Plymouth State College Journal on Writing Across the Curriculum

Volume 7

Requests for copies:

Michelle Fistek
Coordinator, WAC Task Force
c/o Social Science Department
Plymouth State College
Plymouth, NH 03264

Printed by Pegasus Press

DOI: 10.37514/WAC-J.1996.7.1.01

Editor's Introduction

The first paper in this edition of the Plymouth State College Journal on Writing Across the Curriculum reports the last piece of research by William L. Taylor. We publish it here as a memorial to him and his strong and effective support of writing across the curriculum.

Thanks to Joan Taylor for permission to publish this piece.

Richard M. Chisholm
Editor

Plymouth State College
Journal on Writing Across the Curriculum
Volume 7, August 1996

Contents

Railroad in the Wilderness: The East Branch & Lincoln Railroad, 1892-1948

by William L. Taylor

To conceive of a logging railroad in what is today a designated wilderness may be difficult for most to imagine. Yet, between 1892 and 1948 the East Branch & Lincoln Railroad operated throughout much of what today may seem untouched forest. Only along the trails, at river and stream crossings, and at certain old camps does one become aware of the earlier presence of extensive human activity. These include the existence of railroad ties along many of the trails, huge bridge abutments that are far too large for the existing foot bridges, and rusting and decaying artifacts at former logging camps along the old right of way. For over half a century this region served as the resource base of an industrial complex that epitomized the attitudes and techniques of industrial America. The heart of the operation was Lincoln, New Hampshire, where J.E. Henry transformed what had been primarily a resort community catering to hotels like the Flume House in the Franconia Notch area.

Lincoln provides an excellent example of a "company town" that emerged in the early 1890s in order to tap the huge timber resources in the valley of the East Branch of the Pemigewasset River. In late summer of 1892, J.E. Henry, his sons, and many of his workers arrived at a site in Lincoln about a mile east of the junction of the East Branch and the

DOI: 10.37514/WAC-J.1996.7.1.02

Pemigewasset rivers to begin construction of a mill, railroad, homes, stores, and other structures to create a new industrial town that George H. Moses labeled "Pullman, New Hampshire." They transformed what had been forest into a community that would become one of the largest industrial complexes in northern New Hampshire. It continued as an industrial community in the 1970s. Today the former mill complex and railroad yards are once again part of a resort community centered around Loon Mountain ski area.[1]

The East Branch & Lincoln served as the sinewy life line of the Henry and Parker Young operations. In a time before modern internal combustion engines were powerful enough to reach far back into the rough, mountainous terrain east of Lincoln, only steam locomotives could furnish the power needed to haul timber economically many miles from the yarding areas to the mill. Henry's men did an impressive job conquering the rugged country.

As one hikes along the old main line, the work of its builders remains impressive. The extensive stretches of tangent main line and the massive abutments and piers at the Franconia Brook crossing remain lasting monuments to their skills. Much of the original construction occurred under the supervision of Levi ("Pork Barrel") Dumas, a self-taught construction foreman.[2] A photograph in the January, 1923, issue of *The Pycolog* shows vividly the nicely groomed track running straight as an arrow toward the horizon.[3]

The Parker Young Company, which purchased the entire J.E. Henry & Sons properties in 1917, recognized the essential role of the early issues of *The Pycolog*:

> The train crews of the woods engines must be

> mentioned here for one cannot overrate the importance of our own railroad system. It is the pivot on which swings the great Lincoln operation and plants of the Parker-Young Company. We must remember the crew of No. 5, our old stand-by, with Louis Boyle at the throttle, Billy Magee fireman, and Joe Landry the conductor.[4]

Although it began as a timber and sawmill operation in 1892, the potential for manufacturing pulp and paper was soon recognized. J.E. Henry's land contained a massive amount of excellent spruce, an ideal tree for making pulp. The area also had ample water resources for processing the spruce and enabling the construction of dams on the East Branch of the Pemigewasset River for the generation of electric power. The Henrys built a pulp and paper mill in 1902 which made groundwood and unbleached sulphite pulp, newspaper stock, and ground specialties. Before the sale of the property to Parker Young in 1917, the Henrys added a third paper machine, a bleaching plant, and a third sulphite digester. This enabled the plant to increase production and to include bleached sulphite papers to its product mix.[5]

In 1917 the Henrys sold the entire complex of plant, housing, store railroad, timberland, and all the rest to Parker Young Company. Thus began nearly four decades of operation in Lincoln by this corporation. Parker Young in early 1920 was a large firm with its headquarters in Boston employing over 2500 people at mill and logging sites in New Hampshire, Vermont, and Maine. For a few years in the 1920s it also owned a sawmill in Florida.[6] The two largest operations of the company were in New Hampshire: the complex at Lincoln was the largest; Beebe River, in

Campton, second in size. Both had company housing, stores, mills, railroad, and extensive tracts of timber. Begun in early 1917, the complex at Beebe River was ready to saw its first log on 17 November, 1917. Large quantities of spruce frames for airplanes were manufactured there. One estimate states that Beebe River furnished more than one-fourth of all the airplane spruce produced in New England during World War 1.[7] The East Branch & Lincoln and the Beebe River railroads seem to have shared equipment during the years of common ownership. Beebe River produced dimension lumber, laths, and pulpwood during the Parker-Young years. By early 1925 most of the spruce and pine had been cut and the company sold the entire Beebe River operation to the Draper Corporation, which converted the mill to the manufacture of bobbins. The hardwood on the property had hardly been touched, thereby leaving adequate material for the Draper operation.[8]

With the sale of Beebe River, Parker Young focused on the Lincoln operations and the pulp plant at Livermore Falls (in Campton, N.H.) that supplied ground wood pulp for the Lincoln mill. In December, 1922, the paper mill set a production record of 104.74 tons of paper in one day with a daily average that month of eighty-seven tons per day.[9] To supply the mill with pulp the East Branch & Lincoln operated twelve to fifteen miles of standard gauge railroad between the yard around the mill and the landings in the woods.[10]

References in the company publication *The Pycolog* indicate that by the 1920s the large scale operation centered at Lincoln was unusual in the Northeast. In October, 1922, the mill superintendents who met at

the company-owned Lincoln Hotel had "a new experience." They traveled by train into the woods (crossing over Black Brook trestle) to visit Camp 23 which was then at the end of the line. There they did what any interested group of mill superintendents would do: they inspected the camp, looked at the timber stands at Camp 23 and along the right of way, and talked with the foremen and the men. Also, they enjoyed a full logging camp meal. The writer of the article indicated how large the scope of operations was:

> Woods operations on the scale of our Lincoln Woods were a new experience for our guests, familiar though most of them are with the logging of pulp wood; and moreover, seldom is such a virgin growth of spruce seen within a day's trip of civilization. We ourselves may have got used to thinking of bringing logs out of the woods on a railroad but that is such a rare method of doing it that very few of our guests had imagined such large operations were carried on without a river to drive in. . . .[11]

The East Branch & Lincoln used standard side-rod steam locomotives as well as geared locomotives (several Shays and one Climax). The railroad operated year round, but the most intense activity took place in the winter months when most of the cutting was done. To carry the logs the road employed "logging trucks" which were nothing more than two-axle trucks with hand brakes and link and pin couplers. When empty, the logging trucks were connected drawbar to drawbar and pushed up to the loading areas ahead of the locomotive. Often, on very steep grades, such as on the Cedar Brook branch, the engineer had to break the empty train into one or more shorter trains so that

the locomotive could climb the grade to the loading yards. After being adjusted for log length with "reachers" (bars of differing lengths which connected two trucks), a pair of trucks formed a "car" which was coupled by the link and pin system into a train. This system made it impossible to employ any kind of air braking system on the train in contrast to common carrier roads like the Boston & Maine. The Interstate Commerce Commission had required air brakes on all trains in the early 1900s. Logging railroads did not have to meet such I.C.C. regulations. In essence, the East Branch rail workers were using railroad technology that had been standard in the nineteenth century. Such equipment placed train crews in a much more hazardous work environment than similar crews on the Boston & Maine.[12]

Log trains had to rely on the brakes of the locomotive and hand brakes turned down by the brakemen. Since loaded trains were descending from the mountains to the mills, braking trains could be challenging to engineers and train crew. The steepest grade in later years of operation was found in the Cedar Brook Valley where Camp 24 was located. The grade averaged seven percent and made operations very difficult and potentially dangerous. Louis Boyle, an engineer of many years on the East Branch, described how he handled trains on those incredibly steep grades. With the engine at the head of the train (downgrade from the log cars), the crew set the hand brakes on the last few cars of the train, the engineer ran the engine slowly in reverse, and everyone prayed that a coupling did not give way. The engineer also sanded the rails for additional braking and traction. Boyle stated that the longest train he ever hauled on the line

totaled twenty-six cars, which was "quite a feat considering the sharp curves and steep grades of the road bed." Whether this was on the Cedar Brook branch is unclear, for it may have occurred on the branch into either the Franconia Brook or Lincoln Brook valleys. Wherever it took place, the handling of such trains tested to the utmost the skills and mettle of crews and equipment. During the 1940s typical train length was eight or nine cars of logs. Perhaps these much shorter trains reflected deteriorating conditions of equipment, track, roadbed, bridges, and an effort to operate in a safer manner.[13]

Railroading has always been, and still remains, a dangerous occupation. Adding to these inherent dangers were other conditions considered normal in the early and latter years of East Branch history. In the early days of the railroad, crews often worked as long as fifteen or sixteen hours a day. This forced them to leave before daybreak and finish after dark during times of the year when the days were short. For this they earned an average wage of $1.75 a day. Such long hours certainly increased the likelihood of accidents. Another safety issue related to coupling cars. Brakemen had to step between the cars to drop the pin into the socket to retain the link. In contrast, the automatic coupler used on common carrier railroads did not require such a dangerous procedure. One issue of *The Pycolog* reported the accidents during the year ending June 1919. The article noted that high accident rates had occurred in the woods operations (cutting and hauling timber) at Lincoln and Beebe River as well as on the two logging railroads. These accidents included one fatality in the Lincoln operation.[14]

The scale of rail operations in the early years of Parker Young can be perceived by the efforts of the company to increase its haulage capacity over its railroads. In 1920 the company purchased twenty-three and a half sets of logging trucks from Mine Central Railroad for use on the East Branch and the Beebe River railroads. These supplemented trucks already in use on both railroads.[15] This purchase indicates the large number of cars of logs required to sustain operations at the saw and pulp mills and suggests that the capacity of the railroads was being expanded.

Not only did the East Branch & Lincoln operate log trains, it also ran "excursion" or "tourist" extras on Sundays at various seasons of the year. In summer these trips were referred to as "blueberry specials." Such trains brought tourists to old, cut-over areas where blueberries had established themselves as one of the earliest species of new vegetation after clear cutting. The railroad equipped several old "coal cars" (what were often called gondola cars by railroads) with benches, lined them with canvas, and sometimes erected an awning which protected riders from sun, sparks, and cinders emitted by the locomotive. Passengers riding such trains included guests staying at the Lincoln Hotel, local townspeople, and tourists who might be in the vicinity. Management normally scheduled these trips on Saturday afternoons or Sundays so as not to interfere with regular operations. Always a highlight for passengers was a meal at one of the logging camps. During the 1920s Parker Young scheduled winter excursions as well as specials throughout the year for conventions, meetings, and the like. Such specials continued until at least 1946.

