing performance and high amounts obstructing it. With excess fear or its related constructs of excessive anxiety, too much stress, or phobias, a student will usually experience a blocking and will learn at a much slower rate than he otherwise could. Consequently more time must be spent in the process of learning to fly which proportionately increases the costs of this already expensive training. (pp. 1-2)

Likewise, Telfer and Biggs (1985) and Diehl et al. (1983) describe the relationship between stress (arousal) and performance using the bell-shaped curve or the inverted-U theory. At a low level of stress, performance is poor due to apathy or boredom. As stress increases to a moderate level, performance reaches an optimal point, after which performance will gradually deteriorate if stress is increased and overloads a person's capability to cope with the task at hand.

On the upward slope, the energising effects of arousal predominates; on the descending slope, the interfering effects take over. . . . A very common example will illustrate: an instructor is questioning a student in a briefing. Gentle probing is likely to provide the right sort of pressure to lead to a good response. However, if the instructor's questions become heavy or sarcastic, the student is likely to become flustered, and if answers are forthcoming at all, they will probably be confused or incorrect. . . . High anxiety disrupts performance; one tries too hard, becomes confused, and the mind "goes blank." With a middling degree of anxiety, however, performance is best for that person, for that task. Complex tasks are best performed at lower levels of anxi-

ety, while simpler ones can withstand quite a high level. (Telfer and Biggs, 1985, p. 78)

Iampietro et al. (1972) agree:

Performance on complex task devices which require a high degree of alertness, mental function, muscular coordination and time-sharing of functions is more readily susceptible to degradation under adverse conditions than is performance of simple tasks. (p. 1218)

Stress or emotional arousal is an essential part of life because of its energizing effects, however, the incapacitating effects of overly strong emotional incitement also need to be recognized.

Emotion is a normal and necessary part of behavior. Without it, life would be extremely dull. Moreover, it provides physical energy which enables us to act more vigorously and with greater endurance than we could if we remained entirely calm.

On the other hand, strong emotion makes precise movements more difficult and concentrates our field of attention to such an extent that adequate solutions to emergencies may be difficult to accomplish. (Bond et al., 1968, p. 9-14)

On a positive end though, the value of a certain amount of apprehension or anxiety in the training of pilots cannot be overlooked because it raises the level of awareness and vigilance, makes the student more attentive to what is happening, and facilitates his or her concentration on the task or the situation.

A certain normal fear promotes fixing the attention, increases the receptivity threshold, places the subject in a situation of alertness and makes him more vigilant to what is happening in the situation where he finds himself. (Galle-Tessonneau, 1977, p. 30)

Grinker (1961) agrees that "anxiety in optimum quantities

intensifies efficiency, but at a certain peak of intensity it decreases facilitation and increases destructive effects" (p. 18).

Numerous studies have shown impairment of perceptual-motor performance under stress resulting in fixation, mental blocks, inattention, increased rigidity, disorganized activity, slow learning and non-adaptive behavior. Tenseness can cause rigidity in psychomotor functions which leads to inadequate perception. This is quite obvious in the early stages of training when, for example, the student is too slow in perceiving the initial tendency of the aircraft to yaw during take-off. This results in delayed responses and zig-zag take-offs (Steininger, 1964; Davis, 1964). Thus, psychological stress can lead to the disorder of sensorimotor skills.

Another detrimental symptom of stress that is apt to occur when a pilot is emotionally aroused is tunnel vision or target fixation:

Under stress, peripheral vision deteriorates, leaves one with foveal vision. The former perceives motion while the latter is used for reading. Therefore, the pilot has no perception of motion and he can hit the ground without a clue of what's happening. (Sanders and Ethell, 1986, p. 37)

Psychological stress also tends to narrow one's range of attention, so that a person's normal "channel capacity" is materially reduced:

The principal way emotion affects thinking is by

narrowing, or "channeling," attention. The frightened individual is likely to be acutely conscious of the emergency facing him, but to be unable to notice things in the periphery of his attention. He may not shift attention to those things which might be important in escaping from the emergency. (Bond et al., 1968, p. 9-2)

Stress tends to cause people to concentrate on the difficulties or the disturbing elements rather than on the practical aspects of the situation being encountered. Emotional conflicts and personal worries push their way into the focus of our attention when we should be concentrating on the task to be performed. Bond et al. (1968) explain:

Attention is a psychological process that is a critically important link between the aviator and the remainder of the control loop. It is an unreliable and limited channel for information that is only partly under voluntary control. Flying imposes special requirements on attention which aggravate common causes of attention failures: overloading, stress, personality disorders, and mental lapses.

Inattention, fixation, and fascination are kinds of attention failures which contribute to aircraft accidents. (p. 4-12)

Indeed, one of the effects of anxiety is that it often produces a powerful distraction. "Threatened subjects frequently report that their productive thinking is disrupted by the compelling preoccupation with the thought of the consequences of failure or danger" (Lazarus, Deese and Osler, 1952, p. 312). As was mentioned earlier, when a student pilot is uncertain or lacks self-confidence, stress or "tension" can adversely affect his or her perception, cognitive functioning and motor responses. Steininger (1964) notes:

If the student's mood is generally anxious and if his attention is stressed additionally by multiple tasks, a small aberration alone could release considerable confusion. This leads to blocking the normal receptivity to information, e.g. when reading or interpreting instruments or listening to radio communications. In such cases it can be seen that the student overconcentrates on a single instrument instead of making a proper cross check. Consequently his entire perceptual organisation breaks down. (p. 35)

One of the main reasons for errors of perception such as a faulty reading of the altimeter may thus be due to over-anxious anticipation in watching the instruments.

Perceptual efficiency depends, among other things, on the emotional disposition which determines the degree to which the stress affects the subject. . . . As long as subjects are unable to overcome emotional disturbances they cannot meet such complex requirements as perceiving different factors simultaneously or solving complex orientation problems while flying an aircraft under stress. (Steininger, 1964, p. 42)

An additional detrimental effect of stress is that it leads to a constriction of the perceptual field. Confronted with a threat, students tend to narrow their attention to the threatening situation or object; all their perceptual faculties focus on the thing or condition that generated the fear or stress. Consequently, learning is impaired.

It would be expected that such perceptual tunnel vision would impede the synthesis of perceptions into meaningful wholes and to the development of insights that are essential to true learning. Thus tension would be expected to increase the number of hours required for a student to attain private pilot competency, thereby increasing the monetary cost of flight training. (Melton et al., 1975, p. 5)

Davis (1964) agrees that the "disintegration of the sensory

field" tends to occur when anxiety is aroused. He reports on an experiment where anxiety was shown to interfere with proper scanning techniques and lead to fixation and subsequently to the misinterpretation of the instruments.

At the start of a test the subject tended to regard movements in the various instruments as inter-connected and to respond to the display as a whole. Thus he tended to regard a movement in one instrument as associated with movements in others, so that they formed an integrated pattern which conveyed meaning in terms of the attitude and behaviour of the aircraft. As anxiety increased, the pattern split up into its components, and he tended more and more to respond to each instrument independently. Deviations in individual instruments became merely stimuli requiring to be corrected rather than indicators of a change in the whole pattern of events.

In other terms, he no longer made a diagnosis. Failing to integrate the information available to him, he became liable to misinterpret a change in an instrument reading. With the disintegration in the sensory field went a tendency for attention to be held by the one particular part of the task which had taken on a special urgency. That is, he showed 'preoccupation' with one part of the stimulus field to the neglect of other parts. (p. 19)

Similarly, Holmes (1986) concludes that anxiety can hinder a pilot's performance because it impairs perceptual functioning:

Anxiety can constrict and narrow the entire field of attention--it can limit or prevent the scanning of instruments. An over-anxious pilot's attention might be limited to only one instrument alone, creating a fixed perceptual response. The over-anxious pilot might experience what is called perceptual distortion either through fixation or from the inability to direct attention to the TASK being performed (such as a short field landing or some other maneuver). . . . During stressful situations all visual, auditory and kinesthetic (seat of the pants cues) perceptual processes may be distorted and even imagined. Anxiety can also

cause forgetfulness, such as not completing the GUMP [Gas, Undercarriage, Mixture, Pitch] check prior to landing. Stress and/or anxiety present serious problems under instrument conditions. The most critical is believing one's own perceptions or beliefs rather than believing the aircraft instrument indications. (p. 32)

In addition to debilitating perceptual faculties, stress induces fatigue. Bond et al. (1968) found that "stressful missions which cause anxiety cause more subjective fatigue than longer, routine missions. Emotional arousal uses up energy at a higher than normal rate, causing subsequent feelings of extreme tiredness" (p. 10-9). McFarland (1953), in an investigation of the effects of fatigue and stress on flying, concludes that (1) the timing of motor responses suffered more and more as fatigue developed; (2) subjects became increasingly willing to accept reduced standards of accuracy and performance; (3) they shifted from following the six primary flying instruments to making more automatic responses; and (4) they increasingly forgot to check instruments out of their immediate range of vision (i.e., on the side panel). It was also noted that when pilots were aware of the approaching termination of a flight there was an "end deterioration" effect, that is, a tendency for a sudden increase in errors at the end of a flight. The indication here is that the tired or stressed pilot tends to relax at the end of a flight thus increasing the possibility of landing accidents (p. 348-350). Smode, Hall, and Meyer (1966) basically arrived at the same

conclusions:

Observation and anecdotal information indicate that substantial stress on the pilot increases muscular output and tension, with a loss in coordination. Fatigue and stereotyped [sic] behavior may occur as well as temporal and spatial narrowing of the perceptual field. Of extreme importance to flying is the tendency for fixation and loss of short-term memory (e.g., remembering instructions in holding, landing patterns) as well as cognitive loss (e.g., thinking, planning, programming of operational sequences). (p. 84)

Research by Simonov, Frolov, and Ivonov (1980) further indicates that "a high stress level disorganizes the activity, complicates it with a trend towards untimely acts and reactions to the insignificant signals" (p. 46). Alkov (1974) makes the same point:

It has long been known, for example, that overstressed individuals often engage in irrelevant activities or rigid stereotyped behavior and experience loss of discriminative skill and mental efficiency. The safe performance of complex tasks (such as those demanded in aviation) is improbable in such a psychological context. (p. 154)

In addition to perceptual impairments and fatigue caused by stress, decision making processes are also adversely affected. According to Bond et al. (1968), "Stress has a more serious effect on central processes, such as judgment and decision-making, than on motor skill per se" (p. 10-9). They indicate that in times where stress is high, "decision-making is perhaps one of the first things to be degraded" (p. 7-16). Information must be organized into meaningful patterns to permit the pilot to interpret the nature of the information received and to respond according-

ly. It is on the basis of such perceptions that pilots make decisions. The decisions and subsequent responses are determined by the interpretations placed on the pattern of sensations received. The key to correct decisions and accurate responses is correct interpretation or perception. Bond et al. (1968) maintain that "many of the errors of perception result from the failure to properly integrate information being received through various senses" (p. 5-11). Under psychological stress or when a pilot's attention is preoccupied with details or is distracted, he or she fails to integrate the information available and could consequently make faulty decisions and revert to wrong responses. Berlin et al. (1982) claim that an overstressed state of mind can increase the likelihood of poor judgement. Indeed, stress, anxiety or frustration "are not conducive to cool-headed decision making; they may cause rigidity, vacillation, apparent stupidity, or panic" (Bond et al., 1968, p. 7-14). Roscoe (1980) agrees that emotional stress can affect decision making efficiency:

The in-flight decision process is further complicated by the fact that flying is an emotional experience for many people. High levels of emotion, whether in normal or emergency flight situations, can be expected to have extreme effects on rational decisions, either adaptive or maladaptive. (p. 177)

An additional point made by Haward (1968) is that stress is both combinative and cumulative, so that while some stressors may not, by themselves,

. . . be sufficiently stressful to interfere with the pilot's capacity to fly safely, together they may so interfere with the cognitive processes and operational skills of the pilots that a serious error of judgement, potentially capable of producing a fatal accident, may occur. (p. 19)

Thus, any stressor can create a stressful climate that produces a ripple effect when other stressors come into play.

An interesting and pertinent point made by Davis (1964) and Biggs and Telfer (1981) is that in stressful situations, that is, when the arousal system is stimulated, the automatic defence system is activated, mobilizing immediate energy so that a person is ready for emergency action, such as running away or fighting. These defence mechanisms put the body on alert. However, in situations like flying, such automatic emergency reactions would be inappropriate and thus an added deterrent to proper responses. Consequently, in addition to being forced to deal with a threatening or a stressful situation, the pilot has to ignore or suppress automatic bodily reactions.

When dangers appear imminent, behaviour tends to undergo characteristic changes. For instance, responses tend to become more readily elicited, more rapid, more forceful and more extensive. These changes are of biological value, in that they enable the subject to react vigorously to situations which threaten him, but they are not always advantageous, for many of the danger situations met by pilots require, not vigorous activity, but restrained, deliberate and accurate responses. When these qualities are required, the emergency mechanisms may impair efficiency. This impairment may be progressive, because a vicious circle is readily instituted. (Davis, 1964, p. 13)

Further, Bond et al. (1968) caution that the effects of emotional stresses and anxieties are often very subtle and are not often recognized.

Reactions to the normal stresses and irritations of life vary from those of little concern to anyone, such as rationalization, to those which seriously interfere with a person's efficiency--and safety. More often than not a stressful situation merely serves to distract attention, to make it difficult to concentrate on the task at hand. Frequently a person is impelled to take risks, to "short cut", to accept reduced standards in himself or his equipment because of his emotions. (p. 9-15)

In fact, psychological stress can induce problems that are imponderable and never fully comprehensible. Like the iceberg, their bulk lies invisible below the surface of behavior.

It should be noted though that some students do not experience undue anxiety about learning to fly and they are not adversely affected by the experience. However, there is a large number of students who approach the flight training situation with a high degree of trepidation which interferes with their learning, their performance and their problem-solving efficiency. The responsibility lies with the flight instructor to reduce or control student pilot stress in flight training to facilitate and enhance learning and thus to promote achievement and build the student's confidence. Unfortunately, research has shown that flight instructors, instead of alleviating emotional stress, frequently impose additional stress on the student pilot. Krahenbuhl et al.

(1980) found that "one of the most salient stress producing agents in pilot training is the instructor pilot" (p. 1). Research by Grandchamp (1971), Melton and Wicks (1967), and Horowitz (1964) has also identified the flight instructor as the weakest link in the flight training process, and sometimes the most feared element by the student pilot.

Haward (1968) and Krahenbuhl et al. (1980) conducted almost identical studies to determine the level of stress different instructors imposed on student pilots. They found that while some instructors lowered the student's stress level, other instructors had an undesirable augmenting effect upon the stress experienced by the student pilot. When examining the behavior of the instructor who imposed additional stress, Haward notes that:

. . . two clear cut factors were his manner of correcting errors in cockpit drills during the prelanding checks (which proved particularly upsetting when the student was trying to concentrate on the difficulties of the approach) and his unduly early takeover of controls prior to landing if he felt the approach was less than perfect (which proved frustrating for the student and at the same time impaired learning efficiency). (p. 22)

In contradistinction, Haward points out that the instructor who reduced stress was

. . . a young Indian whose casual air of blissful confidence that the aircraft would fly itself off and land again despite what the student did to the controls made flying a real joy to the student. Conscientiously correcting every departure from correct flying with a quiet word, he nevertheless gave the student complete freedom to follow the exercises to the best of his existing ability,

never taking over control unless there was insufficient time to give appropriate instruction for remedial action. (p. 22)

Similarly, Krahenbuhl et al. (1980) found that "positive instructors" (those who relied on encouragement, acceptance, praise, and instructional cues) produced less stress on the student pilot, the result being better performance, while the "negative instructors" (those who relied on harsher tones, criticism, and scolding) significantly raised the stress level of the students, thus inhibiting performance. Research by Postman and Bruner (1948) also indicates that psychological stress produced by failure or the threat of failure and by ridicule resulted in poorer performance.

Thus, researchers agree that when stress induced by the task is augmented by distractions produced by an instructor's behavior or verbal disparagements of the student's performance, learning can be seriously hampered. When student pilots are confronted with a situation in which they feel particularly vulnerable and where their pride is at stake, or there are threats to ego integrity, the defensive tendency to "look good" or "save face" increases and attention that should be oriented to the flying task is used to deal with emotions. Consequently, the reaction to emotional stress or frustration is often ego-defensive, that is, the student is primarily preoccupied with the maintenance of self-esteem. Lazarus, Deese and Osler (1952) suggest that in such a situation the student might become so involved in

developing defensive mechanisms that concentration on the task at hand is greatly reduced and flying efficiency is adversely affected. In fact, "a major effect of anxiety is distraction from the learning tasks because our faculties are put to work mobilizing personal defenses" (Smith, 1982, p. 46).

In view of the research findings, flight instructor training should be closely re-examined and altered so that instructors will not only be competent pilots but will also be well-versed in the art of teaching; more specifically in the art of teaching adults in a non-traditional setting (i.e., the aircraft). As Telfer and Biggs (1985) emphasize, "teaching people to fly requires top-level skills in both flying and teaching" (p. 11). Moreover, since flight instructors are the cornerstone of flight training, the quality of their training is critical. "When you get down to bricks and mortar, flight instructors take the load. They are the foundation of the training structure, and the skills of the pilot population reflect their strength" (Moll, 1987, p. 83). Consequently, they must acquire an understanding of the basic principles and processes of learning and teaching. Furthermore, since stress or fear has been shown to be present in the flight training situation and can be disabling, one of the necessary functions of the flight instructor must be the reduction of student pilot stress. As Grandchamp (1971) states, "To ignore student

pilots' fears is to ignore one of their most basic learning needs" (p. 124). Along the same line, Steininger (1964) emphasizes the fact that "if flying training is to be successful the whole syllabus of instruction should aim at alleviating emotional stress" (p. 39). Sanders and Ethell (1986) agree:

The only effective way to deal with this complex problem is going to be pilot education, which hopefully will lead to self-monitoring. It is very possible that we can teach stress recognition just as we teach pilots to recognize their responses to hypoxia, which has similar self-masking characteristics. And like hypoxia, the more one is under the effects of stress, the less he recognizes it--insidious to say the least. (p. 39)

Traditional approaches to flight training though have not prepared instructors to recognize student pilot stress nor have instructors been taught ways or means to help students cope with stress. As Smode, Hall, and Meyer (1966) note:

The quality of pilot training is in large part dependent upon individual instructor pilots. Despite the instructor's key position in flying training, little effort has been devoted to controlling the quality of instructor personnel, and to ways for maximizing their utility in training. A viewpoint that has prevailed is that since instructors are easily defined as expert pilots, their activities and procedures in instructing students are satisfactory to the objectives of the training program. Yet significant variability among instructor personnel in technique, philosophy of instruction, and performance assessment has been demonstrated repeatedly. One result has been a significant lack of control of their outputs in a training program. (p. 200)

Along the same line, Roscoe (1980) states that "there is probably more literal truth than hyperbole in the frequent assertion that the flight instructor is the greatest single

source of variability in the pilot training equation" (p. 173). So if we want to improve and standardize the training of future pilots, we must recognize that the adequacy of flight instructor training is of utmost importance. The flight instructor

. . . is the one responsible for the training and eventual piloting aptness of the future airman. Since his instructional abilities/techniques are foremost in the training process and the eventual success for the pilot trainee, it becomes important to scrutinize the characteristics/attributes of the flight instructor to determine the best of flight instructor techniques. Understanding what contributes to the making of a "good" flight instructor on the "front end" of the flight training process should contribute significantly to air safety by reducing "pilot error" accidents because the trainees were initially taught by a properly educated instructor. (Buckingham and Wiersteiner, 1985, p. 560)

In the same way, Holmes (1986) stresses that "safe or accident free flying begins with good flight training. Well organized and planned instruction of essential skills and knowledge to operate an aircraft without accidents or incidents cannot be over emphasized" (p. 31). Bond et al. (1968) state:

Probably no area demonstrates more clearly the interdependence of men and machine than does modern flying. Human beings frequently fail as functional system components. No words can underscore this fact more emphatically than does the high proportion of "pilot-error" accidents. Unless we are willing to accept this high proportion, we must produce and use more information about the human links in the system. (p. 1-1)

Similarly, the Report of the Safety Review Task Force on FAA Flight Standards Safety Program (1985) states that,

"Pilot training and certification is probably the most important element in G.A. [General Aviation] safety, as illustrated by the fact that, according to FAA statistics, pilot error is a factor in 83% of general aviation accidents" (p. 5). In fact, when reactions to stress interfere with efficiency, or prevent solutions to problems, they are matters of concern in the field of safety. As Bond et al. (1968) underline, "skillful behavior is not made more effective by strong emotion. Fear is likely to produce incoordination and reduce skill. . . . For this reason, strong emotion is more likely to reduce safety than to increase it" (p. 9-1). Davis (1964) also found that many errors pilots made could be attributed to psychological stress: "Fear or anxiety or hazard or anticipatory tension . . . plays an important part in the causation of the errors made by pilots" (p. 12). Bond et al. (1968) profess that "Safety requires full attention. Emotional stresses and anxieties are the most disturbing distracters of attention" (p. 9-10).

Consequently, to attain optimal training efficiency and safer flying, flight instructors should receive special educational and psychological training (Bergeret and Marchesseau, 1959). Furthermore, since teaching is basically an interpersonal relationship, this dimension of the teaching process cannot be overlooked. Haward (1969) underscores this conclusion. "Many factors concerned with

student-instructor relationship remain to be made explicit and it is hoped that aviation psychologists will be encouraged to step forward into this terra-incognita" (p. 329).

Smode, Hall, and Meyer (1966) further recommend:

Research can profitably examine techniques for reducing emotional anxiety reactions that might impair performance. Emphasis should be placed on the conditions that evoke stress responses and on the development of procedures for reducing anxiety-provoking potentialities. Assuming that performance degradation will eventually occur if the individual is subjected to a stressful situation long enough, a desirable product of the research would be the development of training procedures for retarding the onset and the severity of the effects of stress. The training sequences should emphasize providing experience with the determiners of psychological stress, and hence, building up situational confidence in flight. (pp. 92-93)

So far though, "the entire area of stress in the cockpit has been left virtually untouched in researching some of the possibilities involved in pilot error accidents" (Sanders and Ethell, 1986, p. 9), or in studying its effect on the acquisition of flying skills, and in finding ways to help students and pilots in general cope with the stress inherent in flying.

Presently, flight instructor candidates spend the majority of their training time polishing their personal flying skills and acquiring essential technical knowledge. (See Chapter 5.) Minimal time is devoted to learning instructional techniques, especially techniques and approaches to be used when teaching in such a noisy,

threatening and stress-producing environment. Naughton (1986) deplores the fact that the greatest problem faced by flying schools "is finding CFIs [Civil Flight Instructors] who can communicate effectively and produce safe and competent pilots" (p. 46). He quotes Chief Pilot Fred Powell of Burnside Ott, as regrettably saying: "Our problem is finding properly trained flight instructors who know something about teaching" (p. 46). Unfortunately, a large number of flight instructors would rather be flying for an air carrier than teaching student pilots to fly. The Aviation Consumer (1980) claims that "half of the CFIs in the country are instructing because they like it, the rest are just building time for an airline job" (p. 12-13). Many flight instructors instruct not because they enjoy teaching but because it is the most inexpensive way to build time towards the coveted Airline Transport Pilot Licence. Consequently, they do not see teaching as their profession. Naughton (1986), on the other hand, underscores a very important, yet unfortunate aspect of the flight training industry:

It's unfair and a serious flaw in the system that many in the industry look down their noses at the CFI [Civil Flight Instructor] jobs. As a result of that attitude and the low pay, it is rare to find instructors who regard teaching as their career, their mission in life. Many who actually would be happier teaching than flying the scheduled skies cannot afford to continue. . . . The result is usually high CFI attrition and irregular attention to the student.

In such circumstances, it's not surprising that few CFIs are dedicated, competent teachers. Vir-

tually all are good pilots and conscientious individuals but teachers they are not. (p. 46)

Howard (1983) claims that flight instructors, as a group, do not view "teacher" as their primary professional identity. They consider themselves foremost as "pilot". Thinking back to his initial flight instructor ride with a Federal Aviation Administration (FAA) inspector, Collins (1984) supports this view:

I knew that I was a hot pilot if I could satisfy him. What I didn't know was that I wasn't a teacher. I was just a practiced-to-perfection spin, spot-landing and turn-about-a-point artist.

That beginning is probably why for years I never thought of a flight instructor as a teacher, at least when in an airplane. The role while flying, as I saw it, was to protect the airframe while the student taught himself how to fly based on what I had explained to him before flight . . . It wasn't until later that I learned that a good instructor has a much stronger role than protecting the airframe. (p. 77)

In the early 1940s, comments were made concerning the fact that flight instructors, while professional pilots, are seldom professional teachers and that there is a difference between one's ability to fly and the ability to impart flying skills to others. Kelly (1943) makes the point as follows:

A man may be able to fly well, and still be unqualified to teach others how to fly. . . . Efforts must be made to develop teaching skill as a necessary accompaniment to skill in flying among those who are given the responsibility for training flying personnel. (p. 6)

Viteles et al. (1943), writing about the Civilian Pilot Training Program, state that:

The actual administration of flight instruction remained, for the most part, in the hands of persons with interest and experience in flying but little or no experience with methods of training.

. . . There persisted the point of view that any pilot supplied with the program and materials of instruction could teach others to fly. In other words, there remained the belief--to be found also in other industries, and even to some extent in higher institutions of learning--that teaching others is a matter of a sixth sense; an "intuitive faculty" which defies explanation; a "hunch," appearing spontaneously in the teaching situation, that tells what is the right thing to do at the right time in training others. (p. 9)

Minimal change in the training of flight instructors has occurred in the past forty years! Even today, most flight instructors are granted a flight instructor rating without any formal recognition that teaching is an art that requires its own knowledge and skill. Geier, executive director of the American National Association of Flight Instructors, is quoted by Moll (1987) as confirming this:

I'm convinced that some of the problems pilots have in dealing with airspace are due to bad training. . . . The majority of the testing now is to see if a prospective instructor can fly. We've already established that when he got his private. Not enough emphasis is placed on his ability to teach, to analyze a student's mistakes, to deal with a student who reaches a plateau and doesn't seem to be able to progress. And we're still teaching flying the way it was taught back in the beginning: "Watch what I do, then you do it". (p. 84)

Telfer (1983), in a study assessing Australian flight instruction, says:

There remains a tendency for Australian flight instructors to see teaching, rather than learning, as pre-eminent. The instructor's strength is that of personal skill in a specialist field. This leads to an emphasis on content expertise in

flight instruction (placing a liability on the learner to observe and replicate the skills) rather than a commensurate weighting being given to the importance of the process of learning to fly (which would recognise the central role of the learner, rather than that of the instructor). (p. 581)

Furthermore, as Lombardo (1986) notes, the individuals designing flight training programs are often more practitioners than educators:

Unfortunately few flight training operations can afford the luxury of bringing in an educational consultant to help structure their program. Often the techniques employed are based on educational assumptions inappropriate for the complexity of the training involved. (p. 1)

Besides not being trained for their role as professional teachers, flight instructors are seldom made aware of the level of physical, physiological, and psychological stress (Diehl et al., 1983; Berlin et al., 1982) accompanying the task of piloting an aircraft. In fact, the emotional factors coming into play when learning how to fly are often not recognized as stressors by the instructor. Steininger (1964) notes that even though experienced instructors recognize differences of behavior among their students, "psychologically they are not always understood by the instructor" (p. 33). Spark (1980) succinctly summarizes the current tendencies in flight instructor training and points out some of the deficiencies:

He or she simply followed the set patterns handed down from generation to generation of demonstrating and teaching aircraft manoeuvres, rather than approaching the task in the full teaching role.

Instructor training, to this day, is still

confined to mastering the 17 basic functions of learning to fly to thoroughly understand the mechanics of flight and to have some rather parrot fashion method of passing on this message to would-be aviators.

But nothing is learned of the psychology of teaching, nothing is learned about retaining motivation and other attendant matters, which are necessary in a true learning environment. (p. 42)

Lombardo (1986) makes the same point:

Most flight instructors, who have practically no training in the psychology of education or program design, use their own student experiences as a model. If it was good enough for them, then it is good enough for their student. This causes a type of self-perpetuating, ever-growing problem as each instructor potentially adds an additional layer of misconception to be passed on to the next generation of flight instructors. (p. 1)

Thus, flight instructor training still addresses mainly the cognitive domain (content expertise) and aims at polishing personal sensorimotor skills. Issues such as psychological stress and interpersonal relationships are usually ignored. This fact emphasizes the anachronistic character of flight instructor training and reveals that aviation education has not kept pace with technological progress and has not benefitted sufficiently from available educational insights and techniques described in the literature. Roscoe's (1980) comment about flight training reiterates this point:

Pilot training in the United States has grown like Topsy, with little guidance in its development. Basic research in human learning has had a virtually imperceptible effect on the configuration of either civilian or military pilot training programs despite the lip service that it continually receives. The popular term "training technology" is a euphemism for trial and error. (p. 177)

In summary, learning to fly, like all other learning situations, involves the whole person. It is the whole person, including the feeling person, who experiences and reacts. Consequently, flight instructors should be taught to take into account all of the factors affecting learning especially since the cockpit provides a poor classroom environment (Holmes, 1986) because it is a hostile and anxiety-producing environment (Link, 1970). One of the most important factors in flight training, but which has been ignored in flight instructor training, is that of student pilot emotional or psychological stress and its effect on learning, performance and decision making skills, and ultimately on aviation safety.

## Chapter 3 - Methodology

Given that the central thrust of the present research is to be a description and an interpretation of perceptions, feelings and emotions of student pilots and flight instructors during flight training, the most appropriate research strategy was deemed to be the qualitative/naturalistic approach rather than the mainstream "scientific"/rationalistic method. In other words, the naturalistic paradigm becomes the paradigm of choice when the purpose of the inquiry is to gain knowledge of human behavior.

It is virtually impossible to imagine any human behavior that is not heavily mediated by the context in which it occurs. . . . Moreover, it is impossible to believe, on the basis of experience, that an investigator can keep an objective distance when the objects of his investigation are people, and it might not be desirable to do so even if one could. Finally, it is difficult to imagine what a context-free generalization would be like with respect to human behaviors, which are so strongly contextually mediated.

On balance, then, the naturalistic paradigm is, with some exceptions, the method of choice when dealing with human behaviors. (Guba & Lincoln, 1981, pp. 62-63)

The expression "qualitative methodology" is fraught with ambiguity and multiple meanings. It is commonly used as an inclusive term referring to a number of research strategies or paradigms sharing certain basic assumptions and characteristics. Van Maanen (1979A) specifies,

The label qualitative methods has no precise meaning in any of the social sciences. It is at best an umbrella term covering an array of interpretive techniques which seek to describe, decode, translate, and otherwise come to terms with the meaning, not the frequency, of certain more or less naturally occurring phenomena in the social world. (p. 520)

Morgan and Smircich (1980) add that "qualitative research is an approach rather than a particular set of techniques, and its appropriateness derives from the nature of the social phenomena to be explored" (p. 491).

The roots of qualitative methodology are found in a variety of philosophical, epistemological, and methodological traditions (i.e., existentialism, phenomenology, anthropology, ethnography, sociology, ethnomethodology). As a result, the methodological literature offers quite an array of terms when referring to the qualitative approach. For example, Guba (1981) notes that the "naturalistic" paradigm is also referred to as phenomenological, anthropological, or ethnographic (p. 75). Similarly, Patton (1980) talks about the "holistic-inductive" paradigm of naturalistic inquiry (p. 44). Most of the terms used, such as holistic, inductive, naturalistic, descriptive and interpretive, are qualifiers that describe or isolate one facet or characteristic of the qualitative approach. Words like anthropology, ethnography, and phenomenology, on the other hand, refer to established disciplines of study with their respective theoretical perspectives and methodological traditions and wherefrom are derived the theoretical underpinnings and perspectives of qualitative methods.

Bogdan and Biklen (1982), along with many other qualitative investigators, underscore the fact "that there appears to be almost as many variations in conducting quali-

tative research as there are qualitative researchers" (p. x). However, despite the diversity of qualitative paradigms, certain common traits connect research done in the qualitative mode. These prevailing characteristics will be the focus of the first Part of this chapter, while the second Part will briefly indicate the sources of information. The third and fourth Parts respectively explicate the data collection and data analysis techniques.

#### PART I. CHARACTERISTICS OF QUALITATIVE RESEARCH

Bogdan and Biklen (1982) point out that in the emphasis on the intersection of social context and biography, taken from the "Chicago School" methodology, "lies the roots of contemporary descriptions of qualitative research as 'holistic'" (p. 11). Back in 1932, Waller's, Sociology of Teaching was influential in determining the orientation of qualitative research in education. He stressed that "children and teachers are not disembodied intelligences, not instructing machines and learning machines, but whole human beings tied together in a complex maze of social interconnections. The school is a social world because human beings live in it" (p. 1).

Based on the assumption of multiple realities and interactivity, researchers using qualitative methods follow Waller's lead and seek an understanding (verstehen) of phenomena as "wholes," or at least in ways that reflect the

complexity of the phenomenon under study. In qualitative research, a holistic approach is thus necessary to gain a full understanding or to arrive at a complete picture of a phenomenon. Events, interactions and participants' perspectives and interpretations are studied against the backdrop of the phenomenon as a whole.

The researcher strives to understand the gestalt, the totality, and the unifying nature of particular settings. This holistic approach assumes that the whole is greater than the sum of its parts; it also assumes that a description and understanding of a program's context is (sic) essential for understanding the program. Thus, it is insufficient simply to study and measure the parts of a situation by gathering data about isolated variables, scales, or dimensions. (Patton, 1980, p. 40)

Guba (1981) provides a graphic description of this holistic view, saying it "gives the appearance of 'whole cloth'; if one attempts to focus attention on certain portions of reality, the whole falls apart as though the cloth had been cut with scissors" (pp. 77-78).

Qualitative research designs are frequently referred to as "naturalistic" because the investigator does not alter, manipulate or attempt to control the natural setting. In short, the investigation of the phenomenon takes place where the event naturally occurs, or within its natural context.

Qualitative designs are naturalistic in that the researcher does not attempt to manipulate the research setting. The research setting is a naturally occurring event, program, relationship, or interaction that has no predetermined course established by and for the researcher. Rather,

the point of using qualitative methods is to understand naturally occurring phenomena in their naturally occurring states. (Patton, 1980, p. 41).

For naturalists, the interpretation of a phenomenon cannot be separated from the context in which it occurs.

If anthropological interpretation is constructing a reading of what happens, then to divorce it from what happens--from what in this time or that place specific people say, what they do, what is done to them, from the whole vast business of the world--is to divorce it from its application and render it vacant. A good interpretation of anything--a poem, a history, a ritual, an institution, a society--takes us to the heart of that of which it is the interpretation. (Geertz, 1973, p. 18)

Qualitative methods of inquiry produce descriptive, not explanatory, data which are usually reported using the respondent's own written or spoken works. The qualitative researcher is interested in an in-depth understanding of a phenomenon as reflected in a small group setting and not in prediction; therefore, the naturalistic paradigm relies on qualitative data, that is, detailed or "thick description" (Geertz, 1973) derived from close contact with the sources of data. The qualitative researcher seeks to report on what the respondents know and how such knowledge guides and constrains their behavior. The results of this research are richly textured, thick descriptions consisting of people's own words and word-pictures of events and activities.

In their search for understanding, qualitative researchers do not reduce the pages upon pages of narration and other data to numerical symbols. They try to analyze it with all its richness as closely as possible to the form in which it was recorded or transcribed. (Bogdan & Biklen, 1982, p. 28)

Basically, then, qualitative data consists of direct quotations from respondents and descriptions of situations, events, interactions and activities in an attempt to understand the point of view and the experiences of the respondents. For the qualitative investigator, "the description of social reality is the description of a mosaic" (Bogdan & Biklen, 1982, p. x). Or as Patton (1980) puts it,

Qualitative data consists of detailed descriptions of situations, events, people, interactions, and observed behaviors; direct quotations from people about their experiences, attitudes, beliefs, and thoughts; and excerpts or entire passages from documents, correspondence, records, and case histories. The detailed descriptions, direct quotations, and case documentation of qualitative measurement are raw data from the empirical world. The data are collected as open-ended narrative without attempting to fit program activities or peoples' experiences into predetermined, standardized categories such as the response choices that comprise typical questionnaires or tests. (p. 22)

The purpose of presenting such detailed or thick description is to take the reader into the setting that was investigated.

A qualitative approach, then, seeks to capture what people have to say about their own experiences, in their own setting, using their own words. Hence, the reason for the data being described by some as "anecdotal".

One of the distinctive hallmarks of qualitative methods is that the data are analyzed inductively. The initial focus of qualitative research is on fully understanding a phenomenon without imposing predetermined expectations on

the research setting. Inductive designs begin with specific observations or individual experiences, "without pigeon-holing or delimiting what those experiences will be in advance of fieldwork" (Patton, 1980, p. 41), and build toward general patterns.

You are not putting together a puzzle, whose picture you already know. You are constructing a picture which takes shape as you collect and examine the parts. The process of data analysis is like a funnel: things are open at the beginning (or top), and more directed and specific at the bottom. The qualitative researcher plans to use part of the study to learn what the important questions are. He or she does not assume that enough is known to recognize important concerns before undertaking the research. (Bogdan & Biklen, 1982, p. 29)

Consequently, an inductive approach, being "discovery oriented" (Guba, 1978), eschews preordinate designs in favor of flexibility, that is, the design "emerges" or unfolds as the research evolves. This means that an interpretive understanding (verstehen) of a phenomenon emerges from experience with the phenomenon in its natural context with no prior constraints placed on what the outcomes of the investigation will be.

The strategy in qualitative designs is to allow the important dimensions to emerge from analysis of the cases under study without presupposing in advance what those important dimensions will be. The qualitative methodologist attempts to understand the multiple interrelationships among dimensions which emerge from the data without making prior assumptions about the linear or correlative relationships among narrowly defined, operationalized variables. (Patton, 1980, p. 41)

In summary, qualitative research which accepts the complexi-

ty of a changing reality, is characterized as inductive because naturalistic researchers develop their concepts and analytical categories from the data, rather than from preconceived expectations and fixed designs. This "discovery of theory from data," Glaser and Strauss (1967) call "grounded theory."

To gain empathic understanding and to generate "grounded theory," the researcher doing naturalistic work must be intimately aware of and immersed in the setting of the phenomenon being explored. In other words, to inductively study phenomena in their naturally occurring complexity "involves the studied commitment to actively enter the worlds of interacting individuals" (Denzin, 1978, pp. 8-9). To understand the minutiae of the phenomenon, that is, both externally observable behaviors and internal states--world view, opinions, values, attitudes, and symbolic constructs (Patton, 1980, p. 44), the inquirer must get close to the people and situations being studied. "The inner perspective assumes that understanding can only be achieved by actively participating in the life of the observed and gaining insight by means of introspection" (Bruyn, 1963, p. 226). In short, an insider's stance compels the qualitative researcher to actually enter the world of the studied and attempt to come forth with an empathic understanding of that world in terms of the interpretive standards found in that milieu.

An integrating theme prevalent in qualitative methods is the fundamental concept of verstehen, "the interpretive understanding of human interaction" (Bogdan & Biklen, 1982, p. 31).

The verstehen tradition stresses understanding that focuses on the meaning of human behavior, the context of social interaction, an empathetic understanding based on subjective experience, and the connections between subjective states and behavior. The tradition of verstehen or understanding places emphasis on the human capacity to know and understand others through sympathetic introspection and reflection from detailed description and observation. (Patton, 1980, p. 45)

According to Bogdan and Biklen (1982), one of the fundamental assumptions of qualitative approaches is that human experience is mediated by interpretation.

Objects, people, situations, and events do not possess their own meaning; rather, meaning is conferred on them. . . . The meaning people give to their experience and their process of interpretation is essential and constitutive, not accidental or secondary to what the experience is. To understand behavior, we must understand definitions and the process by which they are manufactured. . . . People act, not on the basis of predetermined responses to predefined objects, but rather as interpreting, defining, symbolic animals whose behavior can only be understood by having the researcher enter into the defining process through such methods as participant observation.

Interpretation is not an autonomous act, nor is it determined by any particular force, human or otherwise. Individuals interpret with the help of others . . . but others do not do it for them. Through interaction the individual constructs meaning. People in a given situation (for example, students in a particular class) often develop common definitions (or "share perspectives" in the symbolic interactionist language) since they regularly interact and share experiences, problems, and background; but consensus is not inevitable. (p. 33)

One of the main concerns of the qualitative researcher is, thus, "participant perspectives," that is "a concern with capturing the people's own way of interpreting significance" (Bogdan & Biklen, 1982, p. 30), or the ways different people make sense out of their lives. "From the interpretive-idealist perspective, the purpose of investigation should be verstehen, or interpretive understanding, and this requires a hermeneutical approach" (Smith, 1983, p. 12). This interpretive understanding of the meaning another assigns to his or her actions is perceived as a hermeneutic process which requires that these meanings be placed within context, in other words, it must be context-bound. Accordingly, to describe what is happening in the educational world in a context-free or neutral scientific language is untenable to naturalists.

