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Author(s): L. S. Rosen, William C. Howell and L. Todd Johnson

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## EDUCATION RESEARCH

*L. S. Rosen, Editor*

# An Evaluation of the Compressed-Course Format for Instruction in Accounting

*William C. Howell and L. Todd Johnson*

**ABSTRACT:** Although "compressed-course" offerings are widely found in summer programs and intersessions, little published work has evaluated the efficacy of this format relative to conventional term courses, apparently because the controls necessary for strict comparative research are difficult to implement. This study involved such a comparison between several sections of two accounting courses offered under the most compressed format possible and under a regular semester. All aspects of the courses were virtually identical. Evaluation was in terms of (a) terminal performance, (b) post-course student reactions, and (c) comparison of reactions with prior expectations. Analysis of the data showed the compressed format to be highly comparable to the regular format on both performance and student evaluation profiles. The only differences, both marginal, were in the tendency for perceived stress and instructor effectiveness to be greater under the compressed format. Given the rigor of the experimental controls and the power of the statistical tests used, these findings constitute strong evidence of the efficacy of compressed courses.

THE "traditional" approach to college instruction has changed little over the past few generations despite criticism from students, educators, employers, and even the general public [Goldstein, 1974]. Alternatives have not been lacking or underpublicized; indeed, all manner of innovations from team-teaching to individualized and computer-assisted instruction have been suggested and vigorously promoted (see, for example, Campbell [1971]; McKeachie [1974]). The problem seems to be one of proving demonstrable performance. It has been very difficult to

prove that any of these methods is consistently and conclusively better than the

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*William C. Howell is Professor of Psychology and Administrative Science at Rice University, and L. Todd Johnson is Project Manager at the Financial Accounting Standards Board.*

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more traditional ones on overall measures of effectiveness [Carrol, Paine, and Ivancevich, 1972].

For the most part, innovation research has concentrated on *methods* of instruction, the object being to show that a newer method produces more learning or more permanent learning than older ones. An equally valid but neglected question is whether, irrespective of method, a more efficient mode of scheduling might be found so that the same result would accrue with a savings of time, expense, or convenience. One frequently reported advantage of the so-called "personalized" methods, for example, is that learning is more efficient (faster if not necessarily more thorough or permanent) because the learner's schedule is not tied to that of the slowest students in the class [Keller, 1974].

The present study examines another possibility for efficient scheduling: the concentrated single-course format. The minimum time into which one could compress all the work of a typical semester course (lectures, homework, study time, tests, etc.) without changing anything else about the format is about one week per semester hour. Thus, a course that would normally meet for three hours a *week* would be scheduled for three hours a *day*, with each session separated by several hours for homework and study. With this compressed schedule, a three-hour course would require a total of only three weeks.

While a number of potential advantages of this concentrated format over the traditional ones may be cited, the primary consideration in the present case was the opportunity it would afford the full-time job-holder to upgrade his skills or education. The demand for both degree and non-degree programs in management geared to the schedule of busy executives is quite apparent today. Since organiza-

tions can usually tolerate brief absences on the part of their managers more easily than extended periods of reduced effort, the compressed format seemed particularly worthy of study. Likewise, accounting, a most fundamental management discipline, seemed to be an appropriate content on which to base a format evaluation. That evaluation was called for, of course, was predicated upon the proposition that an advantage exists only if convenience can be achieved without sacrificing quality. Efficient or not, an inferior course is of little value to anyone.

Before proceeding further with the description of the present work, we should point out that a compressed format is not without precedent. A number of universities have instituted a limited slate of "intensive" courses in conjunction with their summer programs, often as pre-, inter-, or post-sessions [Schoenfeld, 1967]. One institution, Colorado College, has been operating its entire curriculum under this format (which incidentally, it refers to as the *Block Plan*) since 1969 [Heist and Taylor, 1979]. If it could be shown that such courses are at least equivalent to conventional ones in terms of available educational criteria, the viability of the general concept would be enhanced.