Another kind of special train brought a local minister or priest into the camps every other Sunday to celebrate mass or preach a sermon.[16]

In the late 1930s and early 1940s several important changes occurred that would affect the decades-old railroad logging operations east of Lincoln. Of major consequence was the sale in 1936 of more than 68,000 acres of Parker Young land to the United States Forest Service. The company had cutting rights on 8,700 acres of this land for twenty years. Correspondence between the Forest Service and Parker-Young indicates that the former seemed anxious to have railroad operations cease on government land. It becomes apparent that the company also wanted to conclude timer cutting and rail operations long before the deadline in 1956.[17] Since the East Branch & Lincoln served this tract, its sale doomed any long-term rail operations. A second change was the increased use of trucks to haul logs. Although as late as the mid-1940s Parker Young continued to employ traditional transport methods (horses, sleds, and tractors) for getting logs from the cutting areas to the landings, in 1941 management announced a consequential decision regarding transportation from the landings to the mill. The November 1941 *The Pycolog* contained an article which conveyed the extraordinary nature of the decision: "EXTRA Trucks to invade the Lincoln Line after more than fifty years. This winter pulp and logs will be taken down the line by truck."[18]

Bill Boyle, who had worked in Lincoln for both the Henrys and Parker Young, laid out the new truck road which began near "the new bridge at Camp Four" and went up the east side of the river to a point

across from Camp Eight. This route placed the truck road on the opposite bank of the East Branch from the railroad. While spotting the road Boyle remarked: "Forty-eight years ago, when I was firing one of the old wood burners, I never thought that I would be spotting a truckroad into this valley; I thought that all the timber would be taken in by train."[19] From then until the company removed the tracks in 1948, *The Pycolog* contained more and more references to the hauling of pulp and logs by truck.[20]

The trestle over Black Brook remained in use until the very last years of the East Branch & Lincoln as a logging railroad. The grand finale occurred during the winter of 1945-1946. Cutting in the Cedar Brook area had begun in 1927 and had continued intermittently from then to the 1945-1946 winter cutting season. The amount of wood available in the Cedar Brook area can be understood by the cordage cut in the years from 1927 through 1938. In those years 125,000 cords of pulp were cut and transported by rail to Lincoln. The crews lived in Camps 24, 24A, and 24B during the years of operation. At the end of the winter of 1946 the company picked up the rails from Camp 24 back to Trestle 16 about a mile east of Black Brook. The truncated East Branch & Lincoln now only went a short distance beyond camp 16.[21]

By November, 1946, rails had been removed to Camp 16, which likely means that Black Brook trestle no longer had any tracks crossing it. From this evidence, it seems safe to conclude that the last railroad use of the trestle occurred in the summer or fall of 1946 as part of the process of hauling the rails removed from the right of way between Cedar Brook and Camp 16. The truncation of the East Branch

continued in rapid fashion. During the summer of 1946, the company reopened Camp 16 for the last time. That summer 1,200 cords of peeled pulp had been cut by mid-July.[22] In the winter of 1946-1947 trucks hauled wood out of the Camp 16 area, but no mention is made in *The Pycolog* regarding rail haulage that winter. Perhaps some wood did come down by rail, but clearly the use of trucks was becoming the standard way of wood haulage. Another important change during the postwar period was the increasing use of wood cut by contractors rather than relying solely on wood cut by company crews on company land.[23]

What also becomes clear was the desire of the company to conclude rail operations as soon as feasible. On 9 October, 1946, Parker Young sold its pulp and paper mills in Lincoln and Livermore Falls to Marcalus Manufacturing Company of East Paterson, New Jersey. Parker Young retained ownership of its other "public and private village property" in Lincoln. Marcalus came under increasing pressure from the Forest Service to discontinue the logging railroad. By the summer of 1947, the active railroad reached only to the vicinity of Camp 8, located about halfway between the Hancock Branch of the Pemigewasset River and Franconia Brook. By December, 1947, crews were removing rails back to Camp 3 which was only a short distance east of Lincoln. Effectively the East Branch & Lincoln had ceased to exist as a logging railroad.[24]

Black Brook trestle, the focus of this project, furnishes some excellent insight into construction techniques on logging railroads in New Hampshire. As the preceding narrative suggests, this line remained

in operation far longer than most such railroads in the state. According to C. Francis Belcher, "Most of the trestles and bridges along the East Branch & Lincoln were the work of a self-taught construction foreman, Levi ("Pork Barrel") Dumas." Dumas came to work for J.E. Henry in the early 1900s and would in all likelihood have supervised the building of Black Brook trestle which had to have been completed sometime between 1903 and 1917. Dumas also had responsibilities for dams, roadbeds, and the portable logging camp buildings used by the Henrys and Parker Young.[25]

Our recording of Black Brook trestle demonstrates clearly that some of the original pier foundations (and perhaps the abutments as well) were log cribs. As existing drawings and photographs indicate, the extant stone and mortar piers have openings that are in proper alignment to indicate the mortared stone piers were built around existing cribbing. In some of the holes we found iron pins used to fasten the logs together. We are assuming that as the cribbing began to settle or decay, the stone piers were constructed around the wood cribbing to stabilize the foundation and to provide adequate support for the superstructure and the truss. Despite the extensive damage done to the railroad by the flood of November, 1927, the Franconia Brook trestle, Trestle No. 16, and the Black Brook trestle survived the high water. Henry C. Waldo, a forester employed by Parker Young at the time of the flood, noted that the flood had a devastating impact on the railroad and the mill facilities, but stated that these bridges sustained no consequential damage.[26]

In addition to the stone and mortar piers, other

strengthening became necessary to maintain safe operation of trains. A pier (No. 11) placed in the middle of Black Brook supported posts that buttressed the center part of the truss. Because the truss is asymmetrical, it has, over the years, sagged down and partially moved off the foundation of Pier 12. The support in the center appears to have been an improvised measure to avoid major reconstruction.[27]

Henry Waldo, who worked for Parker Young in 1945 and 1946, does not remember any major repairs to the bridges of the East Branch when preparations were being made to finish cutting the virgin timber in the Cedar Brook area. He also stated that the trestles and bridges were covered with sheet metal on the top (below the ties) so that water would not penetrate the timbers. This practice, at least in part, accounts for the longevity of the trestles and why the untreated lumber did not decay. Black Brook trestle substantiates this, since the upper members of the structure are in remarkably good condition. Most of the decay evident today (1991) has occurred at ground level, where the timbers and sills are in contact with the earth or where water can accumulate as on the stone abutments. Waldo believes that the additional piers were likely put in place by the Forest Service after the abandonment of the railroad. Almost all of these repairs and reinforcements remain in place and are noted in the drawings. We have concluded that piers 1, 3, 5, 8, 10, 12, 13, and 14 are original. Other piers were added either because of the need to strengthen the trestle during those final years of railroad operation in the 1940s or by the U.S. Forest Service to make the trestle safe for use as a footbridge.[28]

Such an approach made sense for a company not

contemplating any long term use of this structure. The future belonged to truck transport, so why should the company waste funds to repair the bridge beyond the barest necessities. Also, Parker Young had only twenty years of cutting rights in what today is the Pemigewasset Wilderness, further undermining any rationale beyond short-term repairs.

As one contemplates how many logging railroad bridges and trestles once existed in New Hampshire, it is remarkable that only this one survives. Far from being the longest or highest, it, nevertheless, furnishes a fine example of vernacular bridge construction by men who likely had little or no professional engineering training, but who did know what was required to carry a railroad across a river or brook. What we have is a trestle, despite its flawed design, which served as an active bridge for many years for a company chronically short of adequate resources to make proper repairs. The depression years of the 1930s taxed even the most affluent of firms. Parker-Young could hardly be placed in that category and did file for bankruptcy in 1933.[29]

Despite all the glamour and romance associated with railroads of all types, we must always remember that they have been and remain businesses. Once they are no longer profitable or, in this instance, their resource base becomes exhausted, or a new technology comes along that can do the job more efficiently, their reason for being ceases to exist. Such was the situation for the East Branch & Lincoln. It once served as the most efficient way to transport pulp and logs from the Henry and Parker Young holdings in the East Branch watershed. By the 1940s virtually all of the old growth accessible to the railroad had been

cut and trucks could haul the wood from the new cutting areas more cheaply. Furthermore, the Forest Service sought to end all logging in the area and would, in time, seek to have the valley designated as a wilderness tract. All of these circumstances combined to bring to an end an era of logging activity that commenced in New Hampshire in the 1870s.

Perhaps an article that appeared in the January 1948 issue of *The Marcalog* gives the most fitting and appropriate epitaph for the East Branch & Lincoln:

> The East Branch Logging Railroad now consists of only the yard trackage and the main line along the river as far as the Company's line [boundary?] above Camp 3. Fred Charron and his crew succeeded in spite of the snow in salvaging all steel from Camp 16 to that point.[30]

This very matter-of-fact statement is a fitting reminder that the origins, expansion, and ultimate demise of this railroad and the way of life it represented must be understood as the culmination of a series of business decisions by owners and managers beginning with J.E. Henry and concluding with Marcalus Manufacturing Company.

Endnotes

1 C. Francis Belcher, *Logging Railroads of the White Mountains*, (Boston: Appalachian Mountain Club, 1980), 108-110; George H. Moses, "Pullman, New Hampshire: A Lumber Camp, "*Granite Monthly*" 18 (May 1895): 320-327. For a description of Lincoln in the 1870s see, Alonzo J. Fogg, compiler, *The Statistics and Gazetteer of New-Hampshire* (Concord, N.H.: D.L. Guernsey, 1874), 225-226.

2 Belcher, *Logging Railroads*, 118.

3 *Pycolog,* January 1923, 5.
4 *Pycolog*, "Lincoln Woods," October 1920, 5.
5 *Pycolog*, "History of the Town of Lincoln," January 1944, 11.
6 *Pycolog*, "History of Lincoln," January 1944, 11; "What is the Parker Young Company?" April 1920, 1.
7 *Pycolog*, "Beebe River Past, Present and Future," May-June 1925, 5-6. For the location of the Beebe River operations see map in Appendix B, "Map of Pemigewasset Valley."
8 Ibid., 5. Henry C. Waldo stated that "extra flat cars were used in the daily run, nights only, hauling slabs, hopper cars for hogged sawmill and rosser waste for the boilers at Lincoln." Letter of Henry C. Waldo, Lincoln, NH to William L. Taylor, Plymouth State College, 14 September 1991.
9 *Pycolog*, "Lincoln Mills Hang up Some New Records," January 1923, 3.
10 *Pycolog*, "Transporting Logs," February-March 1926, 1.
11 *Pycolog*, "Superintendents' Convention," October November 1922, 5. For location of Camp 23 see Appendix B. Henry C. Waldo states that in his experience each rider was requested to sign "a waiver of liability." Waldo Letter, 14 September 1991.
12 Much of the information on rail operations in this paragraph was supplied by Henry C. Waldo. Waldo stated that the Boyles (Billy and Louis) preferred the rod locomotives to the geared locomotives (Shays and one Climax). Waldo also stated that the railroad hauled only logs which were cut into four-foot pulp length at the mill in Lincoln. Interview with Henry C. Waldo, Lincoln, N.H., 20 June 1991. Waldo worked for Parker-Young from 1927 into the early

1930s and for Parker-Young and Marcalus again beginning in 1945. See Ari and Olive Hoggenboom, *A History of the ICC: From Panacea to Palliative* (New York: W.W. Norton & Co., 1976), 33-34, for a brief overview of safety legislation by the Congress and the enforcement role of the ICC. Congress passed the Safety Appliance Act in 1893.

13 *Pycolog*, "The E. B. & L.," July 1942, 2-3. The article noted that Louis Boyle had thirty-six years on the East Branch. Ibid. C. Francis Belcher states that the longest train over the line was twenty-eight cars behind Baldwin No. 5. This occurred in 1912 from operations centered around Camps 19 and 20 in the Stillwater region. Belcher, *Logging Railroads*, 116. *Pycolog*, "Pycologgers," February 1946, 9. Additional information on train operations from Henry C. Waldo. Waldo interview, 20 June 1991. For location of Camp 24 see map in Appendix B. Waldo stated in a letter that few trains had more than 12 or 13 log cars (two log trucks) during his tenure, and never on down grades such as Cedar Brook. Waldo Letter, 14 September 1991.