Hermeneutics demonstrates that understanding cannot be pursued in the absence of context or of an interpretive framework. To interpretive researchers, the investigator of human affairs must always take into account the fact that meaning is socially and historically bounded, both for the investigator and the investigated. A hermeneutical approach is therefore employed to achieve an interpretive understanding of human activity, and this interpretation is expressed in the language of the situation rather than in a neutral scientific language. (Smith, 1983, p. 12)

By way of concluding this discussion of the method, it seems apropos to briefly address a few of the more common questions raised concerning the trustworthiness of qualitative research. Guba and Lincoln (1981) suggest four major

concerns relating to the trustworthiness of the data presented and the interpretations drawn from the data. Each will be discussed in some detail subsequently.

1. Truth value: How can one establish confidence in the "truth" of the findings of a particular inquiry for the subjects with which--and the context within which--the inquiry was carried out?
2. Applicability: How can one determine the degree to which the findings of a particular inquiry may have applicability in other contexts or with other subjects?
3. Consistency: How can one determine whether the findings of an inquiry would be consistently repeated if the inquiry were replicated with the same (or similar) subjects in the same (or similar) context?
4. Neutrality: How can one establish the degree to which the findings of an inquiry are a function solely of the subjects and conditions of the inquiry and not of the biases, motives, interests, perspectives, and so on of the inquirer? (pp. 103-104)

#### 1. Truth Value

Qualitative researchers attempt to establish "truth value" (internal validity in "scientific" terms) by testing the "credibility" of their findings and interpretations with the informants from whom data were drawn. This credibility test is commonly referred to as doing "member checks". Guba (1981) stresses that "the process of member checks is the single most important action inquirers can take, for it goes to the heart of the credibility criterion" (p. 85). Likewise, Guba and Lincoln (1981) underscore that,

The determination of credibility can be accomplished only by taking data and interpretations to the sources from which they were drawn and asking directly whether they believe--find plausible--the

results. This process of going to sources--often called making "member checks"--is the backbone of satisfying the truth-value criterion. (p. 110)

## 2. Applicability

Qualitative researchers who believe in multiple realities, do not think generalizations about human behaviors are possible because generalizations are of necessity context-free propositions. Phenomena, on the other hand, are intimately and intricately connected with the natural context in which they occur. Consequently, Guba and Lincoln (1981) suggest replacing "generalizability" with the idea of "fittingness" (p. 118) as the naturalist's key concept. Guba (1981) specifies,

For the naturalist, then, the concept analogous to generalizability (or external validity) is transferability, which is itself dependent upon the degree of similarity (fittingness) between two contexts. The naturalist does not attempt to form generalizations that will hold in all times and in all places, but to form working hypotheses that may be transferred from one context to another depending upon the degree of "fit" between the contexts. (p. 81)

Working hypotheses are very much context-bound and in order to make judgments about the transferability of working hypotheses, the investigator must be fully conversant with both the originating and receiving contexts, hence the importance of "thick description". Thick description, which presents a kaleidoscopic version of the phenomenon, also "involves interpreting the meaning of such demographic and descriptive data in terms of cultural norms and mores, community values, deep-seated attitudes and motives, and the

like" (Guba & Lincoln, 1981, p. 119).

In summary, qualitative researchers are not concerned with developing context-free generalizations of enduring truth value. Rather, the naturalist attempts to generate working hypotheses rooted in the natural context that spawned them. Since grounded hypotheses (grounded theory) are intimately tied to the real world, only extensive knowledge of the milieu will enable one to assess the degree of transferability or "fittingness" to another context.

### 3. Consistency

Qualitative research is often criticized on the grounds that it is virtually impossible to replicate a descriptive study of a phenomenon. Barritt et al. (1983) note, however, that "it is hard to redo any kind of study when humans are involved because conditions are never entirely replicable, and it is easier to recreate the appearance of similarity in a controlled experiment" (p. 124).

For the qualitative investigator who believes in multiple realities, emergent designs, and who uses changeable humans as instruments, the concept analogous to consistency (reliability for rationalists) is "dependability" (Guba, 1981) or "auditability" (Guba & Lincoln, 1981).

For the naturalist, the concept of consistency implies not invariance (except by chance) but trackable variance--variance that can be ascribed to sources: so much for error, so much for reality shifts, so much for increased instrumental proficiency (better insights), and so on. The naturalist thus interprets consistency as dependability,

a concept that embraces elements both of the stability implied by the rationalistic term reliable and of the trackability required by explainable changes in instrumentation. (Guba, 1981, p. 81)

Guba and Lincoln (1981) propose the concept of "auditability" instead of consistency (reliability). They explain that auditability simply means that the work of one investigator could be tested for consistency or "audited" by a second investigator, who, after examining the data of the first, could conclude, "yes, given that perspective and those data, I would probably have reached the same conclusion" (p. 124).

#### 4. Neutrality

The term neutrality, commonly used as being synonymous with "objectivity", is generally accepted as meaning trustworthy or reliable. The word "subjectivity", on the other hand, has acquired the connotation of untrustworthy or unreliable. Scriven (1972) underlines this fundamental confusion in the use of these two terms.

The terms objective and subjective are always held to be contrasting, but they are widely used to refer to two quite different contrasts, which I shall refer to as the quantitative and qualitative senses. In the first of these contrasts, "subjective" refers to what concerns or occurs to the individual subject and his experiences, qualities, and dispositions, while "objective" refers to what a number of subjects or judges experience--in short, to phenomena in the public domain. The difference is simply the number of people to whom reference is made, hence the term quantitative. In the second of the two uses, there is a reference to the quality of the testimony or the report or the (putative) evidence, and so I call this the "qualitative" sense. Here, "subjective" means unreliable, biased or probably biased, a matter of opinion, and "objective" means reliable, factual,

confirmable or confirmed, and so forth. Now it would certainly be delightful if these two senses coincided, so that all reports of personal experience, for example, were less reliable than all reports of events witnessed by a large number of people. But as one thinks of the reliability of reports about felt pain or perceived size, on the one hand, and reports about the achievement of stage magicians and mentalists, on the other, one would not find this coincidence impressive. (pp. 95-96)

All of us have witnessed how easily a large audience can systematically be duped or deluded. Nevertheless, qualitative inquirers must constantly wrestle with charges that the researcher's attitudes, opinions, and prejudices can bias the data. Because the interpretation and the analysis of the data is necessarily a product that has gone through the researcher's selective mind, like through a sieve, many critics worry about subjectivity. Bogdan and Taylor (1975) point out that,

What these critics fail to realize is that the researcher acts as a selective sieve in all forms of research. For example, those who are involved in survey research choose questions that correspond to their notions of what is important and consequently force reality into a preconceived structure. (p. 12)

Bogdan and Biklen (1982) add that qualitative researchers openly acknowledge and communicate their own prejudiced viewpoint in an attempt to minimize the effect of such biases on the data. They stress that, in reality, biases are universal and cannot be totally eliminated from any inquiry.

It should be noted that we are talking about limiting observers' biases, not eliminating them.

Qualitative researchers attempt to seek out their own subjective states and their effects on data but they never think they are completely successful. All researchers are affected by observers' bias. Questions or questionnaires, for example, reflect the interests of those who construct them, as do experimental studies. Qualitative researchers try to acknowledge and take into account their own biases as a method of dealing with them. (p. 43)

In fact, there are methods and techniques that qualitative researchers employ to aid them transcend or at least minimize the potential effect of their own biases on the collection and analysis of the data. Bogdan and Biklen (1982) stress that,

For one thing, qualitative studies are not impressionistic essays made after a quick visit to a setting or after some conversations with a few subjects. The researcher spends a considerable time in the empirical world laboriously collecting and reviewing piles of data. The data must bear the weight of any interpretation, so the researcher must constantly confront his or her own opinions and prejudices with the data. Besides, most opinions and prejudices are rather superficial. The data that are collected provide a much more detailed rendering of events than even the most creatively prejudiced mind might have imagined prior to the study. (p. 42)

One of the methods used by qualitative researchers to guard against their own biases is doing "member checks" which was mentioned under the credibility criterion. Naturalists also record detailed fieldnotes which include reflections on their own opinions, preconceived ideas, prejudices (subjective states) and their potential effect on the data. Bracketing is yet another means by which qualitative researchers attempt to safeguard against the potential effect

of the researcher's presuppositions and beliefs on the data. It means researchers must consciously take account of and openly acknowledge the "common-sense" understandings under which they collect data. Bogdan and Biklen (1982) urge qualitative researchers "working in the qualitative mode to be more sensitive to the need to 'bracket' or suspend their own common-sense assumptions, their own world view, instead of taking it for granted" (p. 38). Barritt et al. (1983) explain,

To bracket, you simply make a conscious decision to observe without prejudice; you decide you will not pay attention to what you already believe about something. Some would argue that rising above one's prejudices entirely is impossible. Perhaps it is. But bracketing is useful nevertheless, because to do it one has first to examine oneself carefully as investigator. The first questions for any phenomenological study are questions we address to ourselves. The questions are these: What are my prejudgements? What personal commitments do I bring to this study? What do I know about the subject that could influence what I see? Having discovered our presuppositions and beliefs and having brought them to light, we know to watch out for them. Later when the study is written, it makes sense to tell readers about these prejudices so that they can watch out for them as they read description and analysis. (pp. 70-71)

Objectivity and subjectivity, in the qualitative sense, are seen as opposites. "A subjective experience is one that happens for someone; it is personal, immediate and real. . . . A subjective experience is a private event. An objective experience is impersonal, a public event" (Barritt et al., 1983, p. 129). Bogdan and Biklen (1982) point out that qualitative researchers attempt "to objectively study the

subjective states of their subjects" (p. 42).

This section has attempted to show that qualitative research is interested in everyday activity, as defined, enacted, interpreted, and made problematic by people going about their normal routines. As Roy Rist states in the Foreword of Qualitative Research for Education, "qualitative research brings back into focus a concern of many who toil in the vineyard of educational research. This mode of research brings the study of human beings as human beings to center stage" (Bogdan & Biklen, 1982, p. x).

## PART II. SOURCES OF INFORMATION

In order to gain an understanding of student pilots' psychological stress and their perceptions vis-a-vis their flight instructor's awareness of/or sensitivity to their feelings and emotions during flight training, and the manner in which flight instructors reduce or increase student pilot stress, semi-structured, in-depth interviews were conducted with twenty student pilots from the four Western provinces. The study was restricted to student pilots who already hold at least a private pilot licence and who undertook additional training, since by then, they have been exposed to more than one flight instructor. Yet, if flight instructors are indeed unaware of their students' psychological stress and if flight instructors at times even contribute to student pilot stress, it could be that "they are the product of an unsatisfactory system of flying training" (Spark, 1980, p.

41). To determine whether flight instructors are the product of an inadequate system, sixteen flight instructors, also from the Western provinces, were interviewed. The interviews provided an opportunity for flight instructors to describe the training they received and to express their views and perceptions about the adequacy of their training in two aspects: (a) in preparing them for their role as teachers, and (b) in helping them recognize and reduce student pilot stress. Additionally, since flight instructors have been exposed to different flight instructors during the course of their own training, they were asked, like the student pilots, to give their perceptions of the manner in which some flight instructors might have contributed to their stress as opposed to the way others might have helped them overcome psychological stress or emotional barriers to flight training. The study was restricted to Class I and Class II flight instructors because they are seasoned instructors; they are responsible for the supervision of Class IV (novice) instructors, and Class I flight instructors are the only ones who may teach flight instructor candidates. Related literature and results from previous research were also used as another source of data.

### PART III. DATA COLLECTION TECHNIQUE

Using appropriate questions as guides, semi-structured, in-depth interviews were conducted with twenty student

pilots and sixteen flight instructors. Since it was not feasible to talk to a large sample of the population of interest, it was important to make choices on the basis of the quality of the data to be collected. Guba (1981) suggests:

. . . theoretical/purposive sampling, that is, sampling that is not intended to be representative or typical (such a purpose focuses the investigator on similarities and makes sense only when one is trying to generalize) but that is intended to maximize the range of information uncovered. The nature of the sampling process is governed by emergent insights about what is important and is relevant. (p. 86)

Consequently, the concept of "key informants", taken from Bogdan and Biklen (1982) was adopted.

Some subjects are more willing to talk, have a greater experience in the setting, or are especially insightful about what goes on. These people become key informants and often you will talk with them, compared to other subjects, a disproportionate amount of time. (p. 63)

The method of sampling became a combination of "purposeful sampling," where particular informants are chosen "because they are believed to facilitate the expansion of the developing theory" (Bogdan & Biklen, 1982, p. 67) and the "snowball sampling technique", where a person that is interviewed is asked to recommend others (Bogdan & Biklen, 1982, p. 66).

Ten of the student pilots were interviewed individually, while a class of ten first year students taking flight training at a Flying School affiliated with a Community College were interviewed collectively. Ten flight instructors were interviewed individually and six flight instruc-

tors were interviewed as a group during one of their weekly instructors' meetings. The interviews took place in private settings--the respondent's home or mine, or a classroom or briefing room at the school where the respondent(s) worked or studied.

When participants agreed, interviews were tape recorded and transcripts were made of the recorded sessions. If informants preferred not to have the interview tape recorded or when tape recording was not possible, as during follow-up telephone conversations, sketchy notes were taken by the interviewer during the conversation and more detailed notes were completed immediately after the interview or telephone conversation.

No deceptions were employed and all the informants participating in the study were advised of the exact nature and purpose of the research project. Participants were also informed that they were free to refuse to participate in the research project or to withdraw consent and to discontinue participation at any time without penalty. Informants were assured that names would not be used in the report and that what was said in the interview would be treated confidentially.

#### PART IV. DATA ANALYSIS

Each interview was analyzed for important elements of the experience and for underlying meanings, all of which

were set forth using, whenever possible, the language of the informant. Subsequently, themes from all the interviews were analyzed to draw out common themes, common feelings, and common aspects of the experience. Unique themes or "variations" in the themes were not discarded but are noted separately. The important elements, underlying meanings and emergent themes were resubmitted to the informants to confirm that they accurately capture the intended meanings. As was mentioned earlier, doing "member checks" is advocated by prominent qualitative researchers, such as Guba and Lincoln, as a means of testing the credibility of the data collected along with the resultant interpretive analysis.

## Chapter 4 - Student Pilot Stress

"On the sixth day, the Instructor  
created God in his own image."

Anonymous

## INTRODUCTION

The literature reviewed in Chapter 2 indicates that student pilots often experience psychological stress during their training and that the flight instructor frequently is instrumental in either alleviating this stress or augmenting it. To find out what student pilots felt was particularly stressful during their flight training, a sample of twenty pilots were interviewed. They were explicitly encouraged to talk about apprehensions or fears they might have had with regard to certain exercises or certain aspects of the training program. They were also asked to relate incidents where they felt their instructor had increased or alleviated their psychological stress and to describe attitudes and behaviors of flight instructors which they felt were particularly annoying and interfered with their learning versus those they felt were helpful in reducing their tensions or apprehensions.

The first Part of this chapter outlines the exercises and situations that student pilots found most stressful. The second Part presents some of the attitudes and behaviors of flight instructors found to be particularly negative by student pilots, while Part Three gives the opposite picture: that of the "positive" flight instructor.

## PART I. STRESSFUL EXERCISES AND SITUATIONS

Most student pilots admitted being nervous or apprehensive when it came to manoeuvres such as the stall, the spin, the landing phase or going solo, and the majority approached the first few hours of flight training with a high degree of trepidation mixed with excitement and anticipation. Schimmelpenninck (1983), a private pilot, echos the feelings of many a student pilot when he confides:

My first five hours of flying were hell. I was convinced the little Cessna would fall out of the sky unless I gripped the yoke tightly. Every circuit was an exercise I wanted to get over with. As a result, I always overbanked to turn left after climbout. In the fifth lesson my instructor sneered: "You really like those steep banks, don't you? Great way to kill yourself." (p. 10)

White knuckles and resultant overcontrolling are common symptoms of tension during the early stages of flight training.

*"I had never been up in a small airplane before, so I was quite nervous at the beginning. I would hold on to the control column so tightly I almost had to peel my fingers off from it at the end of the lesson (laugh)."*

*"I was always very nervous. I would get so frightened. I would get really tense at the controls and probably if I'd just been able to stay just a little bit more relaxed, it might not have been such a difficult undertaking. But it felt scary."*

*"I was very nervous at the beginning. When I'd put my feet on the rudder pedals you could see my legs shaking."*

I'd get sweaty palms and I'd hold on to the control column for dear life. My instructor used to kid me about my white knuckles. But I really had a hard time to relax. I was tense most of the time."

"I wanted to fly quite badly. I was very eager to learn, very interested. But I also was very apprehensive because I had never been in a two-seat airplane before. We took this little plane on my discovery flight and my instructor let me fly. It was great but I was appalled, I was terribly nervous or tense. I was both excited and scared."

"I was quite nervous. Even for the Introductory Flight, I was tense. I couldn't keep the aircraft straight on the taxiway and I thought, I can't even taxi properly, how am I gonna fly this thing? I'd break out in a sweat, the whole thing. I'm sure you couldn't have taken my hand off the control column if you had tried (laugh). And when my instructor would say, 'I've got control', I'd get my hand off and sneak it down to wipe the sweat off on my pants. It was so wet it would have slipped. Yeah, I was nervous from day one."

### Going Solo

"I was anxious because I had this idea of going solo hanging over my head. I thought, I can't do that. I'm not ready for that. I guess thinking about going solo was probably the most apprehensive thing for me. So what I did

basically was--I would go for a couple of lessons and then I wouldn't call him [the instructor] for a month or so. Then I'd have to start over again. I was sort of prolonging it that way. Partly it was because of my instructor but partly it was because I would get scared."

"When I realized that the landings were going fairly well, I realized that I would be going by myself. And that scared me because I still didn't know what I was looking for. I was flying by the seat of my pants or by something subconscious that was helping me do it but I wasn't aware of what it was."

"When I went solo to the practise area, I was afraid. I felt I wasn't ready. I had lost my confidence and I scared myself. It took me a long time to come back. I quit flying for a while."

"Because I didn't have much confidence in my ability, I was always very nervous about going solo. The actual leading up to going up there by myself--during the drive out to the airport, I would be shaking in my boots. And I would keep waking up the morning I was supposed to go flying alone and hope that there was a ceiling [cloud cover] of 200 feet or something, so I'd have an excuse not to go (laugh). But once I went, I would feel really good when I got back. I thought, wow, maybe I'm not really so bad after all."

### Stalls and Spins

"Actually I was excited about doing stalls and spins.

I thought this was going to be a whole lot of fun and stuff. And when my instructor was doing them, I thought it was great. But when he had me do them, I was scared. I was really scared to do them and mostly I was scared when he sent me off to do them by myself. I kept waiting for the last possible minute before I had to return to the Club before I'd do them."

"I didn't care for spins. I was very nervous about doing spins. I never did spins with my first instructor and in fact, I don't think I would go with him. I just wouldn't go with him. But not my second instructor, with her I had that confidence that if I didn't react or couldn't react, that she would. I trusted her."

"I'm still nervous about spins and stalls. It's not that I don't feel confident. I feel confident that I can get myself out of them, but I'm nervous about them. I don't like them."

"I was very nervous about making mistakes in spin recovery. I was damn nervous. I was scared. Call it what you want. But that's good in one way. I didn't freeze or anything but the thing is, I'm scared enough to respect it. I can recover. I know I can recover but I'll just not get into that attitude if I can. But yeah, I was damn scared, I don't like them. I never cared for them."

"Things that made me apprehensive--well, I guess the

thing that comes to mind is SPINS, because on my second lesson, I had a young instructor and he was obviously bored with this whole proceeding, so he thought he could show me one. He said, 'Do you want to see a spin?' I, not knowing what on earth that was, said, 'Well . . . sure.' So he showed me a full one turn spin. It just freaked me right out. But my pride was at stake so I couldn't say or do anything. I felt really helpless, just terrified. I didn't want him to think I was chicken. I almost quit because I was so terrified."

"I remember the morning we were booked to do spins. It was a Sunday morning; I remember being very nervous. I knew we had the bloody aerobat and that was it, boy. It was spins or . . . I didn't know what a spin would look like. I knew what it was theoretically but I didn't know what the ground looked like from inside the cockpit. Now when I think about it, I figure--like I say, hindsight is great--I can sit here in the armchair and say: 'Hey, I can go up there and do a spin'. If I had to go, I'd go. But when I'd get there, I'd be damn nervous again. I know I would."

### Landings

For the most part, student pilots were nervous about landing the aircraft but most felt that their instructor contributed a lot to their stress or tension. The fact that some instructors appeared to get more nervous as the aircraft approached the ground or did not seem to trust the

student's ability, increased the stress level of the student and failed to instill confidence.

"I think that [landing] was the most frustrating part of my training. The take-off was easy but when it came to the landing, that was a challenge. For some reason, as soon as we'd start setting up for the approach, I would tense up and it just felt as if things were happening too fast. I was always miles behind the aircraft. My instructor would talk me through but most of the time I didn't really have the time to listen to him so I didn't know what he had said. Then the controller would say something and all I'd catch was my ident and I'd ask my instructor: 'What did he say?' My instructor would pretend he didn't know so I'd have to grab the mike and say: 'Say again', and by that time I'd be all over the place. The controller would repeat what he had said and at the same time my instructor would be raising his voice saying: 'Watch your airspeed! Keep it straight. Throttle back.' I'd be ready to pull my hair. In fact, I think that he was nervous himself. The closer we got to the ground the more fidgety he'd get; he'd talk more and his comments would be snappy. I found it very distracting. The fact that he seemed nervous or ready to jump on the controls made me nervous. A couple of times I went with another instructor because mine was off and this other instructor was not nervous at all. He seemed completely calm. He'd just sit there, say very little and let me go for it. Once

we were on downwind, he'd suggest a few corrections and then he'd be quiet again and he'd let me concentrate on the approach. It was good."

"My instructor for my private was fairly new at it and on the landing he wouldn't let me--as soon as I'd do something wrong, he'd take over. So it took a while before I did the actual landing. At first I didn't mind too much but then after a while I felt I could have done it and it got very frustrating. I'd get a bit angry and thinking how am I ever gonna learn to land if he always takes over. It took me a long time to get it--longer than it should have, I think."

"One of the instructors I had was quite apprehensive and at the beginning he didn't let me do the landings. Then he kind of talked me through it. But every landing after that you could see his hands go up to the control column quickly. It's distracting. You want to learn how to land the airplane and you think you can do it well yourself. But he didn't seem to trust my ability to do it."

"I found learning how to land the airplane was terribly difficult. In fact, I didn't think I was going to be able to learn to land the thing at all until my instructor sent me with another instructor. I went up with her once. She didn't say very much but it was just a less stressful atmosphere I suppose. I think she was a little calmer about things. My own instructor had a habit of getting rather

uptight when I'd do something wrong. Maybe because he had seen me all along; he knew I was capable of doing a lot better than I did sometimes. Whatever the reason, he would get very uptight and I could tell. He would make sarcastic remarks or get very frustrated and sometimes he would grab the controls from me. And I'd feel pretty small. He had a way of making me feel pretty dumb sometimes. The other instructor, she just didn't do that. She'd say: 'Well that's okay, most students do a few of these things in that way. It's perfectly normal to feel this way.' She suggested I do a few things which made a big difference. There were just a couple of little things that she said that were most helpful. But yes, the landings, I really had trouble with that."

## PART II. NEGATIVE INSTRUCTORS

All the participants in this study had encountered, at one point during their training, at least one instructor who either had no taste nor skills for teaching or who made them feel clumsy or dumb. Following are some of the attitudes or behaviors characterizing "bad" or "negative" instructors.

### Sarcasm

Sarcastic remarks and verbal disparagement of the student's performance by the instructor were identified by student pilots as being most upsetting and detrimental to productive thinking and to learning. Garrison (1980) underscores the tendency some instructors have of using

mordant reprimands when critiquing their student's performance:

If a student failed to perform a maneuver up to the expectations of the instructor, he could expect to be regaled with the rhetorical refrain, "What are you trying to do, kill us both?" (p. xiii)

A few testimonies from student pilots illustrate how some instructors subject their students to unmerciful verbal abuse.

"He would make sarcastic comments like: 'Where were you last night? Who were you with last night? Why are you so out of it today?' Or he would get very frustrated and sometimes he would grab the controls from me and he'd sneer: 'You can do that better, you know you can do that better.' One of his favorite lines was: 'I've seen you do that better before. What's happened to you today? Where's your mind today?' Just the whole roast like that, that really made me feel crummy. It made me not want to go back. It would make me feel like I might wait a month or so before I'd go back for another lesson. He had definitely an ability to make me feel like I wasn't very bright sometimes."

"He was sarcastic--by the tone of his voice, I knew he was frustrated with me. It wasn't that I couldn't hear him, I just couldn't do it right because I wasn't getting something. My altitude was off, so he'd make snarly comments. I felt, forget it! The day was lost, my concentration, my drive were gone. It was a complete waste of time."

"When he made sarcastic remarks, several times I used to have to concentrate on not crying because I would be so upset. He seemed to be able to make me feel very small or dumb. Maybe it was just my reaction but it usually happened it seemed when I was feeling pretty unconfident or more nervous than usual. Something had made me feel kind of jittery and uneasy, so an ill-placed remark would make me feel pretty upset. There were times when I would just sort of grit my teeth and say, Okay, let's just get through this until we get back on the ground and I can get out of this place."

"I think there was a real lack of human psychology applied to the training. My instructor seemed to think that humiliation techniques were an accepted way of dealing with students. He would often belittle me or make derogatory comments about my performance. What really bugged me was that he'd comment on my performance in front of others. Jokingly, mind you, but it still was very embarrassing and made me feel like a real klutz."

"One instructor I had for a 60-day check made me feel useless or incompetent. He got very frustrated with me because I didn't seem to be as good as he was. I just couldn't do the crosswind landings right and he made sarcastic comments, so I got frustrated with him. I got so angry with him, I would have liked to smack the fucker. That was the day I just said, 'Shut it down. Piss on this

shit.' I didn't go back after that so I didn't even finish getting checked out. His position as an instructor was to help me; not make one feel useless or dumb. His heart was not in it."

Even professional pilots undertaking training in more advanced aircraft have experienced the detrimental effects of an instructor's diatribe.

"When we got in the simulator he was very demanding and he was demanding more than I could actually deliver. When I didn't deliver what he was demanding or his expectations weren't met, then he decided to get very obnoxious. And some of the points that he was criticizing vehemently were points, in my opinion, that really shouldn't have been brought up at this time. Case in point: I received a very severe verbal chastising for having the autopilot engaged to pick up an airway which is perfectly safe as far as operations go. However, it is not recommended if you're carrying passengers. Of course, the scenario before the simulated flight didn't mention cargo, passengers or anything. I thought he should have been fully cognizant that we were on an initial mission and that any type of automation that I chose just to try and keep up with the airplane--seeing that it was a new environment, it was a new airplane, I didn't have a first officer like I'm normally used to--I would have thought that that [using the autopilot] would have been just a minor debriefing point when we got outside the simulator.

However, he chose to belabor this point for quite some time, which I took exception to because that flying training is a thousand dollars an hour and I really didn't need that type of debriefing while flying. This seemed to be the scenario: he would verbally chastise you to the point that you would be listening to him more than you were flying the aircraft. And of course, what would happen would be you would go ahead and 'muck' up something else and then, of course, history would repeat itself. All it did was deteriorate my performance to the point that if it had been an actual aircraft it wouldn't have been safe at all."

When asked what the instructor could have done to be more helpful, the student quickly replied:

"SHUT UP actually (laugh), because if you are behind the airplane and then somebody is trying to debrief you or is reprimanding you in flight--being behind the airplane is bad enough, let alone trying to debrief. If he sees you getting behind the airplane, make a note of it, help you a bit, and carry on so you don't get completely behind the aircraft. There was a total of five missions and at the end of the second mission I was completely beside myself because I felt as though I had learned nothing--comparatively speaking anyway. Forty percent of my course was over and as far as I felt, I was still very much behind the eight ball, thanks to that instructor."

"My instructor used to get me quite upset sometimes. I

can remember coming back from some lessons in tears. One time it was a windy day and I knew if it was windy and blustery I would have to really work at it. We got out and took off for the practice area. We were climbing but I wasn't going back and forth or dropping the nose of the aircraft to check for traffic ahead of us as we were climbing. I don't recall him ever having told me that we should do that before. But all of a sudden now he's telling me and giving me hell for not doing it. I think he got his students mixed up but all I know is that I was being given hell for something I have never been told about."

"It all breaks down to personality. It's not necessarily the theory that is put forward, but it's the way it's put forward. I had an instructor sneer: 'What the heck are you doing? You do that again and you might as well forget it. You'll never fly again in your life.' That kind of thing turns you off. You feel a little bit rejected, a little bit of a low life. You ask yourself: 'Why don't I know that? He's making it sound as if any simple human being could understand it and I don't understand it. I'm not doing it right. I don't know why.' So you're rejected. You feel a little bit bitter towards yourself and towards your instructor. I think ultimately, because of human nature, you want to blame somebody else rather than blame yourself."

### Loss of Confidence

A major source of distress reported by student pilots who experienced instructor-induced stress is a loss of confidence in their ability to fly and consequently apprehension regarding their capability to think clearly or to cope adequately with the situation. An instructor who stifles a student's initiative can be very detrimental since initiative could be all important to success in solo flying.

*"When I made a mistake, I felt very inadequate because my instructor would become impatient. He wouldn't scream at me or anything, but I could tell by the tone of his voice or he'd make a few sarcastic remarks--I knew he thought I was slow. I didn't want to make dumb mistakes so after that I would hesitate more. I guess, I really lost my confidence. I doubted that I could do this. It took me until my commercial before I got an instructor who helped me build my confidence again."*

*"I was quite apprehensive about the flight test especially since I had flunked the pre-flight test. What happened was--he wanted me to do a spin and he said: 'Anytime you're ready.' And so I thought, oh fine. I did a little look around and I did the spin. It turns out that I did it over a small town but I thought he meant the coast was clear. He didn't make it clear to me because every other time we had ever done any of that stuff, he had made sure we were in the right kind of an area. He would sort of go*

through the look around with me and say: 'Well there's nothing there.' So, it was just that this time he didn't do that. He misled me and tricked me into doing it in the wrong place, I'm pretty sure. He said: 'Well, you never know about what they'll do to you on the exam. They could very well mislead you like that and try and trick you. So you've got to be careful.' So I got a big fat zero for safety. All he did after I did that, he just looked disgusted and carried on the whole rest of the pre-flight test, it was: 'Oh I'm so disappointed in you, I didn't think you'd do such a stupid thing.' Things like that. I was just convinced--Why am I even doing this? I'm no good. So I did not look forward to the flight test. I went home and had a good cry, then I sat up with the books and tried to study. I figured I had to learn everything from scratch, I just had to sit and try and go through all the manoeuvres in my mind. I had to prepare for the written part of it also, but that didn't seem to be too much of a hassle. But I was convinced I was going to fail the whole thing. I was convinced. It sure didn't help build my confidence. It made me feel pretty incompetent. Especially what was really shattering about it was that prior to that I had been up with another instructor and he had basically said: 'Oh you're doing pretty well. You shouldn't have too much trouble with the test.' He pointed out a few of the areas that I would possibly need to practise but nevertheless he

didn't seem to think I was going to be terrible. Then my other instructor basically said: 'You miserable little creep, why are you so terrible, so stupid. I taught you better than that.' You fail "safety"--that's it, you don't pass at all. So he didn't even bother with the rest. All he said was this needs work, that needs work and everything else, that's alright--not good, never good. It was always so, so. If it was good, it just didn't get mentioned. So I left that pre-flight test very depressed and not particularly happy about the prospect of the upcoming flight test."

"When you get an instructor who is overly demanding and who vehemently criticizes every move you make, you become full of self-doubt. You actually literally wonder if you really ARE capable of flying this aircraft, because all the airports we were going into were airports where I had never been before, and you have a lot of self-doubt, saying: 'Gee, could I really do this by myself?' This instructor has destroyed your confidence. Whereas, by the time I was finished with the other instructor, the positive chap, there was no doubt in my mind. I had regained my confidence."

"I used to think I had sort of a little bit of a scientific bent. I did well in science in school. I thought I'm not a complete moron when it comes to that stuff. But he certainly had the ability to make me feel like I wasn't very bright sometimes. It made me feel much less confident."

"I don't think that my instructor and I were the best mix. I don't think his style of teaching me was good for me particularly. I think he knew his stuff, maybe he knew it so well he couldn't relate to a beginner. But I just felt his style of teaching was not appropriate for me. Like a few 'for instances' are: Yelling at me or raising his voice for something that I wasn't doing quite right. I never forgot what he told me but it made me a little less confident about showing initiative while he was there for fear I was gonna get the old slap on the hand or yelled at."

"One of the things that really annoyed me about my instructor was his stopping me while we were doing the airwork. I don't know, I used to just want to blank my mind out. And then I'd feel like a little kid being yelled at when he'd stop me and wanted to go through the whole thing again. I felt--you're wasting my flying time. This is my lesson, not yours. Let me fumble through it. Let me work my way through it myself. If it looks like we're going to be in trouble then step in but I'm not putting us in trouble. But as soon as I made a wrong move, as soon as I reached for the wrong knob and started doing something wrong, he'd snarl: 'You're doing it wrong! You've got to do this and you don't have a clue here!' And I would just sit there and wait for him to go through it all. Then I'd start again and if I did the wrong thing, he'd take over and make me wait while he went through it all again. I thought,

I'm getting gypped here. This is my flying lesson. I'm paying for this and you're doing all the flying. I wasn't concentrating a whole lot on the flying. I was mad at him for taking over my flying time and slapping me in the hand. Another thing--it just didn't build much confidence in me--he won't let me try it."

"This constant questioning, the harsh tone of voice and the fact that he made me feel dumb--I remember very vividly, it affected my performance to the point where I was unable to do things anywhere near as well as I previously had done them--I had done them very well and was comfortable with them when I was with the calm instructor. An example was with the side slip. The day I was shown how to do a side slip it worked well, it felt right. Then after a particular nerve-racking flight with the negative instructor, he'd say: 'Alright, let's see you put it in a side slip.' And the thing wouldn't go on right, to the point where I couldn't figure out what I was doing wrong. Then I took a flight with another instructor who analyzed what I was doing and he picked it up in a moment and told me how to do it properly. And it took several ruddy flights and my first instructor never did analyze what I was doing to the point of telling me what I was doing wrong. He just kept letting me know it was wrong. So eventually I geared my time so I avoided this instructor, because his attitude just crushed my self-confidence right out. I'm thinking, Here I am, I've been

teaching for quite a few years and I think I know who I am. I would talk to myself about that on the way home and despite that I felt apprehension of going the next time because I might meet with that first instructor which I didn't want to do. It was very, very shattering. I was still confident that I could fly the aircraft but I guess it was a matter of what I was going to hear from him in the air and back on the ground. I dreaded it. It made the whole flying thing less than enjoyable. Especially when I was paying a good shot of money for every flight and to come down and be made to feel dumb."

Several student pilots felt that once they had gone solo, they flew better and were more relaxed without their instructor on board. Steininger (1964) supports this view. He points out that the very presence of the flight instructor in the cockpit has significant bearing on the student's behavior and performance. He notes:

A typical comment from a student was: 'As soon as I am on a solo flight I stop being afraid of doing something wrong and I can manage everything much better than when I'm being supervised by an instructor.' (p. 38)

"Flight training was one of the most negative type of training I ever got. I was very keen and really motivated. I had wanted to take flying lessons for a long time but my instructor soon made me feel really clumsy and dumb. He didn't say much, it was just his attitude. If I made a mistake he'd just shake his head and looked disgusted or if

I asked a question or didn't understand something he'd say: 'Everybody knows that, it's very simple.' And he'd leave me there feeling like an idiot. I became very unsure of myself. I had no confidence at all in my flying ability. I got the impression he didn't think I could learn how to fly. And it seemed that when I flew with him, I got more nervous and I made more mistakes than when I flew by myself. As soon as I went up with him I would manage to do the dumbest things. I just felt like a complete moron. I felt really unsure of my ability. I thought I was the only one making such stupid mistakes. It was only when I started instructing that I realized that most students basically make the same mistakes and when they're nervous they make more mistakes and it becomes a vicious circle."

"I probably put in more solo time than most students going for their private [licence] because I couldn't get the confidence out of sitting with him in the cockpit. I had to get it myself by going up alone. So that's what I did."

"I just couldn't build my confidence flying with him. I was aware of that when I was flying with him. I was afraid to make a move. I think maybe he didn't want to let me go for my flight test because he was afraid that I didn't have the confidence or didn't have the initiative to do certain things. But it was a vicious circle because I was afraid to show initiative. And I know why I didn't. It was because I thought he was going to smack me or yell at me. I

wasn't allowed to make mistakes. I certainly wasn't allowed very much leeway for mistakes while I was with him in the plane."

### Display of Impatience

Instructors who scold, scream, or yank the controls from the students were seen as definitely contributing to the student's psychological stress and as a hindrance to learning. In a slightly tongue in cheek article, Wallace (1986) insinuates that the impatient or insensitive instructor is an all too common individual.

Before the actual test begins I conduct an informal briefing designed to quell some of the candidate's fears. It never works. I explain that I am not allowed to make any suggestions or criticisms during the test. No large groans or guffaws are allowed either, and I am not supposed to cry. This is strange to students who have been flying with instructors who do all of those things. (p. 29)

"I had one guy during part of my commercial who used to yell and scream when I didn't pick up a concept. I just had a hard time with ADF [Automatic Direction Finding--a navigation aid]. And this guy just made me feel like an idiot. I almost gave up the course because of that. I figured, well if I'm having trouble with this, what's the point of going on to any kind of higher navigation. I just could not get it! And there was a lot of negative from that and from the instructor."

"When he yelled at me, I just blanked out. I wasn't thinking about what I was doing. I was more worried about

trying to keep him from yelling at me than concentrating on the exercise I was doing. I'm just learning, I don't know how to do the exercise. So I just thought it was a display of impatience more than anything."

"I had an instructor who believed in intimidating students. When you did something wrong in the aircraft he would holler and yell and scream. He would just feel free to ream you out, up and down, left and right, military style and call you down. We were afraid of him."

"My instructor wasn't all that consistent in his instruction. Sometimes he'd give me hell for doing something wrong and other times he wouldn't. So you never knew what you were gonna get from him. Coming in for a landing one time--I was always told that I was landing too flat so I'm making an extra effort to pull the nose up more coming in. And I pulled the nose up so high that the stall warning went off. Well, meanwhile back at the practice area, when the stall warning goes off you put the nose down. Like a mouse I'm trained to do this, or like a monkey. So when we're coming in for a landing, the stall warning goes off--I put the nose down. Of course, BANG! (laugh). We hit the deck. My instructor started screaming and yelled: 'You're not supposed to put the nose down!' He started to give me hell and he took over the controls. I said, 'But you just trained me out at the practice area that that's what the stall warning is for--you get the nose down when the stall

warning comes on. So back at the Flying Club he explained that in a landing, the aircraft really is stalled. But he sure got excited when we were out on the runway (laugh)."

"Things that I found stressful were instructors nagging or giving you hell for little things, to the point where you just knew that before you could correct something, they were gonna yell at you. So you're like a rabbit frozen in his tracks--that throttle is 100 RPM too high but if I reach for it he's gonna yell at me and if I don't, he's gonna yell at me. So you freeze there. You panic. The altitude is out 50 feet--'Oh God, I hope he didn't notice!' To the point where you're flying the airplane for him more than you're flying it for the purpose of doing it right--for yourself. That is very stressful and a totally negative lesson as far as I'm concerned. It's totally wasted. The learning just went right down the tube."

"My first instructor was always laid-back in the plane. If I did something wrong or didn't get something, he'd say: 'Ah try it this way, or have you tried this?' Just a little different way of doing it, but very, very enjoyable--very relaxed. Whereas the other instructor would scream: 'You've got to do it this way! Watch that! You're forgetting this!' Bang, tapping on the instruments, banging this and pointing at that. The absolute worst thing that I can think of is to move the controls or do something physically when the student is hanging on to it. Like I had one instructor

who used to bang the ailerons all the time. It just threw me right off. That was it, I didn't even want to touch the control column anymore because you never knew when you're gonna get a rap or a pull or a push. Or he'd jump on the rudder--stump on the rudder pedal because you weren't putting it on. That was very, very negative. That more than anything was my learning tool for not doing that as an instructor. I thought, I'll never do that because, God, I know how that bugged me and how, in that lesson, the learning went right out the window."

"If I made a mistake or sometimes when I'd ask a question, he'd just shake his head and looked disgusted. I felt I was the stupidest student pilot there. Or what used to really bug me was that, without saying anything, he'd yank the controls from me and bring us back to our assigned altitude. I just hated that. It made me nervous and I felt terribly incompetent or dumb."

"I remember when we were doing my cross country and we were coming back. I had written down: Make sure you descend before you get to TRSA [Terminal Radar Surveillance Area]. I had written it down, I was so concerned about it. Well just before we were coming up on the check point, in my mind, where I thought, okay, this is where I'll descend, he started talking to me about something. I can't remember what about but all of a sudden he just grabbed the control wheel and throws us into a dive and drops down. He snarled:

'We're almost into TRSA.' I just cringed. I just felt so stupid and I was so mad because I had known it. I had prepared myself for it. I had even written it down on my flight plan: Make sure you do this. I was so mad 'cause I thought, I don't need to be treated like that. There's no reason to do that. I know he's done it with other people and I think this was his little pet. He just loved doing it. He'd just wait and it was like: 'Boy, this student will never do it again,' kind of thing. Well, I wouldn't have anyway.' I just felt mad and stupid about it."