Unfortunately, there are at present virtually no published data on the efficacy of the compressed format. Several evaluation studies have been carried out in connection with the programs alluded to above, largely, it appears, for purposes of internal justifications. The unpublished reports of these studies strongly support the concept of compressed courses. For example, Baskerville and Sesow [1973] surveyed 589 students enrolled in 36 pre-session classes of three-weeks' duration at the University of Nebraska, Lincoln, and found that 81 percent felt they had learned at least as

much as they would have in a regular-session course. A more rigorous controlled study conducted at Indiana University by Richey, Sinks, and Chase [1965] provided even stronger evidence. In ten of 11 course groups (a total of 1,016 students), students in the three-week compressed courses matched or exceeded the achievement of regular-course controls, and, once again, the vast majority (85.5 percent) was satisfied with the amount learned. Pilot studies at the University of Minnesota produced similar results in a comparison of regular versus five-week compressed formats [Kanun, Ziebarth and Abrahams, 1961]. And, finally, a 10-year evaluation of the Colorado College Block Plan, in which all courses were of 3.5 weeks' duration, gives every indication that the approach has been a huge success [Heist and Taylor, 1979].

Encouraging though they may be, studies such as these are subject to a number of potential confounding influences. It is extremely difficult, for example, to achieve strict comparability of courses used in direct comparisons even if the content, instructor, and student characteristics are controlled (as they appear to have been in the Richey, Sinks, and Chase Study). There is always the possibility that a novel approach will produce spuriously positive results due to the well-known "Hawthorne effect" or to a particularly favorable set of prior expectations held by the learners. For this reason, key dependent variables—especially those involving subjective judgment—should be measured before, as well as after, the learning experience [Goldstein, 1974]. Only in the Colorado College study were judgments made before the four-year college experience as well as after. However, in that study there was no direct comparison with a regular-session control because all

courses had been switched to the new format.

Despite the potential difficulties, care in design can alleviate some of the problems in course comparison studies [Campbell and Stanley, 1963]. If, in addition, the research situation permits strict comparability of material covered, course organization, students, instructors, and tests, the prospect for meaningful comparisons is greatly increased. This article describes a comparison of the compressed and regular formats made possible by just such a set of circumstances. The opportunity for the research arose in conjunction with a decision to offer an otherwise identical series of accounting courses during the regular and summer sessions under the regular and compressed formats, respectively. Design of comparative evaluation research could thus be "built into" the program at its inception. Moreover, by focusing on *accounting* courses exclusively, it was possible to increase the relevance of the findings to the population of primary concern: students seeking a grounding in a fundamental business course. By contrast, most of the previous evaluations which sought broad-scale justification for the compression concept were heavily biased toward liberal arts courses and, in the case of Colorado College, represented the normal mode of instruction.

## METHOD

*Courses.* Several sections of two accounting courses, one each at the introductory and intermediate level, were offered under both the regular and compressed conditions over a period of two years (1977–78) at Rice University. For the major comparisons involved in the present study, each course was taught by the same instructor under both formats (i.e., one instructor for all sections of the

introductory course; another for all intermediate sections). Being very much aware of and sympathetic toward the comparative study, and having no predisposition toward either format, these instructors cooperated fully in the creation of similar conditions: textbooks, syllabi, problems, tests, organization, coverage, and style of presentation were made as close to identical as possible. Apart from the variable of interest (format), the only other apparent differences were class enrollment (the compressed courses were somewhat smaller), academic session (the compressed courses were offered in the summer; the regular courses, in the fall), and student characteristics (which were to a large extent controlled as described below).

*Students.* Effective enrollments (those for which measures were available) in the compressed courses were 35 and 21 for introductory and intermediate, respectively; those for the corresponding regular session courses were 38 and 26. Questionnaires administered prior to each course established the sex, age, year in school, grade-point average, work experience, SAT scores, career aspirations, major, and reasons for taking the course for each student. Comparisons of those enrolled in the compressed and regular classes revealed several mean differences between groups (the former tended to be slightly older, to have more work experience, and to have slightly lower SAT scores than the latter); however, the only statistically reliable difference was that for work experience,  $t(34) = 2.57, p < .05$ ;  $t(20) = 2.10, p < .05$ . Moreover, in subsequent analyses, all group comparisons were carried out twice: once with the total available sample, and once with subgroups matched according to demographic profiles. Since the two procedures produced identical conclusions in all cases, the

slight demographic differences were considered to be of no practical consequence and thereafter were disregarded.