14 *Pycolog*, "The E. B. & L.," July 1942, 2-3; "Accident Department," June 1919, 3. A set of logging trucks is on display near the entrance to Loon Mountain resort. These trucks have link and pin couplers. See maps in Appendix B for locations of woods operations and the routes of the two railroads.

15 *Pycolog*, "Beebe River," January 1920, 4.

16 *Pycolog*. " The E. B. & L., "July 1942, 2-3; "Winter Parties," March 1923, 6-7; October 1946, 16. *Belcher, Logging Railroads,* 116-117, 119. Henry Waldo stated that sometimes Pullman cars would ride the rails of the East Branch & Lincoln when visitors would arrive

to view and inspect Parker Young operations. The ability of Pullmans to use East Branch rails indicates the high quality of the roadbed and the lack of sharp curves on the line. Waldo interview, 20 June 1991.

17 Memo from H.G. Waldo, Associate Forester, to A.H. Anderson, Acting Forest Supervisor, 20 September 1943 in U.S. Forest Service, White Mountain National Forest, Supervisor's Office Land Records, File: "Parker Young Company Tract #50a, n" in White Mountain National Forest office, Laconia, N.H. See also correspondence in January and February 1948 between C.L. Graham, Forest Supervisor, and Henry C. Waldo, Marcalus Manufacturing Co., in ibid. Tract 50a totaled 68,785 acres and was purchased by the U.S. Forest Service on 13 March 1936. See land records, File: "Parker Young Company Tract #50a, n." Waldo Letter, 14 September 1991.

18 *Pycolog*, "The Pycologgers," November 1941, 5.

19 Ibid.

20 See *Pycolog*, "Pycologgers," November 1941, 5.

21 *Pycolog*, "Cedar Brook Finale," May 1946, 8. See also map in Appendix B.

22 *Pycolog*, "Camp 16," November 1946, 13; "Pycologgers," August 1946, 8. Camp 16 was located just west of Trestle 16. Its reuse would not have required crossing the trestle.

23 See *Pycolog*, November 1946; *The Marcalog*, February 1947, September 1947; Waldo interview, 20 June 1991.

24 *Pycolog*, "Announcement," November 1946, 6; *The Marcalog*, "Marcaloggers," December 1947, 7; ibid., January 1948, 6. *The Pycolog* became *The Marcalog i*n December 1946. In July 1947 Parker-Young began selling its remaining real estate holdings in Lincoln.

The company offered 135 houses for sale. The Laconia Evening Citizen, 2 July 1947, 1, 5. See also copy of letter to Henry C. Waldo, Manager of Wood Department, Marcalus Manufacturing Company, Lincoln, N.H., from C.L. Graham, Forest Supervisor, White Mountain National Forest, no date. In this letter Henry Waldo suggested wording regarding cessation of railroad operations: "In our opinion [Forest Service] this logging railroad is no longer necessary for efficient and proper operation of the mills of Marcalus Manufacturing Co., Inc. at Lincoln, N.H." See also letter from Waldo to Graham, 9 January 1948. Both in U.S. Forest Service, White Mountain National Forest, Supervisor's Office Land Records, File: "Parker-Young Company Tract #50a, n."

25 Belcher, *Logging Railroads*, 118-119. The date of construction of Black Brook trestle has been determined by two maps of the region. In *Scarborough's Topographic Map of the White Mountains and Central New Hampshire* (Boston: The Scarborough Company, 1903) no railroad appears in the vicinity of Bear (Black) Brook. The line is shown only as far as Franconia Brook. In 1917 the U.S. Forest Service published a map of the White Mountain National Forest showing the rail line reaching up the Shoal Pond Brook valley and into the Carrigan Brook area. Some of the Park Young maps refer to this area as Stillwater and Belcher also uses this term. See map U.S. Department of Agriculture, Forest Service, *White Mountain National Forest, New Hampshire-Maine* (Washington 1917.)

26 See drawings "Earliest Reconstruction," "Stone/Mortar Reconstruction," and "Present Trestle" by Duncan Wilkie, Institute for New Hampshire Studies, Plymouth State College. Waldo interview, 20 June 1991.

27 See Wilkie drawings, "South View of Trestle" and "Main Truss South Face" and Below View."
28 See Wilkie drawings, "Main Truss South Face," "Below View," and "Present Trestle."
29 Belcher, *Logging Railroads*, 142.
30 *Marcalog*, "Marcaloggers," January 1948,6.

Writing Makes It Real: Conveying the Essentials of Gothic Fiction to a Varied Student Audience

by Bonnie W. Epstein

The setting: an old, brick building with a tall, stately clock tower from which bells peal periodically. Darkness pervades the room I enter and makes only shadows of the slumped and eerily silent bodies seated before me. My sweaty and tentative fingers grope for the light switch; suddenly the bodies snap to attention as light floods the classroom. Gothic Fiction is about to begin.

I spy 24 bodies before me, embracing 12 different majors and as many different reasons for having chosen this course. Twelve of them are here to fulfill the "L" perspective; 4 are here to fulfill their 200-level Women's Studies requirement, and 8 of them are English majors taking the course as a general elective because they have an interest in the literature. My task as their professor will be to meet the needs of each student. This is not going to be easy. How will I convey to them the basic, but often complex, concepts inherent in Gothic fiction? Is there a common denominator for these students?

Yes. WRITING.

Let's find out what's on their minds. A freewrite about what Romantic or Gothic Fiction is to them. Sophisicated students of literature respond with some great initial concepts: castles, entrapment, landscape, dark side of the self. Others, less savvy, expect to read Barbara Cartland's stuff. With Fabio on the

DOI: 10.37514/WAC-J.1996.7.1.03

cover. Yikes. Nevertheless, they are communicating their ideas, level of understanding and expectations to me and to each other. Writing provides the common starting point.

Initially we spend some time learning background material from lectures in order that they might finish reading their first novel, *Castle of Otranto*. Now we are ready to discuss the novel, so can we find a means for focus? Yes. WRITING. We brainstorm, based on our learning so far: what is Gothic about this novel? Next, we record questions we still have after reading. The list we make on the board, of the identified themes and concepts, plus the remaining questions, establishes the framework for our discussion. Only one Fabio-like entry appears on this list. Other items include: family secrets, hidden identities, helpless females, dark heroes, and the concept of enthrallment. Everyone feels invested in the process; everyone has contributed to it. Writing provides the connection.

The next step is to reinforce these sometimes elusive concepts. How can we embed in our heads, for example, the interest some contemporary feminists have in the Gothic as a female genre, one which through its conventions registers the confinement of women? How can we capture the use of landscape to reflect the dark side of self? How can we demonstrate our own enthrallment with this genre? Is there a way? Yes. WRITING. We can write our own introductions to a Gothic novel, using what we've learned about the importance of setting, the introduction of characters and the creation of conflict. We agree to let each person decide whether to work independently or as a member of a group. For more tentative students, the group work becomes a haven in which they can test their understanding of these concepts. For the

English writing major, the solo performance becomes a juicy challenge. We report back at the end of the period so all can hear what works are being born: we listen as eerie settings unfold, some medieval, some contemporary; we hear about abused and entrapped women, horses, attics, turrets, dark heroes and orphans. We have a tangible, demonstrated understanding of the major Gothic concepts and themes.

We continue to work periodically in class on these introductions, as time permits, combining new concepts and reflecting a growing ease with this genre as we read and analyze assigned course readings. Meanwhile, the writing focus intensifies as the major requirement in the course--the literary essay--takes center stage. This writing assignment, which includes a lengthy list of suggested topics, allows the students exceptional flexibility to work in their areas of interest. If a student is particularly enchanted with the Victorians' love of ghost stories, she can pick two from our text and compare and contrast their Gothic overtones and influences. Or students can develop their own topics, as one did: he chose to analyze the Gothic elements in the contemporary animated novel, *The Crow*, set in gang-infested L.A.

Beyond these writing tasks, each student keeps a journal of thoughts and reflections about the literature and time period. Again, writing provides students with this opportunity to establish regular reading habits*, to reinforce understanding of these concepts and readings, and to explore, occasionally for the first time, a personal response to literature. As a result, we see a marketing major writing this in his journal:

> Audiences of present times are drawn to this [Gothic fiction and film] because it portrays what

> we can't understand. Our imagination is forced upon us in order to satisfy our instinctual need for explanations and answers. We question our beliefs and we pity those we never thought had the right to be pitied and this excites our senses and makes us desperate for more.

Writing provides this connection.

The final writing assignment for this course, the final exam, embodies all that the students have learned about Gothic Fiction and requires their best writing effort. Students choose one of three topics I distribute to them on a sheet. They go home and think about which writing topic most appeals to them. In the next class, we divide into three groups by topic selection. Amazingly, we have an equal amount of interest in each topic. The groups spend the class period discussing their topics, sharing insights with each other, and jotting down ideas. They can gather information, make notes, and think all they care to about this topic, but they must wait until the final exam period to write their final essay. Some students will write in response to a topic that asks them to imagine being the editor of the *Literary Review* with the task of writing about the themes and concerns of the Gothic literary tradition as reflected in four of the novels we've read in class; others will imagine themselves invited to an international women's conference where they will present papers on Gothic literature: its main characteristics, the role of women writers and characters in the Gothic tradition, and its enduring fascination for people today. By allowing focus groups to discuss the topics during class time, students from all majors and backgrounds can contribute to and benefit from the knowledge and insights of others, thus reducing anxiety for those who may feel less well pre-

pared for such an undertaking. This final writing assignment allows each student to review, synthesize and order their information and to display their knowledge in a well-written essay. Again, writing provides the connection.

And so we all survived Gothic Fiction, even those students who at first thought we were acting out in real life the concepts of entrapment. In fact, many found this literary experience exhilarating. How so? Written self-assessments completed near the end of the course revealed feelings such as these, written by an Outdoor Recreation major:

> At the beginning of this course I was clueless and now I radiate with this [Gothic] stuff. It penetrates me so that I cannot separate clearly what I know from what I am. . . . Frankenstein has meaning in many ways--some too gut-churning to verbalize. I learned effectively how to suck the essence of this novel just like a vampire does to the human. It's a symbiotic relationship. I have taken from the literature that has given. Now I must give . . .

Such responses evolved throughout a semester of learning. In the end, course evaluations bore out what you might suspect: the greatest learning and the most enjoyment occurred through writing. Each student, regardless of major or reason for being in the class, invested in the course content because it became real to them, and they felt that their needs had been met. Writing provided the means.

*Student evaluations have repeatedly identified the required journal writing as incentive for doing assigned reading and doing it on time.

Using Writing in the Adolescent Psychology Course

by Wendy J. Palmquist

Early September, the first day of classes. I am in my Adolescent Psychology class, and they are writing. Only for five minutes, and I have given them two starting points. First, I asked them to write about any incident from the memories they have of adolescence, and then to try to write a definition of "adolescence." They are writing and thinking and creating and analyzing. Much to their surprise, they are finding out that they have something to say about both topics. I am at the front of class, having one of those moments of insight. Here I am, with writing happening in my classroom, and I am dealing with a classic case of writer's block about the book chapter I have agreed to do on using writing in the course on adolescence. Perhaps there is some logic to this. I suspect the writer's block I developed along the way comes from my not doing enough writing in the past. Knowing I have writer's block is one reason I am open to ideas that will help others do a better job writing and help me do a better job myself.