"I didn't think my instructor had a lot of patience. No question, he didn't have a lot of patience. He was frustrated very quickly. For instance, when I'd do a steep turn and I didn't keep the nose up, he'd look out the other side saying: 'Oh shit' and he'd take it away from me. What he could have done is to say: 'Okay, take it back and try it again.' That's what he could have done right there and very calmly. But instead, as soon as he saw that nose drop he'd recover for you, he'd kick the rudder for you. And I thought, oh, shit. I damn near flipped that sucker! (laugh) But I didn't feel that way at all with my other instructor. It would be a good laugh and she'd tell me to kick in some rudder to coordinate the turn."

"One time we were coming in to join the circuit and I had trouble hearing the controller. That was a big complaint of mine--hearing on those radios and also what to

anticipate--I'm not experienced yet so I can't anticipate what they'll say. I would hear the controller say something but I wouldn't always hear what it was. But, of course, my instructor would. One time it was an instruction to turn right NOW. I didn't pick it up. Well, he gave me about 2 or 3 seconds to react and I didn't because I didn't make it out and before I could call back to verify what it was, he screamed: 'Turn NOW!' and he yanked the controls from me and abruptly banked the plane. Yeah, we turned alright! But it doesn't matter how much he wants to raise his voice at me or how impatient he wants to be--I didn't hear and there's nothing that is going to change that. Maybe headphones would, but we didn't use them. Anyways, when he turned I understood what was said. He said: 'You have to obey those directions right away, you can't wait, you know.' Okay, but I feel helpless because I still didn't hear the instructions. I don't care what he says, I'm helpless, I can't do anything about it. I just have to find a way to hear the controller better. If he wanted a fast reaction, I don't know if he had to be so abrupt and it sure didn't make me hear better."

"I had an instructor who was very impatient. He wouldn't give you time to react. If you didn't do something right away, he'd scream: 'You're too slow,' and he'd already have taken over. He didn't allow me time to even think. I'd get upset and I guess he felt I wasn't reacting fast

enough, so he took over the controls so fast and so abruptly it wouldn't have allowed anyone to even try. He could have at least given me a little bit of a chance, a little bit more leeway. As long as it doesn't endanger anything. A new student being nervous and him having screamed at me in the first place, it threw my whole train of thought right off. I had a hard time. Had he given me an opportunity, I may have recovered after all the screaming at the beginning but when he grabbed the controls away from me I just thought, well you want to fly, here you fly it even though it's costing me the mega bucks to have him fly for an hour. It was a waste of time. But I couldn't care anymore, I was too mad. The guy wants to fly, let him fly, no point trying to argue with that man. It was an absolute waste."

"When it came time for my first solo, I had to go with another instructor. I felt confident I could do the solo and I felt confident I had no big problems. I felt good about it. I had been doing the circuits with very little instruction needed as to what I did wrong. I felt ready. I got in the plane, with this other instructor and I didn't feel too nervous. Everything was fine. We taxied to the runup area and I was being careful to do all my checks and I was listening to make sure I understood what the controllers said. And I don't know what I did wrong but this fellow suddenly got mad at me and snapped, 'Let's go back to the hangar.' He started yelling at me that I hadn't done some-

thing. He became very angry and short with me. I just sat there with my mouth open. I didn't know whether to get out of the plane, go on, or what. I really should have gone back to the hangar and gotten rid of him if that was his attitude, but we kept on. I became very upset. I bit my lip but I became very uptight. I don't know how I got onto the runway because I was too upset. On top of that, we no sooner got off the runway, he cuts the engine! As far as I am concerned, I don't even know who was flying the plane because my mind was definitely not on my flying. My mind was on the fact that I did not want to encounter a verbal argument with this man. There was something bothering him because I don't know what I had done wrong. He frightened me so I did not want to upset the man anymore. I don't even know whether we did a circuit or a couple of circuits, I'm not sure because I was just so upset from his screaming. We came down and I went straight to my car and went home. I said I would never fly again. I was so upset and uptight, I just cried. I was never gonna fly again. I just don't think anyone should be treated like that. I'm not a teenager. By the time I started flying, I was a grandmother and I certainly don't expect anyone to be sitting there crying because their instructor got them all upset. But I did. I don't recall ever being so upset. My mind was made up, I was not going to go back flying. I was going to quit but my first instructor finally convinced me to go back. I think

we had to go for a couple more flights before I could get my confidence back because now I felt very unconfident. I felt I didn't know anything anymore. But I'm telling you if I had been prepared or if I had known this man does this to students, he would have had a lesson from me he would have never forgotten. If that same instructor did this to me today, I would give him a lesson and it wouldn't be in flying (laugh). But when I returned to fly after that terrible lesson I was extremely nervous and I tried very hard not to make mistakes. My instructor knew I was very, very nervous and she tried very hard to make me feel at ease but I was shaking in my boots. I was just nervous about my capability of handling the plane. I had lost my confidence."

#### Lack of Teaching Ability

One of the major problems identified by student pilots was the fact that some instructors, while competent pilots, could not teach. They lacked teaching and interpersonal skills and thus were unable to help the student learn and at times were even detrimental to learning.

"He was a good pilot but he couldn't teach. The ability to talk to people, to know how they feel, to make them feel at ease--he didn't have that."

"As a pilot he was very, very competent and highly regarded in the club. Very knowledgeable, he was cautious, very, very cautious about everything he did. I think he was

honestly trying to instill safety and caution in us. But at what cost? So as a pilot, himself, I think he was very, very good. As a teacher, I think his method of teaching was extremely poor. He just couldn't relate to the student."

"My instructor showed a definite lack of professionalism. He would often use threats or fear tactics. He would yank the controls away from me if my altitude was off or if I was not on course. I just hated that. It would make me jump, I didn't know what was going on. Then I'd be mad at him. That's no way to teach."

"My first instructor believed in shock treatments, like yelling or hitting the controls. I thought that was very poor teaching. When he'd yell at me or hit the control column forward if I was too high, my mind would go blank. I felt, I'm an adult, I don't need to be treated like a moron."

"He wasn't the type to yell or anything like that. I'm very hard on myself when I'm learning. He doesn't have to yell at me to make me feel bad, I already feel bad enough when I know I'm not doing well. But there were times that he would practically humiliate you, which I really didn't need and that's something he didn't seem to twig onto . . . But I couldn't discuss how I felt with him. It's just that you're so tense. And he was the reason why I was tense! Half the time I was so mad at him. How do you say something like: 'I'm not doing this right because right now I'd love

to kick you out of the airplane!' It's hard. I guess it's just that while we were flying, we didn't have a lot of rapport. I could ask him technical questions and stuff like that but again, it's hard to sort of say to someone: 'You personally are bugging me! And that's why I'm not doing this very well.' Anyways, he never seemed to be available to talk."

"My second instructor I didn't like. I found him to be rather impatient. I had a lot of trouble hearing, especially when you're in the circuit. You've got changes in the engine revs. He'd be saying something and I'd be saying: What? What? What? And half of the time I thought I wasn't getting what he was saying. And I found his attitude to be: 'Well, come on. Hurry up and get it. I don't have time to waste on this sort of thing.' Consequently, I was a lot more relaxed when I did solo circuits. And on the cross country, I remember I was really pissed off with him. The winds changed enroute and I ended up about 10 or 15 miles north of my destination. I knew I wasn't gonna get any help from my instructor. But I knew by my time that I should be at my destination and I wasn't there. He said to me: 'Where do you think you are?' I said: 'Well I should be at my destination.' He said: 'Yeah, but you're not!' And I said: 'Yeah, I know I'm not! I can't see the town, so I guess I'm not there!' I thought, I'm not stupid, you know. He asked: 'Do you have any idea where you are?' I said:

'Well, I know I'm north of my destination but I don't know exactly how far.' And I thought now is the time when he should be saying: 'Well your winds have changed and you should be further south of your present position.' But he just wouldn't help. He just left me hanging there and I'm still flying westbound and now I'm passed the highway and I'm thinking, 'When the hell is he gonna tell me where I am or at least help me a bit?' Finally he said: 'Well you're entering the control zone. Don't you think you should let them know?' He added: 'If you look off to your left, and you look closely, you'll be able to see the airport.' It was one of those smoky, hazy autumn days. The first thing I thought was: Holy shit! I'm in the control zone, nobody knows I'm here. Why did he let me do that? It could have been dangerous. We could have been killed. It was a little nerve shaking. I thought he could have been a little more helpful, a little more understanding. He's supposed to be there to teach me. I never felt I got that much out of him. Very seldom was there any classroom time in terms of briefing or debriefing. I really missed that. I felt that at times we should go in and talk about things where it would be quiet and we could talk using reasonable tones of voice. But instead we kept yelling at each other over the engine noises. I also felt I was stupid because I thought I was the only one having problems with some of those exercises."

### Demonstration Versus Teaching

All too often instructors limit their instructing to the "follow me through" method of teaching in which a manoeuvre is demonstrated and the student attempts to mimic the flight instructor's movements, albeit without having any idea of what he or she is trying to accomplish or why a manoeuvre should be performed and what goes on aerodynamically when the aircraft moves through the air.

"Teaching ability--well they could fly well--I had only two before I came here--they were both very good pilots, they could really fly well, so when they'd show me an exercise, I would get a good model to imitate. But I don't know if that's really teaching. They'd never really tell me what I did wrong, just that it was wrong. So they'd show me again and I'd do it again. A lot of times I didn't know what to look for. The instructor would do a manoeuvre and I would observe and it would all look quite simple. Then I'd try it and I'd just seen it but I couldn't quite remember the sequence so I would fumble my way through. The instructor would say: 'No, just watch it again.' Then I'd do it again and I thought I was doing everything he did but somehow it wouldn't come out the same way. He just didn't seem to be able to see what I did wrong. So he'd show me again, I'd try again and on we went until I'd finally get it but I didn't feel really comfortable with the exercise. I felt a bit like a robot, I could eventually imitate him but I

wasn't sure I really understood how things worked. Here I find they teach us why certain things happen so you get a better understanding of what you're doing."

"My instructor didn't really know how to teach. He knew how to fly, but he didn't know how to teach. There was no real applications--the exercises weren't made real for me in my flying. He didn't explain why we did certain things. So I was learning by imitating him and by trial and error, but I didn't understand why I did certain things or why I needed to do them."

"My instructor didn't have a logic that would help me. He was very good at demonstrating the manoeuvres but it didn't make my judgment any better. He wasn't a whole lot of help about pinpointing what I was doing wrong."

"I expected that maybe the instructor would do a little more explaining so that I would understand why I was doing what I was doing. I felt that my first instructor what he did a lot was mostly demonstrate the motions but not give me the understanding behind it so I could think for myself. I wanted some more background. Again although he's a very accomplished pilot, as a teacher it left a little bit to be desired."

"Well, he was very thorough in the flying part but there was some surrounding theory I thought sort of fell by the wayside. I think maybe he expected me to pick up everything outside of flying in a book. And I read all the

material we were given but still some things don't get across."

"This here was kind of typical of what he would do. He would say: 'Okay let's do slow flight,' and so I would start and make the wrong moves. I would do something wrong. And as soon as he saw me making the wrong moves, he would say: 'Stop' and he would go through the whole thing and say: 'Okay, you do it again.' And so I would get a little further along okay but then I would do something else wrong and he would say: 'Stop' and he would do the whole thing again. And I found that so frustrating--You don't need to show me the whole thing again, let me go through it and fumble on my own and tell me but don't take it out of my hands and do it for me. He did that an awful lot, which really annoyed me. So I'd sit there waiting and not really paying attention because I thought, I need to do it, not you. Anyway, the whole session was like that from beginning to end. I would make mistakes and he would correct, correct, correct. He finally noticed I was kind of upset on the way back and he said: 'How about if I just shut up and you just take it in.' And I said: 'Yeah, that would be real nice.' But you know he just ticked me off so much that day. I just had it right up to here (showing way above the head) with this!--being shown over and over again."

### Overloading

Some instructors wanting to be either scrupulously

thorough or friendly will overload or distract the student and may be blissfully unaware that they are loading the dice against the student.

"One thing my instructor did was he would load me up with too many ideas at one time--he would say too many things. I would find it hard to keep up. I guess what he basically did was he used to talk all the time--chatter away about all kinds of things. He would talk all the time when I was supposed to be taking off and climbing to 2,500 feet and then he'd say: 'Look at your altitude.' And I'd look at my altitude and it would be 3,000 feet and he'd say: 'How come you didn't level off at 2,500 feet?' Well, he was talking to me, what did he expect? I can't do everything. Maybe the point that he was trying to stress was that eventually when I'd become a pilot I would have to deal with passengers talking to me but there were a lot of times when it got in the way. I appreciated the fact that he was friendly but I don't think he quite realized how much of my concentration was required to just fly the airplane, and a lot was required. I mean, all of it was required to fly the airplane. If it was a nice, calm day and there was no updrafts and we could just be flying straight and level then that was fine. But I was always trying to concentrate on the flying and if he talked too much it would distract me. It took me a long time when he would say: 'Check your altitude,' to actually look at the thing--well, find it,

look at it, read it, and have it sink in what this dial was trying to tell me and the same with all the other things. He would just assume that I could look at it like he did and just read it off like that, but I couldn't. I just couldn't. There were a number of times that I felt like I was staring at the panel and seeing absolutely nothing, just a row of nothing. I'd be looking at it and I'd see nothing."

"My instructor used to like telling me something while we're standing by the waiting line just before we'd pull out onto the runway and I'd be looking for the traffic. I'm waiting for my clearance. I'm all set to go and he's explaining something to me and I said: 'You know, I'm not listening to a word you're saying.' And on several occasions I'd just say: 'Now is not the time to tell me this.' I couldn't concentrate on what he was saying because I was busy trying to fly properly. So he'd say, 'Okay, we'll talk about it later.' Well, we never did because by the time we'd get back, we'd have forgotten about it, or he didn't want me around, or I just wanted to get out of there. By then I was usually so mad I didn't want to talk about anything--'Go away and leave me alone.'--But yeah, when he did stuff like that, sometimes I'd snarl at him because again I'd be usually mad and I thought, don't bug me with this right now! He just didn't seem to know when was the right time to explain things."

"My instructor and I were matched according to choices

of days when we wanted to fly. When he was starting to have a teaching point, I started to realize that I was being uncomfortable when he was drawing things to my attention. He would attempt the Socratic approach which left me frustrated. For instance, supposing we were doing a daily inspection on the glider and he'd teach what things to look for, then he would start to ask me questions about--supposing we were checking the rudder cables--he'd say: 'Okay what makes you think that that cable is intact behind the seat?' And I'd say: 'Woooh, I'll have to think about that.' I said: 'Well I guess we can do a look when we're in the cockpit, behind the seat.' Now that kind of questioning was fine until he started to be aggravating about it and made me feel really dumb. He would question in a manner that I think a lot of instructors don't realize what they're doing--which tends to be the put down. 'You what!?! You would do what?' Which instead of being a neutral question and allowing you to justify your decision, it immediately makes you think: 'Woooh I'm way off base. Now if I justify this, I'm just digging a bigger hole for myself. If I admit I'm wrong and say: Well I guess that's not the right answer judging from the attitude of your voice. That seems kind of dumb too! So those are the kind of games that start to go on. That was on the ground in a comfortable position. You get in the air and the same kinds of things occurred where he would be having me do a steep turn, and as you probably

know you have a piece of yarn attached to the front of the cockpit, outside the window, so that when the yarn is anywhere other than straight up, you're either slipping or skidding. So depending on which way the yarn was going you knew at an instant whether you're skidding or slipping. We had a turn and bank indicator but it was easier to glance up and see this piece of thread than to pick out the instrument. So in a steep bank you'd be thinking about putting in the right amount of rudder and he'd scream: 'Look at that thread, you'--it was the idea--you idiot. And these events were emphasized by the fact that on off Saturdays or early Sunday there was a different instructor who was just the antithesis of this. We would do the daily inspection and it would be an enjoyable thing and it would be like fishing in a way and yet he was still checking over my shoulder at what I was doing and say: 'Right, you've checked this, good.' And if I forgot something he would remind me in a friendly way. And in the air the comments came out calm. In the same situation he'd say: 'When you get a moment, take a look at the thread.' And he'd let you think about it for a while and asked: 'Are you skidding or slipping.' He'd be calm so you'd have time to think. Just the antithesis--giving you lots of time to think, giving you questions in a quiet manner which reflected that he had confidence in you. While the other instructor, even his tone of voice made you feel dumb. So his insight was such that he didn't, in my estima-

tion, consider what he was doing from the student's point of view and give the student enough time to think about what he had asked and the tone of voice in which he had asked the question. I don't think he realized he made students feel dumb. And this kind of thing was reinforced when the aircraft was coming in over the wires to land and he'd be yelling: 'You haven't got the aircraft straight. How are you gonna straighten up the aircraft? How much rudder should you be putting on?' Asking a barrage of questions just at the time when a student needed to be quiet and do things himself. It was terribly distracting. It added up to a bad scene with that particular instructor."

As with the landing phase, the forced approach is an exercise where student pilots typically feel overloaded.

"For the forced approach it was really pumped into me that you had to make sure you got your Mayday out three times and all the checks done. And I thought to myself, if this was really happening to me and I wanted to get the plane down--screw the Mayday. All I want to do is get the plane in, in one piece and I want to get everything set up, then I'll start worrying about talking to people. If you worry too much about talking to people, and doing all the various checks, you might miss your field. My main concern is to pick a place, get the plane set and get it down. Then I'll worry about all these other things. The most important thing is to maintain control. If I get down in one piece,

that's three quarters of the battle. But the way it was taught, with all the checks and Mayday three times and checking every single little thing (laugh), by the time you've done all this, you've lost your field already. They just tried to crowd in too many things at once and that way you end up losing the real purpose of the exercise: Which is to get down safely."

Following is an excerpt from a discussion where three students weigh the pros and cons of instructor-induced stress during the forced approach exercise.

"On forced landings--when you first do them--you'd review them over in your head when you're on the ground but when you get up there you tend to forget just like that. Then when you're doing the forced landing, the instructor pushes you--'What do you do next? What do you do next? Come on, fast, quick, faster, faster.' Stuff like that. I didn't like that. My mind would just go blank. I didn't do well. I felt too much pressure."

"But the amount of stress that that would put on a person might not be anywhere near the amount of stress that they would feel if they were in an emergency and they had to do those procedures and know them. So it might not make you feel comfortable but to be able to do them under stress even a little bit of stress might help you out when you really had to deal with it."

"I agree that at the end you should be able to do those

under pressure but when you're a student pilot, at first, you find that your attention is so challenged on just flying the aircraft, the instructor has to give the student a certain amount of time to catch on--to build his knowledge and skills gradually. You spend so much time when you're a student pilot just learning how to trim the aircraft or simple things like that. Then when you're set up for the forced approach--if you get everything dumped on you all at once--by the time you do all the checks, you find yourself close to the ground and you're forgetting to control the airplane or you've drifted away from the field. So I think it should be more gradual."

#### Lack of Interest: Building Time

Student pilots felt that it is important that instructors care about their students and about teaching and that they should not be there only to fill a hiatus between jobs or to build up time in order to get hired by the Airlines. As Schimmelpenninck (1983) indicates, charter flights often take precedence over instruction, so students either get shuffled around or their booking gets cancelled.

In real life, the girl at the flight desk will tell you: "Bill isn't back yet, he's on a charter. You're flying with Gord today. This is Gord. And Gord will ask: "What are we doing today?"

In theory, Gord has spent the last five minutes studying the school's record of your groundschool and flying experience and the comments made by your instructors. In practice, he just became available because another student cancelled.

"What used to really bug me was that if a student

didn't show up for a booking, he got charged a 'no show', however, when I showed up for my lesson and my instructor had gone on a charter without even letting me know, nothing was done. He didn't even bother to call and cancel, so I drove all the way there for nothing."

"Whenever a charter came up, my instructor was gone. It could be in the middle of a briefing, he'd just say: 'Sorry but I've got to go on a charter. Can you come back another time?' You don't have much choice, right? He was building up his multi time and I knew he'd much rather fly the twin than teach me."

"If an instructor doesn't care about his students, he really can't have their best interest in mind and ultimately it affects the training that's done."

"My instructor was forever late. He did not like flying in the morning. It was a standard joke. He would have been out partying the night before and 10:00 o'clock was just too early. In fact the very first booking I ever had, I went for my discovery flight--I got out there and no instructor. They had to phone him at home and get him out of bed to get out there. And he comes in--'What can I say, it was a good party. Who's going to fly the day after Boxing Day?' I'm sitting there fuming--Well some of us have holidays and want to fly. So we started off right away! We were over an hour late and I had been early because I'm so punctual it's disgusting sometimes. So I was usually early

and I'd get the plane checked out and everything before he'd get there. But he'd wander in late and I'd be sitting around waiting. He comes wandering in late and it's like--oh, give me a minute to get my act together. I was sitting there waiting while he went over to talk to the guys. And I'm sitting there. He couldn't have made me feel less important if he had tried. So he'd start the lesson and half the time I would be so furious from his attitude--well you're nothing, you can wait while I'm good and ready--that I would have to forcibly talk to myself before we went up--calm down. Put this out of your mind. You've got something else to worry about now. It worked up to a point. I mean, I was so nervous--probably once we actually got into the instruction I was so scared to death about everything else that I could sort of forget about it. But it infuriated me and as soon as I had a minute where I wasn't really tense, I thought about it. He thought it was a big joke. Like, 'Oh yeah, I was at a party last night, and let me see, eight hours from bottle to throttle,' kind of thing. There were times I'm sure he'd only gotten home two hours before. You know he couldn't possibly be a 100% right now and you're paying big bucks an hour for this guy!"

"I guess the training itself--I have to admit my instructor was quite thorough. I don't really have any concerns or anything about that because I felt like I learned a lot. But my instructor was definitely not interested. You

got the definite feeling that unless you had specific questions he wanted you to leave immediately after the lesson and don't bug him anymore."

"The thing as a student that really ticked me off was that there were certain instructors that you could just tell by their reactions that they couldn't care less about you; they couldn't care less about the training. They were just getting their hours in so that they could get a job somewhere else. To me that's the big downfall of instructing. It's been a place to start. Everybody wants out of it and that's hard on the industry. I think most people can tell when their instructor really isn't interested."

"I had a lot of hours, I bet that by the time I had my licence, I had 50 or 60 hours. I never felt very relaxed with him, partly because I bet you I was mad at him half of the time. I guess a lot of it was just his attitude. I knew he didn't want to be there. He wanted that big airline job in the sky."

"My instructor seemed only concerned with logging hours."

"I think that my first instructor was an affable character. He was likeable but I just got the impression after a couple of lessons that he would have preferred to be somewhere else. To him it was just a stepping stone. He wasn't that interested in teaching me how to fly. He didn't have an essential interest in learning people how to fly.

He was out to gain whatever he could from my pocket book. That's basically how I felt. So I realized that this fellow probably had ulterior motives. I didn't feel he had my best interest at heart. My colleagues were doing things that I wasn't doing, like spins and stalls, and we're still doing turns after 6 or 7 hours. I just felt we weren't advancing. He was there to build time and take my money in a sense."

"When I was out there doing circuits after circuits after circuits, it bothered me because I felt nobody knew that I was even there other than the fact that they took my money and signed me in and signed me out. It felt like nobody cared, nobody knew what I was doing, nobody really gave a damn as long as I paid my money every two weeks."

"I had some instructors who were there only to put in their time. And they go up there and sure enough they show you what to do but there's just not that little bit of effort to force you into doing it. So really it's self-learning, you learn more or less by trial and error and he's not gonna influence you to help you learn quicker."

"I found that some instructors don't seem interested in the students or the only interest they have in the student is the fact that it's going to be more pilot-in-command time for them [the instructors]. My first instructor would not give me briefings on the ground because he wasn't paid for down time. He was paid only when he was flying. So he'd explain things to me as we were taxiing or on our way to the

practice area. I would hear him talk but it would not really register because I was trying to pay attention to flying--or to handling the airplane. Then he'd asked me a question and I'd feel embarrassed because I hadn't been really listening to him. So he'd get impatient or frustrated with me. After that I'd try to pay attention to him and in the middle of his briefing he'd snap at me--'Watch your attitude' or 'Watch your heading', whatever. It just seemed like I couldn't walk and chew gum at the same time. Then I would try harder, but it seemed like the harder I tried the worse I got. I would get quite frustrated and sometimes I thought if only he'd be quiet for a little while I think I could settle down. But I began to feel that maybe I was a bit slow or that I didn't have what it took to be a pilot. I never seemed to do anything right."

"The instructor I now have for my night rating is much more relaxed and he takes the time to chat after lessons. I feel way more at ease. I'm under less stress. Whereas with the other instructor, I just felt I would never ever be able to do anything right. This instructor I have now has helped in building my confidence. He gives a lot more positive reinforcement and you feel that he likes instructing. Like when you're setting up your schedule, he's really accommodating--'Is this better for you?' You know. We even went out on a Sunday night. How many instructors do you know that would want to give up their Sunday night to take a

student on their night cross country? He'd say things like: 'Okay, when do you want to go next? Do you want to book both days just in case?' He was genuinely interested. My other instructor,--'Well, I don't want to get up that early' or, 'I don't want to go then, it's not suitable.' By the time you negotiated, you felt like saying: 'Well, just forget it!' This guy made you feel he was definitely doing you a favor teaching you. He would be late and you're suppose to be grateful he has actually shown up. To me it's not too much to ask for someone to be there on time. Okay, it's the weekend and maybe you were partying last night, but this is your job! And if you don't like it, get out!"

"My instructor just didn't care. We'd do medium turns and steep turns and things like that and he'd stare out the window and he never really commented on whether you were doing it wrong. I found with flying that if you tried something a couple of times and it didn't turn out too good, you were better off to go on to something else and come back to it either later in the lesson or in the next lesson. Especially once you do something like a stall or a spin and you're not comfortable with it, there's no use doing it over and over and over again and doing it wrong over and over again. I felt he should have proceeded on to something else and then come back. But we just went back and I did the same turns over and over again while he stared out the window probably adding up his hours" (laugh).

"My instructor was really bored with flying and he slept in the aircraft and sometimes came to work drunk. So it was really hard to follow that as a role model because that's not really what I wanted. He used to say stuff like: 'Ah you're doing great' and go back to sleep. So one had to doubt that as being a sincere concern for me or what I could do. It was no criteria as to whether I was doing well or not."

"We'd always be starting off late. I'd already been out there for a long time with the plane all checked out, ready to go, saving time as much as I could. So all he had to do was come in the door and we'd step out in the plane. But no, he comes in the club and he has to talk to his buddies for 15 minutes before we get going. How does that make you feel?"

"My first instructor for the commercial licence--his knowledge was very good. He was obviously a person who studied aviation and worried about aviation. He gave me a lot of helpful hints. So generally he was pretty good, although at the end you could see him tailing off because he was starting to get busy on the twin and the interests were dying. The instructor that finished my commercial was obviously there just to put in the time. She made that very, very apparent. She just wanted to put in the time and see how many hours we could pump in a weekend. That was really a waste. It was kind of nice to get the thing

[Commercial Licence] finished with. There wasn't an awful lot of anything good that really came out of that."

"I had an instructor, I guess he had problems but I just felt this guy didn't want to be here. He had something else on his mind. He was totally disinterested in what he was doing. One day I went out with him and we got to the runup bay and I just about said, 'Let's forget it and let's go back,' because he made me feel so nervous. He kept stopping me before I could do anything. He'd ask me a question and if I got the answer wrong he'd sound upset. I just got mad at him. I didn't think about my performance too much after that. It took my mind totally. There was a personality conflict almost. It affected my performance adversely. I just didn't feel comfortable with the guy."

#### Lack of Sensitivity

Some flight instructors also displayed a definite lack of sensitivity to their students' feelings, problems, and needs.

"I could usually tell at the beginning of a lesson if things weren't going well. Like one time, it was when I was getting my checkout on the Warrior. It was one of those 'iffy' days. It wasn't a good day for flying. I had come out but we couldn't go to the practice area because of weather. But he was being hesitant: 'Well sure, if you want to go to the practice area.' I'm standing there not believing what I'm hearing. Someone just radioed in and

said it's the pits out there. What do you mean, we might go to the practice area? So he shrugged his shoulders and said: 'Ah, whatever you want to do.' Real enthusiasm, you know! So I said: I still needed a checkout on the Warrior. And he says: 'Well go, take it. Go do circuits.' I said: 'I'm not comfortable with it. I want someone to come with me and just check me out.' He says: 'Well, I don't really want to fly today.' So we went on like this for awhile. Finally, we decided we were going to go. So we get out there and the weather was the pits and I'm trying to do circuits and I wasn't doing very well. I was tired and if I had followed my gut feeling, I would have just said: The heck with it. I don't want to go either. So we got out there and I wasn't doing very well. We only did about three circuits and I just was not doing well. Then he snarled: 'Make the next one a full stop.' And by this time I was pretty upset. We landed and we were taxiing and ATC [Air Traffic Control] gave me some funny instructions and I didn't hear it all that well. I was sort of trying to listen to them and I taxied in with the landing light on and the flaps down. He snarled at me: 'The lights are on and the flaps are down.' I put them up and I was practically in tears. I was so upset. I thought, you jerk, you knew I was upset when I got down! Instead of just not making a big deal of it. It was a minor thing to forget. I had never ever forgotten to do all my checks before. I bet you that

was the only time. And that was just because I was upset. He just had no clue as to how I felt. So by the time I came in I was just so upset and mad, I just got out of there. But he really didn't give a damn."

"My first instructor had not even noticed that I wasn't comfortable in the 152. I'm 6 feet 5. I remember my right side was always cramped because of the door, my legs were always cramped because of the rudder pedals and everything. I didn't feel comfortable in that plane and that's important--you should fly the equipment that you feel comfortable in. So when I went with the second instructor, I asked to go in the 172 and when she saw me, she thought it was a smart move (laugh)."

"I don't think my instructor was aware at all of my feelings. He was not there, period. He was looking to Air Canada. That's what he does now. And he couldn't have been less interested in instructing. He very quickly communicated that to me--not only that he didn't like women flying, but that he didn't like teaching flying. So it was an unfortunate situation and I realized it. I was old enough to know that this would not work so after talking it over with a friend of mine and with my husband, I decided to try with another instructor."

"I don't think my instructor was aware of my feelings or if he did, I don't think he cared. I think he was of the view--I don't care what the student thinks, or feels, or

believes, I know what that student should do and by God that student is gonna know. No, I don't think he was into feeling at all."

#### Waste of Time and Money

Some students felt that their instructor actually made them lose their time and their money.

"My instructor would tend to divert in other directions so you'd sit there for an hour listening to the old war stories and you couldn't get him back on track--the harder you tried, the more stubborn he would get."

"I can remember coming out here one Friday afternoon--I used to get Friday afternoons off work--to do nav. diverts [navigation exercise]. We were scheduled to do two hours of flying and one hour of briefing. Well our flight was to fly up to point A, divert to point B, land at B, and have him talk to his friends for two hours over a cup of coffee, and then fly back here. Then he'd say: 'Well, see you next time.' That type of thing. More than anything else it was an exercise in frustration."

"I can remember getting dragged out there for a lesson when I could see out my window it was snowing and a storm was coming.--'Oh come on out. Come out. It will be okay! So I drove out there but half way out I could see it was a mistake. But I thought, Well, I've got a booking, I better drive all the way there and at least tell him. So I get in there and it's like, 'Ah, ah, ah. It's snowing, we can't go.

Well, good-bye.' Not even--'Well, now that you're here, do you want to go for coffee or do you want to talk about any problems you're having? You're here, we can talk about it.' Stuff like that, but no. So I just turned around and left and no one said: 'Hey, aren't you gonna stay for awhile?' Nothing. And yet, I had phoned him and argued with him that it was not a good day for flying and I thought we were crazy to even consider it. But he's the instructor, who am I to argue? And it was a big joke when I got there. I was just furious. He insisted practically--'Oh, it will be okay. It will be okay.' And I get out there fighting this blizzard all the way and he just says, 'Oh gee, too bad. Good-bye.' I was so MAD. What a waste of time."

"The big problem I found was after I soloed, I went to do solo circuits and I felt like I just kind of got abandoned. They said: 'Go out and do circuits and when you feel good enough about your circuits come back and see us.' So you're sort of flying around in the circuit, around and around and around and around (laugh). I was doing basically two hours every weekend or if the weather was good, four hours every weekend. And I kept thinking, well I guess I'm doing okay but how do I know whether I'm doing okay? There were no checks. In the meantime my instructor packed up and went to work somewhere else and nobody even bothered to tell me that. I was still flying solo circuits (laugh). I noticed I didn't see my instructor around anymore. I wanted

to talk to him about--I thought maybe it was time he should come and have a look at what I was doing in the circuit and see how I was doing. Because you obviously don't know whether or not you're doing well. You think you're doing well because you get back in one piece every day. So I went and asked about my instructor and they said he had quit. And I said: 'Oh, what do I do now?' kind of thing. They said: 'Well, you'll need another instructor. And I said: 'Yeah, I guess I will.' There were two or three instructors standing around there. The dispatcher asked one of them: 'Do you need another student?' He said: 'Yeah--okay, I guess so.' And that's when I started with him. We went over my record, what I'd done so far. I went flying with him. I went up to the practice area with him and we went through the air exercises and we did some circuits and he said: 'Okay, you need a little bit of practice in your landings.' He put me through the engine failure on take off and the whole works basically. And he said: 'Your landings could be worked on a little bit. So go back and do some more circuits. Do a couple hours of circuits and then come and see me.' So basically I was pretty happy doing circuits anyways (laugh), as long as I had somebody that I felt was now keeping an eye on me. I thought, okay, I'll go back and do some more circuits. I went and did, I don't know, another 4 or 6 hours of circuits. In the meantime, of course, the costs are going up. You kept putting money in every

couple of weeks. Finally, I thought, the money was getting low and I thought, I've got to get this thing over with pretty soon. So I went to my instructor and said: 'I think we should start thinking about a flight test pretty soon.' So he said: Well, have you written your test downtown, yet?' And I said: 'No.' And he said: 'Well maybe you should do that first and then come back and see us.' So I went downtown and did the written and passed with a good mark. Then I went back and said: 'Okay, I've passed my written test.' and he said: 'Well, you know you could still use some work in the circuit.' (laugh). So I went back out and did a couple more hours of circuits, all the time thinking, 'Well, how much longer am I gonna be able to do this? I don't have too much more money left.' Finally I went to them and I sort of gave them an ultimatum and insisted: 'I want my flight test and I want it pretty soon.' They didn't like that very much. My instructor and whoever else was there said: 'We'll decide when you're ready for your flight test.' And I said: 'Well it doesn't seem like anybody is deciding anything. So I'd like somebody to make a decision pretty soon.' So we did the pre-flight and he said: 'Okay, I guess you can do your test next week.' So we set it all up for the flight test on a Saturday. I get out there at 8 o'clock in the morning and it's 37° below. They said it was too cold to fly, we'd have to wait till the temperature went up a bit. So I sat there. You're on pins

and needles. I sat there from 9 o'clock in the morning till about 1 o'clock in the afternoon and it came up to maybe 34° below. So I asked: 'Are we gonna do it today or not?' The examiner said: 'We have to give you an oral test before we do the flight test.' And he added: 'Actually I have to leave at about 4 o'clock today. I've got a wedding to go to. So for today, we'll just do the oral test and you can come back tomorrow and we'll do the flight test.' You can't say much but the disappointment is there. I had thought, Finally today I'm gonna get it over with one way or the other. But I thought, okay. You can't really say too much to this guy 'cause you know he's going to do your flight test. You can't say: 'You son of a bitch.' So you say, 'Yes sir,' and you smile. So we did the oral test and got that out of the way and I went home--still on pins and needles, shaking like a leaf. One more sleepless night! I'll be honest with you, I never worked for anything so hard in my life as I did for my licence. I wanted it really bad and I didn't want to screw it up. The next day we finally did the flight test. We did all the air work, the navigation, the forced approach. I thought I did a really good forced approach. So we did the overshoot and flew back to the airport. I was feeling pretty good about the whole thing. I felt pretty confident about it. In the debriefing he said: 'I'm gonna have to fail you on your flight test.' And I said: 'WHAT?' And he said: 'You didn't make your

forced landing.' And I said: 'Yes I did.' And he argued: 'No, you didn't.' And I said: 'Yeah, I did. I was over the field already when you said overshoot.' And he said: 'No, you wouldn't have made the field.' I said: 'I was over the field when you said to overshoot.' It wasn't a matter of I was almost at the field. I was 100 feet past the fence when he said: 'Overshoot.' He said: 'No, in my opinion you didn't make the field.' And I said: 'Well, in my opinion, I did make the field.' And he just said: 'Well your opinion doesn't count. I'm the tester and I say you didn't make the field.' So I just said: 'Alright.' I turned around and said: 'That's fine' and I walked out. I thought if I stay here I'm gonna kill somebody. I came home and I said: 'That's it, I've had enough. It's a bunch of bullshit.' Then I found out through another guy who had been training there also that there was a lot of funny business going on there. I realized that somebody was ripping me off and I started thinking about the hours and hours and hours I'd put in on circuits that nobody ever checked on, but they were still getting paid for. And I thought the whole thing is just a rip-off. I've been taken and it's time I admit I've been taken and I pack it up. So I packed it up. Two months later I got a letter from another school saying they had taken over this school I was at and they'd like to talk to me. So I went and talked to the manager and I told him the whole story. So I went back and

got my licence there. And that was the happiest day of my life when I got my licence."

### Loyalty

One may ask why do student pilots remain with an instructor who scolds and screams, who uses verbal abuse, harsh tones, sarcasm, brusqueness and demeaning comments, or who makes them lose their time and their money. Perhaps one of the worst illusions perpetuated amongst aviation neophytes is that they must be loyal to their instructor. To ask to change instructor for whatever reason would seem like an affront to the initial instructor. Some students do change instructor after a while, however, many remain with the same instructor either because they feel a certain loyalty towards that person, or they come to think that it is normal to experience some discord in the learning situation. Some of those who do change instructor go through a period of self-doubt before they eventually decide to change. Schimmelpenninck (1983) shares his personal experience thus:

For five long hours I had put up with Don and I felt that I must continue to do so until I got my licence. After all, a sign on the clubhouse wall read: "On the sixth day, the Instructor created God in his own image." There had to be some truth in that.

Then it dawned on me that this was my money, so I sat down with the flying club manager and told him: "If I was made to fly, I won't learn it from Don." (p. 10)

"I thought about changing instructors many times, but it's the old loyalty thing--How would I ever look him in the

face again when I came back."

"During my licence I wanted to go with someone else but I felt trapped. A student just wasn't supposed to change instructor."

"I had decided I just didn't want to fly with him anymore because he really didn't give a damn. So before that Governor General test that I did, I phoned the Chief Flying Instructor to book someone for recurrent training. But instead of asking: 'Who do you want to go with?' he said: 'Who was your instructor?' So I got stuck going up with him again. I felt in a position where I couldn't turn around and say I don't want to go with this guy now. So I went up with him knowing it would be a mistake and it was. It was like I couldn't do anything right. It was just a disaster, just an absolute disaster. At the end of the lesson I was so discouraged, I was not going to go on the contest. I had gone home with every intention of not going. I had convinced myself that I was terrible and how could I contemplate going in this contest?" (This student had received the highest mark on the private pilot flight test that year at one of the largest flying schools in that region).

"I thought I was progressing well. All the progress reports were positive and yet, when I went with another instructor I soon found out I wasn't that good. I found out I was missing some of the basic skills so I doubted the

accuracy of my first instructor's comments. It was very depressing, very disappointing. Still I didn't feel I could change instructor. I felt loyalty towards her. I lost sight of what I was there for. So I lost time and money."

"I didn't know too many other students and I had no idea how other instructors were with their students. So I sort of came to think that maybe it was normal to have scraps in the cockpit or to have that friction. It just seemed like impatience. This man was such an accomplished pilot with an awful lot of experience behind him. He obviously wanted to impress upon me somethings that were really important but I don't know if that was the way to do it--hollering and screaming and moving the controls abruptly."

"I felt my instructor was more interested in building time than in teaching me to fly, and when I started to talk to other students about what they were doing in flying and I looked at myself and looked at the first eight hours I flew with him--there were people doing spins and stalls and things like that and I hadn't even done a stall. It seemed that everybody was ahead of me. Then I started to think, well maybe it's me, maybe he thinks that I'm not at that point right now to perform a stall. He's not confident in me. So it makes you feel unconfident. I started to doubt my ability. I thought I might quit but I'm not a meek person as far as being able to say: 'Listen, I think there's something wrong and it might be me or it might be

him.' So I called the Chief Flying Instructor and said to him: 'I don't feel that I'm a gifted person as far as it comes to flying but I don't think I'm as bad as a lot of people that I see around me. So I'd like someone to look in to see if there's not something wrong either with my instructor or with me.' So I changed instructor. I didn't feel that speed was there. We weren't advancing and I spoke up, that's all. But I know a lot of other people that would have been intimidated and probably would have still been trying to get their licence." (After changing instructors, this student completed the training in the minimum time required for the licence and obtained excellent marks in both the written examination and the flight test).

### Perseverance

Most student pilots approach the flight training situation highly motivated. Learning to fly an airplane may be the most sought-after goal in the student pilot's life. The flight instructor needs to retain that motivation and at times may have to rekindle it. Unfortunately, the training often becomes unpleasant, so that acquiring a licence becomes a matter of goal-directed perseverance.