*Research Design.* The principal measures used in the comparison of the two formats were (a) questionnaire data taken at the start of the course reflecting expectations on a number of descriptive and evaluative scales, (b) similar questionnaire data taken at the conclusion of the course reflecting reactions to the course as experienced, and (c) grade distributions. Attempts were also made to track the performance of students in subsequent accounting courses for which these two were prerequisites, but the sample was too small and the range of grades too narrow to permit meaningful interpretation.

Information obtained on the pre- and post-questionnaires was, for various practical and theoretical reasons, not identical (both covered somewhat unique domains). However, several key items— notably those involving time, effort, personal attention, coverage, and grade—were the same on both instruments. This permitted calculation of change scores denoting deviation of perceived reality from prior expectations on these key facets of the course.

The design, therefore, was simply a direct comparison of attitudes, perceptions, and performance generated by the two formats with a control for prior expectations. Factor analyses were carried out on the post-course questionnaire data to determine whether the students were using the same basic criteria for judging the various courses.

*Questionnaire.* The pre-course instrument consisted of 13 self-descriptive items (age, sex, reasons for taking the course, etc.) and 14 course-expectation items. Two of the latter dealt with grades (*expected* and *lowest acceptable*), while the other 12 were ratings (on a 10-point

TABLE 1  
SUMMARY OF PRE-COURSE DEMOGRAPHIC AND EXPECTATION (MEAN) DATA FOR TWO COURSES  
UNDER THE REGULAR AND COMPRESSED FORMATS

Item	Format			
	Compressed		Regular	
	Intermediate	Introductory	Intermediate	Introductory
<i>Demographics</i>				
Age	22.1	23.6	20.6	19.9
Sex	59%M	64%M	68%M	61%M
Years college	3.2	2.6	2.7	2.0
Related courses	5.6	3.1	4.3	2.6
Cumulative grade point	2.8	3.0	3.1	3.1
Years work experience	3.0	3.2	<1.0	<1.0
Combined SAT	1256	1220	1290	1270
<i>Expectations</i>				
1. Amount material covered	7.1	6.9	7.7	7.4
2. Effort required	8.7	7.7	8.3	8.1
3. Personal attention received	7.4	6.5	6.8	6.3
4. Thoroughness	6.9	7.1	8.2	8.6
5. General student motivation	7.5	8.1	8.2	7.0
6. Own capability	6.5	6.5	7.1	7.4
7. Effectiveness of format	6.0	7.7	6.3	7.6
8. Amount time required	8.6	7.5	8.1	7.5
9. Own attendance	9.0	8.4	9.0	9.2
10. Class performance	7.1	7.1	7.1	7.1
11. Expected grade	A-	A-	B+	A-
12. Lowest acceptable grade	B+	B	B	B-
13. Course importance	7.9	7.3	7.2	7.5
14. Own motivation	8.7	8.1	8.8	8.0

scale) of expected effort, coverage, time, class attendance, thoroughness, personal attention from the instructor, self-motivation, and similar characteristics. The essential scale items are presented, together with summarized results, in Table 1. The instrument was administered at the beginning of each course by the investigator with instructions as to its purpose and the assurance that individual responses would remain confidential.

The post-course evaluative questionnaire, which was similar in form, consisted of ten items pertaining to the course, the instructor, and the experienced stress, plus one item on expected grade. Six of the items were virtually identical to those on the pre-course

instrument. Since Rice University has a campus-wide system for course evaluation, the present instrument was administered within this system. Thus, it required no special instructions or procedures other than the announcement that the special form was being substituted for the regular one as part of the previously described study. The evaluation was administered during the last class session but prior to the final examination (consistent with Rice policy).