Snodgrass (1985) noted that the traditional use of writing in psychology courses is to evaluate students. We ask them to produce papers and exams and give them a grade, treating the papers and exams as proof of how well they have mastered the particular content area. She asked that we consider writing as something more, as a process that can be an important tool

DOI: 10.37514/WAC-J.1996.7.1.04

for learning, for gaining skills in analyzing, creating, and problem solving. McGovern and Hogshead (1990), in a special issue of *Teaching of Psychology* devoted to the use of writing in psychology courses, came to a similar conclusion, that most writing in psychology classes is done for assessment of students, but that it can also be used to promote learning, facilitate analytic and creative thinking skills and problem solving, and of course to further develop writing skills.

The Writing Across the Curriculum program here at Plymouth has made many of us familiar with the idea that writing can be used to develop thinking. Using writing as a process, not a product, can add to the strength of a course. Fulwiler (1986) argued that writing is more than a basic communication skill. The process of writing is a thinking process; the writer may find new meanings and new directions while composing. In 1987 he pointed to the theories of psychologists like Vygotsky on the relationship between language and symbolizing reality and the role of language in constructing an understanding of reality. Fulwiler noted that this is what happens in the process of composing, and writing becomes something more than a basic technical skill. By asking our students to write, we are asking our students to think.

Of course, the kind of writing Fulwiler (1987) is talking about is not the traditional kind of writing for a course, the production of answers to exam questions or traditional term papers. These traditional forms of writing do not ask the student to generate new ideas; they ask the student to communicate what information they have learned, or are supposed to have learned, to be graded by someone who already knows the information. It is instead expressive (or personal) writing that Fulwiler is most interested in, writing

done to explore ideas, to find out what the writer is thinking by actually writing it down. This is writing for discovery, and may or may not be perfect communication when it begins. It is finding out what you think when it appears on the page in front of you!

Recent research by Astin (1993) supports the importance of courses with writing. In looking at all the factors of a college environment, trying to find the variables "that matter," that have a positive impact on student development, Astin found that courses emphasizing writing were high on the list. He found that besides leading to strong self-reported gains in writing skills and ability, such courses had strong effects on "self-reported growth in general knowledge, critical thinking skills, public speaking skills, and Overall Academic Development" (p. 377). Wade (1995) has listed writing as an essential ingredient in teaching critical thinking skills.

Types of Writing

I find both traditional and expressive writing important in my courses. I have not abandoned the traditional writing of essays on exams, and I still ask for a written term project (though not the traditional term paper). Counting actual written words, though, I think I now ask my students to do more expressive writing than traditional writing, because there are many ways to bring it into the course, and I can build on these writings to make a more interesting class session.

Freewrites and Journals

I use freewrites, timed focused writing assignments, at the beginning of each class period. These are meant to generate ideas, and digressions are encour-

aged, as the student explores an idea triggered by the topic of the day. I give the class about five minutes for writing, then use another five or more for talking about what was written. I ask my students to keep their freewrites in a journal, which I collect regularly, so that I can read and react to what they have written. This is not a graded writing assignment; freewrites are for thinking, and serve as a means of establishing a dialogue, with the self and with me.

Topics used for freewrites can vary considerably. I use them to solicit comments about (and problems with) assigned research readings and the text, for reactions to various theories presented in the previous lecture, as a gauge of level of understanding, and for coming to a deeper understanding of material by applying it to one's own experiences (or for some, the experiences of their own children). The goal is to get the students actively thinking about the material, to take them out of the passive responses of reading, listening, and memorizing. As noted in Palmquist and Shelton (1991), sample topics include:

-What is adolescence?

-What one physical change of puberty do you most vividly remember?

-What don't you understand about the hormone cycle underlying the physiological changes?

-React to Piaget's theory (or Erikson's theory, or Kohlberg's theory).

-What do you remember about striving for independence? Have you completed the process?

-What was going on in your parents' lives when you were 14?

-Recall one incident during adolescence when you conformed.

-Be an anthropologist: what are your observations

on this culture's preparations for sexuality?

-Describe the achievement that made you the most proud during adolescence.

-Write about when you first had an alcoholic beverage.

And, at the end of the term:

-Match your own adolescence to what we have studied this semester. How do you match/not match the theories and research? (I give 10-15 minutes.) (Palmquist & Shelton, 1991, p. 165-166).

Students often have a lot to say about these topics (some even go back and add more later). After the writing time is done, I ask for volunteers to get the discussion started. For certain topics I quickly go around the room and ask everyone to make a short comment. Using freewrites means everyone has had some time to think about a question and get some thoughts collected (not to mention getting a little more writing into every day). They also serve to keep the students current in the reading, since the daily question potentially could be on any aspect of the current material. (Confessions of neglect are common with this technique and profuse apologies and excuses for why the reading wasn't done...then some ideas on the topic anyway).

Another expressive writing assignment is an academic journal kept outside of class, with observations, comments, and reactions to the class material as the students read it and as they see examples of it in "the real world." Fulwiler (1987) places the academic journal between the diary, a collection of subjective expressions, and the class notebook, full of objective topics. Fulwiler has commented that "any assignment can be made richer by adding a written dimen-

sion which encourages personal reflection and observation" (1987, p. 17). Just a few examples that I've seen in Adolescent Psychology journals are reactions to the readings written while the student is reading, observations of "mall rats" used to support class material on peer group interactions at different ages, or recollections of family events directly related to some course material on family interaction. Journals and freewrites can be very similar in specific chosen topics; in fact, I sometimes find students have already written about a freewrite topic in their out-of-class journal and refer back to that writing while they are completing the freewrite.

The success of academic journals has been more varied than the success of freewrites; some students produce wonderfully rich journals, some do the bare minimum. Perhaps because most of the students are still adolescents themselves, sometimes they get overly personal, turning the journal into a diary. These students have to be guided gently back to "academics" and objective interpretations. An interesting problem has developed on our campus recently; as more instructors in many disciplines ask for such journals, the students find less time for any one. Partly in response to this, and partly to make the assignment more structured, I now ask for one entry per week, after several years of the less specific requirement "several times a week." Students seem to like this amount of structure, and can write more if they find they have more to say. Many even title the entry "Weekly thoughts" or such, and do seem to be more reflective in what they write than students were with the more ambiguous assignment.

Assessing freewrites and journals when I collect them is reasonably objective but time-consuming. I

have the students submit both to me in the same notebook or folder four times during the semester, so each time I get about 4 weeks worth of work. I read each entry and typically make a brief comment on each, reacting to the content, not judging the writing ability. Some entries get longer comments from me, if the content makes me think, gets me going. I've gotten ideas for class discussions, and for topic expansions from the kinds of things students have written about in freewrites and journals. The actual "grade" is based on whether the material substantially meets the assignment (most of the class freewrites are there, and there is outside writing done about once per week) or minimally meets the assignment (missing many freewrites, and/or no outside writing). The student who fails to submit a collection of entries for a given time period receives no credit for that period, and I will not go back and read them if they are included with a later submission.

Major Paper Assignments

When I was an undergraduate I had my share of traditional term papers. I chose (or was assigned) a topic, went to the library and did my research (usually at the last minute), and cranked out my eight to twenty pages (often late at night, correction fluid all over my hands). I learned how to use the bibliographic tools of the library very well, gained odd nuggets of knowledge about various topics in psychology (and other fields), and learned to like coffee. When I started teaching, I taught as I was taught, and assigned traditional term papers. I assumed my students did much the same as I did, learning more or less the same kinds of things I did.

After my first few years of teaching the adolescent psychology course, I started looking at the traditional term paper more critically. I knew I wanted them to write but, based on what they were submitting, I wasn't satisfied with what they were learning. Then I discovered the ideas incorporated in the phrase "involvement in learning." For several years it was a "catch phrase" at conventions on higher education, stemming from the 1984 report *Involvement in Learning*, from the Study Group on the Conditions of Excellence in American Higher Education (National Institute of Education, 1984). Letting students mix their own specific interests in various "hot topics" in adolescence with the research they were reading and hearing about seemed like a good motivating force. First I tried requiring a "clipping file" from local newspapers and magazines, leading to a paper on images of adolescence in the public eye. The files that I got were usually sports reports, crimes, and accidents. Even if this was the reality of media coverage at the time, I wasn't satisfied with what the students were learning about adolescent development from writing about it. I returned to the traditional term paper, but I added a couple of more active options alongside it. Eventually these options replaced the traditional term paper entirely.

Students in my class now have the choice between completing a community inventory of their hometown as a context for developing adolescents, or investigating community resources and responses to a potential "adolescent situation." In either case they must combine background library research into adolescent needs and problems with what I call "investigative reporting," actually going out and doing inter-

views and observations to determine what is really going on. Either type of papers must include documentation of facts, evidence for conclusions, and some critical thinking in a closing evaluative section.

I developed the community inventory because I place a great stress in class on the important effects of the varying contexts of adolescent development. The inventory is a picture of the settings for adolescents in a given community. I have received community inventories on segments of major cities, suburban towns, resort towns, mill towns, and farm towns. Many students have taken the spirit of investigative reporting to heart; I have been told where to gain access to illegal activity and substances in many hometowns. I have heard from students who have come to understand their own frustrations and/or joys of adolescence, as they have seen that they did or didn't have what they needed. I ask them to be comprehensive, to view the local McDonalds as potential vocational opportunity/hangout/etc. Several students, after interviewing local officials, have made promises to give copies of their papers to their town governments or school administrators (in some cases I hope they deleted their evaluations, though I suspect the towns knew they had problems). One humorous result comes from interviewing siblings; I like seeing the shock in a 20-year-old's paper about how the "younger generation" is behaving!

The "situations" were my first alternative project and grew from requests from students in applied programs for projects that had more "meaning" for them. Adolescent psychology draws students from education and human service programs who intend to work with adolescents. The situation projects were

designed to have the students see how to find resources in a community, and to assess at some level how effective those resources might be for adolescents. They were meant to be done locally, not requiring returns to perhaps distant hometowns. Most students do choose to do their investigating locally, though some choose their hometowns. When I started offering these options fewer students chose the situations, but that has recently changed, as some students find it harder to go back home to research an inventory. Situations include things like 16 (or 13) and pregnant, or alcoholic, or arrested for burglary, or depressed and suicidal, or a runaway, etc. The students do not get to choose which situation they must investigate; situations are assigned randomly. Again, though, I get wonderful investigative reporting. An important point I stress here is that they not pretend to be in the situation ("Don't call the suicide hotline pretending to be suicidal!")! I do ask the college student to look at the resources through the eyes of an adolescent, though ("How easy is it to find the suicide hotline?"). Since I have a small class, taught only once a year, I find I don't alienate the local resources (particularly after I brief the students on courtesy and care in interviewing), though I have worried about that problem. The only awkward development is when students detect that a source is giving entirely misleading information; I had to gently dissuade one student from a major confrontation, by suggesting a more tactful strategy.

In both types of projects the students still have to use the library, find references, and produce a literate product with a references section. They definitely seem to be more involved in these topics than they

were in research term papers. In fact, not only do they seem to be more motivated; most seem to actually enjoy producing the project!

I have found these papers to be easier to grade than traditional term papers. I use a fairly typical approach to grading both kinds of projects, A through F (in point value equivalents), but find they essentially self-sort themselves into grades. The best papers mix the library facts with the community information effortlessly, cover all the areas specified thoroughly, make good evaluations of what it is like to be an adolescent in the community or situation, and draw good conclusions. These students did the work over time and learned a lot about how the experience of adolescence is affected by the community. Even if the writing isn't perfect, when the material is good somehow the writing seems better. I think it is that you can see the thought behind the writing, because the presentation is well-organized, and the whole paper makes sense.

Papers from the middle group of students are missing information, because they didn't do the legwork they needed to do (trying to write about their hometowns from memory), or minimized the library research. These papers are often disorganized, in need of some work on composition skills, and make me wonder again at the circular relationship between good writing and good thinking. The weaknesses in these papers are weaknesses some kind of peer review would probably pick up. I sometimes think these students haven't even read their own papers. The flaws seem so obvious, but I understand that we are all often blind to our own failings. I got more papers like this before I developed a simple handout

listing expectations; though I had been saying the exact same things as were written on the handout, students "get it" better when they see it in black and white.