"There were times I came home and I thought, this was supposed to be fun. How come this isn't fun? I'd come home and I'd see a plane go by and I'd feel like throwing up. Oh, he was a motivation killer if I ever saw one! Half the reason I ended up competing for the Governor General Award

is I thought I wasn't going to let that little BEEP (laughs)--I wasn't going to let him talk me out of this. That's half the reason why. There were times when I wanted to give up flying but I wouldn't give him the satisfaction. I continued in spite of him, because I was too stubborn to give up."

"I don't think I would go back to the same instructor because it doesn't feel like it would be enjoyable and I think it should be. I told other people out at the Flying Club how frustrating I found it but they seemed to think: Well I guess that's not too unusual when you spend that much time with somebody, things are bound to pop up. A lot of people said that of all the people who take flying lessons, 50% or even more don't make it through. They don't complete their licence. So, that made me kind of determined that I'm gonna finish. I'm not gonna be one of those people who went by the wayside."

"At first I thought I would go back and take my night endorsement with that instructor, but I can tell you right now I won't because it wouldn't be a pleasant experience."

"I can assure you that many times I asked myself: Why am I doing this? Why put up with this garbage? But when I start something, I see it through to the end. Besides, flying was a childhood dream and I wasn't about to let a lousy instructor stop me from reaching my goal."

"To me, flying, it's the whole experience. It's talk-

ing to other people who also fly, to your instructor after lessons. But it wasn't like that. The instructors are up there and you're down here, you can't talk to them. You sort of try to be friendly but you get snubbed. There was really no rapport between my instructor and I. So, knowing what I know now, I'd never fly with him again, but then, I just stucked it out."

"My instructor really didn't give a damn but I didn't feel I could very well change instructor. When you've gone out and spent over 70 bucks for an hour of torture, you know you've got to be a masochist (laugh). But I went back because I wanted that licence."

#### Praise or Feedback

Garrison (1980) forewarns student pilots not to expect praise from their instructors, yet encouragement and positive feedback are essential elements of any learning environment.

Do not expect that your instructors will heap praise on you if you are doing well. There is one school of pedagogic thought that holds that praise is a great goad to student effort, and another that dismisses it as an opiate. For myself, I don't believe any instructor ever told me, apropos of anything more general than a single execution of a particular maneuver, that I was doing well. Much less that I was a "good pilot" . . . . I attribute the lack of praise from my instructors, who have been many, to some unwritten law; but perhaps I was always so embarrassingly bad that they could not bring themselves to lie to me, even for kindness sake. At any rate, don't expect praise; if you get it, consider yourself lucky. (p. 13)

Testimonies from student pilots confirm the fact that many

instructors are not overly generous with their praise. They, however, are quick at pointing out something that is wrong, though not necessarily how to correct it. One of the complaints students most often expressed was: "I never got feedback from my instructor--except when I did something wrong."

"I got frustrated really early on because my instructor would tell me to turn or do this, do that, and it never seemed to work out right. I kept thinking I must have four left feet or something. It was really frustrating to be there. I never seemed to do anything right. My instructor would never say: 'This was good' or 'That was well done.' Only the mistakes got pointed out."

"He gave me positive feedback but it was never exuberant or anything. It was like: 'Ah, it's more or less what I expected of you, I'm not surprised.' Or 'That's more like it' kind of thing. And I got to realize that coming from him that was praise. It wasn't patting me on the back or saying: 'Way to go,' or anything like that. It was much more subtle. But he never gave an awful lot of positive feedback. My primary memories would be basically of negative reinforcement."

"It seemed as if I never did anything right. I don't remember him giving me any positive feedback. He'd say: 'If I don't say anything it's because it's right.' But he wasn't talkative in the first place and even when I did

something wrong, he wouldn't say anything, he'd just point at instruments or give me signs to turn, climb or descend and shake his head and look disgusted or annoyed. I really felt inadequate and dumb."

"He wasn't one to praise. I can think of one time when he told me my glide path was right, was really nice. But I can't think of a whole lot of instances where he said: 'Well, that's pretty good. You did well.' When I first landed the airplane by myself he said: 'Well, you did that all by yourself you know.' Well, I was just smiling from ear to ear. But I can't think of too often when he really patted me on the back and said: 'That's good going.'"

"If I did something alright he wouldn't say anything. He might say: 'Well there was nothing wrong with that, but it wasn't like: 'That's good.' There was no encouragement. It was only the negative things being pointed out. And I need the encouragement. I need to be told that this is okay, you know, a pat on the head once in a while. But I never seemed to get it."

"I guess basically for my own purposes, it would have been nice to have a lot more praise to build my confidence. It would have helped a lot. But my instructor never praised. Nothing was ever good, always so so, never good."

Students need encouragement and they want to be praised when they are doing well. However, they want honest feedback, otherwise they will lose faith in their instructor.

"When I first started I was very enthused. I was very interested, very motivated. Of course I had some apprehensions but my instructor said I was progressing well. She made me feel more at ease. However, when she taught me the landings she was riding the controls all the time. I didn't know that so I had a false sense of making progress. But when I went with other instructors I couldn't do proper landings. A lot of the basic skills were missing. That was very disappointing. I didn't believe what she said anymore. I didn't trust her assessment. She should have been honest. Sure we need encouragement, we need to know we're doing well, but not lies. I want an honest assessment. Otherwise you think you were doing so well but it was false reassurance."

One student felt that his instructor's over zealous negative criticism was an attempt to place his own competence in unflattering juxtaposition to that of the student.

"It appeared to me, although I have nothing to base this on, that my first instructor felt that he should impress one with the fact that he was a very, very knowledgeable person and a very, very competent individual. And it appeared to me, that the way he wanted to get this message across was to catch me making all these mistakes. That would establish his credibility as far as he was concerned-- by being superior in this fashion."

Attitudes Toward Women Student Pilots

Some of the women student pilots indicated that certain instructors did not think that women had a place in aviation.

"One attitude about my first instructor that bothered me was that he didn't feel women should fly at all. So I changed instructors after about five or six lessons."

"This other instructor I had made a point of telling me that he thought that in aviation, especially commercial aviation, there was no place for women. He was young, kind of macho. He was also very aggressive. On the forced approach, I didn't do it right, so he abruptly grabbed the controls and sneered that, like most women, I lacked depth perception. I felt quite intimidated, I'm not overly aggressive so I let him go ahead and fly. But I started losing confidence. His attitude certainly impeded my learning."

"My first instructor didn't take women students seriously. He was convinced that women took flying lessons strictly to meet pilots. A real jerk! I didn't last long with him."

"I got the impression that he felt that there's no place in an aircraft for a woman. That's in my opinion how he felt towards me. I got the feeling that he did not think that women should be in an aircraft 'cause she was threading on his territory."

Another female student pilot relates that her instructor often made ill-humored remarks which she did not appreciate at all.

*"I had a lot of trouble with my instructor because he kept making sort of sexual innuendos all the time. I mean it was never really overt but he would make comments to me like--He'd lean over to start the engine, and he'd say: 'Don't ever tell my girlfriend I had my hand between your legs,' and stuff like that, which really grossed me out a lot. I didn't appreciate that."*

### PART III. POSITIVE INSTRUCTORS

Most student pilots also had "good" or "positive" instructors dedicated to flight training, who helped them cope with their apprehensions or fears and made learning to fly a worthwhile and enjoyable experience.

#### Enthusiasm

Student pilots identified enthusiasm as an important trait of instructors with whom they enjoyed flying. An instructor's genuine interest in flight training helps students maintain their motivation and interest throughout the course.

*"The difference between the instructors was the enthusiasm. A teacher that's really enthused and creates a lot of enthusiasm, say--'Hey, let's get out there and learn this. This is really neat. You're going to like this.' You really get geared up for it. Whereas the instructor who*

says: 'Ah God, I've got to get up again for another hour. I've got a party tonight, let's cut this lesson short.' You know the guy is just there for time. That's a problem with instructing."

"My second instructor was very enthusiastic. You could tell she enjoyed teaching. She made the lessons interesting and enjoyable. She made learning fun. I had a good time, I laughed, but I was still learning because even though it was a relaxed atmosphere she wouldn't let mistakes go by uncorrected. She spent extra time with her students and she'd always be available if you had some questions or needed some help. She cared for her students and liked what she was doing. I think that's very important in teaching."

"I had an older instructor and I had a lot of confidence in him. He had a lot of experience and he enjoyed instructing so you really feel pleased or privileged that you're up there with this guy and you're gonna get little tidbits of information. That was really inspiring and really relaxing. Also, someone showing you an exercise and seeing their smoothness on the controls. By their demonstration, you can see their skill and that plays an important part as to how much I relax. I like an instructor who is soft-spoken and I like eye contact--now it's difficult in the airplane (laugh) but I don't like a guy drooling on and on and on and talking to the wall or the ceiling when he's briefing. I like a little bit of eye contact--facial

expressions. And ENTHUSIASM! That's the most important. I like to feel that this is my lesson, not just No. 14 and it could be given to any person. I like to know that this is custom-tailored to me. I also like a relaxed atmosphere in the airplane where it's not all just plain work. It should be fun and enjoyable."

"My instructor for the private licence was a good instructor. It was just his enthusiasm I think that tended to hold you up. He wasn't possibly the greatest pilot, though, at that time I thought he was. But he could get you doing things probably better than he did them himself just by bringing it out of you. He sometimes would say: 'Well okay, so we blew that, I'm not very good at it but let's get you better.' So he would admit things like that. I think that makes a big difference."

"My second instructor was genuinely interested in teaching. I think that's important for any teacher, whether it's flight or school or anything else like that. They shouldn't be doing it just for the money. They shouldn't have that ulterior motive and that's important. They shouldn't be there to build time! Well, in a way they are building time but yet if you look at it from a teaching point of view--if you're just there to build time and if people know you're like that, how much time are you gonna get? How many students are gonna book you? If you have what it takes to be a good instructor, you're gonna get to

your goal a lot quicker, by getting students to their goals quicker. I just felt that my first instructor was too immature to realize that. My other instructor, on the other hand, was interested in teaching. This person was there to instruct."

"My instructor for the private licence was a new instructor. I was his first student. He was a part-time instructor. He had an awful lot of enthusiasm for it [instructing] because he hadn't been burned out. He just made the course very exciting. You're doing something that you always wanted to do but he held the enthusiasm along the way. He would always give that little extra. He'd sit down and talk with you. His full time job was in a hospital. He did a lot of interrelating with other people, maybe that helped."

"I think that the second person who instructed me was genuinely interested in my learning to fly. And that's not something that you can tangibly put a finger on--like in such and such an instance or this specific thing happened. But I knew right away that she was interested in me learning how to fly. It was the whole thing: the way she spoke, the way she'd act, the way she showed me the different things that were expected of me. And it was an enjoyable experience. I took up flying as recreation, as a hobby and with my first instructor it wasn't that. It wasn't enjoyable. I was looking for some enjoyment, some recreation and

with her, my second instructor, that's what it was. And yet it was under a learning situation. With her, if I made a mistake, we'd make a joke out of it. That's the way it was and we'd just laugh about it. And if I didn't catch something the first, second or third time, then we'd proceed to something else and then come back to it and when we came back to it, a lot of times if I had had some fear or apprehension about doing that particular exercise--just to laugh about what had happened previously relaxed you and it made you think, yeah, I think I can do it now. You didn't feel as though--'God, am I stupid. I've done this wrong four times and this is the fifth and I'm gonna do it wrong again.' I didn't feel that way at all with her."

#### Caring/Rapport

Student pilots feel more comfortable flying with instructors who genuinely care about them and who want to help them increase their knowledge and their skills. A good rapport between the student and the instructor is considered essential.

"With this instructor I have now, we seem to work quite comfortably together. I now look forward to my lessons. I'm now leaving my lessons with a good feeling and, to me, this is the way it should have been all along. Before I used to dread the lessons and leave quite frustrated because I just felt, I can't do anything right. This instructor cares about his students and you can see he enjoys

*instructing."*

*"My second instructor was very keen and professional-like. He was sincere and to the point. He was very honest. He gave a darn about his students. He went the extra mile. He gave us some extra material, extra time, he made photocopies for us. You knew he cared. He was friendly, yet he was very business-like. He could relate well with the students but he kept everything in perspective. He was very professional."*

*"After about the first couple of lessons with my second instructor, I started to feel comfortable in the plane. I think my first instructor liked to play God. If I did something wrong, he'd say in a condescending tone, 'Okay, I'll take over from here,' sort of thing. There was no reason to do that. But let's face it, when you see people that have a commercial licence, an instructor rating, it's all prestige, it's all kind of seniority and stuff and who are you to question whether or not you're doing this the way it should be. You're just a little lowly scab beginner pilot. But it wasn't like that with my second instructor. I felt as though this person had my best interest at heart. And I could goof off a bit if I wanted but yet I learned quicker that way--with less pressure than I would if I felt as though I always had to perform in front of somebody who didn't care, like my first instructor."*

*"I really appreciated the fact that my instructor was*

almost like a friend. He would always want me to stay and have coffee afterwards and maybe just yak about airplanes and things that we were interested in, which really got me excited. He also did have a tendency to realize when I was getting very discouraged. And if he hadn't seen me for a while or I seemed to be really down, he would do something extra. Like, he took me up in the Super Cub one time because he knew I was crazy about taildragers. Another time he took me up in the Aerobat and did a loop 'cause he knew I was excited about stuff like that. When I was really down he would do something completely out of the ordinary that would get me right back up again and would get me all excited. So he really did manage to remotivate me. I think if he hadn't done some of that stuff I might have lost interest completely. He somehow seemed to realize that I really needed to remember that flying was fun and that's why I did it. So that was good. I really appreciated that."

#### Acceptance: Respect for the Student

Acceptance and respect for the student are seen as positive attributes of a good instructor. This acceptance appears to be the foundation on which is built a good rapport between the student and the instructor.

"Anytime I was apprehensive my instructor always worked the lesson in easily. He did not say: 'You stupid idiot, you can do a spin.' He'd never do anything like that. It would be, 'Well, let's take it back to step 1 and see how

far we can get. As soon as you want to stop, let me know.' He was a very good instructor. We had a good rapport."

"My second instructor was an older man and he had a lot of experience and he was very sensitive to me being terrified of spins. So we didn't even touch spins for a long time, until I built confidence in this new environment. And it was a new environment for me--completely."

"It was put across to me in a way that--we did some steep turns first to see how I reacted to that. He said: 'Okay, do you feel uncomfortable?' I said: 'No, it was fine.' He said: 'Okay, let's do power off stalls but any time you feel uncomfortable just let me know and I'll stop.' So it worked out great. He didn't push me beyond what I could take. I felt comfortable with him."

"I felt comfortable with my instructor and I enjoyed flying. I enjoyed coming out for lessons and I felt good when I left there. So I think he was doing a good job of teaching me. He was sort of an easy going type of person. He'd let me make my own judgments. And if I made mistakes, he didn't scold. That's how you learn. He wasn't an overbearing person. He treated me almost as an equal. He was teaching me to fly and I felt totally comfortable with him. We got along very well."

"My third instructor was really helpful. I felt very relaxed with her. We talked about things and I think that's important for the student. If you get up there and the

instructor says: 'Do a steep turn.' And you do the steep turn wrong and they just say: 'Do another steep turn.' I don't think that does the job. If all they say is: 'Keep that nose up or you're gonna go into a spiral. Try it again.' And that is it. I don't think that's enough. Whereas, I felt that with my third instructor I could talk more about it. It was easier to talk to her. I felt more comfortable with her."

"I was fortunate, I think, I had two very good instructors. As far as unusual manoeuvres, they always explained it on the ground first very thoroughly and then in the air they'd demonstrate 2 or 3 times before they'd let me have a go. I was a little apprehensive going into them but never to the point that I was scared ever. So I was fortunate that way. I had total confidence in them. They also made it very clear to me that if I didn't feel good to let them know and we would go on to something else. They didn't make you feel like a wimp if you didn't care for stalls or spins. I felt very comfortable with both of them."

"My commercial instructor had a lot of experience so if you goofed he never really said much. He never really got uptight. You could flip it [the aircraft] upside down and he'd just say: 'Okay, let's fly right side up again' (laugh). So he kept his cool. I remember during the instrument training for the commercial, half of the time I was all over the place at the beginning. He'd just let me

be all over the place and after a while you start getting down into it. But he didn't expect you to run before you were ready to crawl. So it was good."

"The one fella, the demanding chap, might technically be a better pilot in as much as the understanding of systems and that type of thing. However, seeing neither of them fly, you really don't know what their talents are. One chap was very precise, very, very demanding and couldn't really understand why somebody else wasn't. While the other chap was pretty laid-back and it could be that if he was a line pilot that he may let a few things slide where the other fella would get right on it. However, in the instructional role, because you're dealing with a person on a very elementary level, chances are that would be a better attitude to take. You certainly can't demand the same standards of your students as you can of yourself. And that's what appeared to be what the first instructor was trying to do is to ensure that you were as good as he was. But of course, he had years of experience in this one particular machine, these particular systems, so it's not possible."

### Patience

Student pilots identified patience as an essential quality of a good flight instructor. An instructor who can calmly correct mistakes and who can pace the lesson so as to keep the students challenged yet not overwhelm them with too much material, is one who is greatly appreciated by student

pilots.

"My instructor was very good. He was extremely patient. If you went through a manoeuvre--he'd be correcting mistakes and made sure you'd comprehend but he wasn't the kind of person who made you feel stupid. If you did something stupid you felt stupid because you were embarrassed but not because of him or comments he made."

"I felt very comfortable with my instructor. We had a lot of fun, but she wouldn't let anything go by. She would correct me if I was sloppy on the controls. And if I didn't do something, I sure heard about it right off the bat, but I did not feel uncomfortable. If I made a mistake it was corrected right away. I was told it was wrong and I was told what to do to correct it. When I did something right, I was told it was right. It was always very positive. I think it's good when the instructor can tell you calmly, 'Hey, you could have done this, you could improve here.' You don't get uptight."

"I was fortunate in that my instructor was a pretty dedicated guy and he did things by the book. So I feel I got an above average kind of instruction. He was very calm, a laid-back type of a guy. When you made a mistake he didn't make you feel like an idiot. He'd show you how to do it correctly and stressed the fact that he was there for that. He was very patient and that's so important in instructing."

"My second instructor, he was very, very quiet. We did a stall and I recovered but I kept pushing forward and we were heading for the ground very rapidly and I wasn't pulling out and I wasn't pulling out. So he very calmly said: 'Do you realize you are approaching red line?' He said that in a soft tone of voice. And I said, 'Oh yeah.' If it had been my other instructor, I'm sure he would have been yelling at me a lot. And as it turned out I remember the event just as vividly the soft, or calm way--if the instructor has guts enough to hold off as opposed to the yelling at the student."

#### Challenge

Student pilots enjoy a challenge; it makes learning more interesting and enjoyable. Some instructors have a knack for doing this.

"My instructor for the private licence was very good. He'd make things a little bit of a contest, for example, we'd bet a coffee for whoever would get the closest ETA [estimated time of arrival] for check points during the cross-country. Or there was always a contest as to who could land in the shortest distance. And of course he would mess it up sometimes so I'd win and sometimes he'd do it right so he'd win. Things like that. At the same time he knew when to put down a firm hand when I'd start to mess up pretty badly. But he made it really enjoyable. He was a very good instructor."

Schimmelpenninck (1983) relates how one of his instructors, similarly, made instrument flying more interesting, by making it challenging for the student:

Vic, a carefree 25-year-old instructor, salvaged my instrument-pilot career . . . .

He made instrument flying both a challenge to be met and good fun. At his request (as I learned later) Ann Arbor Tower gave me three different IFR clearances ("I know the girl and I asked her to make it interesting"). He gave me simulated surveillance radar approaches to Munroe "International," a 4000 ft. uncontrolled strip in the backwoods of Michigan. And he covered up more instruments than I knew existed to train me in partial-panel instrument flying.

Vic and I worked as a team. We bet each other on obscure regulations. Whoever won earned a bottle of wine--which we drank together. (p. 11)

*"When I took landings, the instructor that I had was very good because he knew just how much I could take. He'd make it challenging but he would not push me too far--when he saw me getting in over my head, he'd help out--he'd do the radio work, for example. So it was good."*

*"I feel that an instructor who gives me a challenge has a very positive effect of my learning, I feel I can trust him. My instructor was professional to the point where he was relaxed and we did not feel that it was an instructor/learner type of relationship. It was like two friends and this guy was just showing you how. It wasn't like--do this and this is how you're supposed to do it and if you don't do it, this is what's going to happen. I felt very relaxed with him. He was there to help me learn and not just to criticize me."*

### Encouragement

Student pilots feel that instructors should provide supportive encouragement in addition to constructive criticism. A student needs to know when he or she has done well.

*"With the other two instructors, the calm ones, it just felt a whole heck of a lot better. It felt very, very enjoyable with these two instructors, especially when they'd put their hand on your shoulder and you just felt that confidence and the first instructor never touched you."*

*"My instructor would brief me before we went flying and when I did something right, he'd sort of give me a pat on the back and say: 'That was well done.' And when I did something wrong, he didn't get impatient. He'd just point out what I did and show me or tell me how to do it right. Sometimes also he'd just smile and say: 'What do you think you did wrong here?' And most of the time as soon as I'd done it, I knew what I had missed. So I'd tell him and he'd say: 'Right. Okay try it again.' And I felt that he sort of had confidence in me. He knew that I knew how to do it, I just needed to practice more. So it was encouraging and I did much better with him than with my first instructor."*

*"I was having a terrible time landing, I just couldn't get it. I don't know what it was and my instructor didn't seem to know what the problem was. So he was going to be away one weekend and he said: 'I'll book you with this other fellow.' Well at first I was scared to go with some-*

one else but I finally got my nerves up and we went up and this other instructor looks at me and says: 'Tell me what you see when you're sitting there.' Well not much. He says: 'Here sit on this,' and he grabs the documents binder and shoves it under my rear end, and all of a sudden, hey, new perspective up here (laugh). And then when we were coming in to land he says: 'Where are you looking on the runway? How are you lining up?' I wasn't sure. He says: 'Well try lining up the hinge on the cowling there, just line it up.' All of a sudden click!' I'm not saying I went to being perfect, but all of a sudden it made a heck of a difference. I knew what to look for. This instructor was there to help, and not just to criticize. He was very positive. If you did something wrong, he found a solution. And when you got it right, he'd say" 'Very good, you've got it. that's the way to do it.' It was good to get the encouragement instead of always just the criticisms. I was comfortable with him and I did much better."

"My second instructor was very positive. If you made a mistake, she wouldn't get uptight or give you hell. She'd show you how to correct it and if you did it wrong 4 or 5 times she'd just teach it again, she would try different things, different ways until you got it right. She also had a good sense of humor, so a lot of times we'd laugh and that made you feel more relaxed. She'd tell you not to worry about making mistakes because that's how you learn. She was

very encouraging. When I did something right, she'd pat me on the back and say: 'Nice going.' It helps to get that bit of a boost. I felt good flying with her."

"One of my instructors would sit back and wait for me to make a mistake but he'd let me make it so I could see where the mistake was and how I could correct it myself. On your Commercial, it doesn't help if the instructor is there constantly talking to you and telling you or showing you how to do it. It's not you thinking of how to solve the thing. So he was good in helping me develop my own judgment. He was supportive and helpful, so I didn't feel stupid about making mistakes. I felt comfortable with him."

"After two days, I got another instructor and everything started to work well. His approach was much better for the fact that, all be it that flight safety simulators are very good, they still can't completely simulate the actual aircraft. So, a good case in point, is I was always being chastised for the way I was doing an over-percent check with the Garrett engine to check to make sure the governor, the overspeed governor, was functioning properly. One of the ways you do it is you throw a computer off the line and go through a series of little checks. But one of the things I was ALWAYS getting chastised horrendously for was pushing this throttle up and then bringing it back because you only have a very limited time to make sure the governor wasn't working or you would, in fact, overspeed the

machine. The second instructor's attitude was 'that's fine,' but when you're actually in the aircraft itself, the sounds, the cues will be very much more understandable, so don't spend too much time on this, we'll just go on to something else. Whereas the other guy was insisting on perfection without the machine being perfect and just taking up more time than we really had to. I guess more than anything, his attitude was positive. In other words, don't worry if you make some mistakes now because by the time we're done you won't be making those mistakes and that's why we're here. As opposed to demanding perfection the first time you try any exercise."

#### Laughter

On several occasions students mentioned the fact that laughter often helped in relaxing them. The fact of being able to laugh at one's mistakes because the instructor has created an atmosphere of genuine acceptance goes a long way in helping a student cope with psychological stresses inherent in a learning situation. Laughter does appear to be the best medicine in releasing stress.

"Some instructors will let you make mistakes so that you'll learn from them. If you're supposed to taxi to runway 18 and you taxi to 36, they'll let you do it instead of saying, 'Weren't you supposed to go to 18?' Then you realized what you did and you both laugh. They will let you make that mistake so that it will sink in. You do feel

stupid but it doesn't affect the rest of your flight if he laughs at it rather than yelling at you."

"Like I said before, I took up flying as recreation, not for a career and with my first instructor it wasn't enjoyable at all. He wasn't interested. But with my second instructor it was really a lot of fun. I got to laugh during my lessons. If I made a mistake, we'd both laugh. I didn't feel she was judging me. If I was nervous about an exercise--just to laugh about what happened before relaxed you and you now felt: 'Yeah, I can do it now.' It gives you confidence."

#### SUMMARY

The data presented in this chapter permit the sketching of a profile of a "negative" instructor in comparison to that of a "positive" instructor.

Instructors considered to be "negative" by student pilots lack enthusiasm; students do not interest nor challenge them; and students' problems or emotional blocks leave them indifferent. Their interest and attention seem to be elsewhere or nonexistent; when the student executes a manoeuvre they are looking out the window, visibly distracted or they get impatient. Some are so passive the students are basically teaching themselves by trial and error. Others grow tense and angry at repeated failure to do a manoeuvre properly or at someone's inability to grasp a concept or an aerodynamic principle. Their impatience leads to sarcasm,

verbal abuse or brusqueness. A few are aggressive and domineering to the point of almost being bullies. The "negative" instructors usually lack communication skills; their explanations are often elliptical, confused or incomplete and if they give feedback at all, it usually is strictly negative criticism. The lack of appropriate communication between the instructor and the student is an obvious problem, but from the data it is also apparent that the style of communication plays an important role.

A likely reason for the overly critical or aggressive behavior of certain instructors may have to do with most flight instructors' perception that flying training cannot always afford to be a democratic endeavor because of extremely short decision times. This being so, it appears that some instructors believe that treating student pilots with anything less than the firmest of hands invites errors or indecision when time is desperately short.

Notwithstanding the rationale some instructors might put forth, the above-mentioned personality dimensions, attitudes and behaviors of flight instructors were considered particularly unnerving to student pilots and were deemed to inhibit their learning, performance and decision making. Garrison's (1980) advice should be well heeded by student pilots:

An instructor who is irritated easily, who gets impatient, or, worst of all, who shouts at you, is not worth going on with. Tell him that you are not paying to be abused and get another instructor.

The loss is his, not yours. (p. 12)

In contrast, effective or "positive" instructors are described as being easy-going, mild, sympathetic, and calm. Enthusiasm, dedication, diligence, friendliness and a caring attitude also characterize the instructors who made learning interesting and enjoyable. These instructors demonstrate a genuine interest in flight training and their congeniality is a definite attribute in establishing a good rapport with their students. They truly care for their students; they are interested in the student's progress and they believe in the student's ability to succeed. They are student-oriented: they concentrate on the needs, feelings and problems of the students. Acceptance and respect for the learner also are traits of the "positive" instructors. Student pilots underscore the important role played by human relationships in the teaching process. Prevalent attitudes emphasized getting along with students combined with patience and tolerance for repeated mistakes and for students' fears and apprehensions. Encouragement and praise were identified as essential elements of feedback. Through encouragement instructors help build the student's self-confidence and self-reliance. They do not crush initiative, they promote it. As Garrison (1980) points out, "An instructor who builds a student's self-confidence, self-reliance, and self-control may affect his flying ability and judgment in subtle ways" (p. 12). Thus, good instructors

are positive: they give credit where credit is due and when they diagnose difficulties, they give instructional cues to help the student achieve the desired results. They skillfully guide learning. Positive also includes the flexibility to be assertive and commanding without being tyrannical in times of stress, and in most occasions, to be pleasant, supportive, and easy-going without being passive. Finally, "positive" instructors have a good sense of humor and use laughter to release tension and to make learning to fly a more enjoyable experience.

Chapter 5 - Flight Instructor Training

An instructor knocked on the pearly gate  
His face was scared and cold,  
He stood before the wall of fate  
for admission to the fold.  
"What have you done?" St. Peter asked,  
"To gain admission here?"  
"A flying instructor, sir," he said  
"For many and many a year."  
The pearly gate swung open wide -  
St. Peter punched the bell.  
"Come in and choose a harp, young man,  
You've had your share of hell."

Anonymous

(Student at the Brandon Flying Club-Circa 1976)

## INTRODUCTION

The adequacy of flight instructor training is of utmost importance since the process of training pilots begins with flight instructor training. Flight instructors are the foundation of the system. Yet, previous researchers, supported by students interviewed in this study (see Chapter 4), have identified the flight instructor as the weakest link in the flight training process, and sometimes the most feared element by the student pilot and the most disruptive element to productive learning. But why is that the case? Could flight instructors simply be the product of an inadequate system of flight instructor training: a system that has failed to prepare them for their role as teachers?

Interviews were therefore conducted with seasoned Class I and Class II flight instructors in an attempt to find, with them, an answer to this dilemma. The first Part of this chapter uses testimonies from sixteen flight

instructors to describe the training they received as flight instructor trainees. Part II reports on these flight instructors' perceptions about the adequacy of their training in two aspects: a) in preparing them to teach, and b) in helping them recognize and reduce student pilot stress or emotional barriers to flight training. Part III gives an account of the perceptions of Class I flight instructors with regard to their preparation and their competency in training flight instructor candidates to become instructors and to recognize and reduce student pilot psychological stress.

#### PART I. DESCRIPTION OF FLIGHT INSTRUCTOR TRAINING

It is interesting to note that the term "patter", used when referring to the flight instructors' word-for-word instructions, is derived from the word "pater in Pater Noster,"\* as pronounced in rapid mechanical recitation" (Webster, 1984, p. 1042). The term "patter" appears to be most appropriate since flight instructors who were interviewed described the training they received as being indeed repetitive and rote.

*"I was not impressed with what I was getting. It was a 'rote' business. I was to do a lecture so that when the Transport Canada inspector came out, every word would be in*

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\*Our Father, the Lord's prayer

place and every hair would be in place. That's not my idea of teaching. All it presented was a memory work problem."

"My instructor rating was--I guess for the briefings--it was kind of rote. Rote in the sense that I was given a briefing and I was expected basically to learn just about word-for-word what it was and spill it back. So basically I memorized what the other guy said. And he'd quizz me a little bit on theory so I could get out of a muddle if I got into one. But basically that's what I did: mimic him just about word-for-word. It was known that certain Inspectors needed to hear certain words and THOSE WORDS WERE USED! I don't want to be negative, on the other hand, being that you're a fresh instructor I guess you should try your wings to a certain extent. You still need a format and guidelines but what I thought was lacking was flexibility. The instructor should have said, 'Okay, here is one way of doing it, here is a general format that you should follow, a certain logical format to follow'--sort of the WHY and HOW, type of thing. But I guess it had to be THAT WAY because the Transport Canada examiner you were getting wanted it THAT WAY. Instructors had gotten beaten on the fingers a few times maybe."

"We just went through each flight lesson, I think without exception, every single lesson he would brief me first. I would take notes and he would just treat it as if I were an ordinary student. Then I would give him back the

same thing the next time out. It was basically the same thing in the airplane, just rote, repetition."

"The way I was taught was: here are the facts and here is what you say and that's it. You're not allowed to even switch a word."

#### Mechanical Approach

The teaching approach to be used by flight instructors to impart aeronautical knowledge and flying skills to future pilots has thus remained very mechanical, or robot-like and has been passed on to would-be instructors in a rather parrot-like fashion.

"It was more or less imitating the 'patter' that the instructor you were taking your instructor training from would give you. So he would have his notes and I would copy his notes."

"It was imitation really. You just did it enough times until you got it right and you didn't leave out anything."

"It was strictly imitation. As a matter of fact, the attitudes and movements briefing, I copied it out word-for-word as he was giving it to me--you say this at this time and that at the other time. It's pretty well just imitation and repetition."

"We'd just get the briefings, repeated them and then repeated them up in the air. That was all there was to it."

"My impression is still one of being taught to jump through hoops during my training."

Only two flight instructors did not go through this mimicking routine for the instruction on the ground. Their instructor simply lectured to them throughout the entire course. The first time they actually stood up in front of someone to present a lesson was on their flight instructor test with a Transport Canada inspector.

*"All it was was sit there and listen to a person talk and that was about it. At no time did I ever get a chance to practice a briefing with an instructor until the day I went for my flight test when I stood up in front of the examiner. I'd never stood up in front of a person and briefed."*

*"The person I had had lots of knowledge, but he didn't know how to get it across to more advanced students so that they could give it back to someone else. You just sat there and spent more time sifting through all the crap you didn't need. To get a worthwhile hour of briefing you probably needed four hours. . . . All we did was sit there at a desk and keep writing out all the notes or whatever you thought was important. There were no briefings back and forth. They used to be endurance sessions. So it wasn't very good."*

*"The first time I taught or gave a briefing was on my instructor ride. That was the first time and there was no such thing as an instructor syllabus then of any kind."*

The teaching approach used to demonstrate how to teach

manoeuvres in the aircraft was basically the same for all the instructors interviewed. The instructor trainee would first observe how his instructor taught an exercise, then he or she would be called upon to mimic the performance. The basic format was much the same as that used for ground instruction--imitation and repetition. However, in the air, instructors also had to polish their personal flying skills.

*"In the aircraft, the basic 'patter' was: this is the way you teach it--you say this, you say that. You don't say this, you don't say that. It was imitation."*

*"What it was really was going out and doing the airwork and just doing it better than you did it on the commercial. Once you got the briefings down in the classroom, you'd go up in the airplane and you'd do the instructor 'patter' in the airplane. That was about it."*

*"We simply got in the airplane and it was a matter of 'monkey see, monkey do', and the 'patter' virtually word-for-word. That was a spin off of the old Commonwealth Training Program."*

*"The basic content of the training was more or less aimed at the instructor's knowledge of theory and 'patter' in the aircraft--what we would say in the aircraft and how we would present a lesson in the aircraft. Very little of even presenting the lesson in the aircraft was discussed on the ground. That was all done in the aircraft with the instructor doing it, and then I would mimic it. It was just*

repetition over and over and over again. In the air that was the main emphasis, plus precision flying."

"In the airplane it was just rote--repetition, and the flying skills were being polished at the same time--the actual physical skills. . . . It was just mainly trying to memorize key phrases and what to say, what not to say, what terms you can use and which ones you shouldn't use, how to avoid using slang and things that the student is gonna misinterpret."

"We covered the air exercises a lot. In the air I did get to brief him back on the various air exercises. He would brief me and then I'd brief him. At the end of it he'd say, 'that was good or bad or whatever', but there was no critiquing. There wasn't any feedback as to why it was good or bad or how I could do it better. There wasn't anything like that."

"At the end of my instructor rating, we ended up going a little bit crazy on the aerobatics because you know you've got to do at least a turn and a half, maybe a two-turn spin and roll out on a heading. So you ended up doing a lot of that."

"During my instructor training, I guess I felt I was being put in a box, and so were all the students. I was put in this little box where I was a green instructor and it was assumed that I was something that had crawled out from underneath a rock. I was the lowest of the low, and that

*didn't really compute with my experience in the rest of my life. And that a student was even lower than me."*

### Military Legacy

This mechanical or rigid approach to flight instructor training is seen by some of the instructors as a tradition or as a military legacy that has been handed down, virtually unchanged, from generation to generation.

*"You see, this mechanical or 'rote' approach is understandable, considering that it all comes from the military."*

*"It was just a tradition the way they passed it on and passed it on. It was just mainly how that instructor was taught himself."*

*"What they were doing was superimposing upon me a military mindset that has been filtered through the instructor training for I don't know how many years."*

*"The course is set up in a very military fashion. . . . In CIVIL flying instruction we are not in training to be soldiers. We do not fit into that philosophy. But Transport Canada makes a big attempt to try to fit its flying instructors into a military--left right, left right, do this, stand up, sit down, take a breath--environment. We don't fit that, so I think there is a lot of damage done. A lot of waste happens in the teaching/learning process because of this philosophy."*

*"The whole setup in flight training is based on military traditions or ways of thinking. They get guys in*

there, they shave their hair, they dress them all the same way, they all think the same way and act the same way. They're producing clones. That's where this rigid, narrow approach to flight training comes from."

"This military or 'rote' approach has a spill over into instructors and how they relate to their students. They relate to their students in the same way, and therefore, their students don't really learn to be pilots. They learn to be what they think their instructors wanted them to be. So when they get out there in the world, they don't know how to think like a pilot because they don't know why they're doing what they're doing."

Only one instructor felt that this approach was appropriate because, that way, one received an established "patter".

"It was imitation. There was nothing really left up to yourself to compute, which in my opinion was good. At least you're not putting in a bunch of things in on your own that perhaps haven't been time tested. Because that instructor had gotten his patter from his previous instructor and so on and so on. It probably had been improved upon by time. So I think it's better that way, rather than--'Okay, here's all the books, make up your own patter.' I don't think that that would be the way to go."

### Strengths

All but one instructor felt that the major strengths of

the flight instructor course were that it gave them a good understanding of the theory of flight, a better grasp of the reasons behind aerodynamics, and an opportunity to polish their personal flying skills.

"I thought the course taught me more about flying than any other previous training that I'd ever had. You learn things with the Commercial and Private and this is the way it is, and 'don't ask me why but this is the way it is'. Maybe the 'don't ask me why' is not brought in it but there is just so much information all at once during the Private and Commercial, you don't really have time to ask 'why' a lot of times. Whereas with the instructor's rating, in order to teach it, you've really got to understand it. So I found quite a few things during the instructor's training that I'd really either glossed over or skipped over during Private and Commercial training. It taught me a heck of a lot more about flying than any other licence I'd ever had before. I really understood a lot more things during the instructor's training."

"The instructor I had was certainly knowledgeable for the theory which I found very, very useful. I found his knowledge of physics was very useful to help me understand some of the theoretical aspects of flying."

"I certainly think the instructor rating gives you a better understanding of what's going on."

"It helped me in my flying skills and gave me some

theoretical background. After I sifted through all the other stuff, there was some theoretical background."

"The basic content of the training--we got very thorough instruction on the theory of flight. The main emphasis on the whole course was theory. We got lots of theory of flight. That's what we spent all our time on. Very little time was spent on student-instructor relationship. It was more or less aimed at the instructor's knowledge of theory and 'patter' for the aircraft. Those were the main things. If you could fly the airplane precisely, if you could say the right things in the aircraft, and if you knew the theory of flight, and how the instruments worked, you were instructor material."

"All the briefings were straight theory of flight and that was it. It was more or less: here's all the theory to get you by, and then, through experience, you could tell how this guy performed and you adjust your teaching accordingly."

One instructor felt that, because of the instructor he got, the course was "an absolute waste of time".

#### Student Teaching

Only two instructors got limited exposure to student teaching during the course of their training. They found the opportunity to teach or observe their instructor teach an actual student to be very beneficial.

"I was fortunate, I did get to go with a student who

was doing his commercial training when I was doing my instructor's, and that was good. The instructor I had teaching me my instructor rating was sitting in the back, in a Cherokee, and that was good. That was kind of hands on experience. I think it was good that the student-teacher atmosphere was there. It was a good experience for me to get a real feel of it before Transport actually giving me their blessing and sort of sending me off by myself. So I think it was good. I would suggest that."

"When I did my training we were never allowed to ride in the back to see what your instructor did, which would have been, I think, very good. 'Cause I know when I was teaching instructors, we had done that, and we found it was very good because some things you can't say in words, they can only see. They might see your mistakes too, but they'll still see a situation, and they can evaluate it the way they see it before they actually are caught in it. They'll also see your responses, maybe they'll learn something good out of it."

## PART II. ADEQUACY OF FLIGHT INSTRUCTOR TRAINING

The actual administration of flight instruction remained, for the most part, in the hands of persons with interest and experience in flying but little or no experience with methods of training.  
 . . . There persisted the point of view that any pilot supplied with the program and materials of instruction could teach others to fly. In other words, there remained the belief--to be found also in other industries, and even to some extent in higher institutions of learning--that teaching others is a matter of a sixth sense an "intuitive faculty" which defies explanation; a "hunch,"

appearing spontaneously in the teaching situation, that tells what is the right thing to do at the right time in training others. (Viteles et al. 1943, p. 9)

A. Training to be an Instructor

When asked how they felt their training had prepared them to teach, none of the flight instructors interviewed felt it had given them the skills to teach. Some of the replies follow:

"I'm being rather negative here, but I think-- 'poorly'."

"Just that it didn't. It didn't prepare me to teach and even afterwards there were no real checks on me whatsoever. It was--go up and do your own thing, whatever happened happened."

"My general impression was that it wasn't that good. I don't think it qualified me properly to become an instructor, or not for what I would envision an instructor should be. It maybe qualified me to be an instructor in the old days of aviation where it was kind of--'kick the tires and light the fires'--kind of thing, but not for these days, for what an instructor should be."

"I don't think flight instructors are trained properly as far as teaching goes."