## RESULTS

Except where otherwise indicated, all data represent the combined sections of the two same-instructor courses, introductory and intermediate.

TABLE 2  
GRADE DISTRIBUTIONS FOR THE TWO COURSES UNDER THE REGULAR AND COMPRESSED FORMATS

Grade	Format			
	Compressed		Regular	
	Intermediate	Introductory	Intermediate	Introductory
A+ to A-	20%	32%	26%	22%
B+ to B-	33	26	30	26
C+ to C-	39	32	37	30
D+ to D-	8	5	5	18
F	-0-	5	2	4
	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%</u>

*Performance.* As shown in Table 2, the grade distributions for the compressed courses were very similar to those for the regular session. While it could be argued that instructors tend to “force” grades into a similar distribution from course to course, making such comparison meaningless, there are several reasons to consider the present grades to be a more valid index of class performance. First, the instructors used strictly comparable test materials and grading schemes for the different sections. Second, these materials and procedures allowed very little subjective judgment on the part of graders. Third, grades were not “curved.” Thus, it was entirely possible for one class to out-perform another on the final grade distribution.

*Student Post-course Evaluations.* The first question of interest was whether students used the same subjective criteria in evaluating compressed and regular courses. There is no direct way to answer this question. One can, however, gain some insight into the underlying evaluation process by factor-analyzing the obtained ratings. To the extent that different courses produce roughly similar factor structures for the same rating scales, one can infer that the respective students

are using similar bases for judgments. The inference, of course, is a weak one in any case, particularly when the total number of scores is small. Nevertheless, it appeared worthwhile to carry out such analyses to obviate the possibility of spurious effects due to gross differences in subjective criteria. Therefore, separate factor analyses were carried out on (a) all the compressed-course ratings, (b) all the regular-course ratings, (c) the combined ratings, and (d) ratings for two sections of the same regular-format course (introductory). In all analyses, a standard (SPSS) principal-components program with varimax rotation was used.

Despite minor differences in factor structure, the various analyses produced quite similar groupings of variables: three or four interpretable factors (eigenvalues > 1.00) involving the *instructor's effectiveness*, the student's *personal investment* in the course, and the student's *expected outcomes*. Most of the differences involved the grouping of student input and outcome variables; none, however, seemed to be related in any way to format differences. For example, the combined summer (compressed-format) ratings produced a pure input factor defined by heavy loadings of *time re-*

quired (.84), effort (.56), physical stress (.77), and mental stress (.85); a relatively pure outcome factor defined by grade expectation (.76) and course quality (.66); an instructor effectiveness factor defined by personal attention (.40), thoroughness (.75), effectiveness (.82), liking for instructor (.74), and course quality (.43), and a hard-to-interpret fourth factor composed of amount of material (.79), effort (.70), personal attention (.74), and physical stress (.37). These four factors accounted for 73 percent of the total variance.

By contrast, the combined regular-session ratings produced three factors which, together, accounted for 69 percent of the variance. The principal difference between this structure and that for the compressed course ratings was the organization of the input and outcome variables: they shared two factors rather than defining separate ones. One input-outcome factor thus included effort (.87), time required (.86), thoroughness (.75), quality (.62), and expected grade (.41); the other included physical stress (.83), mental stress (.90), and expected grade (.71) plus a negative thoroughness loading (-.41). The instructor effectiveness factor was virtually identical to the compressed-course profile: personal attention (.78), thoroughness (.37), effectiveness (.75), liking for instructor (.80), and quality (.49).

The remaining analyses all produced patterns similar to these. The combination of all ratings yielded three factors (65 percent of the variance): a clear instructor effectiveness factor, a combined input-outcome factor, and a secondary input-outcome factor emphasizing stress and evaluation. One regular-session course produced an input and an input-outcome factor but no clear input factor; the other did just the opposite; and both, again, yielded a clear instructor factor.