Rarely do I get a D or F paper. That happens only when a student just doesn't do what the assignment tells them to do (for example, researching adolescent suicide in the library only and not pursuing the community component). I did get more poor papers when I assigned traditional term papers. I think that now the vast majority of the students do get involved in the topics, and it is hard to do a really bad job on something you care about!

Case Studies

I have never tried using case studies, but suspect that they would fill many of the same objectives of involvement as the term projects I do use. McManus (1986) presented a model combining "live" case studies (the students actually interact with "real" adolescents for the semester) with an academic journal. Weekly interviews and suggested activities with the adolescent are discussed in the journal in terms of the material in the course. The goal is to integrate the picture of adolescence from research and theory with the realities of a given adolescent. Chrisler (1990) suggests using novels, biographies, or autobiographies as sources for case studies in abnormal psychology; the same materials could serve for adolescent psychology classes as well. Here again critical thinking and integration of a picture of adolescence would be the goal.

Making it work

Assigning all of this writing does raise the issue of

workload. It takes a long time to read and respond to a set of journals or a set of freewrites, on top of essay exams and major papers. Snodgrass (1985) literally referred to having "second thoughts" (p. 93) about all the work involved. She acknowledged that it is very time-consuming, particularly if you really give the students the information and feedback that they need to do it right. Sometimes I find that just looking at the stack of journals waiting to be read is discouraging. There are lots of rewards in the contents, and in the student learning that you can see happening, and that does keep me going, but to be realistic, it is a heavier load. It is something that perhaps is best done only in small classes or with plenty of assistance. My typical class size is around 30, and that has been a manageable size. I don't try the same kinds of writing in my General Psychology section of 80 (though I do include essay questions on their exams, and also require at least 3 written assignments from each of those students, as a firm believer in the value of writing!). Snodgrass (1985) emphasized that the time was worth the effort: "Students learn much more about psychology by using these writing techniques. They are actively involved in the material, and writing forces them to think about it and to relate it to their own lives" (p. 94).

It is also important to be prepared for the reactions of students when they hear the amount of writing in the course. A certain number do leave, because they do not believe the idea that writing is good for them. Boice (1990) has written about resistance to writing intensive courses from both faculty and students. His survey found that resistance from faculty came from several concerns, ranging from the workload to just

plain not liking to write. Classroom observations led him to believe that actually the student response was a primary source of the faculty ambivalence. Instituting a writing intensive course is hard on the faculty member, because students respond with complaints and negativity when they learn about the writing in such a course. His prescriptions for reducing resistance from faculty to teaching such courses thus focused mostly on the part that stems from being uncomfortable with writing. He recommended that classes as a whole talk about writing, including discussing the common fears and maladaptive beliefs about the process of writing, and work on techniques that reduce those fears and beliefs (freewriting is a primary suggestion). He reported students do become more comfortable with writing as they do more of it and begin to value the writing as part of the learning process.

Using a lot of writing in my course has not made it an easier course to teach. It does take more time than it used to take, and the temptation is always there to reduce the writing. The rewards come in reading the writing, in reading the exploration of ideas, and in seeing students get involved with those ideas and with psychology. It helps that we have an active and supportive WAC program, where we can meet with colleagues in other disciplines and hear how writing works in their courses. The newsletter and workshops help reduce the temptation to go back to the old way of teaching the course!

I find it a fulfilling experience to see students learn through writing. I return to Astin (1993), who concluded that three specific types of courses were the part of the curriculum that contributed (among other

non-curricular factors) to the kinds of cognitive growth we want in our students. These are "courses emphasizing science or scientific inquiry, courses emphasizing the development of writing skills, and interdisciplinary courses" (p. 423). I think a good course in adolescent development can incorporate all three of these themes.

0

References

Astin, A. A. (1993). What matters in college? Four critical years revisited. San Francisco: Jossey-Bass.

Boice, R. (1990). Faculty resistance to writing-intensive courses. Teaching of Psychology, 17, 13-17.

Chrisler, J. C. (1990). Novels as case-study materials for psychology students. Teaching of Psychology, 17, 55-57.

Fulwiler, T. (1986). The argument for writing across the curriculum. In A. Young & T. Fulwiler, Eds., Writing across the disciplines. Upper Montclair, NJ: Boynton/Cook.

Fulwiler, T. (1987). Teaching with writing. Upper Montclair, NJ: Boynton/Cook.

McGovern, T. V., & Hogshead, D. L. (1990) Learning about writing, thinking about teaching. Teaching of Psychology, 17, 5-10.

McManus, J. L. (1986). "Live" case study/journal record in adolescent psychology. Teaching of Psychology, 13, 70-74.

Palmquist, W. J., & Shelton, L. G. (1991). Teaching adolescent development. Journal of Early Adolescence, 11, 152-171.

Snodgrass, S. E. (1985). Writing as a tool for teaching social psychology. Teaching of Psychology, 12, 91-94.

Wade, C. (1995). Using writing to develop and assess critical thinking. Teaching of Psychology, 22, 24-28.

Working Tools of the Craft

by Bruce D. Heald

Each new semester, when I walk into the class, I ask myself, "*How can I shape an environment that will encourage these students to become confident and effective? How may I focus their attention from what they already know about themselves, and their writing ability, to a climate of mutual trust, where each student feels comfortable and free to experiment, to create and communicate new ideas with the exposure of new strategies for writing?"*

More often than not, many students carry into the room unnecessary baggage of negatives about their writing ability; thus, in their minds, the whole experience seems to be unnecessary and of overwhelming drudgery.

After a brief introduction, I inform the class that their instructor, text and the college environment is only a catalyst for their creativity--the sole purpose of encouraging, motivating and helping them develop their self-confidence, and the ability to communicate through this writing process. Thus I sculpture each lesson to the situation centered around generating ideas and a cooperative effort to fine-tune the students' writing skills; the *Working Tools of the Craft.*

To discover one's ability is to explore all facets of purposeful writing. What matters for each student is mastering knowledge and discovering his or her own ideas, expressing them in a sequential pattern, logically, which they are comfortable with.

I enjoying sharing with my students many of my own compositions, but I inform them that most of my

DOI: 10.37514/WAC-J.1996.7.1.05

writing is tailored to a specific audience: *The Weirs Times,* Guide books, historic short stories, and books which reminisce about the early settlers of central New Hampshire. Thus, it is imperative that I research my expository and narrative writing through observation, reading from historic journals, conversations--then use my imagination to create a texture of transcendentalistic writing suited for that period of literature. I find, however, that when I share my material and how I orchestrate a style, free communication quickly develops with my students.

For each assignment, I assist them with generating ideas, planning, shaping, drafting, revising and editing. We continually focus on writing as thinking and rethinking. Because I assume that the best writing grows from an abundance of ideas and options, they provide additional options for each stage of this process.

Throughout the semester, I find it useful to challenge their thinking and creativity through reading and peer editing other students' work in class, which helps demystify writing for apprehensive students. I constantly encourage them to think of writing as a recursive process. Their description of the process of each writing assignment demonstrates recursiveness, as does their treatment of the process for each chapter in their text. Through the course of time each student begins to think about the discrete subprocesses and clear-cut steps within his or her writing. Unknowingly, they may be thinking about it as linear rather than a recursive process. At this point I find it most valuable to instruct each writer to describe a typical writing session, either in composition or as part of a discussion.

From each of my original essays, I ask students to analyze their own writing processes. Many of them will think that they don't have a writing process; however, I assure them that everyone has a style or manner of writing, and that there are similarities as well as differences in these processes, and that they should be cultivated and polished, that some work is better than others, and that this instructor will respect their procedures, whatever they may be. I always take this opportunity to let my students know that much of the work of this course will be to help them strengthen and vary their writing skills through study and practice of various options for writing.

I always try to reinforce with my students that writing isn't built on lockstep stages; we don't always proceed in a straight line. Writing is a way to generate ideas. Work with other writers and let them assist in polishing your work. I inform them that I have four different publishers that edit my work constantly, and that I learn from their input; I discover ideas from their suggestions. I ask students to exchange their work with other students, to give and receive reactions.

Throughout the course, we as a class will share useful hints for ways students may help one another discover ideas as they write, rewrite and edit their papers. These are the *Working Tools of the Craft.*

Teaching Technical Writing Through Snowpack Study

by Richard M. Chisholm

Abstract

In the section I teach of Technical Writing at Plymouth State College, students learn to handle the content, form, and style of scientific reports by writing about a snowpack (accumulated snow on the ground). In this context, snowpack study requires students to learn and apply only elementary concepts of snow physics, but it establishes common experiences in science for students with non-scientific backgrounds. During an initial field trip, students examine the layers in a snowpack and observe the various characteristics of snow. For two weeks after the first field trip, students study local weather history and learn basic concepts of snow science, snow stratigraphy, and snow metamorphism. Based on their new understanding of snow, they hypothesize changes that have occurred in the snowpack, and they learn to identify types of snow particles in the field. Then they return to the snowpack to make a second set of observations. During the second field trip, they reexamine the snowpack, compare their hypotheses with actual conditions they observe, and account for persistence and change in the snowpack. At each stage in the snowpack study unit, students write up their findings in a series of technical reports, then write essays in which they examine their personal experience in snowpack study and assess the snowpack

DOI: 10.37514/WAC-J.1996.7.1.06

study unit. After a final edit to polish their reports, they publish them on the World Wide Web.

Key words: snowpack study, school science, snow physics, snow metamorphism, technical communication, science writing, teaching technical writing

* * *

> Consider winter as a classroom, limited not by walls, but only the imaginations of those who venture forth.
>
> Halfpenny and Ozanne
> *Winter, an Ecological Handbook*

The Rationale for Snowpack Study

Despite wide publicity of blizzards and near-record snowfalls in New Hampshire this past winter, my observation is that the public is poorly informed about snow. They continue to ignore it, deplore it, or see it only as an adjunct to a sport or play.

A student of mine told me he had never thought much about snow: "I knew it was white and fluffy and sometimes it was compactible (good for snowball fights, and snowmen)." His only thoughts about snow were "how beautiful it was, how great it was to ski and snowmobile on, how much I enjoyed playing in the snow, and how much of a pain it was to shovel

the driveway." Beauty, play, sport, nuisance—that summarizes the experience of most people with snow. Snow has lain all around them, but people have never examined its structure or the agents that change it.

This indifference to snow permeates our educational system as well. While snow science has advanced rapidly since the 1930s, teaching about snow in the schools has been neglected. Typical school science projects have students merely draw and cut out snowflakes or determine the water content of snowflakes by melting a can of snow. Many school science textbooks fail to mention snow altogether. The motto seems to be, "When the crickets die, bring the science indoors."

Capitalizing on this neglect of snow science, I have used snowpack study four times in my course in Technical Writing (EN309). Although I limit the study to observation of physical characteristics of snow on flat ground, snowpack study in this course provides students ample opportunity for extensive observation, interpretation, and reporting.

The chief value of snowpack study in my technical writing course is that it provides a common experience in science among students without a technical background. Snowpack study is suitable for these students because meaningful study of snow on the ground requires little prior scientific knowledge and hardly any mathematics. No member of the class is likely to know anything about the subject, so everyone starts off even. I have tried numerous other writing and research topics in this course, including human anatomy and physiology, hypothermia, environmental impact statements, and a variety of case stud-

ies, but none has worked as well as snowpack study as a vehicle for teaching technical writing.