"The teaching aspect is just swept aside. You just go out there--this is how you brief a guy, this is how you stick the control column in his hand and make him do a turn, and that's it."

"It wasn't very good. I couldn't teach a student."

"The relationship between my training, which was like memorizing all the works of Shakespeare--between that training and actually teaching a student--the relationship was pretty remote."

"The course is set up in a very military fashion. It seemed to stifle the creative side of me. The focus is on [flying] techniques. I believe technique is important, but it's not the only skill that an instructor needs."

#### Flying Versus Teaching

Some of the instructors stressed the fact that being a skilled pilot does not automatically guarantee one will be a competent instructor.

"Knowing how to perform a skill and communicating that skill to someone else are two different things."

"Right now they're turning out people who know how to fly an airplane, but they're not turning out people who necessarily know how to instruct. I can repeat what my instructor told me to say in a lesson, but that doesn't mean I'm getting the message across to the student."

"There was absolutely nothing to prepare me for the instructing. It's two professions in one but it's treated as a 'pilot', it's not treated as a 'teacher' at all. And that's where I think that some extra training is needed."

"Five hours under the hood [instrument flying] certainly doesn't mean I can teach that student. I might as well

just have an instrument rating then. So I'd rather see us get away from this minimum five hours of hood work, and let's worry about TEACHING a person how to fly under the hood instead, how to teach instruments, how to teach the VOR and ADF [aids to navigation]. Not just--this is THE method, memorize it, but actually teach various methods and find out which one works well at various times or under various situations."

"The important part of the course is left out. An instructor candidate already knows how to fly, so we will not be teaching that skill. We will be teaching the student how to be an instructor. But that is completely left out."

"You see, if you know something, like most pilots, even a private pilot knows what a climb is and knows how to climb, but tell that private pilot to explain it to someone who doesn't know. To me that's the essence of the instructor rating, is to be able to come down to the basics and break it down for the student to understand. Sure you might know how to climb, you might know about all sorts of things but to be able to teach it is another thing."

"The instructor doesn't need to be the greatest pilot himself as long as he can get the student to do things probably better than he can himself just by bringing it out of the student. That's a good instructor. It's going to make it harder if a person can't teach. He can be a great pilot and students will learn by mimicking, to a point, but

they'll probably not understand why they make a mistake along the way, if he's not a very good instructor and can't spot it. It's going to lead to frustration, and it's going to lead to longer hours. The average pilot but a very good instructor can usually bring out more of the student, and so what if they're better than he is, that's good. If he can bring that out, that's the goal anyway."

#### Lack of Teaching Skills

More specifically, flight instructors felt that their training did not equip them with basic teaching skills, such as lesson planning, psychology of learning, interpersonal and communication skills, and stress management. Instructors felt that such skills were left to be acquired through experience.

"It didn't prepare me at all to teach. It was the 'school of hard knocks' for several months of instructing."

"It was more or less: here's all the theory to get you by and then, through experience, you could tell how this guy performed and you adjust your teaching accordingly."

"You learned through experience--trial and error. That's probably not very good for the students. You're very, very ill-prepared."

"There's nothing on how to deal with, how to detect problems. You pretty well have to learn by experience or go out on your own and try to learn it."

### Lesson Planning

Instructors felt their training left them at a loss as far as lesson planning was concerned.

"There was no lesson planning at all. There was no thought given to how a lesson plan would go or even how to teach a private licence. When I started teaching a private student, I had to go back to my own log book, look at what flights I had done, and I started teaching my students like that and made up briefings. I had to figure out what briefing I should give them because there was no thought given to anything like that. I had no idea about having a curriculum."

"If you're taught how to put a lesson together, instead of just repeating it, you take the important facts out, make sure you've got them right and then present them so the student can understand it. But it was always the same thing, we'd just get the briefings, repeated them and then repeated them up in the air, and that was all there was to it."

"Lesson plans were never covered when I was doing my rating because at that time we were still using the little blue Instructor Guide, which was a joke, and there was never any lesson plans per se. You'd go on the previous lesson that you'd done with the student to formulate what you would do the next lesson. There was never really any lesson plans."

"There was no layout as to what to do. So what I did it from was a Cessna book where they give you the layout hour by hour. I sort of just made my own timetable according to that."

### Psychology of Learning and Interpersonal Skills

Aside from a few isolated incidents or meager excerpts taken from the Flight Instructor Guide, the whole realm of psychology of learning and interpersonal relationships was neglected.

"I found that the instructor rating itself--there wasn't much said on how to help students learn. In fact, it was more techniques and stuff--how to land, the roundout, the flare, and all that stuff. The human aspect wasn't there."

"There was never any actual lesson that zeroed in on giving a psychological breakdown of people problems involved in the learning process."

"It did not address the learning process. I felt that very little was known about the learning process. The people that I was dealing with certainly didn't know very much about it."

"There was never any real talk about teaching somebody how to learn, except the one classic which is always on the exams: What do you do with an above-average student with above-average capabilities? And the answer was always: Load him up with more work and make it feel like a

challenge."

"It's a seventy-five hour course now. Seventy-five hours is a lot. Twenty-five hours solo in the airplane--I would say take some of that solo out and turn it into literally a psychology program where, based on adult education principles, you learn how to figure out the different types of students you will get. You know, they've got that one page in the Instructor Guide which has little dots on it [see Appendix B] and tells you what to do with different types of students--that I found totally useless. I found it very vague. It doesn't help in the actual sense."

"There was this little chart in the Instructor Guide that said students are categorized into these types of problems. There's a dot at what you do. You know, you punch them in the computer and they come out the other end. It seems so dehumanizing. As if we were just categorized and labeled. That every solution--we would find the answer to any problem that an instructor might ever have in the Instructor Guide under that chart (laugh). It's ridiculous."

"The ways people learn was never really covered, other than the fact that you had to read the laws of learning\* in the blue book [Flight Instructor Guide] in order to get by the written examination."

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\*Thorndike's laws of learning: law of effect, law of exercise, law of readiness.

"They listed laws of learning, and I can't say that that was helpful to me."

"They give you a sentence and they say this is a law of learning or a factor but it doesn't give you a scenario or a situation then that you can apply that to. Whereas in Kershner (1981) it tells you what some students might do. Then you apply that psychology to what they're doing and it tells you how to cope with that. There's nothing in the Canadian one like that."

"We were taught that there were learning plateaus but that was it. You're not taught how to cope with it. There's nothing, absolutely nothing on how to cope with it. They tell you to expect it but they don't tell you how to cope with it really. You're also taught after seven days do this [a remembering formula that states that if you review a skill every day for 7 days, then review it again after 28 days it will be remembered for life]. Well that's a bunch of garbage. When you've got a guy that flies once a week, you can't possibly apply that. It's for the military."

"Technically I think it was pretty good. I thought the background material, the Training Manual, and especially the forward part of the Instructor Guide talking about the laws of learning, etc. I thought that was pretty good. It was actually more than I expected it to be. It was pretty good and it's pretty to the point and accurate and fairly helpful. Over the years, I've referred back to it. What I

thought was lacking was follow up right after. You're cut loose, you become an instructor, you get put on the line and there's very little feedback, very little follow up to start with. Even with the monitoring, you don't really get any real direct feedback."

"Emotionally, and how to deal personally with a student, there was nothing. Absolutely nothing because the person that trained me had nothing. So he had nothing to give me. There was just no formal structure at all to pass on in any written or even verbal--only minor little tips that I guess someone's learned the hard way through experience, but nothing that's common place or has proven effective."

"I think one of the things that was mainly missing was how to deal with different types of students. Depending on who was teaching you, you'd usually get a set way of teaching. Usually an instructor rating just basically involved how to lay out a course and how to talk about each topic in a logical sense. I found as a Class III when I came into the instructing field I was very, very set, and found myself almost resistant to any flexibility in the ways another instructor would teach. I found myself wanting to sort of stay with the method that I was shown as opposed to maybe being shown that there are several ways of teaching. I found that out later as I kept teaching--through my own experience."

"I found a lack of emphasis on teaching techniques, especially to be able to have some good questions that you can ask the student so you're not feeling that the student feels intimidated, so that it doesn't become just a constant repetition of each lesson--just constant lecturing. So techniques in that sense I found kind of lacking. If there could also be some way of having either the psychological side or towards adult education. From the books and stuff that I have been reading there is obviously quite a difference between teaching adults as opposed to people under fifteen years of age. So to be able to adapt to each type of person. I think teaching more flexibility in the instructor field is something that I would like to see us aim for."

"I find that for the instructor rating it would be nice to be able to have part of the course dealing with the psychological aspects of adult education because right now it's missing."

"I guess part of the things that I would like for an instructor rating is how do you re-motivate students. That was not taught. Sure they have 'motivation' in the Instructor Guide--'why' you have to learn to climb, etc. To me, that's not enough."

"As far as what to instruct, it was okay. It was all content, as a matter of fact. The one thing that I found we should have had more on is the psychological aspect.

There's absolutely nothing on that. At seminars or refresher courses with Transport Canada, when you question anybody about that, they just brush it off because they're there mostly to tell you how you do climbing and descending or whatever. So it didn't prepare me at all for how to get along with a student or anything like that. There was pretty well nothing on that."

"Maybe a little bit of psychology would help and how to relate to a student. An awful lot of people still out there don't know how to relate to a student, how to sit down and actually speak with a person."

"How to present a lesson is fine, but that's all they do now. They don't go to say, 'Okay if you get this certain type of student you should have to teach it this way,' so that you'd be able to keep adapting that one technique constantly so you could make it a lot easier for yourself."

"As far as being adequate for being a good instructor, it was completely inadequate. We were never taught about learning curves, we were never taught about personality problems, this type of thing. If you got very good instructors, they would normally figure that out all by themselves through their own homespun psychology, however, for someone that wasn't very astute, chances are they would never, never even twig. They would just say, 'Oh, that's an odd student' and never really stop to reason why--just keep on giving the 'patter'."

"Instructor-student relationship is vital, yet it's not covered."

"Another thing that I think is maybe almost completely ignored is the development of trust between me and the student, and letting him know that I care what the hell happens to him."

"As an instructor I don't see myself as being the 'king pin' of the whole activity. It's the student who does the learning. The importance is put basically at the wrong place, where our training presently is centered on the instructor. The instructor does all the talking. He does a lot of demonstrating and it's like a show. And you know what it's like if you're watching a show or you're watching a hockey game, you don't learn how to play hockey very well."

"I don't have a lot of good impressions about the instructor rating. More than anything else it was frustration. The only way it probably prepared me to cope with students would be for me to remember what I went through and try not to put my students through it. It gave me a lot of things that I decided I would NOT DO as compared to a lot of things I would LIKE TO DO. It was kind of a negative way of training."

#### Effects of Experience on Instructional Style

In spite of the rigidity of flight instructor training, some flight instructors have gained great flexibility

through experience.

"When you start out, you're very under-confident, and you're afraid of making mistakes. You're afraid of this person thinking you're an idiot. All you want to do is do the job. You don't even realize, for that matter, that different people learn at different rates, and some exercises are easy for some and difficult for others. To you there's just one type of student, one stereotype student. You've been taught this way and you'll give it that way and they'll learn it that way. It takes quite a lot of time, quite a number of hours to be able to say, 'Hey everybody is different.' Then I think when you've been doing it a long time, you find there are some pretty definite patterns there as to what type of people are gonna have trouble with what exercises and they'll follow the same type of category and which ones will sail through it. That plays to a degree in my teaching, to the extent that I will change the order of the sequence of some of the exercises to build on the strengths and to backtrack over the weaknesses."

Two instructors, while noting the lack of training in psychology, questioned whether it could actually be taught. They seemed to feel that gauging students' feelings and thence adjusting their teaching accordingly might be an intuitive faculty or an ability gained through trial and error.

"The theory part of my instructor training was very

good. I think for most of the training I was well briefed. What was not touched, or next to nil, was how to cope with students emotionally. How to size up how quickly a student was learning or how slowly he was learning. Again I don't know to what extent that can be taught. So much of it is just trial and error. How much of it could have been taught, it's hard to say."

"There was never really any discussion on personalities, and I don't know whether that can be taught. It would be very difficult. There are so many different problems that a person can have personality-wise. I think it just takes a lot of common sense on the instructor's part to be able to read out what the student is feeling. I should say there was mention of the way you brief and debrief. Like you don't tear a guy down and say, 'You didn't do anything right and you're not worth anything.' That was mentioned. But as far as different types of people and how to train them, other than that particular point, there was nothing there."

"Nothing was ever mentioned about instructor-student relationship, and again I think it is more or less left to common sense at this point and time. I think, again, that every circumstance is a little bit different, depending on the person. I think most people with a good amount of common sense make good instructors."

But could common sense be taught?

"To be able to teach common sense? I don't think so. I don't think you could ever hit anybody in any kind of training with every possible situation that could ever arise. Different situations, different variables all the time are going to require different solutions, not one standard solution. So it's impossible, you've got to rely on a person's horse sense."

### Communication Skills

Communication skills are seen as a basic need for the instructor, especially since the major part of the teaching takes place in a stressful and non-traditional environment, i.e. the aircraft.

"Well you try and brief in an aircraft, it's next to impossible. There are just too many distractions."

"This instructing is a little unique. It's a much more involved course, it requires a great deal of communication, and the communication has to be quality stuff because it's lousy to do it in the air. So the ground stuff is so important. That just can't be overlooked."

"I believe technique [flying skills] is important but it's not the only skill that an instructor needs. He needs knowledge, he needs communication skills, and I also need to know myself and what it is that I have on the creative side of me that I can give to the student because that's very important, though an elusive factor in teaching."

"If they had a course in communication, it makes a world of difference. How to tell somebody to do something without offending him or to get the most out of him. There was nothing on that. You know what there is in the front of the Instructor Guide, but some of that I don't agree with anyway. I think that's a slanted view. So a course in communication and how to listen, because students can be telling you something and if you don't know what to look for, you don't catch it. And things like problem-solving."

"Communication, that's one of the skills an instructor must learn, but he is not taught how to communicate with people. Human relations--how to get along with another person is a skill. We're not taught it. An instructor's relationship with his student--we're not taught that it's important."

"I think some extra training is needed in instructional techniques, how to set up a lesson, a course on presenting a lesson. There was nothing in the training that prepared us for that. Something on communication, on psychology, would be really valuable."

"What they should do is have a block of, say, Class I instructors, and have special training--send an instructor to school or else set up the course through Transport Canada, but with somebody who knows or someone on contract from a University--do seminars, a weekend seminar or something like that, on instructional techniques, communication

and psychology. It would sure make a difference, a big difference."

"I guess there is a need to know how to just motivate a student, to be able to handle different types of students, and to be able to sit down and really talk with them."

"I took an instructional techniques course and I thought that was very good. What it did was it gave us exposure to public speaking which, when you come off the street, you don't have it. I thought that was really good for that. Also, it showed you how to set up a lesson, which I had never been taught before. I think there should be more of that. I think I've got a big advantage over other instructors 'cause I feel I could look at any lesson and make up something on it. Whereas before I figured I better know that stuff really well, memorize it. But really, as long as you present it properly and make it easy for the students to understand."

"I taught a student from Africa. He had done some teaching before, and the difference you see right away with a guy like that. I'd give him my briefing, and then the next day he'd come in with his own briefing, totally different but with the same information in it. So a person like that, with experience, can do that because he had the training, but if you get a guy off the street who knows how to fly an airplane, all he's gonna do is repeat what you had told him before. That's the difference that I'm talking

about. They should do something about that. You're doing a totally different thing. If you're taught how to put a lesson together, you take the important facts, make sure you've got them right, and then present them so the student can understand it. But now we just get the briefings and repeat them."

#### Instructor Stress Management

"Stress management, that's another thing that should be taught 'cause as an instructor you feel so much stress when somebody's having trouble and it's probably your fault that they're having trouble because it's a chain reaction. There's nothing on stress management. Yet, what a stressful job. I can't think of many more that would be a lot worse than that. But it's gonna affect the student if you feel stressed everytime you go up with a student. That student is never gonna be doing very well because the feeling is always there. So that's another thing that could be included in the instructor course."

#### Instrument Instruction

Only one area in the technical realm was mentioned as particularly weak by a number of instructors, and that is the instrument endorsement.

"One of the things that I really had a beef about during the whole instructor training was the instrument endorsement. I found there was really nothing to work with in forming my own patter. There really wasn't anything in

the Instructor Guide, and the instructor that was doing the training with me wasn't really much help. There was nothing standardized as far as the patten was concerned. I think he made up his own. I didn't agree with a lot of it."

"The instrument endorsement was one area that was really lacking. There was no kind of consensus on what to teach and how to teach it. It didn't seem to me to be a logical teaching experience. It was lacking in some kind of logical way to proceed. The information is just thrown at you. There is no real guidance on the best way to set up a lesson to make it more of a logical thing. When I learned mine, I walked out of there totally confused as far as a lot of the theory was concerned."

"For the instrument endorsement we tore a bunch of instruments apart, and that's fine, but there wasn't a whole lot of emphasis put on practicality--on 'why'. So I think we should get away from tearing all the instruments apart and stress practicality. The idea there is, 'Okay, this is what is going to happen to you. We're on a cloudy night. It's overcast, you can't see, all of a sudden you're in cloud.' There should be more along that line, instead of tearing instruments apart."

"I don't think there is enough guidance for the instrument endorsement, especially when you consider that two-thirds of the Commercial course is based on instruments, which is squeezed in, what, 8 or 9 pages in the blue book

[Instructor Guide]. There should be almost lesson plans written for several of the hours anyway of the instrument time and for the night endorsement. Right now how much hood work should a person have for the night endorsement? Should he be able to do full and partial panel precision patterns, or should he be able to just fly straight and level? No one knows. There is a wide variation of standards. There has never been anything set down. There's just a little bit of fogginess--how much do we teach and whereabouts should a person be after five hours, I couldn't tell you. By experience I have an idea maybe now, but you go through an awful long time of hard knocks again, teaching a commercial student for instrument time, to have any foggy idea of whether he is going to make it in twenty hours or not. There is not much guidance on that, 'cause there is nothing set down at all on it. Some people going for a night endorsement never get a briefing at all--some get a briefing on runway lighting at night, others get a briefing on instruments. I don't know what's right or wrong, 'cause there's never been anything set down or decided about it. I would like to see Transport set down, not only set down a standard, but what we should all be going through before they make the rule. But again, it's their usual [Transport Canada] policy: You'll teach them five hours of instrument time. Go ahead and do it guys, but don't look to us for guidance. That tends to unfortunately happen a lot."

## B. Recognizing and Reducing Student Pilot Stress

Flight instructors agreed that the affective domain, which includes feelings and emotions, was neglected during their training. Likewise they indicated that they were not taught how to recognize and reduce students' psychological stress. Whatever bits of wisdom they now have incorporated in their teaching, they acquired mainly through experience. A typical response given when asked whether they had been taught to recognize and reduce student pilot stress was, "No, that was never covered," or "No, very poorly, very poorly."

*"How to recognize student pilot stress?--there was nothing. I've developed that myself through eight years of instructing, and most of that has come in about the last three or four years. Probably as time goes on I'm able to sort of detach myself and use the broad base of all the people I've instructed and be able to recognize certain common traits of a stressed student, a relaxed student, and how he performs, and the pros and cons. But I think that anybody until they've got a thousand or more hours of instructing hasn't got a chance of picking that up himself. It would have to be taught to them or imparted to them somehow."*

*"New instructors are just so busy trying to get the technical stuff down, they can't relate to any kind of emotional or personal involvement."*

"I don't think I was ever taught how to recognize and reduce student stress."

"No, how to recognize and reduce student pilot stress was never taught, that was something you learned over the years. Maybe there is more of an awareness now starting. Instructors are starting to try to understand the students' feelings a little bit more and reduce the stress or the workload on him a little bit. But I remember students that in the aircraft would get fairly uptight, and we were not aware that we were overloading them."

"No, they tell you that a person might be afraid of doing stalls and spins, but it doesn't tell you about how to lead them up to it or anything like that. There's nothing there."

"As a specific lesson, how to recognize student anxiety and how to reduce student stress was never covered, no. I think through experience, though, you can tell a lot of times with just a nervous reaction that the individual has. But there was never any psychological break down of any apprehensive or tense individual that might cause a dangerous situation. No, that was never covered."

"I was taught some of it, and again, I would say that was due to my instructor's experience in the field, not through a course that was offered as part of the curriculum."

"I acquired it through my own experience. It may have

been tried to have been shown to me or told to me, but it didn't sink in. There was just not enough room for all the other knowledge you had to know just for the technical aspects of it. There was just no room to sort somebody else's mental or emotional feelings. It took a long time to develop that."

"There's a minimal amount said about how to help students cope with stress, say for stalls. At the beginning of the briefing you're taught to try to put the student at ease about doing stalls, but other than that there was nothing, really nothing at all. I think there's more in the American Instructor Guide and in Kershner (1981). There's not a heck of a lot there, but there is more. It talks in layman's view, rather than giving laws of learning or what are they called today, factors?"

"No, as far as I can remember, I don't remember my instructor mentioning anything about student tension or stress. I know we went through the 'patter', say for stalls and spins, the explanation, how it happens, what occurs, the reasons why you have to do it. But I ended up being a little intimidated by stalls and spins myself, so I took that into account when I went up with my students. I made sure that I just didn't go right into a spin (snaps fingers) like that. I realized the fact that you get so anxious up there sometimes. So I think because of my own personal anxiety level when I was a student, I think it tends to help

a lot in understanding where the student stands and in being more sympathetic towards the student instead of sort of thinking the student is dumb."

"No, my instructor didn't teach me how to recognize and reduce student pilot stress. In fact, he provided the stress. Maybe that was his way of teaching me that (laugh). What I've learned has been through experience. When a student is stressed, I get him talking about himself or anything, just to calm him down a little bit. I'll always try to go back to the basic manoeuvres that he knows, that he's familiar with, instead of throwing him this stress-producing thing right at the start--say spins, for instance. When it comes time for spins, I won't push it, even if it takes a little longer. It seems to work. In the long run we might be saving time, or at least saving a student who would probably quit because of producing the stress or pushing too hard."

"I don't think I was ever taught how to recognize and reduce student pilot stress. I don't remember. Somehow I doubt it, but maybe it was, but you see, I think a lot of those things might just pass over your head because you don't have the exact situation. You don't realize how important it is. I do remember that I was always very scared myself of spins so I always identified very quickly with somebody that was jumpy about spins. I don't know if my way of doing it is right, but I always give them only

what they can take. If they can take only half a spoonful, that's all they get. I sort of nurse them a little bit at a time. Maybe because I was very reluctant about spins 'til I got my instructor rating."

"Through experience I found that it's important to be aware of the student's comfort in the airplane, the positioning of the seat, using armrests, and how to control the aircraft--finger tip control. A lot of this is being done after the fact, and it generally comes out as an analysis of the performance afterwards: 'If you would have had the seat a little bit lower, you might have done better.' Instead, let's do it ahead of time. Let's prepare, get this done on the ground before. It's more profitable that way. You don't waste the student's time and money. In instrument flying also, the instructor has to be made aware that the student needs to take the hood off if he's tired. Sometimes students don't realize it themselves. They get tired and their performance starts to go downhill."

"If I see a student is tense or stressed, the first thing I do is ask myself if I feel tension between that student and myself. If there's something that I am doing that threatens him, or our personalities are at conflict for some reason or other. That's the first thing I look at. If there's strife there, then that's something that we can get rid of. We can get rid of me and replace me with another instructor who could be more helpful. Or we could talk

about it. That's of course the first thing that we could do, is talk about it. An instructor is a friend as well as--well maybe friendly--as well as an instructor. So I would take the time to sit down and see if I could find out exactly what the problem is if I don't feel that it's me."

"If it's an exercise that you know a student is gonna be tense, in the briefing you can just get him to talk a little bit. You can find out from their feedback, through questions, just how tense they are and how much negative connotations there are to this aspect. Just make it very casual when you go out. First of all, I don't make it a full lesson. I definitely tell them beforehand what we're gonna do on this lesson. Then I tell them, 'When you've done that next lesson, we're gonna do this,' whatever exercise is next so they already know there's an end in sight. I tell them the purpose of it, and I usually say, 'Look, you don't have to love stalls and spins. We're not gonna do these until you're perfect at them or until you love them. All I want you to do is have a healthy respect for them and have enough confidence in yourself that you know that if you get into that situation, you can get out. As long as you know that you're not afraid of them to the point where you can recover. That's all we're gonna do.' Then they seem to feel: Okay, it's just one thing, we've got to do it, and then we're on to the next lesson. I also look for physical signs of stress--if they're not sitting back in their chair,

if their elbow is off the armrest, if their knuckles are white, and if they're sweating. I try to relieve that, make a bit of a joke about it, things like that. If at all possible I'll say, 'I have control for a minute. Just relax,' and I just get them to take a couple of deep breaths, and I give it back to them."

### Negative Training

Some instructors said they decided early not to model their teaching on that of certain flight instructors they had during their training because of the stress and detrimental effect the behavior of such instructors had on them. One instructor related how his instructor used to yank the controls away from him whenever he did something wrong, and he vowed he would never subject his students to such an unnerving experience.

"It just threw me right off. I didn't even want to touch the controls anymore because you never knew when you're gonna get a rap or a pull or a push. It was very, very negative, and that, more than anything else, was my learning tool for not doing that as an instructor. I thought, I'll never do that because, God, I know how that bugged me, and how in that lesson the learning went right out the window. That's one thing that was never told to me, it was never taught, I never read it, just a fluke through experience that I had it happen to me and it sunk in. So I always try to put myself in the position of--okay, if I was

learning from you, if I was this guy here listening to me doing this and saying that--how would I react? That's hard to do. The longer you're at this game, the harder it is to be objective and remember that these people know nothing about flying and that this stuff is stressful. This is easy for you and hard for them. I think a major fault of a lot of instructors, especially new ones, is that they lost that. They forgot that. They're hyped up on their new skill, new knowledge, and they're impatient. And you just have to be patient with people."

#### Job Related Stress

Instructors themselves can be under a tremendous amount of stress which will reflect in their behavior and ultimately can affect the student's performance. As the old cliché goes: "flight training is hours and hours of boredom interspersed with moments of stark terror."

"Boy what a stressful job. I can't think of many more that would be a lot worse than that."

"We've all read about motivation and stress, but obviously that's just not enough. We're emotional beings too, and you can read something, but when your emotions are such that you feel this person has just screwed up and you just want to yell and scream and pull your hair out--it's like a mother dealing with a little kid, it's not that you don't love him but, you've gotta holler and you feel bad after, but it's too late. The person has gone home. It's differ-

ent here because that person is paying for the privilege of being with you and taking that airplane up. So somehow at the end of it they've got to go home with a shred of dignity and the will to want to come back and work on it. The thing is, too, I think people lose sight that this thing should be fun for these people every lesson. From lesson No. 1, from there to the last lesson should be fun and enjoyable. They should walk out thinking: 'You know, that was kind of neat, I enjoyed that. I screwed up on this and that, but generally it was kind of neat. I enjoyed myself, and I enjoyed the hour we spent together'. I never hope a person goes home thinking: 'Well I just threw my money away on that one', or 'What the heck am I doing this for?'"

"I think a big thing too is just what kind of mood you're in during that day, because if you're in a lousy mood or you're having a bad day or a bad week or you've been overworked, I know you can start griping at a student, and whether you recognize it or not, they can tell, and they get feedback from it. An instructor should know when he's uptight or whatever and what he's passing. I know for a fact that I can be classified as guilty of producing stress in a student at some time during some exercises, and I just have to take a deep breath and say to myself, 'Okay, cool it, just shut up, calm down.' It's mostly I. F. R. [Instrument Flight Rules]. I find that to be immensely stressful. But it's all relative, and it can occur. Students pick it

up, in your voice, mannerisms, twitching, looking around, whatever, they pick it up subconsciously or peripherally they catch something. I can think of many little things that I've seen over the years from instructors that would drive me crazy. But there are some people that just are not born to teach, and there are some that are just naturals."

"If you're an impatient character, it doesn't matter how well you can fly, you're not gonna be able to teach. Maybe if you weren't a perfect student, and you're not a perfect pilot, maybe you can understand a little more how the others can have their off days, too. I think patience is just critical. I guess you've got to have a certain degree of confidence that you can do it yourself, but there's got to be more than that. Because you can be confident that you can do it yourself, and you can say, 'How come that dummy didn't pick it up?' So I guess there's a lot of things involved there. People tend to tell me that I'm a relatively patient character, yet I'll catch myself being very impatient sometimes. Again, those times that I'm not so patient, that I'll snap or whatever, they're not necessarily things where something personal is happening. But I can really narrow them down often to situations where irrelevant of the instructing that I have done, I CAN'T SOLVE that problem. You're at the end of your rope. You've tried all your tricks and it doesn't work. So then you start getting impatient because you're not getting it at

all. You know up to now you've had control over the situation. This guy's having problems, but you know you've gotten them through before, and then you run out of tricks. You see what the problem is, but you just can't get it across. You just can't. I think sometimes that the instructor doesn't realize the stress that he causes. He only understands or realizes the stress he causes if it's an extreme situation or when it comes out of extreme situations."

One instructor relates how being concerned about the weather, and with her questionable decision of going to fly in strong winds in the first place, affected her student and reflected on his performance.

"I was so angry with myself that I was communicating that to him in my voice, and he thought I was angry with him. I finally realized that this was stupid and that I was worried about coming back and the wind being even stronger than when we left. So I said, 'I made a mistake. We should never have taken off in this airplane [a taildragger] because the wind was very strong, and it's a crosswind, and I'm afraid it's gonna pick up, and it will be really difficult to control the airplane on landing. I'm really angry with myself about that, and I think we should go back. I'm sorry.' With a sigh of relief he said, 'Oh, you're not angry at me?' I hadn't said a thing to him, and then I realized that he was getting more and more tense because I

was angry at myself and my voice was letting him know, and his performance was just awful because of that."

### Stressful Manoeuvres

Stalls and spins are commonly acknowledged as being major stress-producing exercises for the student pilot, while the landing is generally considered to be the most difficult and frustrating exercise for both the student and the instructor.

"I think one of the greatest stress situations is the landing, where I would say most people have some kind of problem with landings at one point or another. Some of them overcome them very quickly, others not. It is one point where an instructor gets frustrated, especially when he has no experience."

"The hardest part of the training will be the landing. That's when students become so frustrated. So I try to praise them as much as I can. That was one thing I was never taught to do, but I just keep trying to reassure the students because they always come back so frustrated."

"The landing is the most frustrating exercise but I think that it's healthy for a student from time to time to become frustrated. It's healthy because I can see that this person really wants to do things properly, so I try to help him through the rough areas. I try to personalize it and say, 'Look, I had that problem too with landings.' Maybe talk them through it. The key is to stop on a good point if

at all possible."

"The landing, everybody knows that that's gonna be a difficult phase, a very stressful phase. And people sort of balance the whole course, the success or failure, on how they land the airplane right away, and how soon they go solo. That seems to be a very interesting hurdle to cross, and one I really try to downplay. As far as the circuit goes, again I just developed this myself, I tell everybody, 'The first few hours in the circuit, all I'm concerned with is the circuit. I couldn't give a hoot about the landing, all that is, is an in between place from the time we approach to the time we take off again. You can work on that later.' So I think that helps to relieve some of that tension about the landing, and I don't care if they crash it on the first five times or so. I try to pick the good points--that was straight--that's what we're looking for on the approach or whatever. I think that takes a little bit of the stress off them because they're not embarrassed if they crunch one. It's a tremendous amount of material in the first few hours in the circuit. So keep it simple. Make it simple to start with, and then get into the fancy stuff later. Another thing, and this goes back to maybe faults in the early training, but there's always been a bit of a rush to get a guy to solo. Students talk in ground school--'When did you go?'--'Oh, it took me nine hours,'--so you must be a cement head or something! I just can't be-

lieve that that's been allowed to continue. I don't rush a student into the circuit. I build and build on the other skills first, lots of slow flight 'cause I think that's the greatest skill for the flare, until they're super-confident in the basic skills. Then I find that when they do get in the circuit, it's not a big deal for them to fly around in the circuit, and they're not so overloaded, and they can concentrate more on the new skills. But I remember when I first started instructing, there was that pressure, and I felt it too. I was rushing guys, rushing. And later on, about three quarters of the way through the course, when we came back for the post-solo airwork review, they were out to lunch. It was like learning stuff all over again. They had lost the sequence for leveling-off from a climb or descent, and they'd picked up bad habits. I just slowly over the years developed it--Hey, we're gonna do it right the first time. It really pays off in the circuit."

"Landings can be so frustrating, and it comes back to the idea of soloing in 10 to 15 hours, or something like that, which is so much pressure on the student and on the instructor. I found that one of the toughest things to get through--to try and overcome that and not be intimidated by this pressure. That's one of the things that still bothers me in instructing--that I'm taking too long to send a student out on his first solo. But I always look at it this way: Why send someone out who's still bouncing the aircraft

around, who won't come back from his solo satisfied that it was a good landing? I think, again, it comes back to the psychological thing--there's got to be a few students who actually literally hold themselves back. They might not say it outwardly, but subconsciously they could be holding themselves back. That's why I find the one-to-one aspect of teaching so difficult because you've got to sit there and try to figure out what the student is trying to do. How do you get him to motivate himself to really finally say, 'I can do it' enough that he's not going to be afraid."

"With the ones who have the most difficulty with the landing because they cannot relax, it would be nice to be able to tell them, 'Forget about solo, you're gonna do it one of these days.' But because they know or heard of people who soloed in 10 hours or 8 hours way back when maybe flying was a lot easier to handle or you didn't have things like Air Traffic Control to worry about, there's that pressure to go solo soon."

One instructor underscores the importance of polishing their flying skills, especially landing skills, during their instructor training so as to build confidence in their ability to handle the airplane in any situation a student can get them into, without getting overly agitated.

"The instructor rating helped me incredibly to polish my flying skills, and that's terribly important for two things especially. I'm talking here about confidence and

about crosswind landings or specialty landings. Your instructor is pushing you as an instructor trainee, sort of pushing you to the edge so that you can be competent at the limits basically. Of course you're nervous about those situations at first, but I think it's terribly, terribly important. Terribly important because otherwise if you didn't have that confidence that you can handle that airplane in those extreme situations, you can imagine the stress psychologically on the instructor when his student is not doing things quite right at fifty feet off the deck. He's gonna be very high pitched!"

### PART III. TRAINING THE TRAINER

Class I flight instructors are the only ones who may teach flight instructor candidates. They are the cornerstone of flight training since they prepare the new generation of instructors to teach future pilots. The quality of flight training rests on their competency as teachers of trainers. Since they are the hub of the system, Class I flight instructors were asked to give their perception with regard to their preparation and competency in training flight instructor candidates to teach and to recognize and reduce student pilot stress.

None of the Class I instructors who were interviewed felt that they had received adequate training to prepare them for their role of trainers of instructors. They all felt the present system left a lot to be desired.

"No, I never did receive any kind of formal training. It was something that I got through asking other instructors, more senior instructors, and getting information from them, and trial and error. Really, that's what it was, mostly trial and error. Most of my preparation for training instructors came from sitting in on the post-briefing after instructor rides. That's where I probably got most of my ideas. You'd train an instructor and you thought you did it all right, you'd set him up for the ride, and you thought he was prepared. He'd do the ride, and then you'd take notes on the feedback you got after the ride. That's where I probably got most of my ideas, always after the fact."

"Just the experience thing, that's all, there was no training at all. So all I can do is go over the same briefings, cover the same theory of flight, the same material as my instructor did with me."

"There was no training to prepare you to teach other instructors so you ended up 'monkeying' what you'd learned."

"No, I was not given any preparation to train other instructors. I think there should be a special course for that because it's a whole different course, as far as I'm concerned. Training private pilots, commercial pilots is entirely different than training a trainer. I think there should have been a course, there should have been an exam if you want, and a separate flight test, even. How you'd conduct it, I don't know. I don't think the mechanics would

be that difficult to work out. But just the mere fact that you have achieved X number of hours total and X number of hours instructing, and you've gone through a general flight test, which is just more or less a re-check, I don't see why that qualifies you to automatically be able to instruct instructors. It just means that you're a good instructor now, and you've acquired a certain knowledge. It doesn't mean that you can pass that on with any degree of skill or accuracy to other instructors."

"Right now when you're training an instructor you're just banking on your own experience, and that's not necessarily enough. Let's say a Class I that had done instructor ratings before and a Class I that had not done instructor ratings before, they could work together, and the junior one could learn from the senior instructor. Otherwise, to do it cold, I don't know."

#### Instruction Material

All the Class I flight instructors who participated in this study felt that Class I instructors and Class II instructors wanting to upgrade to Class I's should be given additional training in order for them to acquire the knowledge and skills necessary to train prospective instructors.

"I think there should be more to being able to teach instructors than just getting a Class I rating. I think with the Class I rating there should be certain training set up for that instructor, an actual syllabus and a training

course set out. Right now the instructor learns by trial and error, and whether he maintains the privilege to teach instructors or not depends on his track record. If your students you set up [train] for instructor ratings all pass, you have a good average, then you can continue to train. Where it should be the other way around, you should be able to train instructors once you're qualified to train them. All seems to be the other way around. Right now what you have to do is, you have to train instructors to prove yourself through training them--and the poor instructor trainee! If you're low on experience and you haven't done too many instructor ratings, that's what they get. So I believe there should be a course set up of some kind for Class I instructors to teach them how to train instructors. Right now all we've got is the Flight Instructor Guide, and help yourself. We do with it what we want. As long as the instructor can follow that outline and be able to give a briefing, he's met the requirements. I think they should change the requirements for instructor ratings too. The method of flight testing should also be changed. They should flight test an instructor while he is actually teaching a student instead of having the inspector pretend he's the student."

"Class I instructors are not adequately trained, but unfortunately, I think it's not going to change because Transport Canada in their wisdom have in essence lowered the

standards drastically to become a Class I. They've cut the experience required in half to become a Class I, and it's only because they decided, someone decided, only Class I can teach instructors where Class II's did before. So because there were not many Class I's, they had to lower the standards for some to teach instructors. They have just gone and killed themselves in essence. Yet, I don't know if it's possible but if either the Region or Transport itself could put on some type of instructional technique course. I don't know the length of it or anything else, maybe a day, two days, whatever. Class I instructors or potential Class I instructors would have had to have taken that. And write an exam at the end of that. Right now there is not really much preparation for the Class I exam--read the first 52 pages of the blue book. You memorize those 52 pages, you can write the exam. It doesn't mean you know anything, and certainly with that blue book you don't know an awful lot about instructional techniques. So it would be better probably to have some type of instructional technique course and make it a mandatory thing before they could become Class I's. I think that might help."

#### Distilling Experience

Some instructors, who are seasoned instructors, try to incorporate the insight they have gained through experience in their teaching of instructor trainers, but that depends strictly on the person one gets as an instructor.

"I think the person makes a big difference on an instructor rating. You can have five people with the same material, and you're still going to have poor instructors and good instructors of that material."

"I talk about students' feelings when I do an instructor rating, the do's and don'ts, and watch for this and watch for that. And if it doesn't work, try this method, be more flexible rather than just inject a person with this knowledge and a set way. Try to pull it out of students and make it go both ways, instead of just lecturing. Find out what they're absorbing, and how they're reacting to that, and try to anticipate their fears and anxieties and whatever. Move around, backtrack this way and move around that way or sidestep it. I try to be more flexible, I try to give them some of the things I've learned through experience. For example, I let them know what I've found out about the circuit--don't rush a guy for solo, build on the basic skills first. I say, 'You can try it yourself. Go ahead and experiment, but here's one option, here's the other. Try it yourself and see which you like best', but this is the way I've found successful, and this is the way I'm gonna stick at it."

#### Re-Examining Instructor Training

Class I instructors felt that the whole system has to be re-examined and re-evaluated. According to them the training of flight instructors has not evolved. It has

remained stagnant. Instructor training has not benefitted sufficiently from insights and development that have taken place in the fields of education and psychology.

"It would be nice if Transport Canada took a look at the way the instructor rating is taught. Maybe it's about time to revamp it in some way."

"Instructors are taught to teach the 'course', not the 'student'. It's a way of teaching that has not evolved."

"I've questioned Transport Canada inspectors as to why we don't learn anything about psychology, but it's just brushed off under the carpet. It's the last thing they want to do. I guess it's not their job or something. It's just--don't bother us, sonny, we've got better things to do with our time. To train instructors properly they have to change the whole system because you just get a transient bunch of people coming through the industry, lasting a few years and then getting frustrated and then getting out of it."

"I think what's happened is, because of the economy, the instructors are staying around more. Maybe it's about time the recognition came that instructing is now becoming a profession. Before it was just a space where you dropped in for two or three months to build up some hours. So I think if we recognize that first of all and work from there into getting more into instructional technique, into judgement training. Right now there is no judgement training other

than what you can think of yourself. The lead has to come from Transport Canada, I think."

"Transport Canada is still generally twenty years behind. Their attitude is still that the instructor is only going to be here for awhile. There's not that many new inroads into instructing. It's about time that people involved in flight training sat down and looked at, reviewed it. Maybe get the industry and Transport together and set up some type of proposal or some type of review. I think it's worth looking at now 'cause I don't think it has been done for many, many years. The ideas just aren't advancing fast enough."

"There are some very advanced thinking and developments in the education field that we in aviation haven't taken advantage of. In some ways I feel like we're back in the Dark Ages, and in some ways I feel like we're pretty 'up there'. We do things really well in some areas, but in the field of educating our instructors and consequently, the spill over, educating our students, we're backward."