Considering the small number of cases involved and the modest objective of these analyses, the results give little indication that students used different evaluative processes in judging compressed and regular courses. Differences in factor structure as great as those found between the two format conditions would be likely in any set of comparisons with scales and sample sizes of the sort available here; in fact, the differences between the two *strictly identical* regular-session courses were greater than those associated with different formats.

Given, then, that the processes by which the courses were judged were not grossly dissimilar, we may return to the comparison of compressed and regular courses in terms of specific evaluative responses. A summary of these data is presented in Table 3 for both the introductory and intermediate courses, as well as for two regular-session sections of the same introductory course. Clearly, there are few items on which students evaluated the compressed course differently than either of the regular courses, and none for which the mean difference reached a magnitude as great as the standard error; thus, none could be considered statistically reliable. Only one item produced mean ratings under the compressed format that were substantially different from those for the regular sessions in both courses: *physical stress* was perceived consistently to be somewhat higher in the compressed format. Compressed courses were also judged to be somewhat higher in *instructor effectiveness* than regular courses. But before making too much of this difference, one should note that it almost disappeared when the alternative introductory course (b) was used for comparison.

To explore the possibility of differences in more subtle aspects of the data, univariate and multivariate analyses of

TABLE 3  
 MEAN RATINGS ON POST-COURSE QUESTIONNAIRE ITEMS FOR TWO COURSES  
 UNDER REGULAR AND COMPRESSED FORMATS  
 (Numbers in parentheses are mean format differences)

Item	Format				
	Compressed		Regular		
	Intermediate	Introductory	Intermediate	Introductory (a)*	Introductory (b)*
1. Amount material covered	7.80(-.20)	7.86(-.27)	8.00	8.03	8.21
2. Effort required	8.69(+.50)	7.67(+.22)	8.19	7.45	7.87
3. Personal attention received	7.23(-.19)	7.48(+.85)	7.42	6.63	6.54
4. Thoroughness	6.57(-.78)	7.43(+.35)	7.35	7.08	7.05
5. Amount time required	8.63(+.40)	7.57(+.15)	8.23	7.42	8.10
6. Overall course quality	7.63(-.68)	7.95(+.37)	8.31	7.58	8.08
7. Effectiveness of instructor	8.83(+.64)	8.10(+.81)	8.19	7.29	8.01
8. Liking of instructor	8.57(+.34)	8.14(+.01)	8.23	8.13	7.95
9. Physical stress experienced	8.89(+1.47)	7.38(+.59)	7.42	6.79	6.84
10. Mental stress experienced	8.34(+1.03)	6.67(-.01)	7.31	6.68	6.93
11. Expected grade	B	B	B	B	B

\* The two sections of introductory were offered by the same instructor at different hours. All analyses are based upon the introductory (a) section which had an enrollment of 38 and was used in preference to introductory (b) (enrollment=41) because pre-course measures were unavailable in the latter.

NOTE: The standard error of the above means ranged from about 1.00 for item 2 to about 1.50 for items 9 and 10.

variance were applied to the measures from the individual students. Course format (compressed versus regular) and content-instructor combination (intermediate versus introductory) were included as between-subjects variables; the variable of questionnaire items was a within-subject variable in a mixed-model ANOVA. In addition, several MANOVA tests were used to determine more precisely whether patterns of response over the ten questionnaire items differed significantly as a function of format and course.

The results of these analyses were very comparable. The ratings for the intermediate course differed significantly from those for the introductory course,  $F(1,116)=9.33$ ,  $p < .01$ , and the ratings on the particular scales differed reliably from one another,  $F(9, 1044)=10.71$ ,  $p < .001$ . Moreover, the course  $\times$  item interaction was also significant,  $F(9, 1044)=3.80$ ,  $p < .001$ , indicating that the two instructor-course combinations re-

ceived different evaluative profiles. All of these findings, of course, are to be expected and only serve to emphasize the statistical power of the tests used and to extend the generality of whatever other results are observed.