The Aims of Snowpack Study

At the beginning of the course, I state the aims of the snowpack study unit as follows:

Aim 1. Learn and use scientific procedures

Aim 2. Learn and apply scientific knowledge

Aim 3. Create and participate in a scientific community

Aim 4. Communicate about science to the wider scientific community

Aim 5. Develop personal qualities (skills, attitudes, values and goals) appropriate for humanistic science

The Benefits of Snowpack Study

Snowpack study makes students more aware of their environment. Because our students live on the third of the earth's surface where snow falls, they can study a snowpack on their own college lawn with a minimum of equipment; they can study it individually or in a group. And because snowpack study has not been widely used in our schools, it is a fresh topic. Students discover things they had little suspected. Although snowpack study is presented in this course as pure science and as a subject for writing, it also prepares students to understand applications of snow science in glaciology, avalanche studies, ecology, or hydrology, as well as to participate more safely in

winter sports. Whether viewed as applied science or pure science, snowpack study encourages wider understanding of one of nature's most interesting materials.

Students find snowpack study rich and demanding. Through field work, study, and writing reports, they get the feel for scientific investigation and scientific writing. They not only gain specific knowledge about the physics of snow stratigraphy and metamorphism but learn to observe, record, and interpret data. They learn to write concisely and precisely. Further, they learn to present information in several forms for both professional and lay audiences who are not acquainted with their project. They also learn to work cooperatively in the field, to review each other's reports, to accept criticism from their peers, and to rewrite their reports on the basis of feedback. Perhaps most importantly, students learn how to approach a new area of knowledge and quickly master its fundamental principles. Student assessments of the course indicate that they value all of these aspects of snowpack study.

Snow as a Source of Interest

Much of the interest of snowpack study derives from the special nature of snow itself. Snow probably changes its structure more than any other substance in the world. In studying a snowpack, students can observe the cycle that begins with new snow and, after many intermediary stages, ends in meltwater. This means that they can observe several processes of change over the course of one winter. Other crystal metamorphic processes, such as those that occur in

rocks, take hundreds of thousands of years. Although students do not see the processes of metamorphism directly, they come to understand how the changes in the snowpack create structures that vary daily. For promoting the study of science and science writing, this benefit of snowpack study can hardly be overestimated.

The General Plan of Snowpack Study

At the level of knowledge required in my course, the scientific concepts of snowpack study are simple and few, and students can master them in a few weeks. Despite its technical simplicity at this level, snowpack study is not mere play or casual observation, but real science. Students get out onto the snow, dig a snow pit, observe a snowpack under guidance, and report their observations.

After this introduction to field methods and report writing, students study snow science. My *Field Guide to Snowpack Study* introduces snowpack study, explains all of the technical information, and gives detailed specifications for each report. This information, supplemented with lecture material derived from the sources listed in the Bibliography, helps students learn the fundamentals of snow physics, identify particles, classify them into standard categories, and hypothesize persistence and change in the snowpack. After learning about snow science, the students return to re-examine the snowpack to observe the effects of the forces of change and verify or correct their hypotheses. At the end of each phase of the study, they report their findings. In making their investigations and writing reports, students use the procedures snow

scientists use. They actually engage in original research.

Activities of Snowpack Study

The lessons of snowpack study

Snowpack study is laid out in a sequence of ten lessons described in detail in the *Teachers Guide to Snowpack Study*. The lessons are segmented and articulated so that each phase of the unit builds upon the work done in the previous phases and lays the groundwork for the following ones.

Arousing and focusing interest

I prepare students for snowpack study by explaining the aims of the unit, then having them freewrite about their experiences with snow. Colored transparencies of students using equipment, making observations, and collecting data on field trips arouse and channel their interest in snowpack study. Then students recollect weather history and hypothesize present conditions in the snowpack. After an hour or so of instruction and demonstration of techniques for conducting field tests, we go out for the first field trip. I get them out to observe and test the snow as soon as I feel they can conduct the tests.

Conducting the first field trip: guided observation of a snowpack

During the initial field trip, students gain primary experience with snow. They dig a pit in the snow,

expose and measure the layers of the snowpack, test the layers for hardness and wetness, observe particle type, width, and color, and record their observations on a Snow Pit Data Sheet. This first field trip is an eye-opener; it is exciting for students to actually find that the snowpack is made up of layers of snow that differ in observable physical characteristics.

Writing Report 1: Initial observations of a snowpack

Throughout the sequence of ten lessons, students are guided by a series of research questions. During the initial field trip, students focus on answering Research Question one:

What are the physical characteristics of the snowpack observed in Field Trip One?

Students write up their initial field observations in Report 1, where they present information in tabular, visual, and narrative form. The specifications for the first report require students to face and resolve all of the writing problems early in the unit: what to include, how to say it, and how to format it. They learn to write only relevant information in the concise and highly-structured form required for technical communication. Drafts of these reports undergo repeated review by both other students and by me as well as repeated revision by the writers.

For this and all subsequent reports, I require students to follow specifications exactly. The specifications are modified from Robert Day's *How to Write and Publish a Scientific Paper*, supplemented by specifications for the *Proceedings of the Eastern Snow Conference*, an annual publication of reports by leading snow scientists. I provide a system of paragraph num-

bers to help the students follow the form.

Specifications for Report 1 are as follows:

Physical Characteristics of a Snowpack Observed During Field Trip One

This report answers Research Question One: *What are the physical characteristics of the snowpack?* Follow the General Specifications and the outline below. Information in brackets [ ] is for your guidance only; do not include these words in your headings.

Front Material

- Title page [Include the title, your name, the course place, date, and occasion for writing.]
- Abstract [An informative summary, giving as much detail as possible in <250 words]
- Key words [Four or five words or phrases helpful for persons searching in a data base]
- Contents [Include the headings from these specifications—but not the bracketed material.]

1. Introduction
   - 1.1 Background of the Study [Tell who, what, when, and where.]
   - 1.2 The Research Question [The nature and scope of the problem]
   - 1.3 Rationale for the Study [Why it is significant or important.]
   - 1.4 Review of the Literature [Summary of the *Tests* and other sources of information]
   - 1.5 Personnel [A list of colleagues, their background and experience, college major, sci-

ence courses, technical courses, writing courses, writing experience, and special knowledge]

1.6 Study Site

1.6.1 Map of the Study Area

1.6.2 Plan of the Study Site

1.6.3 Description of the Study Site [Include the reasons for choosing this site.]

2. Materials and Methods [How you went about it.]

2.1 Equipment [Tools and supplies]

2.2 Methods of Investigation in Field Trip One [In a chronological timetable or log of activities during the actual field trip, briefly list and describe the tests you used from *Tests of Snowpack Conditions*]; tell why you used them, and how you used them. Tell who did what and describe the way you interacted during the field trip. Give enough detail that a reader can understand the procedures you used, judge the quality of your work, and replicate your procedure. Reserve assessment of these matters for 5.1 in the Appendix. Use past tense to describe the procedures; do not give directions.]

3. Results [Characteristics of the snowpack observed in Field Trip One]

3.1 Snow Pit Data Sheet [Filled out during Field Trip One]

3.2 Profile of the Snowpack [A cutaway view, including date of deposit and age of the layer]

3.3 Snowpack Characteristics [Describe each layer of the snowpack in connected prose.]

4. Discussion
   - 4.1 Interpretation [Interpret the results of your field observations.]
   - 4.2 Limitations of the Study [List and explain constraints on the study.]

5. Appendices
   - 5.1 Assessment of the Project [What you knew about a snowpack and writing scientific reports before the project; what you learned; how you learned it; how you worked to write and revise this report; how you felt about the project; its value to you.]
   - 5.2 Acknowledgments [Acknowledge the help you received from classmates.]
   - 5.3 References [Lecture, handouts, conferences in standard bibliographic form and style]

Specifications for Report No 1. After completing Field Trip One, students report the conditions of the snowpack in the form specified above. Each of the seven reports follows similar specifications as well as general specifications based on standard formats used by snow scientists.

Learning the fundamentals of snow science

After the first field trip, students spend about a week learning about snow science through lectures, visuals, and reading the *Field Guide to Snowpack Study*. They learn basic concepts of snow physics such as temperature gradients, sublimation and condensation, sintering, and latent heat (See the Glossary at the end

of this paper). For many students, these are new concepts, but when presented appropriately, they find most of them easy to learn and apply. This instruction is followed by a brief explanation of snow formation and deposition and the characteristics of newly deposited snow.

Students next learn how a snowpack is affected by various agents of change: mechanical change through gravity and compaction, wind, solar radiation, warm air, and liquid water; and metamorphic change through angular-grain metamorphism, round-grain metamorphism, and melt–freeze metamorphism. Both the agents and the processes of change are explained in detail and kept in focus throughout the remainder of the study unit.

Armed with knowledge of basic concepts of snow physics and snow metamorphism, and aided by a guide to types of snow particles, students learn how to identify various snow particles such as settled snow, wind crust, sun crust, sintered snow, ice lenses, melt–freeze particles, angulated particles, and rounded particles.

Learning about weather history

After learning about the forces and processes of change and their various products, students work in small groups to study local weather history in detail. Using data supplied by Charles Durgin of Plymouth, a New Hampshire weather observer, they convert the information from British units to metric units. From the data, they design a graph that shows the snowpack accumulation and changing snowpack depths throughout recent weeks. Then they describe significant recent weather events in ordinary prose.

Report 2: Hypothesizing persistence and change in the snowpack

Drawing on their newly acquired knowledge of snow science and understanding of weather history, students then hypothesize how recent weather has affected the snowpack. Research Question 2 guides their hypothesizing:

> *Considering the influences on the snowpack since Field Trip One, a) What characteristics would remain unchanged? b) What changes would you expect to find?*

They present their hypotheses in Report 2—which sets them up for a second field trip.

Students become aware of the fact that although they will not be tested on this material—there are no examinations about snow science in this course—when they conduct a second round of field tests, they will need to apply what they have learned. In this way they come to understand what a *working knowledge* of a topic entails.

Report 3 on the second field trip: observing persistence and change

Students then return to the snowpack to make a second set of observations. They again dig a snow pit, examine and measure the layers, and record the physical characteristics of snow. This time they are guided by Research Question 3:

> *Which characteristics of the snowpack have persisted and which have changed during the interval between your first and your second field trips?*

This re-examination of the snowpack reveals how the layers of snow particles have persisted or changed

during the weeks since the initial field trip.

Report 4: Accounting for persistence and change in the snowpack

In Report 4, students explain how the changes they have observed correspond to the weather history at the site, and they correlate their hypotheses about persistence and change with the actual conditions they observe. This report requires students to apply the principles of snow physics to field observations. In writing this report, they are guided by Research Question 4:

> *How does the snowpack reflect the influences of mechanical change and metamorphism?*

Report 4 completes the series of technical reports.

Increasing complexity in the four technical reports

Each of the technical reports (Reports 1–4) requires students to apply appropriate techniques to gather and record information about various aspects of the snowpack, then to synthesize and interpret this information for a variety of audiences. The complexity of the synthesis increases with each report, so that by the time they write Report 4, students have to synthesize five bodies of information:

1. *Initial observations as described in Report 1*
2. *Snow science as described in Chapters 3–5 of the* Field Guide
3. *Weather information from the local weather station*
4. *Their hypotheses about persistence and change*
5. *Observations of the snowpack during the second field*

trip

Report 4 thus calls for a good bit of integration. Having begun with the concrete experience of the snowpack in the first field trip, they now interpret the data by reference to processes of snow science they have recently learned. Students incorporate scientific concepts into a theoretical understanding of physical forces and their effects and infer the causes of present conditions based on their understanding of these forces. Then they re-examine the changes they have documented and interpret the changes on the basis of snow physics. At each stage, the tasks become more complex and demanding and the intellectual skills move to a higher level. No other part of snowpack study will so severely test the students' abilities—nor so greatly enlarge and enrich their concepts.