"Research in education, that's another area where advances have been made, and I feel that I'm living in a sort of deprived area where we're not told about those things because Transport Canada wouldn't like us to know because we might become enlightened."

"I would like to see a formal presentation or mini course by professional educators doing some aspect of the

instructor course. Obviously not for the technical stuff but for the teaching part of it. How to recognize--and it doesn't have to be only anxieties--just how to recognize people's ability to learn and different rates and how to approach things and just communication skills, just plain communication skills, even to the point of minor things, like blackboard organization, the use of props (visual aids), and stuff like that, because not all of us can do that. I'd like to see a mandatory course like that. Obviously there's educators out there with a great deal of skills, always learning, always using new techniques. There's no reason why that shouldn't be passed on to us."

"It's too bad that there isn't a group of professional instructors recognized as such and that are in there for life or for a long time and keep upgrading their skills to the point where they become leaders in innovations and doing what you're doing now and keeping abreast of all the modern educational tools, right into the psychological aspect of it, and going around and imparting that to the new people in a formal course and recognized as a professional course. But it's just 'Mickey Mouse' the way it is right now. There's some really bad spots in it. There's some holes in there."

"Instructor training needs to be looked at. There should be refresher courses or seminars that could be done before an instructor rating is done or where an instructor

maybe would have to attend this once every year or has to attend within a year of his initial instructor rating, and then when he goes to upgrade. It's just a comparison with the DFTE [Designated Flight Test Examiner] workshops. Things like that should be done more and try to be geared more to the instructor's locality. To say, there is going to be a refresher course in Saskatoon and everybody from Western Canada should go to Saskatoon for a week, it's not feasible, especially when they're not paid. I think the attendance is dropping at that refresher course--it's a combination of the instructors who have been around so long they have been to one once before, and there's only so many times they want to go. It's also an inconvenience for an instructor to take a week off work with no pay, to go all the way out there. So it's got to be looked at that way too. Maybe if the Region can take over the refresher course and psych course and instructional techniques course. I don't know if it's possible. Lots of courses that the Regions would have to do. But you can do a refresher course in a day. It's quite easy to do because you have smaller groups. It means you have to get rid of a lot of the crap that goes on there anyway, which isn't valid for an awful lot of stuff. Cut it down, which will make it a much more worthwhile seminar anyway. Vary the topics so that it's not the same thing every time. It doesn't have to be that you try and cover everything in one refresher course. Say,

we're going to have a refresher course on instructional techniques in the morning and we're going to look at navigation in the afternoon and in six months we'll be doing a psych course in the morning and we'll be looking at forced and precautionary approaches in the afternoon. Something like that. It could be blended in with instructors who have shown a weakness in precautionaries--'Okay, we will be doing this refresher course this time and we'll be including precautionaries, so we strongly recommend that you be at that one'."

"Somehow the whole structure must be changed. The only way they can change it is to make the money available for the training. Maybe keep the Class I instructors and allow them to monitor themselves more than Transport Canada's monitoring. Train them properly in the first place and you won't have to do as much monitoring to get or keep the people in line. The role of the government would be every once in a while make it mandatory to have a course once a year or once every two years--a refresher course, but a good one--that Class I instructors would attend. And in that way you're covering everybody at once. In that way you don't have to work on individuals, 'cause it's just mind boggling how many individuals you have to monitor. It just doesn't make economic sense to have it that way. So get everybody as a group, it'll be standardized that way rather than having, this guy [inspector] likes this and that one likes

that. As long as you'd keep the people refreshed in that way once or twice a year you wouldn't need all that monitoring. Because, anyway, nobody is gonna have more experience than the Class I instructors. As long as they've got that basic training, nobody is going to be able to monitor them better than themselves either, especially now that instructors stick around longer. But something has to be done with the wages for instructors to stick around. Maybe those Class I instructors could be somehow employed by the government, in part, to do rides or whatever. Gees, I'm talking about your job here (laugh). No, but it just makes sense. When was the last time any inspector taught a student from scratch? And to step in and tell somebody else, 'Well no, you should be doing this and you should be doing that', (expression of doubt). But if you were in the industry, working out there, and you'd be doing it all the time, plus you'd be maybe getting paid by Transport Canada to do rides as well and to keep up your training, to attend these courses or whatever. But there has to be a change because that's the basic thing here--even an airline pilot, the first exposure he has to flying is his flying instructor. But instructors are the worst paid people in the industry, and I don't think they're trained properly, as far as teaching goes."

"If they want quality training, they're gonna have to make some changes. 'Cause all they're doing is they've got

people downtown [inspectors] monitoring the new people that are coming in, and it's the same thing all the time, all the time. Nothing changes. Get the guy when he first learns to instruct how to do it properly, not monitor him as he's going along doing things the same way. You could have one year's experience ten times instead of ten years of experience."

#### Transport Canada's Expertise in Doubt

Flight instructors would like to receive training that would adequately prepare them for their full teaching role, however, they question or doubt the expertise of Transport Canada to provide such training.

"They have to change the whole system and it's got to be subsidized by government somehow. If they want quality flight training, they're going about it the wrong way. They should have the instructors better trained. But actually there's nobody in Transport Canada, except one, unless there are other teachers, that probably has had any training in how to deal with people on a one-to-one basis and how to teach. I think that's one of the most important things because right now they're turning out people who know how to fly an airplane, but they're not turning out people who necessarily know how to instruct. I can repeat what my instructor told me to say in a lesson, but that doesn't mean I'm getting the message across to the student."

"The lead has to come from Transport Canada, but the

expertise just isn't quite there for instructional techniques or for training other instructors, or the guidance isn't there. The instructor course, it's fine to brief one to one and all that, but there's lots of times when I'm teaching instructors I feel I'm failing because--where to go? There's something lacking. I'm not that good in instructional techniques. There's a lot more I could do on instructional techniques, but where do I go for it. It would be nice to have courses and say to a guy that's going to become an instructor that he has to attend. All this aspect needs to be looked at a lot more."

"The system is far from adequate. It would have to be changed, where we have to start with us, with the Class I instructors. There's gonna have to be some different system some place. The trouble is, who is gonna do the training? The only thing I can see is going to University because, other than one person, who's qualified in Transport Canada? So the system would have to be changed totally and that's where there could be snags. Where is the money gonna come from to train the instructors? It's gonna come down to dollars and cents. For Class I instructors teaching other instructors, I think the standards should be much higher, much higher than they are now. You can get the experience, but the training initially isn't there. Class I instructors should take some sort of University--some sort of teaching course, something like at Red River College. But, how do

you pay for that? You know instructors make peanuts."

"There should definitely be some extra training before an instructor can become a Class I but it would have to come from the outside. Flight Training Inspectors, except for one or two, have the same background as we have. They're pilots basically, not teachers. And I don't think they get special training when they join Transport Canada, so they really don't have the expertise to give us the training we need."

#### SUMMARY

Flight instructors felt that their training provided them with content expertise and helped them improve their personal flying skills but unfortunately left them ill-prepared to teach.

They described flight instructor training as being rather mechanical or parrot-like, with heavy emphasis placed on rote learning, repetition, and imitation. The strengths of the training were that it provided a good understanding of aerodynamics and of the theory of flight and an opportunity to polish personal flying skills. The emphasis was strictly on content expertise and piloting skills. Basic teaching skills such as lesson planning, psychology of learning, and interpersonal and communication skills were left to be acquired through experience or by trial and error. Likewise the affective domain, which includes feelings, emotions, and psychological stress, was neglected

during flight instructor training. Whatever bits of wisdom flight instructors now incorporate in their teaching, they acquired mainly through experience.

All the flight instructors who were interviewed felt that they should be trained as teachers as well as pilots. They believe the lead should come from Transport Canada and should start with Class I flight instructors since they prepare the new generation of instructors to teach future pilots. However, Class I instructors question or doubt the expertise of Transport Canada to provide such training since Flight Training Inspectors have basically the same background as the flight instructors.

## Chapter 6 - Analysis

A man goes to knowledge . . . as he goes to war, wide awake, with fear . . . . He slowly begins to learn--bit by bit at first, then in big chunks. His thoughts soon clash. What he learns is never what he pictured, or imagined, and so he begins to be afraid . . . . Every step of learning is a new task, and the fear begins to mount . . . . Fear! A terrible enemy--treacherous and difficult to overcome. (Castaneda, 1968, p. 326)

Don Juan, Castaneda's wise man, describes here the anguish that can sometimes accompany learning. As was indicated in the review of the literature and from student pilots' testimonies in Chapter 4, learning to fly can be a stressful or anxiety-producing experience--be it self-induced, task-induced or instructor-induced.

In this Chapter the data presented in Chapters 4 and 5 is analyzed to determine the association between student pilot stress and flight instructor training. Part I gives a brief overview of the findings, while Part II presents a more detailed analysis of the data using, as organizational guides, the five thematic questions developed for the interviews (Chapter 1, pp. 14-15) and recurrent themes emerging from the data. The interpretation which has resulted should be considered the product of an interaction between the researcher, the participants, members from both the education and aviation communities and the phenomena under study.

#### PART I. OVERVIEW

A general review of the data in Chapter 4 indicates that, as a rule, student pilots found their flight instruc-

tors to be competent and skillful pilots (pp. 102-103, 106-107). They also felt that their instructors were knowledgeable and generally seemed to possess a good command of the subject matter to be taught (pp. 90, 102). Nonetheless, some students indicated their instructors should have provided more thorough explanations of the theory of flight so they could have gained a better understanding of what takes place aerodynamically when an airplane moves through the air. They also wanted more feedback. They would have liked a better analysis of their mistakes so they would have known what they needed to do to perform the manoeuvres correctly and not simply be expected to imitate and replicate manoeuvres as robots or in blind faith (pp. 106-108).

While all flight instructors were deemed to be accomplished pilots, the teaching skills of many were considered to be seriously lacking (pp. 102-108). This is not to say that there are no competent instructors in the field of flight training. In fact, a good number of flight instructors, because of their natural pedagogical abilities and their personality, are talented and effective instructors (pp. 142-159). Nevertheless, the behaviors and attitudes of flight instructors identified as "negative" or stressful by student pilots all relate to a lack of knowledge and skill in teaching, not in flying. Similarly, the positive traits of flight instructors considered to be desirable by student pilots concern the realms of interpersonal relationship and

communication skills, which are an integral part of teaching practices, not piloting skills.

The data presented in Chapter 5 offers at least a partial explanation for these observations. Flight instructors felt that their training helped them polish their flying skills and gave them a good understanding of aerodynamics (pp. 169-171, 172-174), but it did not prepare them to teach, let alone recognize and reduce student pilot stress (pp. 176-187). Traditionally, the emphasis has been placed on being a knowledgeable and skillful pilot with little attention directed toward the acquisition of teaching skills. The focus has been on the content of instruction and usually not upon the process of instruction (Telfer, 1983). This position rests upon the belief that "good" teaching is intuitive--a form of art that is not a realm amenable to scientific understanding. Given the theory and personal skills in an area of expertise, a person will then spontaneously or intuitively know how to impart those skills to others. Telfer and Biggs (1985) express it this way:

There appears to have been a tendency to blur the distinction between a highly-skilled pilot and a highly-skilled teacher. Because of the unique combination of experience, skill, knowledge and values that make a top pilot, there may still be a tendency to defer to flying ability rather than teaching ability. This is not an argument where one can have the latter without the former: it's a call for parity of esteem. Both are needed for a dynamic aviation industry. Teaching people to fly requires top-level skills in both flying and teaching. (p. 11)

Yet traditionally, teaching skills for flight instructors have been left to be acquired mainly through experience and trial and error (pp. 176-179). As one instructor stated: "The teaching aspect is just swept aside" (p. 176) during flight instructor training. Or in the words of another instructor: "There was absolutely nothing to prepare me for the instructing [of student pilots]. It's two professions in one, but it's treated as a 'pilot'; it's not treated as a 'teacher' at all" (p. 177). Teaching is still considered to be a matter of a sixth sense which defies explanation. With this view, all that presumably is needed are instructor pilots with warmth, compassion, and an intuitive grasp of the working of the student's mind. Of course the value of instructors' intuitive understanding of themselves, of the students, and of the complex learning conditions should not be underestimated or disparaged. For generations, gifted instructors--even in the absence of clear theoretical and instructional guidelines--have followed their intuitive inclinations in effectively guiding their teaching and their students' learning. However, not all flight instructors are gifted teachers and the demands of flight training are far too important, too complex and too great to allow the aviation industry to rely on rare talents and unexplicated intuition. Although we may hope that all prospective flight instructors possess a certain amount of sound intuition and compassion as part of their motivation to become instruc-

tors, flight training must pass the point of relying on such intuition alone to accomplish the immense and critical task of pilot training. Consequently, teaching practice must be given parity with flying skills so that flight instructors will be competent teachers as well as competent pilots. Participating instructors made this point several times (pp. 177-187, 190-193, 213-223).

## PART II. ANALYSIS AND INTERPRETATION

The organization of this Part reflects the interplay between the two phenomena of concern in this study, that is, between student pilot stress and flight instructor training.

What has been made evident from the data presented in Chapters 4 and 5 is that the whole approach to flight training is technical or mechanistic. In other words, teaching is approached as technology and modeling. Such an approach to teaching is flawed. Teaching is much more than technology and modeling. There is a wealth of research in education studies that has shown that effective teaching is not limited to technical skills and drills. It is more than just observable performance.

### Teaching as Technology and Modeling

Testimonies from participating instructors revealed that the traditional moulding of flight instructors has followed a "rote", or parrot-like approach, where successive generations of instructors are provided with the same word-

for-word "patter", akin to learning one's prayers (pp. 165-171). This "recipe" approach (Telfer and Biggs, 1985, p. 11) basically views students as disembodied intelligences or learning machines, reminiscent of the mechanistic model of development (the reacting subject) promulgated by behaviorists like Thorndike. As a result, emotions and feelings (the affective domain or the feeling person) are not taken into account in the learning process.

The teaching approach used in flight training also adheres to "the all-head notion of learning" (Kidd, 1973, p. 19) of the cognitivists, where learning is approached as if it were completely an affair of the mind (the thinking subject). The advocates of this theory believe that learning is entirely a rational, intellectual process:

According to this theory, learning is not particularly difficult to understand. You simply select and arrange the content of your subject in a rigorously rational way, and present it to the student. However, unfortunately for this notion, man is actually much more than mind and intellect. Most of us have become increasingly aware that man is a creature of emotions and feelings, and that these have an important part in learning. (Kidd, 1973, p. 19)

Yet, flight instructor training as described in Part I of Chapter 5, espouses a theory of learning that is exclusively rational or mechanical. If flight instructors are taught to see their objective as being only to train their students' memory and muscles, they will underestimate the potential of the teaching situation. Students do not leave their thinking minds or feelings at home just because these were not

included in the instructor's plan.

Obviously then, teaching practices cannot adequately be taught as a "rote" process, or as a "recipe" approach because the whole person, including the feeling person, is involved when learning. Flight instructors emphasized that to memorize a "patter" does not ensure one can effectively teach; they felt they needed a much richer preparation which would include theories of learning, instructional techniques, educational psychology, interpersonal and communication skills, and means of retaining motivation, as well as ways of coping with and reducing psychological stress (pp. 180-193, 196-202). Telfer and Biggs (1985) concur:

If flight instructors are professionals, they require a professional preparation. Professionals are not trained how to act. They are educated so that they are aware of the reasons for acting in certain ways and not in others . . . . A "recipe" approach is completely inconsistent with such professionalism, especially if the public is to be convinced of the fact that flight instructors are uniquely trustworthy. (p. 10)

The technical and modeling approach used to train flight instructors naturally is reflected in the teaching approach instructors use to impart aeronautical knowledge and flying skills to future pilots. Thus, there is a tendency to use the "follow me through" method where a manoeuvre is demonstrated by the instructor and the student then tries to mimic the flight instructor's movements often without understanding what is taking place aerodynamically (pp. 106-108).

The demonstration-performance (imitation) method, however, when taught properly is the best suited method to use in the acquisition of a motor skill (Cross, 1982) and has proven most effective in teaching the many tasks pertinent to flying. The demonstration is used as a means of illustrating the correct procedure to be followed so that modeling or imitation and subsequently practice can take place. The demonstration is usually accompanied by a clear and concise oral explanation of what is going on. It is then followed by a supervised imitation by the student. By watching the student's performance, the instructor can determine how well the student has understood and how accurately he or she can perform the manoeuvre involved. It provides immediate feedback and enables the instructor to come to a close understanding of the student's particular difficulties. Student pilots, however, felt that some instructors limited their teaching to the demonstration. They did not provide thorough explanations and were particularly weak in determining and analyzing a student's problems and in giving good instructional cues to improve the performance (pp. 91, 106-108). A typical comment was: "There was no critiquing. There wasn't any feedback as to why it was good or bad or how I could do it better. There wasn't anything like that" (p. 170). Often times, when a student made a mistake, instead of analyzing what went wrong and providing instruction on what to do to perform the manoeuvre

correctly, the instructor simply took control and kept hammering at the manoeuvre, hoping that somehow by pure repetition the student would gain some insight and make progress (pp. 106-108). Students found this approach particularly frustrating; they would have preferred to be told what they had done wrong and then be allowed to correct their mistakes. Instead, some instructors kept stopping the students and redoing the manoeuvre seemingly unaware of the students' frustration or annoyance because they were taking over the student's flying time (pp. 80, 90-91, 98-100). Furthermore, learning to fly involves much more than the acquisition of simple motor skills, it includes the obtainment of decisional skills as well as complex psychomotor skills. Repetition and drills are inappropriate to teach these skills adequately.

#### Shortcomings of the Mechanistic Approach

Within the present technological and modeling approach to teaching, flight instructors fail to recognize basic teaching practices. A mechanistic approach to teaching leads to an insensitivity to student feelings and emotions, and a failure to recognize individual differences and the condition of the teaching situation. It also fosters stress-producing attitudes and behaviors along with faulty instructor expectations.

### A. Failure to Recognize Individual Differences

Many flight instructors fail to recognize individual learning rates because a prescribed "patter" or a mechanistic approach does not allow for varied approaches or individual differences, nor for learning problems and methods of dealing with them. Flight instructors indicated they were taught to demonstrate a manoeuvre as perfectly as possible while simultaneously explaining what went on using the prescribed "patter" and teaching gimmicks for that manoeuvre. Then repetition was the key. Detection of errors or of learning problems and fault analysis were mainly left to be gained through experience and trial and error (pp. 167-171).

The Flight Instructor Guide does have a short section dealing with individual differences and suggests corrective actions for coping with common traits and faults of students. However, flight instructors were generally quite critical of "the chart that labels students into neat little categories" (See Appendix B). One instructor echos the views of most, saying:

There was this little chart in the Instructor Guide that said students are categorized into different types of problems. There's a dot for what you do. You know, you just punch them in the computer and they come out the other end. It seems so dehumanizing. As if we were just categorized and labeled. That every solution--we would find the answer to any problem that an instructor might ever have in the Instructor Guide under that chart. It's ridiculous. (p. 182)

Hence, dealing with individual learning rates and with

learning problems encountered by students is very much left to an instructor's intuition and resourcefulness or lack of it. Mac McClellan (1987) notes:

Today's trainers have at least limited avionics and instrumentation and there is more to learn today, but the flight instruction process is the same. It's one-on-one instructor to student, and the airplane is the only significant teaching aid. With an experienced and motivated instructor, plus use of good video or in-person ground school, this system can be excellent. If the instructor doesn't have experience to draw on, or doesn't care, the teaching process is simply one pilot passing on rote learning to another. (p. 74)

B. Failure to Recognize the Condition of the Teaching Situation

One of the major drawbacks of flight training, of course, is that most of the training must take place in the aircraft which is a very poor classroom. Link, the inventor of the simulator, thought the airplane was a terrible place to learn to fly. It is cramped, noisy, bumpy, often too cold or too hot, sometimes smelly, and generally frightening to a student. "The wonder", he said, "was that anyone learned the delicate art of piloting an airplane in this hostile and anxiety-producing environment" (In Kelly, 1970, p. 3). Yet, this is the environment where the student and the instructor spend most of their time together. Because of the noise and the fact that the aircraft is operational, the student often learns the intricacies of the airwork from shouted and necessarily abbreviated commands.

In the air, the instructor must concentrate on teaching flying skills and developing aeronautical judgment often at the expense of explaining in sufficient detail why a maneuver should be performed and what is going on aerodynamically when an airplane moves through the air. In the absence of the opportunity--and, it must be admitted, sometimes the ability--to explain the intricate and ever changing balance of forces that are at work on an airplane during the airwork maneuvers, an instructor must all too often resort to the "follow me through" method of teaching in which a maneuver is demonstrated and the student attempts to mimic the flight instructor's movements, albeit without having any notion of what he is trying to accomplish. (Parke in Garrison, 1980, p. xv)

Student pilots complained about the "annoyingness" of aircraft noises--the noise of the motor and the constant chatter on the radio--making talking and listening at times almost impossible and concentration most difficult. In fact, two of the most-used phrases by student pilots starting to use the radio are: "Was he talking to us?" and "What did he say?" Students who could not hear instructions from the air traffic controllers or from their instructor said they felt very frustrated. If, in addition, their instructor failed to recognize the condition of the teaching situation and got annoyed because they did not obey instructions that they could not make out in the first place, students said their stress increased because they felt helpless (pp. 99, 104). As one student indicated: "It doesn't matter how much he wants to raise his voice at me or how impatient he wants to be--I didn't hear and there's nothing that is going to change that . . . I feel helpless

because I still didn't hear the instructions" (p. 99). Some students suggested using headphones which would definitely improve communication but very few schools use them.

Bailey and Hughes (1980) also indicate that a concern for safety can sometimes deter from optimal forms of fault analysis or feedback:

The aircraft itself is certainly a less than perfect setting for maximizing the acquisition of skills required to fly a plane. Safety requires the IP [instructor pilot] to put proper maneuvering above analyzing the instructional process and the stress involved in correcting student errors may result in less than optimal forms of feedback. Since the cockpit is operational and the instruments require constant monitoring to maintain proper altitude, the student may be easily overloaded with information in the early stages of instruction and be unable to progress as systematically as would be desirable. No opportunity to practice a particular part of a maneuver in the aircraft is feasible, even though it would perhaps be most desirable from a learning point of view. (p. 9)

However, the fact that some flight instructors manage to teach flying skills effectively and safely in spite of the less than ideal environment means that these are not unsurmountable obstacles. Some perceptive flight instructors just seem to be able to adapt to the condition of the teaching situation and create an appropriate atmosphere to encourage learning in surroundings which are the despair of less effective colleagues. Nevertheless, considering the data presented here, effective teaching seems to be affected more by the insensitivity and attitudes and behaviors of flight instructors than by the physical learning environment.

### C. Flight Instructors' Insensitivity to Student Pilot Psychological Stress

Overall, the testimonies from student pilots confirmed that feelings and emotions play a major role in the learning process. The majority of the participants indicated that they approached the first few hours of flight training with a high degree of trepidation mixed with excitement and anticipation (pp. 74-75). Most made no secret of being nervous and apprehensive when it came to manoeuvres such as the stall, the spin, the landing, or going solo. Many said they were downright afraid of doing spins (pp. 75-81). However, the fear or anxiety experienced before flight or before new manoeuvres, which is a fear of the unknown, often will disappear during the flight itself with the student's development of dexterity at the controls and his or her ability to handle the aircraft. Fear also diminishes with experience, although it does not necessarily disappear entirely (Stephens and Roderick, 1971). To come to terms with the fear of flying or the fear of certain manoeuvres, the instructor should be aware of students' anxieties and let them know that it is a normal reaction to be afraid of a new experience at first. Most fears can be dispelled by careful and appropriate instruction. If the instructor clearly explains the fundamentals involved in flight, the apprehensions of the student caused by a lack of understanding will tend to disappear. Students must also be given the time to

adjust to the new environment of the air.

While some flight instructors were aware of and sensitive to their students' feelings and emotions and proved most helpful in reducing student pilot stress (pp. 146-159), other instructors were totally insensitive to students' feelings, problems, and needs (pp. 123-126) and seemed completely oblivious to the fact that at times they might be the cause of a student's tension and frustration (pp. 78-86, 102-105), or worst yet, of a student's loss of confidence and self-reliance (pp. 87-94). Students said that on many occasions they left the flying school/club in a depressed state of mind with a strong disinclination to continue their training, all the while knowing that their instructor was without any awareness of the condition in which he or she had left them. Pilot trainees also stated that when they were tense, upset, annoyed or angry, in other words under psychological stress, they could not concentrate on learning how to fly but instead were preoccupied with their feelings and their emotions (pp. 81-86, 89-102). As a result they made more mistakes, their performance deteriorated and ultimately some lost their confidence (pp. 87-94).

#### D. Stress-Producing Attitudes and Behaviors

All the participants in this study said that, at one time or another during their training, they had been subjected to at least one instructor who had increased their psychological stress by making them feel awkward or stupid,

or by overloading them or putting too much pressure on them. In contrast, they indicated that they had also received some training from instructors who made them feel at ease, helped them build their confidence and assisted them in overcoming their anxieties. The significance of the relationship between the student and the instructor came through as being critical. How students feel about their instructor(s), how the students feel they are perceived by the instructor(s), and how they relate to one another are of utmost importance in the learning situation.

Flight instruction, even where simulators are much used, is always a human relationship between two persons, a student, or trainee, and an instructor. The ability of the student to absorb and learn depends not only on the quality of the instruction but also--and to a surprisingly large extent--the way the student feels about a specific instructor. (FAA General Aviation News, 1982, p. 6)

This section examines the behaviors and attitudes of flight instructors perceived to be particularly annoying or unnerving to student pilots and deemed to interfere with their learning. The gamut of instructor personality traits, mannerisms or demeanor that may irritate a student can be surprisingly broad, however, the participants in this study narrowed down stress-producing attitudes and behaviors to more prevalent and commonly disturbing ones.

#### Sarcasm

Sarcastic remarks and verbal disparagement of the student's performance by the instructor were identified by

student pilots as being most upsetting and detrimental to productive thinking and to learning (pp. 81-86). Students who experienced an instructor's diatribe or mordant reprimands said they could not concentrate on flying anymore; they became angry or upset and their performance deteriorated--at times to the point of being unsafe (pp. 85, 101). Sarcasm directly attacks a person's pride, it is a threat to ego integrity, consequently, one's defensive tendency to "save face" or maintain self-esteem increases and attention that should be directed to the flying task is consumed in dealing with emotions. Sarcasm and ridicule are out of place in any learning situation. Kershner (1981) emphatically states: "Sarcasm is no training aid and has no place in the syllabus at any time" (p. 3).

Impatience: Scolding, Shouting or Yanking the Controls

Student pilots also indicated that instructors who show impatience, that is, who scold, shout or brusquely yank the controls from them definitely augmented their stress and hindered their learning (pp. 94-102). Flight instructors who violently grabbed the controls, jerking the airplane around while yelling at the students either frightened them or made them feel clumsy or dumb. Students said their mind went blank or they did not dare touch the controls or initiate any corrective action for fear of vexatious rebukes from the instructor. One student's testimony is worth repeating here because it so vividly describes a student's

psychological stress when an instructor is abusive:

You're like a rabbit frozen in his tracks--that throttle is 100 RPM too high but if I reach for it he's gonna yell at me and if I don't, he's gonna yell at me. So you freeze there. You panic. The altitude is out 50 feet--"Oh God, I hope he didn't notice!" To the point where you're flying the airplane for him more than you're flying it for the purpose of doing it right--for yourself. That is very stressful and a totally negative lesson as far as I am concerned. (p. 96)

Understandably, performance worsens and learning is inhibited under these circumstances because the student becomes more concerned with placating the instructor than with flying the airplane. In fact, after failure or following an admonition for a poor performance, students will usually tend to avoid situations that are likely to be costly to their self-esteem and consequently might be very reluctant to show initiative. Instructors, as a rule, would frown upon cantankerous colleagues who would physically abuse their students. It just is not an acceptable practice. However, verbal abuse is just as condemnable and detrimental, yet, somehow is more tolerated.

If you asked some flight instructors if they would hit a student over the head with a rubber chicken to get his attention, they would answer quickly that they certainly would not because, "It would shake the student up too much." Yet, they may do the equivalent verbally by shouting and using sarcasm; or physically, by abruptly snatching the controls away (or both shouting and snatching the controls away) . . . . This shocks the recipient of this delicate attention, and the training situation goes from bad to worse, which probably leads to more shouting and more deterioration, in a vicious circle. (Kershner, 1981, p. 9)

Some instructors still think that the louder they shout and the more they shake students up, the more apt the latter will be to learn and the better prepared they will be to cope with the stressful flying environment. Instructors could get away with it in the early days of flight training and in military programs, but nowadays, nobody learning to fly at today's prices should put up with such irksome behavior. "The cockpit of a small trainer is too close an environment to contain suppressed irritation" (FAA General Aviation News, 1982, p. 7).

In the early days of aviation, one of the most fearsome hurdles a person wanting to fly had to undergo was a gruesome initiation supposed to assay the applicant's determination, courage, tenacity, and willingness to unquestionably trust the instructor. The aspiring pilot was subjected to the most terrifying and sick-making aerobatic manoeuvres of which the instructor was capable. The intention here was to separate the stouthearted from those who did not have the nerves nor the constitution to endure flight training.

If the student never returned it was accepted that he would not have made a good pilot anyway. If he came back for more it was with the tacit understanding that he could be subjected to unmerciful verbal abuse, and dealt with profanely within the often narrow limits of the instructor's vocabulary . . . .

The principle behind this unsettling treatment was simple enough. The instructor was trying to establish a stress situation in which a difficult task would be made more difficult by his hounding the student, often unreasonably, until only the most dedicated would continue and only the most determined would survive. It was thought to be

for the student's own good. (Parke in Garrison, 1980, p. xiii)

Some instructors and administrators in both the industry and the government still feel that a hardy dose of stress or a strong measure of unanticipated difficulty is not all bad for the learning process. It supposedly builds character. They believe that flight training should reflect the stressful environment in which the pilot must operate and thus, any attempt at reducing the student pilot's stress level would be a disservice to the future pilot. Kershner (1981), among others, disagrees:

The belief that the use of fear and anxiety helps people learn is one of the biggest fallacies existing in flight instructing. A person who is afraid or anxious isn't going to be paying attention to anything except his own problems. If you contribute to his fear by shouting or threatening him, you are hurting his learning rate, not helping it. At all times, as an instructor, you should be working to alleviate fear and anxiety.  
(pp. 18-19)

A few tales of incredible oversight, abuse or plain neglect that occurred during student pilot training, however, corroborate that some of the olden days thinking persists to this day. Research conducted by Termoehlen (1987) with student pilots in the Royal Swedish Air Force, reveals that:

Quite often the pilot trainee got the feeling that the main purpose of the flying training was to make the learning process as difficult as possible and it was looked upon as a way of testing the stress resistance. For many trainees it seemed to be a question of trying to survive instead of learning to fly. (p. 4)

This attitude is most unfortunate because a process of

elimination based on endurance does not necessarily guarantee quality.

What proponents of this harsh approach tend to overlook is the large number of people who find the shortcomings of the system intolerable and perhaps even dangerous, and drop out. Who can say whether or not these well-intentioned souls would not have made good pilots. (Parke in Garrison, 1980, p. xiv)

Furthermore, many of the students who persevere in spite of this survival of the fittest philosophy, end up demoralized and disheartened with their training, or worst yet, doubt their ability having lost much of their confidence and self-reliance. Tough (1971) notes that often when adult learners venture in self-directed learning projects, "the most frequent source of confusion, frustration and even anger occurs during the contact with the person, book, or other resource that is expected to be of help" (p. 105).

Granted, flying is inherently stressful and student pilots must eventually learn to manage the stress associated with the flight situation. However, until the basic skills have been acquired, adding to a student's stress is simply counterproductive. This point is emphasized by Andersen and Hagin (1971):

Some level of psychological and physiological stress always accompanies the task of piloting an aircraft. For the student pilot, stress often reaches high levels. Although the student must eventually learn to cope with all the stresses of flight, it is generally inefficient to crowd the information processing potential of the new student with the tremendous array of external and internal cues available from actual flight. To the extent that various individual flight tasks

can be practiced on the ground under controlled conditions and subsequently "transferred" to the sky (1) more efficient learning of the task will occur, and (2) subsequent in-flight learning will be enhanced through a reduction in overall task load. In a circular manner, the reduction in airborne task load will contribute to an incremental reduction in psychological (and perhaps even physiological) stress. This allows a more efficient operation of the student's attention mechanisms, provides greater information processing potential for relevant cues, and because information is processed and organized, memory is enhanced. (p. 2-3)

Instead of nagging at the student in an effort to increase the difficulty of the learning task and to create a more stressful situation, instructors would be more effective if they taught confidence-building techniques and strategies to instill habits useful in coping with the stress inherent to the flying environment.

One of the main culprits in promoting the use of shock treatment or fear tactics in flight training may be the Flight Instructor Guide published by Transport Canada. Some well-intentioned but inexperienced flight instructors may incorporate the preachings of the "Law of Intensity" a bit too literally to their teaching approach. The Law of Intensity states that "vivid, shocking, dramatic, realistic, or unexpected things are long remembered" (p. 13). It further explains:

It is a well-known fact that a student's "look-out" while flying will improve considerably after his first experience with a "near miss" . . . . The instructor, who notices his student disregarding the fuel quantity gauge during a cross-country flight and allows him to continue until the fuel quantity is in close, but safe, proximity to

running dry on one tank, before bringing it to the students [sic] attention, employs this law. The instructor is employing the Law of Intensity. The student is so shocked to find himself so close to an actual inflight engine failure when he thinks he has sufficient fuel, that his learning is strongly reinforced; he will probably remember the experience for a long time, and benefit from it. (p. 13)

Student pilots, and some instructors, tend to disagree or have strong reservations about this (pp. 97-102, 104-105, 202-203). The use of shock as a training aid angered or scared students, so they felt it was a very poor teaching technique.

Another shortcoming of using fear tactics and increasing anxiety in the learning situation is that, because fear and stress are felt to be shameful or denoting spinelessness, few students will admit to being afraid or tense, or they will have difficulty talking about it, especially with an instructor who is perceived as being insensitive to students' emotions or who is the cause of such feelings (pp. 78, 103-104). As one student puts it: "How do you say something like: 'I'm not doing this right because right now I'd love to kick you out of the airplane! . . . You personally are bugging me! And that's why I'm not doing this well'" (p. 103-104). Another student, frightened by an instructor who demonstrated a full spin on the second lesson, says: "It just freaked me right out. But my pride was at stake so I couldn't say or do anything. I felt really helpless, just terrified. I didn't want him to think

I was chicken. I almost quit because I was so terrified" (p. 78). Morgenstern (1967) underscores the fact that in aviation feelings and emotions are not fashionable: "Flyers and administrators are rarely sensitive to emotional problems although they may notice a colleague's diminished skill" (p. 143). In fact, it is almost taboo for a pilot to openly express feelings or admit to emotional stress; it would tarnish the image of the macho pilot. It is a current phenomenon in our society, and even more so in aviation, to have more tolerance for bodily sufferings than for mental or emotional ones.

This phenomenon is even more pronounced in the aviation environment where a rather rigid defensive attitude is developed which consists of denying any internal problems. To acknowledge internal problems would be to tarnish the narcissist image, to attack the ideal of the superman and of the hero and seems to be a flaw, a state of inferiority incompatible with the aviation context. (Galle-Tessonau, 1977, p. 27)

Rather than admitting being fearful about flying or being annoyed with an instructor's behavior, some students will make excuses or will become more hesitant. This will further delay their progress because they will be busy trying to mask their fear instead of coping with it. The key idea to overcoming fear, however, is being able to admit being afraid and to regard it as something to master, as a challenge to overcome. This is where the attitude and behavior of an instructor can make a significant difference. If an instructor is sarcastic, impatient or judgmental,

students will be very reluctant to admit to being apprehensive and will try to conceal their fear. On the other hand, if an instructor shows a genuine uncritical acceptance of students and has established a good rapport, students will feel more confident about expressing their feelings and apprehensions (pp. 148-151).

As was mentioned earlier, a major source of distress reported by student pilots who experienced instructor-induced stress is a loss of confidence in their ability to fly and consequently apprehension regarding their capability to think clearly or to cope adequately with the situation (pp. 87-94). Several student pilots felt that once they had gone solo, they flew better and were more relaxed without their instructor on board (pp. 92-94). Unfortunately, an instructor who stifles a student's initiative or destroys a student's confidence can be very detrimental since initiative and confidence could be all important to success in solo flying. Positive acknowledgement, praise, and tolerance of errors, especially early on in the training when a student has not yet developed enough mastery for self-criticism, are of utmost importance in building self-confidence and in promoting further learning.

Confidence is a most important factor in learning, and the teacher should do all in his power to give the student confidence in his ability to master the material presented in the course. Initial failure is likely to deter the student and make it more difficult for him to learn. It is thus helpful to build up confidence through success at the very beginning. This provides reinforcement

and encouragement and makes the student more eager to proceed with the next part of the course. To maximize success and minimize failure, fairly wide tolerance levels should be used in the early stages of the course. (Stephens and Roderick, 1971, p. 146)

Unfortunately, encouragement and positive feedback were seldom part of a "negative" instructor's repertoire.

#### Negative Criticism and Negative Reinforcement

Testimonies from student pilots confirmed the fact that many instructors are not overly generous with their praise. They, however, are quick at pointing out something that is wrong, though not necessarily how to correct it (pp. 137-140). Ab initio students learning how to fly are most often highly motivated during the first few flying lessons. Students are generally pleased or "feel good" because they are learning quickly, easily, and successfully and are usually overcoming the initial fear or apprehension of flying. They can see they are progressing well. It should be the role of the instructor at this point to reinforce these positive feelings because after the first few lessons, an inevitable slump and a "let down" feeling ordinarily occur. Some sequences become repetitious, the new manoeuvres are more complex and difficult to learn and the instructor is more demanding and more critical. It is normal at this stage for students to experience doubts about flying lessons and even more detrimental, doubts about their own ability to master the skill. Instructors need to be sensitive to this and understand what students are experiencing. They should be

able to provide encouragement and instill in their students a strong determination to succeed and persevere despite difficulties. A leveling off in the learning rate, or "learning plateaus", are normal and can be expected especially when something extra is added to the current area of knowledge or skill or more precision is demanded. For instance, students can be proficient at flying straight and level and can perform accurate turns, however, when they first must integrate these skills to the circuit they often will experience a temporary decline in their performance because of the added demands and pressures of flying the circuit pattern. Steininger (1964) notes:

After the exercise has been demonstrated to him the pupil who has a normal amount of empathy manages to fly the manoeuvre quite well by just imitating his instructor. After the exercise has been practised a few times, however, he becomes worse at it. His difficulties become more noticeable when he is instructed to fly with precision and when the manoeuvre has to be controlled intellectually. Performance improves when his control movements become automatic.

This sequence: imitation of a manoeuvre, intellectual control over the aircraft and finally automatic control, is a criterion of the training of a qualified pilot. (p. 39)

Instructors, however, indicated they were not taught how to deal with learning problems and individual learning rates. One instructor notes: "We were taught that there were learning plateaus but that was it. You're not taught how to cope with it. They tell you to expect it but they don't tell you how to cope with it" (p. 183). Be that as it may,

frequent failures, harsh criticisms and a lack of encouragement while students are still trying to master a skill can intensify feelings of incompetence and a lack of self-confidence and the students may develop emotional blocks which will further hamper their progress. As one Australian student points out: "There seems to be a lack of encouragement and praise--this tends to reduce, not build confidence" (In Telfer, 1982, p. 8). Negative criticisms in the form of reproof and threats tend to reinforce negative self-concepts by introducing psychological barriers which inhibit the learning process and delay the student's progress. Furthermore, if students feel that their instructor perceives them as awkward or dumb, they tend to doubt themselves and make more errors (pp. 81-102). Threats or ruthless criticisms may relieve the instructor's feelings, or frustrations, or concerns, but it does not remedy the teaching problem. Attacks on the intentions, competence, or self-regard of the learner may actually help create or reinforce the idea that the student is a poor performer, a "loser", and lower expectations about what he or she can accomplish. If students perceive that their instructor thinks of them as being stupid or clumsy, they sometimes attribute their failure or poor performance to a lack of ability. According to the attribution theory, the causes students give for their failures or successes will have a pronounced effect on future performance (Bar Tal, 1978; Weiner, 1972, 1977).

Attributions to internal factors, such as "I'm dumb" or "I'm awkward. I must have four left feet or something", can have a detrimental effect on a student's subsequent performance and motivation. Biggs and Telfer (1981) note that:

Clearly, the most damaging attribution is to low ability. Contexts that tend to lead the student to this attribution--such as criticism, sarcasm, comparison with others after failure--are therefore highly pernicious and should be avoided. (p. 206)

In short, such criticism may discourage the learner from active participation and prevent or retard further learning. Instructors' reactions to students who have problems in learning to fly may well be intertwined inextricably to their lack of success.