Most important for the purposes of this study are the various format comparisons. First, the overall difference in ratings for compressed and regular courses did not approach statistical significance,  $F(1,116)=2.72$ ,  $p > .10$ . Neither did the interaction of format with particular course,  $F(1,116) < 1.0$ . Second, the format  $\times$  item interaction was only marginally significant,  $F(9, 1044)=2.43$ ,  $.01 < p < .05$  (epsilon correction), suggesting that any differences that format may have produced were not particularly robust and were limited to particular items. Third, since the format  $\times$  item  $\times$  course interaction was of the same order of magnitude,  $F(9, 1044)=2.29$ ,  $.01 < p < .05$  (epsilon correction), it may be concluded that even the marginal format

TABLE 4  
MEAN DIFFERENCES ON PRE- AND POST-COURSE QUESTIONNAIRE RATINGS FOR TWO  
COURSES UNDER REGULAR AND COMPRESSED FORMATS

Item	Format			
	Compressed		Regular	
	Intermediate	Introductory	Intermediate	Introductory
1. Amount material covered	+.30	+.81	+.70	+1.00
2. Effort required	+.09	.00	+.34	-.03
3. Personal attention received	+.78	+1.05	+.30	+.37
4. Thoroughness	-.79	+.24	-.34	-1.20
5. Amount time required	+.31	+.14	+.52	+.71

NOTE: The sign (– or +) reflects the direction of change from the beginning to the end of the course—a (+) means that average evaluations exceed average prior expectations.

differences on particular evaluative scales varied with the course-instructor combination. Briefly, then, the conclusion reached through inspection of Table 3 is borne out in the statistical analysis: the only notable differences in perceived post-course evaluations attributable to format are slightly higher physical stress and instructor effectiveness in the compressed format, and these differences are statistically unreliable.

*Student pre- and post-evaluations.* As noted earlier, it is always dangerous to draw inferences solely from post-treatment measures: one can never be sure that the students approached the various courses with the same initial expectations. Thus, what appears to be an important format difference (or similarity) could well be nothing more than a reflection of pre-existing subject biases. In the present case, the lack of format differences in post-course evaluations could mask real *changes* that occurred over the semester's experience with one or the other format. Consequently, analyses similar to those just described for the post-course data were applied to the judgments made *before* and *after* the various courses on those items that were identical in the two questionnaires. That is, ANOVA and MANOVA tests were used in mixed-model designs that included course-

instructor and format as between-subjects variables, and items and pre-course versus post-course judgments as within-subjects variables.

The results of these analyses were even more definitive than those for post-course scores alone. Here, neither of the between-subjects variables approached significance, and the absence of any format effect (or interaction involving the format variable) was clearly in evidence. The  $F$  values for these factors were less than 1.00 in all but a few triple interactions; the closest to a statistically significant effect was  $F(4,392) = 2.18$ ,  $p = .13$  (epsilon correction) for the format  $\times$  course  $\times$  item interaction. On the other hand, several of the within-subject effects achieved significance in one or both of the analyses. Differences in pre- versus post-evaluations,  $F(4,392) = 9.94$ ,  $p < .001$ ; in items,  $F(4,392) = 9.94$ ,  $p < .001$ ; and in the interaction of these variables  $F(4,392) = 2.73$ ,  $.01 < p < .05$ ; were all reliable. Thus, as might be anticipated, some student expectations were more completely fulfilled than others; however, this pattern was no different for either course or format or any combination thereof.

The pattern of pre-post differences is illustrated in Table 4. Obviously, the tendency was for course expectations to

be more than fulfilled in most areas of course and instructor performance. The only possible exception was the thoroughness criterion where, in three of the four classes, the material was judged not to be learned as thoroughly as the students had anticipated. While this overall pattern speaks well for the particular instructors in these courses, it raises one caution regarding interpretation of the data: it remains to be seen whether the two formats would be as comparable in the hands of an ineffective instructor. In any case, the similarity of pre-post difference patterns for the two formats and course-instructor combinations suggests that competent instruction in either format is equally effective.

#### DISCUSSION

It is always difficult to substantiate the hypothesis of no difference between treatment groups. The problem, of course, is that failure to observe significant empirical differences can arise from so many sources other than the "true" similarity of the groups. Sources might include large measurement error, poor controls, non-powerful tests, and stringent significance criteria.