Report 4 as a culminating activity

Each of the first four reports presents a stage in the investigation of the snowpack, and each will remain as an integral part of the final report. Report 4 builds on information in the earlier reports. Although it is not a cumulative report and it does not replace the earlier reports, it corrects errors in them and synthesizes some information in them. Report 4 brings to a close the technical portion of the snowpack study unit.

Learning to handle complexities

Although the students in this course are untrained in science, they must quickly learn to use scientific procedure and scientific knowledge (the concepts, the techniques, the terminology, the observational skills).

And after a minimum of instruction, they must learn to handle the new writing problems that technical reports present: selecting appropriate scientific material, organizing it according to a specified form, developing their ideas fully, writing clearly and correctly. It is a big order.

At this point, some students begin to feel overwhelmed by the complexity of this assignment and the demands of science writing. I help them deal with getting stuck by sharing techniques for coping: recognizing the problem, writing it out, considering parallel problems, and so on. With this help, they all make it over the hump.

Style in the technical reports

One of the greatest challenges for students is making the transition from student-based and classroom-based writing to professional writing. For many of them, learning to be objective, concise, and direct entails a radical change of style. They have become so accustomed to writing for student peers or professors in their own field that they have difficulty fulfilling the expectations of professional readers in a different field.

For many students, writing a scientific report means not only learning a new style but a new concept of writing. This is probably the first time they have ever written from the point of view of a person who knows something that few others know. This especially means learning a new point of view about readers and how to meet their needs. I try to help students develop a technique appropriate for technical and scientific writing by giving them both general principles and specific instances, such as the following.

In the Methods section of their reports, for example, I find that students often tell *what they had to do* or *what they were instructed to do:*

> We were told to recollect the weather.
> Or
> The instructor had us recollect weather history.
> Or
> We had to study the *Field Guide to Snowpack Study*.

The students who wrote these sentences are apparently trying to describe the teaching and learning processes or the context they took place in, while they ought instead to describe the intellectual steps they took. The phrases "told to" and "had to" no doubt derive from a dozen or more years of thinking about classroom experiences as teacher-imposed tasks. Although these phrases might reflect the actual conditions of college writing (or even of writing on the job), students need to know that professionals do not write that way. I encourage students to write more objectively and pointedly:

> We used concepts in the *Field Guide* as the basis for hypothesizing characteristics of the snowpack.
> Or
> We examined weather history to determine its probable effect on the snowpack.

Again, I often find students telling *what they learned*:

> During this time, we learned the basic concepts of snow science.

I urge them instead to tell *how they used information:*

> We synthesized concepts of snow science with data from the winter's weather history to hypothesize change in the snowpack.
> Or
> To make accurate predictions of change in the snowpack, we prepared tables and graphs of winter temperatures, precipitation, and snow accumulation based on standard weather reports.

Students sometimes merely tell *how they spent their time;* their writing may sound like a report of classroom observation:

> In class as a large group we looked over the questions that we would be referring to in our assessment. We then looked up the aims of the snowpack study. We used these guidelines in conjunction with questions I will be answering. In class we had an open discussion and opportunity to address some of these questions.

I point out that they need to give only relevant detail:

> We evaluated the snowpack study unit by assessing the degree to which we had met the objectives.

These small differences in style reflect great differences in point of view and status. Changing "We had to study weather history" to "We used weather history to hypothesize change in the snowpack" not only explains how the writer used the information but

changes the student–teacher relation to a professional–peer level. In these ways, students are encouraged to substitute professional style for their habitual mode of classroom writing.

Noting limitations of the technical reports

In each of the technical reports, I encourage students to acknowledge the limitations of their study, such as those imposed by time and cold weather as well as by their lack of knowledge and experience. An essential element in their learning is stating these limitations directly and specifically, but without apology, as shown in this excerpt from a student report:

> This study was limited by the brief time available for the first field trip (30 minutes), by the cold weather and inadequate clothing of the observers, and by our lack of knowledge and experience.

In writing this way, students practice the humility and honesty essential in science writing.

Report 5: Contrasting naive and informed observation

With the work entailed by the second field trip now completed and Reports 1–4 neatly salted away, students have completed the technical portion of the snowpack study unit. They now begin to reflect on their own personal development during this unit. They consider their role as members of the scientific community, such as developing the habits of inquiring and observing, searching for objective data, and reporting to professional peers. They also contemplate their attitudes, values, and goals, and their skill at handling interpersonal relationships as well as their

own feelings.

As the students turn their attention to their intellectual journey during the snowpack study unit, they are guided by Research Question 5:

> *How have you moved from unawareness of snow to informed interpretation and reporting of snowpack characteristics?*

This report encourages students to contrast their uninformed and informed observations of a snowpack and thus gain perspective on their learning.

The source for the personal reflections that students present in Report 5 is a series of journal entries they have written. Throughout the semester, I have asked them to write brief notes about their thoughts and feelings and to preserve them for eventual use in a culminating essay. Early in the snowpack study unit, students write in response to questions such as, "What did you know about snow before you came into this course? How did you feel about it?"; "What went right during the first field trip? Why?"; and "What went wrong? What could you do next time to make it go better?" Later, they reflect on their changing perspectives and abilities by answering questions such as, "How were things different in your second field trip? Were you more interested or less?" Re-worked into an essay toward the end of the unit, these freewrites help students recapitulate the unit from their individual point of view. Each time I assign a topic for a journal entry, I urge them to write fully, reminding them that they will use their journal entries in a final report.

The journal entries are but the raw material for the

report. To help students convert their freewrites into a focused essay, I have them answer a set of questions about what they learned during the snowpack study unit:

> *What have been the differences in your understanding of a snowpack and of technical writing at these stages:*
>
> *Stage 1: Before instruction or guidance in this course [casual observation, sport, work, indifference, etc.]*
> *Stage 2: Preparation for the field trip [lecture and demonstration]*
> *Stage 3: Guided observation during Field Trip One*
> *Stage 4: Reporting initial observations of a snowpack [writing, reviewing, and rewriting Report No 1; include peer review of others' reports]*
> *Stage 5: Learning the fundamentals of snow science and weather history [reading, lecture, discussion]*
> *Stage 6: Hypothesizing persistence and change in the snowpack*
> *Stage 7: Confirming and correcting the hypothesis by additional observation*
> *Stage 8: Accounting for persistence and change in the snowpack*

Students reflect not only on how much information they have gained and used but also on ways that their learning about snow has improved their ability to make scientific observations and to write them up for specific audiences. Having answered these questions, they are well on their way to thinking scientifically. At the same time, their reflections help them meet the

liberal arts and general education goals of the unit.

Report 6: Assessing the snowpack study unit
Toward the end of the snowpack study unit, students assess the unit itself. Their evaluation of teaching and learning in the snowpack study unit is guided by Research Question 6:

What is your assessment of the snowpack study project?

Students explain each of the five aims in their own words, state whether they were appropriate aims for the course and for them, evaluate how well the activities of the course contributed to achieving the aims, tell how well they in fact achieved the aims, and explain how they coped with difficulties.

Assessing an educational experience is quite new to most students. For this reason, what they learn in this section is not only how to make honest and straightforward evaluations but to couch them in diplomatic language. They learn to maintain a tone of collegiality that respects the sensibilities of the people and actions they write about; at the same time they learn to avoid both gratuitous compliments and offensive statements.

Report 7: Preparing the final report for publication
The tangible product of the snowpack study unit is the final cumulative report in which students meld their series of write-ups. They prepare the final reports for publication by applying the concepts in Robin Williams' *The Mac [or PC] is Not a Typewriter* and submitting them to peer review and repeated revision. Students create individual home pages on the World Wide Web, then publish selected reports for a variety of readers on the Web.

Publishing on the World Wide Web creates a new dimension of technical writing: world-wide overnight publication—something few students have experienced. Publication on the Web is a heady tonic that maintains interest for the final big push. Many students realize that this publication opens for them a new method of communication, and provides another sheaf for their professional portfolio and an important new line in their résumés. The fact that publication of their report reflects well or ill upon their college provides additional incentive to perfect their reports. Publication on the Web rounds out the snowpack study unit.

Students tell me that in this snowpack study unit they not only learn how to write more concisely and clearly but develop a new appreciation for one of nature's most interesting substances.

Acknowledgements

Thanks to Robert Davis, Michael Ferrick, and Austin Hogan of CRREL, Hanover, New Hampshire, for extensive review and suggestions for revision of my *Field Guide* and of the snowpack study unit. Thanks also to other personnel at CRREL who attended a presentation on this topic and who made numerous suggestions about teaching snowpack study.

An earlier version of this article was published in the *Proceedings of the Fifty-second Annual Eastern Snow Conference*, Toronto, Ontario, Canada, June 7–8, 1995. Thanks to the editors for permission to publish this revised version. A similar version will appear in the

Proceedings of the Eastern Snow Conference, Williamsburg, Virginia, May 1–2, 1996.

Glossary

Snowpack.	The accumulation of snow on the ground.
Sintering.	The process of compaction. When you squeeze snow into a snowball, you are sintering it. Sintering causes the particles to bond; that's why they stick together.
Sublimation.	The process of changing from solid to gas without having melted. It is a kind of evaporation.
Latent heat.	The heat given off or taken up by water when it freezes or melts. The amount is 80 calories per cubic centimeter. Water gives up or absorbs this amount of heat without changing temperature.

Select Bibliography

Albert, Mary R., and Susan Taylor, editors. 1995. *Proceedings of the fifty-second annual Eastern Snow Conference*. June 7–8, 1995, Toronto, Ontario, Canada. [Hanover, New Hampshire: Eastern Snow Conference.]

Armstrong, Betsy R., and Knox Williams. 1992. *The avalanche book.* Revised and updated. Golden, Colorado: Fulcrum.

Bell, Thelma H. 1954. *Snow*. New York: Viking.

Bentley, W. A., and W. J. Humphreys. 1962 (1931). *Snow crystals.* New York: Dover Publications, Inc.

Chisholm, Richard M. 1996. *Field guide to snowpack study*. Plymouth, New Hampshire: Plymouth State College.

Chisholm, Richard M. 1995. Snowpack study in school. In *Proceedings of the fifty-second annual Eastern Snow Conference.* June 7–8, 1995, Toronto, Ontario, Canada. [Hanover, New Hampshire: Eastern Snow Conference.] pp. 159–161.

Chisholm, Richard M. 1996. *Teacher's guide to snowpack study.* Plymouth, New Hampshire: Plymouth State College.

Colbeck, Sam, and others. 1990. *The international classification for seasonal snow on the ground.* The International Commission on Snow and Ice of the International Association of Scientific Hydrology.

Crump, Reval. 1994. Snowflake science: classifying crystals in the classroom. *The Science Teacher.* January, pp. 45–47.

Daffern, Tony. 1992. *Avalanche safety for skiers and climbers.* Seattle: Cloudcap.

Day, Robert A. 1994. *How to write and publish a scientific paper.* 4th edition. Phoenix: Oryx Press.

Dyson, James L. 1963. *The world of ice.* New York: Alfred A. Knopf.

Fredston, Jill A., and Doug Fesler. 1988. *Snow sense: a guide to evaluating snow avalanche hazard.* Anchorage: Alaska Mountain Safety Center, Inc.

Green, Douglas W., and Tim Lowenstein. 1994. Sedimentary snow: a seasonal activity for studying the sedimentation process. *The Science Teacher*. December, pp. 40–43.

Halfpenny, James C., and Roy Douglas Ozanne. 1989. *Winter, an ecological handbook.* Boulder, Colorado: Johnson Books.

Kirk, Ruth. 1980. *Snow.* New York: Morrow Quill Paperbacks.

La Chapelle, E. R. 1985. *The ABC of avalanche safety.* 2nd Ed. Seattle: The Mountaineers.