#### Faulty Instructor Expectations

According to the well-established principles of the self-fulfilling prophecy, students do better when their teacher/instructor expects them to do well. If an instructor has a low opinion of a student's ability and expects him or her to perform poorly, chances are that these expectations will reflect negatively on the student's performance, a result that Rosenthal and Jacobson (1968) dubbed the Golem effect after the clay figure of Judaic myth later destroyed by its maker. Positive expectations, on the other hand, allow students to sense value in themselves for they assume they are capable of fulfilling them. Such expectations give a student something to live up to or to strive for; they establish a model for personal conduct, a result Rosenthal

and Jacobson (1968) called the Pygmalion effect after George Bernard Shaw's Pygmalion (see Appendix C). Rosenthal and Jacobson (1968) identified these expectations as interpersonal self-fulfilling prophecies, that is, "how one person's expectation for another person's behavior can quite unwittingly become a more accurate prediction simply for its having been made" (p. vii). By expecting a certain result or outcome, an instructor can make it more likely to occur. This idea is not new and anecdotes and research support its tenability. The instructor's attitude toward a student can, in fact, have a profound effect on their relationship and on actual student performance. It can reinforce a student's own self-concept as a "failure" or may have the reverse effect in that the student might want to prove the instructor wrong. The instructor's expectations and subsequent reactions to the student's performance may provide subtle reinforcement in the mind of the student as a good or poor performer, an effect which can very well become circular and encourage a subsequent high or low level of achievement (Brophy and Good, 1970). In short, the instructor's expectancy of a student's performance may subtly determine that performance. Perhaps the morale-building banter and encouragement given to students who are expected to do well help them do so by increasing motivation, self-confidence and by decreasing psychological stress and its interfering effects. On the other hand, the communication,

verbal or non-verbal, to students of the instructor's expectation that they would perform poorly may reduce their motivation and their self-reliance and increase their anxiety to a point where it interferes with performance and learning. Biggs and Telfer (1981) state:

Teachers' expectations . . . can be conveyed subtly and unconsciously, or overtly and with the utmost crudity. Students may react meekly by accepting the status conferred on them, or angrily by rejecting it and fighting back on their own terms . . . . In either event, teacher expectations will have an effect, and it is almost certain to be an undesirable one. (p. 35)

De Charms' (1972) locus of control theory also shows that other people, especially authority figures such as teachers and instructors, greatly affect one's belief in one's ability. In other words, the instructor's belief and feelings about the learner's ability to learn are perceived by the learner and become part of his or her self-image. Consequently, instructors' biases and the resultant "expectancy effect" can also be a potent determinant of performance and learning outcomes (Finn, 1972). If students perceive the instructor as sending a message that ignorance/stupidity and inaptitude are what he or she expects of a "lowly scab beginner pilot", then it can affect their self-perception. One student expressed his feelings thus:

I think my first instructor liked to play God. If I did something wrong, he'd say in a condescending tone, 'Okay, I'll take over here'. There was no reason to do that. But let's face it, when you

see people that have a commercial licence, an instructor rating, it's all prestige, it's all kind of seniority and stuff and who are you to question whether or not you're doing this the way it should be? You're just a little lowly scab beginner pilot. (p. 147)

Some women student pilots indicated that certain instructors seemed to feel that women had no place in aviation and should be kept from the airport (pp. 141-142). Such biases are bound to affect the instructor-student relationship and ultimately the student's performance. In aviation, women may at times be more salient in some instructors' perceptual field and receive more teacher negative reinforcement and disapproval in the form of criticisms of lack of ability to perform skills that are considered to be the guarded domain of men. It may be that a behavior or performance regulating expectancy set is established for women of both lower cognitive/technical attainment and poorer motor skill performance.

#### Intolerance of Errors

Another stress-producing attitude noted by student pilots was an instructor's intolerance of mistakes. Instructors who immediately display their impatience when students err do not promote initiative and often make the students feel dense and clumsy (pp. 81-102). Students become stigmatized by overly critical or judgmental instructors and end up doubting themselves or doubting their ability to learn or to perform adequately. Realistic instructors expect their students to make mistakes and instead

of becoming impatient, recognize that it is more efficient to teach people how to learn from their mistakes. Even in the flight situation, errors can be corrected calmly and effectively; some instructors do it (pp. 146-158). Students must be allowed to make mistakes and to perform the manoeuvres to the best of their existing ability without having an instructor harassing them with demeaning comments. If an instructor has to take over the controls for safety reasons, it can be done assertively without being aggressive or brusque. An effective motivator knows that fear or failure can destroy creativity, self-confidence and initiative. Eddowes (1974) stresses that a student "must be able to strive for excellance [sic] but not perfection" (p. 8). The focus of flight training should not be on "errorless performance" but on producing an "error-conscious" student who will recognize and correct errors accurately and quickly. Eddowes (1974) notes that under the present system,

. . . the student is being taught to be errorless, or perfectly accurate in his aircraft control, when in fact, perfection is not actually required and is seldom achieved in normal flight operations. Thus, the student is being misled, cognitively, with regard to his learning tasks requirements.

The goal of efficient, accurate and fast information processing to detect, interpret and correct flight control errors could be achieved if the instructor taught flight path error correction on the basis of errors being normal and their correction being the desired state, rather than perfect control the goal and errors of any sort

indicating a kind of incompetence not socially acceptable among real pilots. (p. 8)

If students are not made aware of specific problems and errors that are commonly encountered when a manoeuvre is being learned and that errors are normal, they tend to magnify their mistakes and to think that others are coasting on through while they are the only ones making such stupid blunders (pp. 87-94, 105). This misconception then has a tendency to snowball and confidence begins to falter.

Another facet of the anxiety experienced by adult learners is that of doing something foolish and of looking silly. They are afraid of doing anything badly or making a mistake, particularly in front of people who know them as efficient persons in other ways or other situations. Some are unwilling or reluctant to reveal what they perceive as their lack of ability or to admit that they do not remember or are unsure of how to proceed or even to accept that they have made a mistake (Stephens and Roderick, 1971). These are revealing indications of the sensitivity of the adult student and a very human defence against possible ridicule or belittlement (Wener, 1979; Rogers, 1977). In an effort to alleviate this deep-seated sense of inadequacy in the learner, the instructor should emphasize the fact that errors are normal in flight training and that being able to detect and correct these errors is what one should strive for.

### Lack of Respect for the Student

Students who learn to fly are adult learners, they have much more experience than younger children. Some often know more about at least some things than the instructor. As a result, they are not ready to accept whatever the instructor or the book says without checking its legitimacy against what they have learned from experience. They are more evaluative about the content that is to be learned and about the methods used to convey the subject matter (Knowles, 1970). They resent being treated like children or being made to look stupid. The fact that one's previous knowledge and experience is ignored during flight instructor training seemed very demeaning to one instructor trainee:

He just treated it as if I were an ordinary student [ab initio student]. I was a green instructor. I was the lowest of the low--and that didn't really compute with my experience in the rest of my life. (pp. 170-171)

Some instructors' autocratic or aggressive attitude also totally negated the rights of the students as independent learners. They converted the training milieu in a "lock-step" situation and forcefully indicated they knew what was best for the students and, like it or not, the students had to do as they were told, no questions asked! One student describes the instructor's attitude thus: "I think he was of the view--I don't care what the student thinks, or feels, or believes, I know what that student should do and by God that student is gonna know" (pp. 125-126). This kind of

attitude makes students feel "they are unimportant parts of a larger system and that the continued forward motion of the system is the prime concern, not the welfare of its minor parts" (Wener, 1979, p. 28). The rote or "recipe" approach used to train flight instructors, however, totally depersonalizes the training interaction and ignores the importance of previous knowledge and past experience of the adult learner and how it can be utilized effectively as a resource in the learning transaction (Smith, 1982, p. 47; Rogers, 1977; Knowles, 1970, p. 44).

Furthermore, because adult learners are accustomed to being responsible, self-directing, independent personalities, they feel uncomfortable and sometimes quite anxious about the need for almost complete dependence on the instructor in the early phases of learning (Curran, 1977; Tough, 1971). Knowles (1970) points out:

Adults have a deep psychological need to be treated with respect and to be perceived as having the ability to run their own lives. They tend to avoid, resist and resent being placed in situations in which they feel they are treated like children--told what to do and what not to do, talked down to, embarrassed, punished, judged. Adults tend to resist learning under conditions that are not congruent with their self-concept as autonomous individuals. (p. 40)

Adult learners hold strongly to the notion of self-control and self-determination. When student pilots are reprimanded, screamed at, or made to look stupid and awkward, they do not feel respected as self-directing adult learners but rather feel like children whose behavior is judged,

controlled or manipulated by the instructor. "It is a short step from judging the student's work to judging his worth" (Biggs & Telfer, 1981, p. 35). According to De Charms' (1971) locus of control theory, "the difference in locus of control forms the basic distinction between the Pawn and the Origin" (p. 383). Students who feel pushed around or directed by someone else more powerful than they, are considered to be Pawns; their locus of control is external. Students who are self-confident and feel they are in charge of themselves or in control of their behavior and their learning are known as Origins; their locus of control is internal (pp. 381-384). De Charms (1968) indicates that students who feel they are acting as origins feel motivated, personally committed and enthusiastic, which is usually the case when student pilots initially start taking flying lessons. They are there because they want to learn how to fly. "They attend . . . from their own desire to learn" (Pole, 1916, p. 33). Learning to fly an airplane may be a childhood dream and one of the most sought-after goal in the student pilot's life. The flight instructor needs to retain this motivation and at times may have to rekindle it if students are experiencing difficulties. However, by using threats and verbal abuse, instructors can render learning so distasteful and unpleasant that students lose their internal or intrinsic motivation, their enthusiasm, and subsequently their enjoyment of flying and might eventually show a lack

of confidence in their skills. To many, acquiring a licence then became a matter of goal-directed perseverance (pp. 135-137). To the extent that students are treated as pawns and controlled or pressured by the instructor, they become less self-motivated and less enthusiastic and end up complying more or less passively to what is being required. They feel like puppets or robots, instead of self-directed, responsible adult learners (pp. 91-94, 99-100, 106-108). How successful has learning been when student pilots become skillful at mechanically manipulating the flight controls but at the same time have developed emotional blocks which interfere with productive thinking and sound decision making because self-confidence has been destroyed? De Charms (1971) states,

To be really effective, the educational process . . . must have its major impact at the emotional and motivational level. What good has been achieved when a child has learned to manipulate fractions in a mechanical way to the point where he can do the problems on an achievement test, if at the same time he has been under such emotional stress that he has learned to hate the use of numbers? (pp. 394-395)

#### Lack of Interest: Building Pilot-in-Command Time

Student pilots deplored the fact that some of their instructors neither cared about their students nor about instructing. They would show up for the lesson unprepared, randomly select some exercises to be practiced or ask the student what they were supposed to do. They were there strictly to pad their log books at the student's expense or

to fill a hiatus between jobs (pp. 115-123, 126-131). It is most unfortunate that the present structure of the aviation industry condones this practice. However, low salaries and long working days are not enticing many instructors to make flight training their profession. To many, instructing is an inexpensive and rapid way to build time for higher ratings or licences. It is "a stepping stone to other pilot jobs" (Craig, 1987, p. 67).

The flight instructor's certificate is the most important one issued. Unfortunately, it is not always viewed that way, but instead it is often thought of as a "license to build up time" for other flying jobs--or other certificates and ratings. (Kershner, 1981, p. 1)

Often becoming a flight instructor is something of an after-thought once someone has decided to carry on further to the instrument and the airline transport pilot ratings, "a kind of insurance against being out of pocket money because the airlines aren't hiring" (Aviation Consumer, 1980, p. 13). This notwithstanding, pilot training programs presumably exist to serve those who enroll, not to meet the needs of instructors who want to conveniently and economically build their pilot-in-command time.

Another source of discontent among student pilots was the fact that some instructors were forever late or charter flights often took precedence over instruction. Craig (1987) says: "If there is ever a conflict between a lucrative charter flight in a 'big' airplane, and a student lesson, the student will lose out every time" (p. 39).

Students then get shuffled over to another instructor who is unaware of their needs and progress or their booking simply gets cancelled (pp. 115-123). Kershner (1981) notes:

One of the biggest sources of gripes by flight students is for them to come to the airport at the scheduled time to find that the instructor has departed on a more lucrative charter flight. Nobody bothered to contact the student, who may have driven many miles and changed his own schedule to be there at that time. (p. 3)

In the words of one student pilot, instructors who displayed such a lack of personal integrity and such disregard for a student's feelings, were "real motivation killers". Students felt unimportant and were rightfully infuriated by such blatant inconsideration. Students also felt that some instructors made them waste their time and their money (pp. 126-132). Some flight instructors were completely disinterested and showed no concern for the student's progress. Basically, they did not teach at all. When students executed a manoeuvre they were looking out the window, visibly distracted or bored and some were so passive the students were actually teaching themselves by trial and error. Some even fell asleep during the lessons. Telfer (1981A) reports: "One wit suggested that 'best results are obtained when instructors keep their eyes open and remain awake'" (p. 5). Thus, their sole purpose in flying with a student seemed to be to increase their pilot-in-command time or to protect the airframe if the student did something silly. In response to a questionnaire on flight instruction

distributed in Australia in 1981, one student commented: "A lot is left to the student to learn without assistance. There's a difference between spoon-feeding and not teaching at all" (In Telfer, 1982, p. 8).

### Overloading

Student pilots identified overloading as another major source of instructor-induced stress. Some instructors wanting to be either scrupulously thorough or friendly quite unwittingly overload or distract their students. Many seemed blissfully unaware that they were loading the dice against the student with their incessant chatter or with their lengthy explanations at inopportune moments (pp. 108-115). Student pilots emphasized the fact that flight instructors must be made aware that being less experienced, fledgling pilots are limited in the number of things they can attend to at one time. They also take more time to interpret what is going on. Often a novice flyer cannot concentrate on flying the aircraft accurately and simultaneously pay attention to an instructor's explanation of a manoeuvre or critique (criticism) of a performance. Telfer and Biggs (1985) stress that "we can attend selectively to only one train of thought at a time" (p. 27). Thus, when too many demands are placed upon students, in too short a time span, their capacity for attention becomes overloaded and something gives--either the accuracy of the performance suffers or the meaning of the explanation does

not register and is lost. Holmes (1986), in advising instructors to watch for signs of overloading or wavering attention, notes:

One's attention can easily become overloaded because of distractions. The pilot can perform only one task well at any given time. Anything that diverts the flyer's attention from the complex task of flying must be avoided. In flight training the meshing of motor and mental skills calls for undivided attention on the part of the pilot. Again from our viewpoint, the cockpit provides a poor classroom environment because of the numerous visual and auditory distractions. This is the reason why complete and thorough preflight and postflight briefings are vital. Remember that the immediate focus of attention can become overloaded quickly. (pp. 32 & 36)

Students do not normally make mistakes intentionally but rather because they are confused or the perceptual, judgmental and motor demands of the moment exceed their momentary attention capacity (Roscoe and Kraus, 1973, p. 269). In short, mistakes may be caused by an elevation of cockpit workload beyond the student's capacity to cope effectively. Steininger (1964) advises instructors to be aware that "anxiety . . . is always present in some degree when a student is seen to be confused" (p. 35).

Furthermore, complex tasks, such as the landing, or unfamiliar tasks, such as learning a new manoeuvre, are more subject to the adverse effects of increasing stress than are tasks which are simple and familiar or which have become automatic (Diehl et al., 1983; Grandchamp, 1971). Telfer and Biggs (1985) explain that:

Because complex tasks require more task relevant cues for adequate processing than do simple tasks, task relevant cues will be displaced earlier when performing a complex task than will be the case with a simple task. The performer in a complex task, such as landing the aircraft, will in effect be operating with reduced working memory, and he cannot afford to do that in a complex task. Hence performance suffers. (p. 81)

Consequently, just before take-off or during the approach and landing are not appropriate times for an instructor to be blabbing away, or "asking a barrage of questions", or worse yet, to be scolding or screaming at the student. Such behavior distracts and only serves to increase the student's psychological stress and performance will further deteriorate.

When possible, a complex task should also be broken down to match the learner's discriminative and cognitive readiness to deal with each segment, otherwise the student will be overwhelmed and learning will be hampered. Lombardo (1986) states that a common training fallacy

. . . assumes that learning is always maximized when the student is being flooded with stimulus: that's clearly counterproductive. Any instructor who has tried to teach a student how to fly a basic traffic pattern and land an airplane while operating in the traffic pattern of a busy, tower controlled field, will argue this point rather effectively, if not cordially. (p. 2)

The circuit, including the approach and landing, and the forced approach were two common instances where students felt they got "everything dumped on them all at once" (pp. 108-115). Students said that under these circumstances they felt their attention was overly challenged, their mind went

blank, and they did not perform well because they were under too much pressure. Telfer and Biggs (1985) advise that:

The key is to cut down wherever possible on working memory load. This is not "spoon feeding"; it is making sure that our limited minds are given the opportunity of handling more complex problems than they otherwise would. (p. 45)

Students in the initial phases of learning to fly are generally far "behind" the aircraft, thus, a large error or deviation must usually occur before they see it and make a correction. They also take longer to interpret what the instruments are telling them. As one student indicated:

It took me a long time when he would say: "Check your altitude"--to actually look at the thing--well, find it, look at it, read it, and have it sink in what this dial was trying to tell me. He would just assume that I could look at it like he did and just read it off like that, but I couldn't, I just couldn't. (pp. 109-110)

The role of the instructor should not be to make the learning task as difficult as possible in order to test a student's resistance to stress but rather to present the material in portion that the student can assimilate without becoming utterly confused and frustrated, yet remain challenged and interested. As the student masters each component, confidence builds, motivation increases and the probability of success also increases. An interesting point made by Australian Captain Ken G. Patton, Assistant B737 Flight Manager, concerning the problem of overloading, is that:

In flight, the instructor's experience and learn-

ing invariably provides reserve capacity to cope with further sensory input and its processing. The student, however, is invariably working to capacity throughout the flight. This insight gives both an alternate criterion and an alternate structure for flight instruction. The role of the instructor becomes one of manipulating inputs so that the student progressively masters bigger "chunks", and the test of effective instruction is whether the student has not exceeded the red line of maximum processing capacity, but is being positioned to expand that capacity. (In Telfer and Biggs, 1985, pp. 45-46)

Thus, the role of the instructor is not to make learning unreasonably difficult and push students to their breaking point, but rather to inspire and challenge them to move to increasingly more advanced levels of learning and of performance.

#### Instructor's Nervousness

Student pilots also mentioned that an instructor's own nervousness or tension was an impediment to their flying efficiency. The fact that some instructors appeared to be nervous or fidgety especially as the aircraft approached the ground proved very distracting and contributed to increase the student's stress or tension (pp. 78-81). Students felt their instructor did not trust their ability and as a result failed to instill self-confidence. Flight instructors, on the other hand, indicated that in addition to anxiety specific to the task of teaching, they often experience anxiety specific to the environment in which they must teach (pp. 193, 203-207). "There are few performance environments or situations that produce the time-pressure task, the general

physiological and psychological stress and bodily-harm threat as does the flight situation" (Prophet, 1976A, p. 14). A cliché, in common use among instructors, describes ab initio flight training as "hours and hours of boredom interspersed with moments of stark terror." Because flight instructors can be under a tremendous amount of stress which will reflect on their behavior and ultimately could affect a student's performance, they suggested that stress management should be included in their training curriculum.

Research conducted by Keavney and Sinclair (1978) indicates that teacher anxiety can adversely affect the quality of the learning environment. They found that anxious teachers tend to create higher student anxiety because they teach more dogmatically and rigidly and behave in a less friendly manner towards students. Anxious teachers also tend to use more negative reinforcement and critical feedback for poor student performance rather than praise and encouragement for work well done.

#### Lack of Teaching Techniques

One of the major problems in flight training, underlined by student pilots, is the fact that some flight instructors, while competent pilots, are far from being competent instructors (pp. 102-108). The following two statements are fairly typical of comments heard during the interviews with student pilots. One says: "He was a good pilot but he couldn't teach. The ability to talk to people,

to know how they feel, to make them feel at ease--he didn't have that" (p. 102). Another student states: "As a pilot, himself, I think he was very, very good. As a teacher, I think his method of teaching was extremely poor. He just couldn't relate to the student" (p. 103). These instructors lacked teaching and interpersonal skills and, consequently, were unable to help students learn and, at times, their negative attitudes or behaviors effectively crippled students' progress because of the resulting emotional climate. Testimonies from student pilots confirm that some of the greatest blocks to learning are emotionally based.

People do not like to feel foolish, fail, be laughed at, expose their vulnerability or have their individuality negated. They must come through their experiences with their self-respect and their self-images intact. (Wener, 1979, p. 33)

Flight instructors who use sarcasm or who display their impatience by scolding, shouting or snatching the controls when students make mistakes hinder the learning process because they frighten students or they make them feel stupid/ignorant and inept. Frequent negative criticisms and a lack of encouragement can also intensify feelings of incompetence and negative self-concepts which may precipitate the development of emotional barriers to flight training and further hamper a student's progress. Adult learners need to be respected as individuals and need a learning environment in which they feel comfortable, not threatened, about trying new skills and about making mis-

takes. According to Wener (1979), adult learners, like young learners, need "security":

Security means that they will not be hurt or humiliated, laughed at or ignored, insulted or rejected. Security means that they will be given supportive encouragement, constructive criticism and acceptance by both the trainer and their peers. Security means that the trainee is always among friends, always among people who genuinely care about him or her and want to help him or her grow. (p. 33)

Fortunately, not all flight instructors fall in the category of "negative" instructors. Within the technological/modeling approach to teaching there are some positive assumptions made by certain instructors. Through personal insight and experience, some talented and dedicated instructors managed to set the tone of the learning environment or create the proper emotional climate that minimizes anxiety and fosters confidence.

#### Guidance for an Alternative Approach

This section looks at how effective instructors create an atmosphere permeated with trust and security where learning is enhanced, not hampered. Their attitudes and behaviors give hints as to the construction of a more appropriate approach to be used in teaching flying. The following composite of characteristics, extrapolated from student testimonies, suggest attitudes and behaviors which effective or "positive" instructors exemplify.

#### Enthusiasm

One of the predominant traits of effective instructors

was their enthusiasm, that is, an instructor's intense personal belief that flight training is worthwhile. Enthusiasm, according to student pilots, is displayed as a willingness on the part of the instructor to spare no effort in trying to help students learn. Instructors who convey an ebullient and infectious enthusiasm for flying were a tremendous stimulus to their students. Their genuine interest in flight training helped students maintain their motivation and interest throughout the course (pp. 142-146). Enthusiastic instructors who were personally committed and enjoyed instructing tailored the lessons to each student and made the course more interesting and more challenging through their ingenuity and resourcefulness. Students said they enjoyed a challenge and some instructors had a knack for providing situations that stretch and develop the student's problem-solving strategies while fostering individual potential and personal satisfaction (pp. 153-154). These instructors "made learning fun". Most students believed that learning to fly should not be "just plain work. It should be fun and enjoyable" (p. 144). They felt that they could enjoy themselves and still be learning. Craig (1987) agrees. He advises student pilots to change instructor if their instructor is not interested and they are not enjoying their flying lessons:

Does your instructor enjoy teaching others to fly, and does he make the process fun? Is he patient with your questions or does he make you

feel that you are wasting his time? Each time you leave the ground there should be a feeling of excitement and discovery. The instructor should give you the feeling that you and he are "in it together" and that learning to fly is a joint project. If your flight instructor seems bored with instruction, fly with someone else! (p. 68)

Enthusiasm also includes instructors who took the time to talk to their students, who spent extra time with them--instructors who "give that little extra", who "went the extra mile" (pp. 143-148).

Effective instructors, according to student pilots, need not be ace pilots. They should be able to fly well, however, more importantly they should have the ability to bring out the best in their students by inspiring them to always strive for excellence. Cross (1982) writes:

The role of the teacher (or facilitator) . . . is to help the individual advance to the next level of cognitive development through designing educational experiences that will challenge the learner to "reach" for growth-enhancing cognitive experiences. (p. 231)

The instructor's task may then be viewed as that of releasing the full powers or potential of students, of helping them reduce their inhibitions and emotional blockages to learning, and for most students this is more likely to happen if the instructor is an understanding, accepting person (Stephen & Roderick, 1971).

#### Acceptance: Respect for the Student

Students stressed that a basic uncritical and unqualified acceptance of students must be held and authentically presented by the instructor (pp. 148-151). This acceptance

appears to be the foundation on which is built a relaxed learning atmosphere and a good rapport between the student and the instructor. "Learning takes place best in a calm, unworried and friendly atmosphere" (Rogers, 1977, p. 39). Students said they appreciated instructors who were friendly, easy-going, and dedicated and who respected them and treated them as equal. Congeniality was seen as a definite attribute in establishing a good rapport and in inspiring students to do well. One student notes: "A friendly relationship encourages the students to work hard to avoid letting the instructor down" (In Telfer, 1982, p. 9). Stephens and Roderick (1971) emphasize that emotionally adult learners need acceptance and security in order to be able to learn, and this can only be achieved by a recognition of personal worth. Thus, to obtain maximum benefit from the one-on-one learning/teaching situation or individual tuition, the relationship between the instructor and the student is of key importance. Or as one instructor stated: "The instructor-student relationship is vital" (p. 187). If the student is treated in an offhand manner, learning may be stultified. If, on the other hand, the student feels accepted and respected, learning is encouraged.

#### Positive Rapport

Student pilots indicated they felt more comfortable flying with instructors who genuinely care for their stu-

dents and who are concerned about helping them increase their knowledge and their skills (pp. 146-148). One of the main concerns of the caring flight instructor was to make the student feel comfortable in the learning situation by removing or at least minimizing causes of anxiety. If students were apprehensive about doing certain manoeuvres, effective instructors took the time to let students build their confidence and gradually become accustomed to the flying environment before introducing anxiety-producing exercises. They also made students feel unthreatened about making mistakes. According to Smith (1982), adult learners tend to undergo much more stress than children in learning or testing situations. "They can fear both revelation of ignorance and negative comparisons with peers" (p. 47). Thus, it is very important for instructors to create a learning environment that minimizes psychological stress and fosters mutual respect, self-confidence and self-reliance. Stephens and Roderick (1971) stress the need to reduce emotional tension if satisfactory learning is to take place. If a good rapport exists between the student and the instructor and there is evidence of empathic caring where the instructor can sense a student's reactions or feelings, chances are the student will feel less apprehensive or at least be able to talk about his or her problems. One student commented: "It's amazing how performance improves if one is flying with an instructor who one can respect both as a

pilot . . . and a person with regard for a student's problems" (In Telfer, 1982, p. 9). From student testimonies in this study it is clear that one of the foremost needs in the teaching of student pilots is sensitivity. In other words, a kind of sympathetic understanding of the students, an ability to sense what they are thinking or feeling, what their needs, difficulties and problems are. It implies caring, patience and acceptance as well as being responsive to the demands of the teaching/learning situation. Students agree with Wener (1979) that a caring attitude

. . . is also expressed in after-hours counseling, in the constantly positive and encouraging attitude that permeates the training sessions; in the fact that no trainee ever feels like a "stepchild" or a total failure or is ever written off as a complete loss by the instructor. (Wener, 1979, p. 33)

Perhaps caring is best described as a genuine interest and concern for the learner. Gelly (1968) underscores that a good relationship between the flight instructor and the student is a definite requirement in helping students cope with stress:

This is not to say that the success of learning depends only upon the "teacher/trainee" relationship but that because of this relationship the beginner may or may not be successful in resolving and overcoming his anxiety. (p. 26)

Galle-Tessonneau (1977) specifies further that the relationship student pilots form with their instructor is not limited to rational and technical aspects but involves feelings and emotions:

The instructor does not merely teach the student to fly, he teaches him to become a pilot. What we mean is that what is transmitted from the instructor to the pupil is not only "know-how" but also, and especially, a way of life. That is to say, the relation between the instructor and the pupil will be not only rational and technical, but that it will have emotional and affective aspects. (p. 37)

### Patience

According to Kershner (1981), "Patience is one of the finest virtues of a flight instructor" (p. 3). Student pilots agree wholeheartedly. Patient instructors are tolerant of repeated mistakes and of students' fears and apprehensions. Students said they felt relaxed and comfortable with a patient instructor and they did not feel uneasy about making mistakes because such an instructor did not make them feel stupid. One student says: "When you made a mistake he didn't make you feel like an idiot. He'd show you how to do it correctly and stressed the fact that he was there for that. He was very patient and that's so important in instructing" (p. 152). Thus, an instructor who can correct mistakes calmly and who can pace the lesson so as to keep students interested and challenged, yet not overwhelmed, is considered a real asset by student pilots (pp. 151-154).

### Trust

The instructors who trust their students and give them greater latitude or responsibility and make them feel positively about their competence and ability seem to promote

better achievement and more personal satisfaction (Stephens and Roderick, 1971). They truly believe in the student's ability to succeed which helps build self-confidence. As was indicated earlier, students seem to do better when their instructor trusts them and expects them to do well. Instructors who do not trust their students and always assume the sole responsibility of decision making before flight and during flight or take over the controls unduly early when manoeuvres are less than perfect, do not teach students to take responsibility nor do they help students develop sound decision making skills. Students then avoid showing any initiative and rely entirely on the instructor to correct their mistakes and to make all the decisions pertaining to the flight. A lack of trust can prevent students from developing adequate responsibility in the presence of the instructor and could have serious consequences during solo flights (Steininger, 1964). If, on the other hand, a relationship of trust and freedom has developed, students said they felt more reassured and encouraged to try again when they made mistakes or to show initiative when flying with their instructor. Yet, instructors indicated that flight instructor training did not emphasize the importance of trust and caring: "Another thing that I think is maybe almost completely ignored is the development of trust between me and the student, and letting him know that I care what the hell happens to him" (p. 187).

Part of trust also involves promoting self-criticism or self-appraisal. The instructor's task is to bring students to appreciate what the correct performance looks, sounds, and feels like, so that eventually they can recognize for themselves whether the manoeuvre is right or wrong. Students said instructors who allowed them to appraise their own performance helped boost their morale because they knew what they had done wrong as soon as they had done it and did not need to be told by the instructor. Research by Telfer (1981) supports the idea that the development of self-criticism is important if students are to benefit from solo practice. One respondent indicated that often

. . . students are unable to benefit from solo exercises because they haven't developed the ability to criticise their own performance. If instructors, during dual flight, are continuously criticising student performance (rather than first permitting the student to act as critic), this ability cannot be developed. (p. 67)

### Praise and Encouragement

Student pilots stressed the need for instructors to respond to achievement with positive acknowledgement and praise. Students said they need to know they are doing well (pp. 155-158). They see praise and encouragement as essential elements of feedback. Lombardo (1986) agrees that verbal support and praise are "most powerful instructional tools" (p. 4). Students felt that instructors should provide supportive encouragement in addition to constructive

criticism. According to one instructor, "meaningful friendly criticism coupled with praise is the golden rule" (In Telfer, 1982, p. 8). Through encouragement instructors help students build self-confidence and self-reliance. They give credit and praise for good performance and when they diagnose difficulties, they give clear instructional cues to help the student achieve the desired results. In other words, they give encouragement by indicating how an exercise can be improved rather than destroying confidence by too ruthless a criticism. They skillfully guide learning by acknowledging good performance and thus rekindle interest and retain motivation. But praise not only motivates, it also helps students remember. People remember pleasant things or pleasant circumstances longer than unpleasant ones (Kershner, 1981; Morgan et al., 1976). If instructors praise students for something they have done well, the students are likely to repeat the behavior because the outcome was enjoyable. If, on the other hand, students are harshly reprimanded for a poor performance, they are likely to hesitate or will eschew situations that intensify inferiority feelings. Adult learners need reassurance and encouragement as much as children, particularly in the initial stages of learning when they are trying to learn a new concept or a new manoeuvre and they might feel strange about becoming a student again after being out of school for years. After they become comfortable in the learning sit-

uation and confident that they can learn the new material or master the new skill, adult learners do not need as much praise or encouragement because they are now in a position to use self-criticism or self-appraisal. But there is nothing to equal the encouragement students feel when they can see for themselves that they are making progress. Thus, designing a situation where this can happen will be the instructor's strongest weapons against anxiety (Rogers, 1977).

### Humor

On several occasions students mentioned the fact that laughter often helped in relaxing them (pp. 158-159). Humor was seen as an effective antidote to psychological stress because laughter fosters the feeling of an informal atmosphere which usually enhances learning. Thus, being able to laugh at one's mistakes because the instructor has created an atmosphere of genuine acceptance goes a long way in helping a student cope with psychological stresses inherent in a learning situation. Students appreciate instructors with a good sense of humor who skillfully use laughter to release tension and to make learning to fly a more enjoyable experience.

In spite of the fact that many in the aviation industry snub the flight instructor's job, and in spite of the less than ideal working conditions and the economical duress under which flight instructors often operate, there are

still some caring, dedicated, and talented flight instructors in the field of flight training. Their effectiveness, however, may not be due to the training they received but rather to their natural pedagogical abilities and the way they react and relate to their students. These flight instructors were able to transcend the mechanistic and mimetic approach to teaching and develop more humanistic methods of teaching flying and of dealing with students. Because of their enthusiasm, empathic caring, and uncritical acceptance of students, effective instructors were successful in establishing a good rapport or relationship with their students and in creating an emotional climate that was conducive to learning. Their patience and tolerance of errors helped students feel more relaxed and less anxious or threatened about trying out their new skills. A perceptive understanding of students' feelings and problems coupled with a judicious use of praise and encouragement for students' accomplishments fostered the development of positive self-concepts and self-confidence. Successful instructors were also skillful at using humor or laughter to relieve tension and to make flying lessons more pleasant and enjoyable.

#### The Instructor: A Product of a Mechanistic Approach

Data in Chapter 5 clearly indicate that flight instructors are the product of an inadequate system of flight training that views teaching solely as technology and

modeling instead of seeing teaching as a more complex education process. Instructors are not provided with basic teaching practices, therefore, they are very ill-prepared to teach flying effectively.

#### A. The Inadequacy of Flight Instructor Training

Since a flight instructor's job is to teach, flight instructors, to be more effective as teachers, need to know as much as possible about how people learn and what affects the learning process. They also need a host of skills and techniques relative to teaching, in addition to a sound knowledge of their subject matter and a mastery of the psychomotor skills to be taught. Biggs and Telfer (1981) stress that: "Teachers, of course, have to know their subject matter; they also have to know--to be effective teachers--certain theoretical knowledge about the nature of learning as well" (p. 41).

Testimonies from experienced flight instructors, however, indicate that their training concentrated strictly on the acquisition of technical knowledge in the fields of aerodynamics and aeronautics (content expertise), and on polishing their personal flying skills (pp. 172-174, 176-179).

The main emphasis of the whole course was theory . . . . It was more or less aimed at the instructor's knowledge of theory and 'patter' for the aircraft. Those were the main things. If you could fly the airplane precisely, if you could say the right things in the aircraft, and if you knew the theory of flight, and how the instruments worked, you were instructor material. (p. 174)

Basic teaching practices were left to be acquired through experience or by trial and error. It is believed that instructors will learn to teach by osmosis. As one instructor commented: "You learned through experience--trial and error. That's probably not very good for the students. You're very, very ill-prepared" (p. 179). Another instructor indicated: "It didn't prepare me at all to teach. It was the 'school of hard knocks' for several months of instructing" (p. 179).

#### Preparation as a Teacher

Flight instructor training was described as being rigid and rather mechanical or parrot-like, with heavy emphasis placed on rote learning, imitation and repetition (pp. 165-172). "It was strictly imitation . . . just imitation and repetition", says one instructor (p. 167). Another instructor relates: "We simply got in the airplane and it was a matter of 'monkey see, monkey do', and the 'patter' virtually word-for-word" (p. 169). It is interesting to note that, according to Webster (1984), a patter means "to speak or mumble rapidly or glibly; recite mechanically or thoughtlessly" (p. 1042). Flight instructors were taught to teach as one is taught simple skills, using a drill or a behavioristic approach. One instructor indicates that this rote or mechanical approach to learning how to teach was quite foreign to the actual teaching situation: "The relationship between my training, which was like memorizing all the works

of Shakespeare--between that training and actually teaching a student--the relationship was pretty remote" (p. 177).

This approach to teaching which provides the instructor with a prescribed patter for each flight manoeuvre is indicative of the philosophy of learning which predominates flight training. Teaching is considered to be just another technical skill and students are basically viewed as disembodied learning machines to all be programmed with the same information, at the same pace, and in the same fashion. No consideration is given to students' feelings and emotions and how these can affect the learning process. Instructors and students alike were very critical of this lack of flexibility and lack of concern for individual differences. Participating instructors underlined the fact that to have a "patter" drilled into one's mind does not ensure one can effectively teach flying and certainly does not prepare the instructor to cope successfully with the role played by the affective domain in the learning situation. One instructor notes: "I can repeat what my instructor told me to say in a lesson, but that doesn't mean I'm getting the message across to the student" (p. 177).

According to flight instructors, this rigid or mechanical approach to flight instructor training is a tradition or a legacy taken from the military and handed down, virtually unchanged, from generation to generation. They felt it was inappropriate and inadequate to teach anyone to fly

(pp. 171-172).

The manner in which instructors are trained necessarily reflects on their approach to teaching and on the way they deal with students. One instructor felt that if instructors are taught to act instead of how to teach, then in all likelihood their students will only be skillful at duplicating flying manoeuvres but will not have been trained to think for themselves:

This military or 'rote' approach has a spill over into instructors and how they relate to their students. They relate to their students in the same way, and therefore, their students don't really learn to be pilots. They learn to be what they think their instructors wanted them to be. So when they get out in the world, they don't know how to think like a pilot because they don't know why they're doing what they're doing. (p. 172)

Collins (1984) supports this view, indicating that while instructional flying has a better safety record than other segments of general aviation flying, the worst accident record appears in personal or recreational flying, where the new graduates are now operating without the supervision of a flight instructor. He concludes:

While the flight instructor has been successful in teaching the new pilot how to wiggle the pedals and move the wheel, he's failed in teaching the ability to reason with the airplane and the elements and to put the puzzle together neatly. (p. 78)

Roscoe (1980) likewise emphasizes that the purpose of flight training is much more than to develop motor skills:

The role of pilot training is to provide the knowledge and dexterity necessary for the procedu-

ral activities, develop the skills for the perceptual motor activities, and instill the discipline and judgment that will maximize the probability the pilot will make safe and rational decisions in the face of uncertainty and danger. (p. 175)

Notwithstanding the lack of knowledge and skills relative to teaching, the flight instructor course did have some positive points. Flight instructors indicated that it was, in fact, the best course they had had as far as providing them with a good understanding of aerodynamics and of the theory of flight. They also appreciated the opportunity to improve or polish their flying skills (pp. 172-174). Not meaning to take away any credit from the flight instructor course, nonetheless, if private and commercial pilots were properly trained in the first place, then the graduates of those courses would not have to wait until they took flight instructor training to gain a thorough understanding of what makes an airplane fly. It must be remembered that instructor trainees are already rated commercial pilots. Consequently, from the standpoint of the student instructor, the primary task is not to acquire content expertise or to learn how to fly, but rather how to discriminate and communicate piloting skills and aeronautical knowledge effectively. One instructor says: "The important part of the course is left out. An instructor candidate already knows how to fly, so we will not be teaching that skill. We will be teaching the student how to be an instructor. But that is completely left out" (p. 178).

Obviously instructors must know their subject matter well in order to teach effectively, hence, part of the course is necessarily devoted to building up competence in the content disciplines that are to be taught (i.e. aerodynamics, theory of flight, navigation, meteorology, instrument flying, etc.). It is also very important, in fact, it is essential for flight instructors to be skilled pilots, not only to demonstrate the various manoeuvres accurately, but more importantly, to feel relaxed and confident that they can recover safely from any situation neophyte aviators might insist in putting them in. One instructor stresses the importance of having confidence in one's flying skills so as not to become overly nervous when a student does something wrong close to the ground:

I think it's terribly, terribly important . . . because otherwise if you didn't have that confidence that you can handle that airplane in those extreme situations, you can imagine the stress psychologically on the instructor when his student is not doing things quite right at fifty feet off the deck. He's gonna be very high pitched! (p. 211)

Nevertheless, flight instructor training cannot limit itself to content expertise and flying skills if we are to graduate flight instructors who are competent and effective teachers. They must also be taught how to teach. Flight instructors felt that this last part of the course was completely missed. One instructor states: "Right now they're turning out people who know how to fly an airplane, but they're not turning out people who necessarily know how to instruct"

(p. 176). None of the instructors who were interviewed felt their training had provided them with the necessary knowledge and skills to teach effectively (pp. 176-179). The following comment echoes the views of all the participants: "I don't think flight instructors are trained properly as far as teaching goes" (p. 176). Flight instructors stressed the fact that being a skilled pilot does not automatically guarantee one will be a competent instructor. One instructor underlines that, "knowing how to perform a skill and communicating that skill to someone else are two different things" (p. 177). Or as another instructor explains:

Even a private pilot knows what a climb is and knows how to climb, but tell that private pilot to explain it to someone who doesn't know. To me that's the essence of the instructor rating, is to be able to come down to the basics and break it down for the student to understand. Sure you might know how to climb, you might know about all sorts of things but to be able to teach it is another thing. (p. 178)

Craig (1987) agrees. He states that the flight instructor

. . . must be knowledgeable about flying and must be a safe pilot. But there can be a problem: Can that pilot also teach? A person may possess all the skills necessary to become a good pilot but that does not guarantee that he will also possess the skills necessary to teach piloting. (pp. 67-68)

More specifically, flight instructors felt that their training did not equip them with basic teaching practices, such as instructional techniques, lesson planning, psychology of learning, adult learning theories, inter-

personal and communication skills, strategies to retain and rekindle motivation, evaluation methods and stress management. Aside from a few isolated cases where a trainee's instructor had a lot of experience and shared his or her own "homespun psychology", the whole realm of educational psychology, including interpersonal relationships, was ignored (pp. 181-193). Comments like, "The human aspect wasn't there", or "It did not address the learning process" (p. 181), were very typical. The affective domain was not considered at all. Yet, flight instructors along with student pilots consider it to be an essential element in the learning process. Here again it was a matter of learning through experience or by trial and error. One instructor says: "There's nothing on how to deal with, how to detect problems. You pretty well have to learn by experience or go out on your own and try and learn it" (p. 179). Another instructor explains:

Emotionally, and how to deal personally with a student, there was nothing. Absolutely nothing because the person that trained me had nothing. So he had nothing to give me. There was just no formal structure at all to pass on in any written or even verbal--only minor little tips that I guess someone's learned the hard way through experience, but nothing that's common place or has proven effective. (p. 184)

To enable them to be more effective in their teaching role, flight instructors said their training should, above all, stress the importance of the instructor-student relationship and should include a whole realm of topics dealing with

"human relations" and "the psychological aspects of adult education" (pp. 181-193). Some areas of study would cover how to get along with students, how to relate to them, how to detect and deal with learning problems, how to motivate and re-motivate trainees, and how to communicate effectively. One instructor notes: "If they had a course in communication, it makes a world of difference. How to tell somebody to do something without offending him or to get the most out of him. There was nothing on that" (p. 191). Because of the poor learning environment, communication skills were deemed to be of utmost importance along with stress management.