However, if all reasonable precautions are taken to ensure against such spurious influences (to detect differences if they exist), and treatment effects fail to approach even liberal statistical decision criteria, then one can conclude, at least provisionally, that the variable of interest is impotent.

Such, we believe, is a tenable conclusion in the present case with respect to the format variable. Despite controls for student, instructor, content, procedural, prior expectation, and evaluative characteristics; despite the involvement of two instructors in two distinct courses; despite the application of the most

powerful statistical tests available; for all of this methodological rigor, the only evidence of any difference that emerged between compressed and regular formats was a marginal (unreliable) superiority in perceived instructor effectiveness tempered by a marginal (unreliable) inferiority in terms of increased stressfulness for the compressed design. And when prior expectations are controlled, even these differences seem to disappear. In short, the present study lends considerable support to the idea that all of the work typically covered in a full semester course in accounting can be compressed into a three-week, concentrated program without compromising any of the objective or subjective standards of learning effectiveness. Therefore, the compressed format does seem to represent a viable option for circumstances such as those described in the Introduction.

In spite of the clarity of the present data, it is important also to recognize their limitations. First, the caliber of both students and instructors involved was apparently well above average. Whether the results would generalize to a less gifted population cannot be determined. Second, since it was not possible to carry out any long-term follow-ups on the students trained under the two formats, it is impossible to comment on the relative permanence of material learned. Unfortunately, such studies are difficult to implement in any controlled fashion except with very large numbers of students and an unusually structured program arrangement.

Third, the limitation of the research to two specific kinds of accounting courses, while appropriate to the question at issue, makes generalization of results to other types of business (and even accounting) courses tenuous. Some have suggested, for example, that courses requiring a large amount of outside read-

ing may be less conducive to this compressed format [Baskerville and Sesow, 1973].

In conclusion, then, the present data offer strong support for the viability of the compressed-format concept with bright students, good instructors, and

courses as demanding as introductory and intermediate accounting. How far beyond this one may generalize the data remains to be determined, although the unpublished results of similar studies conducted elsewhere suggest that the findings are likely to hold up rather well.

#### REFERENCES

- Baskerville, R. A., and F. W. Sesow, "The Three Week Pre-Session: A Report Prepared for the National Association of Summer Sessions," unpublished report (University of Nebraska-Lincoln, 1973).
- Campbell, D. T., and J. C. Stanley, *Experimental and Quasi-Experimental Designs for Research* (Rand McNally, 1963).
- Campbell, J. P., "Personnel Training and Development," *Annual Review of Psychology* (1971), pp. 565-602.
- Carroll, S. J., Jr., F. T. Paine, and J. J. Ivancevich, "The Relative Effectiveness of Training Methods—Expert Opinion and Research," *Personnel Psychology* (Fall 1972), pp. 495-510.
- Goldstein, I. L., *Training: Program Development and Evaluation* (Brooks/Cole, 1974).
- Heist, P., and M. F. Taylor, "The Block Plan," unpublished report (Colorado College, 1979).
- Kanun, C., E. W. Ziebarth, and N. Abrahams, "Comparison of Student Achievement in the Summer Term and Regular Quarter, A Pilot Study," unpublished report (University of Minnesota-Minneapolis, 1961).
- Keller, F. S., "Ten Years of Personalized Instruction," *Teaching of Psychology* (October 1974), pp. 4-9.
- McKeachie, W. J., "Instructional Psychology," *Annual Review of Psychology* (1974), pp. 161-193.
- Richey, R. W., R. W. Sinks, and C. I. Chase, "A Comparison of the Academic Achievement of Students Enrolled in the Intersession of 1963 and That of Students Enrolled in the Same Courses in the Spring Semester of 1962-63," unpublished report (Office of Summer Sessions, Indiana University-Bloomington, 1965).
- Schoenfeld, C. A., and D. N. Zillman, *American University in Summer* (University of Wisconsin Press, 1967).