McClung, David, and Peter Schaerer. 1993. *The avalanche handbook*. Seattle: The Mountaineers.

Peterson, W. S. B. 1969. *The physics of glaciers.* New York: Pergamon Press.

Seligman, Gerald. 1980. *Snow structure and ski fields.* 3rd Ed. Cambridge, England: Internat. Glaciol. Soc.

Williams, Robin. 1990. *The Mac is not a typewriter.* Berkeley: Peachpit Press.

Seeing Beyond the Student to the Writer: Disentangling the Writing Teacher's Conflicting Roles

By Maribeth Graves and Meg Peterson

Writing teachers despise grading. They delay it. They avoid it. They strive to minimize its impact and importance, speaking to their students as if it didn't matter (when, of course it does). But in the end they are faced with it and do it, usually alone, with trepidation and a lot of second guessing.

Last semester, we decided not to grade our students' portfolios. We opted out of the whole dilemma and in the process, found a way to provide students with a more valid assessment of their work. What grew out of a simple frustration with our roles as evaluators, eventually revealed hidden complexities and subjectivities inherent in grading.

We had long been aware of evaluation of writing as a process riddled with doubt. "Is this really an A, or am I too aware of the fact that this is her sixteenth draft, am I too sympathetic to her struggle?" or conversely, "Is this really a D paper, or am I only reacting to his snide posturing, his bragging to classmates about how quickly he can 'slap something together' before class?" No matter how objective we try to be, these uncertainties remain.

Some writing teachers embrace this subjectivity. Tom Romano (1985) writes, "Evaluation of writing is necessarily a subjective act. Objectivity is impos-

DOI: 10.37514/WAC-J.1996.7.1.07

sible... who the student is helps determine what grade I give, what response I make. It cannot be otherwise... A paper of similar quality may be a C for Mary, an A for Max" (113- 14). While not all teachers would subscribe to this extreme viewpoint, most would acknowledge some subjectivity in their grading process. Lad Tobin (1993) writes, "Every time I read, respond to and grade an essay, I am also reading the student who wrote it; I am reading my own associations into that text; and I am reading the relationship I have and am trying to establish with that student. In other words, while I am reading the text on the page, I am also wondering how hard this student worked on this draft, how capable she is of revision, [and] to what extent my own biases are shaping my responses." (67). He lists 13 factors unrelated to the quality of the text which at different times "play a significant role in the grades that [he] ultimately give[s]" (66). These include questions such as "What grade does this student expect? ... What might my colleagues say if I give her a grade that is much higher than they gave her? ... What do I know about this student's personal life that would explain why he did not do as well as he could have?"(65- 66).

All teachers face the dilemma of weighing the quality of the writing against subjective influences. Tobin resolves this conflict by "openly acknowledging the subjective, interpersonal nature of assessment..." (68). This acknowledgment, he feels, "frees [him] to do [his] best, knowing that in the end, it is all [he] can do" (69).

But is this all we can do? We found ourselves uncomfortable with the way subjectivity has been embraced as a value. Student writers need and de-

serve a true assessment of their work. We asked ourselves if there were a way to minimize subjectivity so that writing could be evaluated, if not totally objectively, at least fairly. But how can we act as objective evaluators without jeopardizing the caring relationships we must have in order to be effective writing teachers? Noddings (1987) notes that in grading "we are asked to look at the student as object— as a thing to which some measuring stick can be applied... This is demeaning and distracting. It violates the relationship" (194).

In the teaching of writing, perhaps more than in any other type of teaching, the essence of learning is in the relationship. Writing teachers build relationships with their students as they look together at emerging drafts. Workshop and conference teaching emphasizes relationship, creating a safe place within which writing can be nurtured. As students generate the text of the course through their writing, the way that text is handled becomes crucial. Teacher and student-writer work closely together as a team, that is, until grading time when "suddenly, grindingly, [the teacher] must wrench herself from the relationship and make her student into an object of scrutiny" (Noddings, 195). This creates resentment on the other side of the desk. Chiseri-Strater (1993) notes that often students feel betrayed after writing teachers have led them, through positive feedback in conferences and on papers, to believe that they are doing above average work, only to receive a C-.

To avoid this breakdown of the relationship, Nodding proposes a radical solution, that "if [grading] must be done, it should be done by external examiners, persons hired to look at students as objects" (195).

Noddings herself recognizes that many problems are inherent in her proposal. While we would certainly not recommend further intrusion of outside authorities into the classroom, we did find the germ of an idea in the concept she puts forth. What if student work could be submitted for grading, not to a hired authority, but to a trusted colleague? Could this be a way to preserve the teaching relationship, give students a more objective assessment of their writing, while, at the same time, continuing to promote those values which we espouse as teachers of writing? We decided to exchange for grading our students' midterm and final portfolios.

Obviously, this type of cooperative venture would only be possible for teachers who share similar philosophies and values about writing and the teaching of writing. We were fortunate in that we had worked closely together over several years. We first met in the spring semester of 1993 when Maribeth began her graduate studies as a student in Meg's course on teaching writing. Maribeth felt an immediate affinity with the process philosophy which Meg explained in the class. In the spring of 1994, Maribeth worked as a graduate intern in Meg's composition class. As part of this experience, we spent many hours evaluating portfolios together, discussing criteria and the subjective factors which entered into our evaluations of student papers. In the fall of 1994, when Maribeth began teaching her own sections of writing 101 at New England College in Henniker, much of what she had learned at Plymouth State was reflected in her syllabus. Thus, our plan was facilitated by the many similarities in the way our classes were set up. More specifically, our grading structure was virtually iden-

tical. We each required a midterm portfolio containing three student-selected pieces, which would receive numerical grades. These grades, however, would not count towards the final grade. This would give the students an indication of their progress in relation to the quality of writing we expect of first year writing students, and encourage the students to further revise their pieces for submission in the final portfolio. The final portfolio, which would count for 40% of their final grades, would contain five pieces, along with supporting material.

By exchanging portfolios, we hoped to separate the role of teacher from that of evaluator. As teachers, we try to work with students, to encourage and support them in their attempts, much as a good coach would work with members of his team towards a common goal. Yet as evaluators, we need to provide an honest assessment of their work. We hoped to avoid, or at least minimize, the conflicts inherent in these dual roles. The actual effects of our exchange ranged far beyond this initial limited goal.

Our grading system involves an analytic scale in which specific writing traits (focus, language, mechanics, information, etc.) are awarded zero to five points each. While our scales were similar, we had not synchronized them, thus there were minor differences in our grade sheets. However, this did not present major difficulties as, through past collaborations, we had evolved shared definitions of terms.

At midterm, we passed huge piles of colorful folders off to be graded. Although we didn't express it at the time, we each felt reluctant to merely hand them over without explanation to help the reader understand our students and what their work had grown

out of. It was a strange feeling.

The strange feelings grew as we each sat at our own kitchen tables and worked our way through stacks of folders filled with papers written by students we had never met and would never know.

While Maribeth overcame her dread and jumped right into the task, Meg procrastinated, perhaps out of past negative associations with the grading process. Yet, the more we got into the task, the more surprised we were at how much simpler it was. We had begun by trying to read papers as we always had, trying to read the person behind the words, the history of the paper, looking for clues to help us to gauge the author's expectations and intentions. We soon discovered that to do this would be overwhelming, requiring us to imagine students' entire history as writers and as people. We gave up and settled for looking only at the works before us.

The work of grading became cleaner, simpler and quicker, with unintended benefits. We were much more aware of when we were becoming fatigued and needed to take a break from grading. When we had graded our own students' works, the tendency had been to press on, because we knew the works and the students well. We could fool ourselves into thinking we could get by with a less focused reading. However, in this new situation, every paper clearly presented itself as a new challenge.

As we worked through the stacks of folders, an unaccustomed confidence in our grading criteria developed. Unencumbered by the normal plethora of subjective considerations, we were able to view the works more clearly. While we still occasionally wondered about the student behind the words, the futility

of such speculation soon caused us to abandon these musings.

We were each aware that the grades we had given were somewhat lower than we were acccustomed to giving, and so it was with some trepidation that we returned each other's folders. Trepidation gave way, in some instances, to shock as we reviewed the grades our students had received. Each of us began to see the other as a ruthless critic, incapable of recognizing the true value of our students' work. We each set to reading certain students' papers over with the intention of proving the other wrong in her assessment, and making the necessary adjustments. However, in this reading, we could no longer hide from ourselves the subjective factors which would have influenced our own evaluation of the writing. We were forced to accept the validity of our colleague's assessment.

While this experience was sobering, and somewhat disconcerting, we realized that we had done what we set out to do. In our post-portfolio conferences with our students, we were able to maintain our supportive teacher/coach role, as we looked at the results together. Many students were pleasantly surprised that their writing had held up under the scrutiny of a distant reader. Of course some grades did not meet students' expectations. However, this no longer could become a personal issue. No longer were we forced to justify/defend the evaluations. We could work together to assume the perspective of the distant and anonymous reader. This triangulation was easier for us, as teachers, and therefore we were able to use this opportunity to guide students in viewing the work from a more distant perspective. Perhaps because we felt so confident in the fairness of the evaluations, and

had prepared the students for the process, no one complained about the procedure itself. The fact that the midterm grades would not influence the final grade greatly facilitated this process. At the same time, we were motivated to work toward the preparation of the final portfolio.

Reading the final portfolios was considerably easier than even the midterm had been. Our initial experience gave us more confidence in the validity and value of our venture. We moved rapidly and confidently through the folders on our kitchen tables. The significant improvement that we saw in the writing, and which was reflected in the grades, was clearly unrelated to any wish-fulfillment, ego-involvement, compassion or other subjective considerations which might have influenced our grading in the past. In many instances, we were touched by the writer's words, or impressed by his or her skill. For the first time, we could be confident our students were writing in a way that reached real readers.

Paradoxically, in eliminating much of the subjectivity that comes of having our students' faces present before us as we read their work, personal subjectivities were revealed. In our discussions of our reading/grading experience, we became more aware of particular prejudices, certain topics about which we found it difficult to be objective. We both found some subjects offensive, such as drinking escapades, sexual conquests and glorification of drug abuse, and there were other topics which one or the other found especially distasteful. Maribeth found it hard to sympathize with John's hunting escapades, while Meg was angered by Susanna's hero worship of her absent father. By the time we read over the final portfolios,

we had become aware of such prejudices and thus were able to provide a check on undue bias.

This process made us painfully aware of how often we, as writing teachers, read the student, rather than the work before us. In grading each other's portfolios, we were able to assume a different role. We didn't know or care how often the student had shown up late to class, how many revisions had been made, or how attractive and likable a person he was. This is not to say that effort and motivation should be ignored in a student's final evaluation. However, we do believe that somewhere in the evaluation process, a place must be created for an honest assessment of the writing and the writer. No matter how great a leap a student has made in the quality of her writing, and no matter how much we might be tempted to reward that effort, her move from an F to a C does not equal an A. Perhaps writing teachers have known that all along. The difficulty lay in knowing how to disentangle our conflicting roles, and in seeing beyond the student to the writer.

References

Chiseri-Strater, Elizabeth (1993). "Evaluation as Acts of Reading, Response, and Reflection" in Newkirk, Thomas (ed.) *Nuts and Bolts: A Practical Guide to Teachng College Compositon* . Portsmouth, NH: Boynton/Cook.

Noddings, Nel (1987). *Caring: A Feminine Approach to Ethics and Moral Education* . Los Angeles: University of California Press.

Romano, Tom (1985). *Clearing the Way: Working With Teenage Writers* . Portsmouth, NH: Heinemann Educational Books.

Tobin, Lad (1993). *Writing Relationships: What Really Happens in Composition Classes* . Portsmouth, NH: Heinemann Educational Books.