#### Failure to Recognize Student Pilot Stress

True to the concept that views teaching as technology and the aviation context where the expression of feelings and emotions is not in vogue, the recognition and minimization of student pilot psychological stress was not addressed during flight instructor training. Typical responses were: "No, that was never covered", or "No, very poorly, very poorly" (pp. 196-211). Some instructors indicated they learned about stress mainly through the stress provided by their own instructor. As one instructor candidly replied: "No, my instructor didn't teach me how to recognize and reduce student pilot stress. In fact, he provided the stress. Maybe that was his way of teaching me that" (p. 199). Several instructors mentioned they decided

early during their training not to model their teaching on the teaching approach of some of their flight instructors because of the psychological stress these instructors produced and the detrimental effect the attitudes and behaviors of such instructors had on them. One instructor relates how his instructor used to yank the controls away from him whenever he did something wrong, or how he made him feel like an idiot, and he vowed he would never subject his students to such unnerving experiences. Another instructor indicates:

I don't have a lot of good impressions about the instructor rating. More than anything else it was frustration. The only way it probably prepared me to cope with students would be for me to remember what I went through and try not to put my students through it. It gave me a lot of things that I decided I would NOT DO as compared to a lot of things I would LIKE TO DO. It was kind of a negative way of training. (p. 187)

In spite of the rigidity of flight instructor training and the lack of consideration given to teaching practices and interpersonal relationships, some flight instructors have gained great flexibility and wisdom, and sound teaching practices through personal insight and experience in the field. Instructors said that initially, because of their training, they did not

. . . even realize . . . that different people learn at different rates, and some exercises are easy for some and difficult for others. To you there's just one type of student, one stereotype student. You've been taught this way and you'll give it that way and they'll learn it that way. It takes quite a lot of time, quite a number of

hours to be able to say, 'Hey, everybody is different'. (p. 188)

Through experience, however, many instructors have grown sensitive to individual differences and are able to put themselves in the student's shoes and adjust their teaching to the pace of the learner. One instructor mentions:

I always try to put myself in the position of--okay, if I was learning from you, if I was this guy here listening to me doing this and saying that--how would I react? That's hard to do. The longer you're at this game, the harder it is to be objective and remember that these people know nothing about flying and that this stuff is stressful. This is easy for you and hard for them. (pp. 202-203)

Instructors underlined the importance of understanding the learning problems and the stress student pilots might experience and accentuated the need to learn how to help students overcome these barriers to learning. Australian instructors agree: "A need exists for a more personal approach--we need to be more aware of the problems and pressures encountered by the student" (In Telfer, 1982, p. 9).

Instructors admitted that, at times, they could "be classified as guilty of producing stress in a student during some exercises" (p. 204). Experienced instructors suggest that initially, "New instructors are just so busy trying to get the technical stuff down, they can't relate to any kind of emotional or personal involvement" (p. 196). Or "they're hyped up on their new skill, new knowledge, and they're impatient" (p. 203). Thus, they might quite unwittingly be

pressuring students or overloading them. One instructor admits: "I remember students that in the aircraft would get fairly uptight, and we were not aware that we were overloading them" (p. 197). Some instructors still adhere to one of the most common misconceptions about learning, that is, learning must be difficult or hard work. According to this school of thought, a person's mind and strength of character are best exercised and developed by stressful or unpleasant tasks, and to make learning easier and more pleasant for the student is contrary to the fundamentals of sound teaching and would leave pilots ill-prepared to cope with the stressful environment of flying. The best preparation for life as a pilot accordingly includes frustration and setbacks as part of learning. Most students and a large number of instructors disagree with this notion. One instructor stresses:

Somehow at the end of it they've got to go home with a shred of dignity and the will to want to come back and work on it. The thing is too, I think people lose sight that this thing should be fun for these people every lesson. From lesson No. 1, from there to the last lesson should be fun and enjoyable. They should walk out thinking: 'You know, that was kind of neat. I enjoyed myself, and I enjoyed the hour we spent together'. I never hope a person goes home thinking: 'Well I just threw my money away on that one', or 'What the heck am I doing this for?' (p. 204)

Instructors underscored that they themselves can be under a tremendous amount of stress which is bound to reflect on their behavior and ultimately can affect the

student's performance.

There's nothing on stress management. Yet, what a stressful job. I can't think of many more that would be a lot worse than that. But it's gonna affect the student if you feel stressed everytime you go up with a student. That student is never gonna be doing well because the feeling is always there. So that's another thing that could be included in the instructor course. (p. 193)

One instructor explains that often the stress experienced by instructors is due to their inability to find a solution to a student's learning problem:

People tend to tell me that I'm a relatively patient character, yet I'll catch myself being very impatient sometimes. Again, those times that I'm not so patient, that I'll snap or whatever, they're not necessarily things where something personal is happening. But I can really narrow them down often to situations where irrelevant of the instructing that I have done, I CAN'T SOLVE that problem. You're at the end of your rope. You've tried all your tricks and it doesn't work. So then you start getting impatient because you're not getting it all. You know up to now you've had control over the situation. This guy's having problems, but you know you've gotten them through before, and then you run out of tricks. You see what the problem is, but you just can't get it across. You just can't. I think sometimes that the instructor doesn't realize the stress that he causes. (pp. 205-206)

Several instructors also indicated that both instructors and students experience an undue amount of psychological stress because of the pressures and status associated with how quickly students will be ready to be sent on their first solo flight. "People sort of balance the whole course, the success or failure, on how they land the airplane right away, and how soon they go solo", deplores one instructor (p. 208). Another instructor despairs at its tenacious hold

on students and instructors alike:

There's always been a bit of a rush to get a guy to solo. Students talk in ground school--'When did you?'--'Oh, it took me nine hours',--so you must be a cement head or something! I just can't believe that that's been allowed to continue. (p. 208)

Considering that the cockpit is a poor classroom and that the learning environment is rather hostile, several flight instructors felt that, in teaching flying it was more important to be an effective teacher with average flying skills than to be a highly dexterous pilot with poor or no teaching ability. In the words of one participant:

The instructor doesn't need to be the greatest pilot himself as long as he can get the students to do things probably better than he can himself just by bringing it out of the student. That's a good instructor. It's going to make it harder if a person can't teach. He can be a great pilot and students will learn by mimicking, to a point, but they'll probably not understand why they make a mistake along the way, if he's not a very good instructor and can't spot it. It's going to lead to frustration, and it's going to lead to long hours. The average pilot but a very good instructor can usually bring out more of the student, and so what if they're better than he is, that's good. If he can bring that out, that's the goal anyway. (pp. 178-179)

Traditionally, the emphasis has been on flying skills more than on teaching skills. Ideally, the aim should be for a "parity of esteem" (Telfer and Biggs, 1985, p. 11). This cannot be stressed enough.

If the ultimate goal is to graduate flight instructors who are highly effective teachers as well as highly-skilled pilots, then instructors need quality training in both

fields. To achieve this objective, Class I flight instructors, who are the only ones authorized to teach flight instructor candidates, need to have the competence and the expertise to provide such training. Do Class I flight instructors have the knowledge and skills necessary to teach future instructors effectively? The following section looks at their answers to this question.

#### B. Reasons for the Inadequate Approach to Teaching

Class I flight instructors are the hub of the flight training system since they prepare the new generation of instructors to teach future pilots. The quality of flight training rests on their competence as teachers of instructors. Class I flight instructors were interviewed to find out if they felt their training had prepared them to teach others to be teachers. The answer to this question was a unanimous and definite "No". How to teach an instructor trainee the knowledge and skills to be an effective teacher was again left to experience gained in the field, and trial and error. One instructor states: "Trial and error. Really, that's what it was, mostly trial and error" (p. 212). Class I instructors indicated that since they had absolutely no training, they relied on past experience and what worked for them: "Just the experience thing, that's all, there was no training at all. So all I can do is go over the same briefings, cover the same theory of flight, the same material as my instructor did with me" (p. 212).

This becomes a self-perpetuating problem as one generation of poorly trained instructors passes on the same shortcomings and the same misconceptions to the new generation of instructors. As one instructor puts it: "There was no training to prepare you to teach other instructors so you ended up 'monkeying' what you'd learned" (p. 212). In fact, there is no requirement for a Class II flight instructor wanting to upgrade to a Class I to take additional training. The truth is, there is no additional training available, no syllabus, no course, nothing. The upgrade to a Class I flight instructor rating is based upon having acquired a minimum of 750 hours of flight instruction experience, obtaining 80% on a 25-questions written examination, and successfully passing a flight test conducted by a Transport Canada Flight Training Inspector. Consequently, Class I flight instructors felt they were terribly ill-prepared to train instructor trainees to become teachers. One instructor notes: "Right now when you're training an instructor you're just banking on your own experience, and that's not necessarily enough" (p. 213). Another instructor explains:

Just the mere fact that you have achieved X number of hours total and X number of hours instructing, and you've gone through a general flight test, which is more or less a re-check, I don't see why that qualifies you to automatically be able to instruct instructors. It just means that you're a good instructor now, and you've acquired a certain knowledge. It doesn't mean that you can pass that on with any degree of skill or accuracy to other instructors. (p. 213)

Class I flight instructors all agreed that the present system of upgrading from a Class II to a Class I flight instructor was inadequate. They stressed that there is a marked difference between teaching private and commercial students to fly and teaching an instructor candidate to teach flying. Accordingly, they felt that prospective Class I instructors should receive special training to prepare them for their role of teachers of instructors. One instructor underscores: "I think there should be a special course for that because it's a whole different course, as far as I'm concerned. Training private pilots, commercial pilots is entirely different than training a trainer" (p. 212). Another instructor agrees:

I think there should be more to being able to teach instructors than just getting a Class I rating. I think with the Class I rating there should be certain training set up for that instructor, an actual syllabus and a training course set out. Right now the instructor learns by trial and error, and whether he maintains the privilege to teach instructors or not depends on his track record . . . . Where it should be the other way around, you should be able to train instructors once you're qualified to train them. Right now what you have to do is, you have to train instructors to prove yourself through training them--and the poor instructor trainee! If you're low on experience and you haven't done too many instructor ratings, that's what they get. (pp. 213-214)

Class I flight instructors felt that the whole system of flight instructor training should be re-examined and re-evaluated (pp. 216-225). According to them, the training of flight instructors has not evolved; it has remained stag-

nant. They deplored the fact that flight instructor training has not benefitted sufficiently from insights and development that have taken place in the fields of education and psychology (pp. 216-223). One instructor echos the dispraising assessment of all, saying: "It's just 'Mickey Mouse' the way it is right now" (p. 219). Another instructor stresses: "Instructors are taught to teach the 'course', not the 'student'. It's a way of teaching that has not evolved" (p. 217).

To rectify this deplorable situation, Class I flight instructors advocate a "change of the whole system" or "of the whole structure" of flight instructor training and emphasize that it should "be subsidized by government somehow" (p. 223). They also feel that Transport Canada, being the overseeing agency, must provide the lead for such a change. Yet, many had strong reservations and foresee a few major problems. First of all, Class I instructors question or doubt the expertise of Transport Canada in providing "quality training" in the identified weak areas, because Flight Training Inspections, save for a few exceptions, have basically the same background and qualifications as Class I flight instructors (pp. 223-225). One instructor points out:

Flight Training Inspectors, except for one or two, have the same background as we have. They're pilots basically, not teachers. And I don't think they get special training when they join Transport Canada, so they really don't have the expertise to give us the training we need. (p. 225)

One instructor also felt that Flight Training Inspectors, because they do not have recent instructing experience, are out of touch in comparison to Class I instructors. When it comes to teaching methods, they also rely on past experience and "what worked for them". He says:

Nobody is gonna have more experience than the Class I instructors. As long as they've got that basic training, nobody is going to be able to monitor them better than themselves either, especially now that instructors stick around longer . . . . When was the last time any inspector taught a student from scratch? And to step in and tell somebody else, 'Well no, you should be doing this and you should be doing that' (expression of doubt). (p. 222)

In spite of their hesitancy, Class I instructors still felt that Transport Canada should lead the way in re-examining and improving flight instructor training. This, however, should be done in consultation with the industry, namely Class I flight instructors, and professional educators whose expertise in the field of teaching would be invaluable.

A tantamount problem to the lack of teaching expertise in Transport Canada, is the economic status of flight instructors along with the fact that, contrary to most other professions, trainees must bear the whole cost of their training from their own resources. Because "instructors are the worst paid people in the industry" (p. 222), or "instructors make peanuts" (p. 225), not many are tempted to stay and make flight instructing their career. One instructor stresses: "Something has to be done with the wages for

instructors to stick around" (p. 222). Another participant states: "To train instructors properly they have to change the whole system because you just get a transient bunch of people coming through the industry, lasting a few years and then getting frustrated and then getting out of it" (p. 217). Instructors in Australia share the same concerns as their Canadian colleagues regarding the transient nature of flight instructors and the need for better training, however, one instructor emphasizes that: "No training will be effective until the career aspects (including hours, salary, conditions, and superannuation) match those in other aspects of the aviation industry" (In Telfer, 1981B, p. 45). In considering the problem of the transient flight instructor, Telfer (1981B) concludes:

Until the industry offers a parity of social and economic status for the professional flight instructor, this problem is the over riding one. It affects both the way others see flight instructors; and the way flight instructors see themselves. (p. 67)

Next to the student, the most important and certainly the most critical person in flight training is the flight instructor. The truth, however, is that in the aviation industry, flight instructors are relegated to the lowest status and have taken the back seat to bureaucrats and others who purport to know what is best about teaching and learning to fly. As a result, flight instructors are seldom considered to be professionals. That is to be lamented. The fact is that flight instructors are a "career-less"

breed. In terms of pay, their salary is unstable and often below the poverty line and their working conditions are frequently unreasonable, i.e. long days, long weeks, and often they are paid only for flying time, not for time spent on the ground briefing or de-briefing students. The only way for flight instructors to improve their financial lot is to graduate into the airline or corporate world of flying. That's wrong and definitely not conducive to excellence in primary flight training. That is not to say that flight training is in complete disarray. It is not. There are some excellent instructors with professional attitudes, however, flight training as a whole can be improved.

Another contributing factor to inadequate flight training is indisputably the excessive cost involved. There presently is a serious gap in the educational amenities of Canada. The universities and community colleges offer courses in a wide spectrum of vocational and professional training ranging from auto mechanics to law, medicine and engineering, which are all subsidized by the government. Air traffic controllers receive their entire training at tax payers' expense, meanwhile drawing a salary. However, there are less than half a dozen tax supported colleges to train pilots. Consequently, the majority of pilot trainees bear the entire cost of their flight training from their own resources. The common belief that employers, like the airlines and smaller commercial operators, provide the neces-

sary training is a fallacy. They hire trained pilots, often asking for a university degree or a college diploma, in addition to at least a Commercial Pilot licence if not an Airline Transport Pilot licence.

Doctors and dentists, for example, pay for approximately 11% of the cost of their professional training (Porter et al., 1979); most pilots pay for 100% of the cost of theirs. To what other profession is the ability to pay approximately \$12,000.00 to \$15,000.00 for training (\$25,000.00 for helicopter pilots) almost the sole criterion for admission? This unfortunate situation means that commercial pilots, having the lives of their clients very literally in their hands, receive much less thorough training than members of other vocations and professions, very few of whom shoulder so explicitly and so immediately the responsibility for human life. Research in Australia revealed the same problem:

Unlike his peers who train to be teachers, policemen, tradesmen or lawyers, flying students in training are not assisted by the government. This is blatantly unjust. The result of the government's treatment of a highly sophisticated industry in this manner is that it fosters a minimum standard qualification because of the cost. This is a matter our politicians could ponder as they are flown about the country. I wonder, too, how they would approach an impending piece of surgery if our medical profession was treated in a like manner! (Ray McNamara in Telfer, 1981A, p. 9)

The quality of training and as a result safety possibly suffers if training is inhibited by its high cost to

trainees. One only has to consider the high percentage of accidents attributed to human error to grant some legitimacy to this assumption. Kershner (1981) rightly avers that "the flight instructor's certificate is the most important one issued" (p. 1), because the process of training pilots does indeed begin with flight instructor training. Unless flight instructors, who are the foundation of the system, are trained properly, the product of their instruction, that is, future pilots will undoubtedly graduate poorly qualified to keep the skies safe. It is important to recognize that flight instructors are at the forefront of aviation safety:

The flight instructor exerts more influence on flight safety than any other pilot. You ask, "What about the airline captain who flies thousands of passengers every year; doesn't he have more influence than a person who may instruct, at most, thirty people in that time?" That airline captain didn't spring fully rated into the left seat; much of his attitude toward flying, and the flying habits he has, are the results of the first few hours of his flight instruction. (Kershner, 1981, p. 1)

Instructors support this view:

There has to be a change because that's the basic thing here--even an airline pilot, the first exposure he has to flying is his flying instructor. But instructors are the worst paid people in the industry, and I don't think they're trained properly, as far as teaching goes. (p. 221)

Thus, if we want well-qualified pilots, we need well-qualified flight instructors. Roscoe (1980) agrees:

Two major instructional functions of a training system are the obvious student training and the not so obvious but vitally important instructor training. The standardization of teaching methods

and skills among instructors is the most efficient way to insure a constant flow of well-qualified students through a program. (p. 179)

The cost in money and energy are great for individuals who learn inadequately. The social costs, not to mention the emotional ones, are surely astronomical and are represented in dropouts, failures, inefficient instructional delivery systems, and even more tragically, in aircraft accidents. One can only guess at the savings in time, money, and lives that might accrue to an aviation organization that chooses to allocate a higher percentage of its energy and training resources to training its trainers more effectively, but it seems almost certain that these would be considerable savings indeed.

Testimonies from seasoned flight instructors disclosed that, unfortunately, the present aviation system still does not acknowledge the crucial role of the flight instructor. This is made obvious in several ways: firstly, the aviation industry generally looks down at flight instructors and has very little consideration for their efforts and their experience; secondly, instructors are in most cases, the worst paid group of pilots and frequently instruct under very poor working conditions; and thirdly, according to flight instructors themselves, they are most lamentably trained as far as teaching is concerned, so they feel very ill-equipped to do their job well. When considering the poor quality of flight training and the high drop-out rate of student

pilots, many point the finger at the flight instructor, but it must be remembered that the flight instructor is the product of the flight training system. If student pilots are poorly trained it is because flight instructors are poorly trained. Spark (1980) indicates:

Many would have it that the quality of flight instructors is to blame, but not in the sense that instructors do not fulfil their task as they have been taught to perform it. Rather, that they are the product of an unsatisfactory system of flying training in our country. (p. 41)

Nikiforuk's (1984) conclusion to his article entitled "Why our teachers can't teach" is very apropos for flight training as well:

Whether educators want to admit it or not, teaching is a demanding science. It's arranging things in a classroom so that children will learn better and faster than they would incidentally or by osmosis. It's caring about results because children matter and learning counts. If teachers are given the tools of the trade, if they are shown how to teach well, students will learn and teachers will feel good about teaching. (p. 40)

## Chapter 7 - Conclusions, Recommendations, and Implications

In Chapter 1 it was noted that there appeared to be a mismatch between factors that have significant influence in the learning situation and areas that are stressed or covered in the training of flight instructors. More specifically, despite evidence for the claim that learning to fly is greatly affected by student pilot psychological stress and by an instructor's effectiveness as a teacher, flight instructor training ignores the role played by the affective domain in the learning situation, and overlooks the need for sound teaching practices to enhance learning. These concerns are reconsidered in this final Chapter and problem areas are identified for further study. Recommendations are also put forth to provide guidance for the improvement of flight instructor training and ultimately, basic flight training.

#### CONCLUSIONS

Data presented in Chapter 4 clearly establish that feelings and emotions play an important role in flight training and that psychological stress can indeed be debilitating and thus, can interfere with learning, performance, and decision making. Student pilots also attested to the fact that psychological stress is frequently instructor-induced. They identified attitudes and behaviors of flight instructors which interfered with the effectiveness and efficiency of their learning and made learning to fly a definite chore. Some even said they almost abandoned or

felt like discontinuing their training because of the way they were treated by their instructor. Many do quit. The drop-out rate of those who take out a student pilot permit and never obtain a private pilot licence is significant indeed. This is not characteristic of Canada alone, as it may also be found in the statistics of Australia, the United States, and the United Kingdom. Of course, people cease training for a variety of reasons, but no one should give up flight training because of an instructor's unprofessional behavior or lack of teaching competence. This is a total waste. Spark (1980) emphasizes:

It follows in relation to the drop-out rate, that the training machine is losing the best part of 40 per cent of the total training investment each year simply because the student, in the majority of cases, does not get the right sort of treatment. (p. 42)

In juxtaposition, student pilots indicated how some instructors helped them cope with their apprehensions by creating a more relaxed learning environment and as a result made learning to fly an enjoyable and worthwhile experience. Testimonies from student pilots also emphasized the importance of the relationship between the instructor and the student. They felt that "the relationship between student and instructor should be constructive and team-like" (Craig, 1987, p. 67).

Of significant importance is the fact that the attitudes and behaviors of flight instructors identified as detrimen-

tal to learning all relate to the realm of interpersonal relationships and communication skills which are an integral part of teaching practices, not flying skills. Student pilots had no complaints about their instructors' flying skills, however, they indicated that some flight instructors definitely fall short as far as teaching practices are concerned.

Data in Chapter 5 revealed that flight instructors are not trained as teachers. While the flight instructor course provided them with content expertise, proficiency in piloting skills, and some prescribed "patter" or "recipe" approach to teach flying manoeuvres, it did not equip them with basic teaching skills and knowledge relative to the learning process, nor did it dwell on the role played by the affective domain in the learning situation. The whole approach to flight training, including flight instructor training, is based on a flawed approach to teaching. Teaching practices and flying skills are viewed as simple motor skills to be acquire through drills and mimicry, based on a behavioristic approach. To complicate matters, the teachers of flight instructors, Class I instructors, receive no training whatsoever to prepare them to teach flight instructor trainees how to instruct. Consequently, they rely on past experience and what worked for them and train instructor trainees the same way they themselves were trained. This becomes a self-perpetuating problem as one

generation of poorly trained instructors passes on the same shortcomings and the same misconceptions to the new generation of flight instructors.

It is clear that there exists a discrepancy between the fact that psychological stress affects the effectiveness of flight training and the fact that the affective domain is ignored in flight instructor training. Because flight instructors are not taught to take student pilots' feelings into consideration, and how to deal with learning problems, their effectiveness as instructors is greatly undermined. Grandchamp (1971) emphasizes, "That to ignore student pilots' fears is to ignore one of their most basic learning needs" (p. 124). Likewise Biggs and Telfer (1981) underline that "anxiety is certainly a major problem, and that if inappropriate coping strategies are allowed to develop, the effectiveness of the teacher will be marred" (p. 131).

Another inconsistency which appears evident is that sound teaching practices are crucial in dealing effectively with the whole learning situation, however, the flight instructor course is bereft of practices and knowledge relative to teaching. Flight instructors are not provided with the necessary knowledge and skills which would help them perform effectively in their full teaching role. Thus, the quality of flight training greatly suffers. And, as was mentioned earlier, poorly trained pilots have a direct impact on safety. Consequently, it is imperative that ef-

fective teaching practices and human factors, including psychological stress, no longer be ignored in flight training. It cannot be overly stressed that flight instructors must be taught to be effective teachers as well as skillful pilots.

Some, however, might question whether one can be taught to be an effective teacher and whether one can learn to recognize and reduce students' psychological stress. Obviously, there are some people who will be more gifted than others at teaching and there are certain individuals who just do not have the personality to be teachers and should look for a more suitable career. As one instructor puts it: "There are some people that just are not born to teach, and there are some that are just naturals" (p. 205). Nevertheless, there are specific instructional strategies and knowledge which make it more likely that the student will learn and that the information presented will be remembered. These can be taught and would save numerous hours or years of trial and error. Spark (1980) reports:

It was clearly identified that while instructors learned quite a lot through experience, there was a considerable period of time when they were not as productive as they could be because they lacked the knowledge and the tools available to them in the field of education. (p. 42)

Almost self-evident is the need for flight instructors to have a working knowledge of the basic principles and processes of learning and teaching. These can also be taught. The effectiveness of flight instructors as teachers will

further be enhanced by a comprehensive understanding of the theories and philosophies of adult education. Furthermore, since flight training takes place in a stressful environment, flight instructors need to be taught ways to recognize student pilot psychological stress and to help trainees cope effectively with their emotions and anxieties. Bond et al. (1968), in discussing the possibility of teaching emotional control, indicate:

Emotional states can have profound effects upon your ability to attend. At least a certain amount of emotional control can be learned. An important aspect of this learning is simply the realization of the fact that this relationship between emotion and attention exists, and the knowledge of the kinds of degradation of attention that can occur under stress. (p. 4-12)

They further suggest that a way of dealing with stressful situations and of controlling emotions is by establishing a good rapport and good morale conditions. Student pilots who have confidence in their instructor, in themselves, and in the equipment they use find that they can face stressful situations without panic (p. 9-4).

#### RECOMMENDATIONS

In view of the research findings, the following recommendations are presented to provide guidance for implementing ways and means of improving the training of flight instructors and, as a normal consequence, the training of pilots in general. The majority of the recommendations that follow do not stand alone. There is a definite interrela-

tionship between most of them. Some recommendations will only be feasible if other recommendations are taken seriously and implemented first. This will be specified when addressing individual recommendation.

RECOMMENDATION NO. 1 - An awareness program directed toward both student pilots and flight instructors should be developed to draw attention to attitudes and behaviors of flight instructors which influence the learning process in positive and negative ways. Furthermore, the knowledge gained from this study must be brought to the attention of flight instructors with the aim of establishing pedagogical objectives and guidelines for improving flight instruction. This recommendation could be implemented in the present context, however, its success is dependent to a large extent on whether the other recommendations will be endorsed by Transport Canada and the aviation industry. What good is it to tell instructors that their teaching approach is based on a faulty model if no means are available to retrain them to use a more effective teaching approach?

RECOMMENDATION NO. 2 - Flight instructor training should be closely re-examined and improved so that flight instructors will be taught to be competent teachers as well as proficient pilots. This means that flight instructors must acquire an understanding of the basic principles of learning and be made aware of the pedagogical and psychological

factors involved in learning to fly. They have to be equipped with the knowledge and skills necessary to be an effective teacher, not just a skillful pilot. And because they are teaching in a stressful environment, they need to acquire strategies and techniques useful in recognizing and minimizing student pilot stress. Training in interpersonal and communication skills is also a requirement. However, for such training to be truly effective, the attitudes of the aviation industry and of many flight instructors will need to be changed. "There appears to be an inbred belief that traditional methods are best and this belief is inhibiting the positive changes new instructor training could provide" (Ray McNamara in Telfer, 1981A, p. 10). Flight instructors have to be seen and have to see themselves as committed professionals. As Telfer (1983) puts it:

Flight instructors, both old and new, have to be convinced that the new requirements are not simply a hoop of specified altitude and diameter, through which officialdom expects all to jump. A new model, recognizing and valuing professional preparation, status and practice needs to predominate. This change must come from the instructors themselves, in the professional way described recently by Houle (1980). In my country we need a professional association of flight instructors; with minimum standards for entry and practice; a code of ethics and a new subculture of values and traditions. (pp. 585-586)

RECOMMENDATION NO. 3 - A prerequisite for the flight instructor rating should be a practicum teaching/learning experience. In order to gain experience in teaching metho-

dology and receive professional supervision as they learn to instruct, prospective flight instructors should teach actual students, as is the case with practice teaching, instead of teaching their instructor who plays the role of the student. An instructor candidate presently has had no hands-on experience in instructing "real" students before graduating.

RECOMMENDATION NO. 4 - In preparation for the practicum, workshops or "mini" courses should be given by "qualified" personnel to cover teaching methods, instructional techniques, lesson planning, simulation teaching techniques, educational psychology, instructor-student interaction, stress recognition and stress management, communication skills, analysis of student performance and evaluation of pilot proficiency. Or an alternative might be initial full-time study as Telfer (1981B) recommends:

The conclusion appears to be that a professional basis for flight instructor training programmes would be initial full-time study, followed by regular seminars or workshops. In this way, flight instructors would not be required to take extended time off work, to the disadvantage of both individual and industry. (p. 45)

This recommendation is closely related to Recommendation No. 8 in that the first alternative could be an interim measure until such time as a full-time flight instructor course would be offered at a reputable institution or flying school, and became a requirement for all prospective flight instructors. A present deterrent to flight instructors taking additional training is the fact that they are paid

only when they are flying; most do not receive a base salary. Thus, taking a course or attending seminars or workshops means a loss of an already meagre revenue.

RECOMMENDATION NO. 5 - Flight instructors should serve a one-year internship in an approved flying school where guidance and quality supervision would be provided. How can a flight instructor with barely 250 hours of total flight time, and in some instances, marginal training be expected to be a professional? More training, or at least, quality training is surely needed. Of course, an internship is no panacea for all the shortcomings of flight instructor training, but it might weed out instructors who are not committed or competent and make the others more effective teachers. A one-year internship program could blend practical instructing experience with further curriculum studies under the supervision of an experienced and competent instructor. The present Class IV flight instructor rating, with some refinement, could be used as the first step toward this program. Supervising instructors, however, would have to have received adequate training and would need to be paid for their supervising duties. Presently, Class I or Class II flight instructors supervising Class IV instructors do not get paid for this added responsibility, so in most cases the supervision is minimal.

RECOMMENDATION NO. 6 - An on-going in-service education program, beyond the annual Civil Flight Instructor Refresher Course, should be established and required of all flight instructors. The purpose would be to upgrade the teaching skills, instructional techniques, communication and interpersonal skills of flight instructors, to discuss common problems and possible solutions, and to keep instructors abreast of new material and media pertinent to flight training. Again, though, the aviation industry and the government must be convinced of the importance of the role of the flight instructor and of the requirement for adequate teacher training, so that flight instructors could be remunerated while attending refresher courses in teaching practices.

RECOMMENDATION NO. 7 - Much of what plagues flight instructor training originates with the lack of training and competence of the trainers of instructors, that is, Class I flight instructors. They, however, are not to be blamed since they have never been trained for their role as teachers of instructors. Yet, they are the foundation of flight training. The quality of basic flight training rests on their competency as teachers of instructors. Special courses should be designed and then presented to prospective and licensed Class I flight instructors to prepare them for their role as teachers of future flight instructors. This recommendation, along with Recommendation No. 9, need to be

addressed first because the success of Recommendations Nos. 2 to 5 is contingent upon the implementation of this recommendation and Recommendation No. 9.

RECOMMENDATION NO. 8 - Study the feasibility of creating a Flight Instruction Research and Training Institute where more in-depth research into flight instructor teaching practices and flight instruction in general could be conducted, and where flight instructors could be trained for their full teaching role. In the name of flight safety, air traffic controllers are trained at public expense, so why not flight instructors who have an even greater far-reaching impact on aviation safety?

RECOMMENDATION NO. 9 - Transport Canada should re-examine the qualification requirements for Flight Training Standards Inspectors. It must be recognized that the role of the Flight Training Standards Inspector encompasses two distinct areas of expertise--flying and teaching--each requiring its own knowledge and skill. Qualifications in both fields are essential if inspectors are to have any credibility with flight instructors. To achieve this, Flight Training Standards Inspectors who have qualifications in both aviation and education should be identified and called upon to work with experts in the field of education to design a course aimed at supplementing or upgrading the teaching practices and knowledge of present Flight Training Inspectors. Future

Flight Training Inspectors should, upon entry in Flight Training Standards, be given special training to prepare them for their role as experts in flight training and as examiners of flight instructors. Furthermore, just as Civil Aviation Inspectors are expected to maintain flying proficiency and keep current on new developments in aviation, Flight Training Standards Inspectors must, in addition, be encouraged to keep abreast of advancements in the fields of education and aviation psychology. Their credibility as experts in the field of flight training and as examiners of flight instructors hinges on this.

All of the above recommendations depend to a large extent on this recommendation because Flight Training Standards Inspectors set the standards for flight training and monitor the quality of the training provided to future pilots. If Flight Training Standards Inspectors are skillful pilots but lack expertise in teaching practices, how can they provide insightful guidance to flight instructors and effectively monitor the quality of their teaching?

#### IMPLICATIONS

The significant findings uncovered in this study also revealed areas or directions in which further research seems warranted. Some were identified in previous research but still need to be addressed. Smode et al. (1966) recommend that the development of confidence-building techniques be

explored as a means of stress retardation. Another possibility, they suggest, "is the investigation of conditioning techniques to instill habits useful under stress" (p. 90). Telfer (1982) also points out: "Two fields of enquiry: the psychology of the process of learning to fly, and the teaching skills involved seem to be the key areas for future research" (p. 10). Telfer and Biggs' book entitled: The psychology of flight training, published this year, addresses these two topics well, however, such complex areas could be researched still further.

The problems of psychological stress experienced by flight instructors are also real, prevalent and potentially deleterious to instructors and students. Thus, the incidence and effects of flight instructor stress in flight training could also be a researchable issue. It would involve a) identifying the causes or sources that have stress potential for instructors, b) seeing how instructors deal with such stress, and c) examining the impact of the anxiety response and its associated coping styles on the instructor's effectiveness in the flight training situation. Relating psychological stress to both student and instructor makes possible a more complete approach that should increase the understanding of the impact stress has on learning to fly.

Another research area very closely related to this study would be identifying attitudes and behaviors of exami-

ners who increase the stress level of candidates on flight tests or check rides.

The whole area of flight instruction warrants pointed and specialized research attention. Thus, further research should examine the flight training situation more closely and identify a composite of characteristics and instructional approaches associated with effective flight instruction from which models might be developed and tested for use in curriculum development.

Looking beyond the realm of flight training, this study brings forth some educational implications for all disciplines. Stress is not unique to flight training; it affects many learning situations, especially where complex skills are taught. The fact that complex skills can determine critical consequences of performance, as in piloting an aircraft, necessitate that unnecessary stress in the learning environment be eliminated. An extrapolation of stress induced by an instructor to other areas such as medical education, scuba diving, sky diving, the training of air traffic controllers, and of personnel involved in all of the transportation modes has commanding implications. Miscalculation, or what is now often referred to as "human error", on their part resulting from learned anxieties or stress induced by an instructor in training could be extremely costly.

An important implication emerging from this study is

that unless the recommendations presented here are taken seriously, the improvement of flight training and as a result, aviation safety, will be severely marred. If Transport Canada is not only paying lip service to safety and is serious about promoting higher flight training standards, the Aviation Regulation Branch might be wise to re-evaluate its orientation and priorities. It should concentrate more or at least an equal amount of its efforts and resources to initial flight training, beginning with flight instructor training, as opposed to its present heavy emphasis on safety programs addressed at licensed pilots, and enforcement action which frequently points the finger at pilot incompetency calling for remedial training of licensed pilots. As White (1983) stresses, "We cannot continue to give remedial training whose efficacy we don't know to people who have been flying for thousands of hours. We need to train pilots right from the beginning" (p. 205). This will only happen when "the importance of the flight instructor as a tool of great value and as an essential part of the entire learning process" (Termochlen, 1987, p. 3) and of flight safety is fully recognized. Concentration on prevention, that is, graduating well-qualified pilots from basic training, instead of on remedial actions, might prove to be more than a financial saving since safety is implicated.

### The Pilot's Creed

"When the earth retreats beneath my rising 'plane, I feel the challenge of those who first ventured into the heavens, those who risked so much to carry on through the lean years towards man's conquest of the air, and those who, today, with me are striving to uphold and advance the glory of Aviation. I am conscious of a responsibility akin to that of a sea captain. I must be the master of my ship, of myself, of every emergency. I must back my ability with keen judgment, accuracy, and unfaltering confidence. My fearlessness must be tempered with caution and wisdom. I must know my aeroplane in order that I may recognize its limitations and appreciate its possibilities. I must have for my 'plane the same regard a seaman has for his ship. As my sea is far greater, my ship far faster, so must I, the pilot, be more sure."

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## DEFINITION OF TERMS

When discussing affect-laden words, such as psychological stress, fear, anxiety and frustration, the problem of definition is obviously paramount. Terms, like stress, have accrued a residue of meanings from prolonged use in many different circumstances. Hence, there has been no attempt to present comprehensive definitions. Rather, to prevent ambiguity, key terms are defined using clear and simple definitions limited to the use and relevance of the terms in this study. Further, to respect usage by previous researchers, anxiety, arousal, fear, stress and tension are used interchangeably.

For the purpose of this study, the following definitions will apply:

Ab initio. This term means from the beginning and is widely used in aviation circles to refer to students who have little or no flight experience.

Ab initio instruction means "instruction given to a non-licensed pilot." (Draft Air Navigation Order, Series VII, No. 5 - Standards and Procedures for Air Carriers Operating Flight Training Establishments, 2.)

Affective domain refers to feelings, emotions, or degree of acceptance or rejection (Kratwohl et al., 1964).

Andragogy is the "art and science of helping adults learn" (Knowles, 1980, p. 43).

Anxiety denotes a feeling of uneasiness, apprehension, tension or threat.

Class I flight instructor refers to a senior flight instructor who has a minimum of 750 hours of flight instruction experience, has an excellent student flight test record, has obtained at least 80% on a written examination, and has shown exceptional ability on a flight test conducted by a Transport Canada Flight Training Inspector.

Class II flight instructor refers to a flight instructor who has a minimum of 500 hours of flight instruction experience, has a good student flight test record, has obtained at least 70% on a written examination, and has shown above average competency on a flight test conducted by a Transport Canada Flight Training Inspector.

Class IV flight instructor is a novice flight instructor who can instruct only while under the direct supervision of a Class II or Class I flight instructor.

Cognitive domain, as defined by Bloom (1956), relates to intellectual tasks such as knowledge, comprehension, application, analysis, synthesis and evaluation.

Psychological stress will refer to stress related to (a) social or emotional factors such as anxiety about being faced with a novel/untried situation or experience, fear of failure and/or of appearing foolish or stupid, frustration

or anger as a result of an argument, or a comment made by someone, or caused by uncertainty or lack of understanding (Rogers, 1977); (b) mental workload such as analyzing a problem, navigating an aircraft, or making a decision while at the same time flying the aircraft accurately and safely (Diehl et al., 1983, p. 54).

Psychomotor domain "connotes that the mind is involved in a particular movement, therefore, the movement must be a voluntary purposeful movement" (Harrow, 1972, p. 182).

Stress will mean "a condition of mental pressure, urgency and tension" (Berlin et al., 1982, p. 12-1).

Student pilot will not refer only to an ab initio student but will include any licensed pilot receiving additional or recurrency training, such as converting to a more sophisticated aircraft or obtaining a higher licence or rating.

APPENDIX "B"

PROBLEM	SUGGESTED ACTION												
	Learns slowly	Thinks he knows all	Timid	Wastes time	Too aggressive	Antagonistic	Learns rapidly	Finds fault	Immature	Courts favours	Stalls, evades	Dominating	Inattentive
Provide less work	•												
Provide more work		•			•		•			•		•	
Give more individual instruction	•		•								•		
Be patient in correcting mistakes	•		•										
Give no chance to dodge responsibility		•	•	•				•	•	•	•		•
Rigidly check student's work		•		•	•			•	•	•	•	•	•
Let student know what is expected of him		•		•		•		•	•	•	•	•	•
Determine validity of grievances						•		•					
Give student more responsibility				•	•	•	•	•			•		•
Give more difficult assignments	•				•		•						
Require student to prove ability	•							•		•		•	
Have student work alone				•			•				•	•	
Keep student informed of his progress	•		•					•	•		•		•
Tell student why progress is poor			•	•		•		•	•		•		•
Check at first occurrence				•				•	•	•	•	•	
Have personal talk with student	•	•	•			•		•	•		•	•	•

Figure 1

APPENDIX "C"

Shaw's  
Summary

. . . You see, really and truly, apart from the things anyone can pick up (the dressing and the proper way of speaking, and so on), the difference between a lady and a flower girl is not how she behaves, but how she's treated. I shall always be a flower girl to Professor Higgins, because he always treats me as a flower girl, and always will; but I know I can be a lady to you, because you always treat me as a lady, and always will.

G. B. Shaw, Pygmalion