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THE USE OF TIME CONTRACTS IN FORMAL EDUCATION

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ABSTRACT

Time contracts offer a simple way to enable students to gain responsibility for their learning. Time contracts were offered to students in five marketing courses at the Wharton school and over BO% of the students selected this option. In comparison to their typical course, these students spent more time, felt more responsible for their learning, and reported more success in changing their attitudes and behavior. They did not gain more knowledge nor did they rate either the course or instructor higher.

INTRODUCTION

> "If the student has not learned
> the teacher has not taught."
>   ( ) True
>   ( ) False

The most common view of formal education is that the teacher takes responsibility for the student's learning. The teacher has the knowledge and the teacher's role is to motivate students to want this knowledge then to provide the information in a stimulating manner.

An alternative view of education is that students must take responsibility for their own learning. Students will change only if they desire to change and if they are in control of the change process.

Dissatisfaction with teacher-responsibility was high in the 1960's Empirical research was unable to link this traditional approach to any gains in student learning (e.g. see L2;li] for summaries of the research). Furthermore. t was found that learning was not sensitive to actions by the teacher (see review in [7]).

The dissatisfaction led to two arguments. One argument was that teacher-responsible programs were ineffective because of too :title responsibility by the teacher. The other was that teacher responsibility interfered with learning.

In the 1960's, many schools reduced teacher responsibility. They turned to "unstructured education" with shared responsibility for learning. In the 1970's. the trend in education was towards more structure ("back to the basics").

In a previous paper [1] I presented evidence that learner responsibility is desirable for behavioral change. Learners who take responsibility are more likely to be successful in their change efforts than those who assign this responsibility to others. A highly structured approach, called SOS (Self Oriented Skill-training), was used by students to gain responsibility for each phase of the learning process.

Unfortunately, the percentage of students who were willing to try SOS was not large. In unusual situations where the

formal program provided a supportive atmosphere for experimentation, this percentage was over half of the student population. Without a supportive environment, the percentage dropped to less than 5$ of the student population. Furthermore, few faculty members have been willing to use SOS.

This paper examines an alternative and much simpler way to implement learner responsibility. The alternative is to give the students responsibility for their key resource, their time.

The next section of the paper examines alternative perceptions towards time. This leads to hypotheses on how students view responsibility. Results are then presented on test groups which were offered time contracts.

STUDENTS' PERCEPTION OF TIME

> "Who should spend the most time on educations the good learner or the bad learner?

Under the traditional approach to education, the teacher presumably has control over the student's time. This is obvious in grades 1 to 12. In college education, where students spend less time in the classroom, the teacher must use controls such as tests or grading of project work. Teachers assign blocks of work that will require an adequate expenditure of time. Faculty committees and administrators monitor the faculty to spot "gut courses', the courses that do not require much time by students.

How is this scarce resource, time, managed under the traditional education? Typically, it is managed in an unsystematic and informal way. Never have I met an instructor who makes explicit time estimates for each demand placed on the student. Nor have I met many students who budget their time in traditional courses.

I was involved with an executive education course in Stockholm. The faculty were dissatisfied with the inadequate preparation by the participants. I asked the faculty to examine each task that they gave to the students and to estimate how much time was required. The total time demands upon each student well in excess of 100 hours per week,

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clearly an unreasonable demand for tasks requiring creativity and change.

Faculty members et Wharton do not think in terms of time demands. In an informal survey 01 three Wharton faculty members, none could recall making an explicit estimate of the time requirements for any course. Nor did they believe that time was valid way to define a course They expected courses to require about 122 hours, but the range was large. One faculty member said there was no minimum or maximum; students should spend whatever it takes to learn the material.

Bloom [3] reported evidence from an unpublished Ph.D. thesis suggesting that the time to gain mastery of specific skills varied dramatically among students: The slowest 5% take five times as long as the fastest 5%. Under the traditional approach then, Rood students would need less time. This helps to explain why studies of undergraduate medical students have found no relationship between amount of time spent by students on learning and their grades In short, we are left with the finding that people who are good at something (learning) should spend less time at it.

If the student rather than the teacher Accepts responsibility for time, the situation should change. Here, the good learner would be expected to spend more time than the ineffective learner. This can be seen by examining the extreme case of the completely ineffective learner; this person should spend no time on learning tasks.

Students who take responsibility for managing their time are expected to be more committed to using their time to work on important changes. In addition because the time contract estimates the need to grade the student's output, it provides a bettor environment for learning (see Condry's [5] review demonstrating that extrinsic evaluation increases production but reduces learning).

 above reasoning implies a number of hypotheses about students who take responsibility :or managing their time. These students will:

H1 spend more time on learning tasks,
H2: feel more responsible for their learning, and
H3: be more successful in changing their attitudes and behavior.

A plausible case can be made that Ill through H3 will be refuted. For example, for H1 students have alternative uses of their time that may be more attractive than time spent on learning. For H2, students may feel that the teacher is not accepting his or her part of the responsibility in what should be a case of shared responsibility for learning. Should these alternative hypotheses be true, instead of Hl and H2, that would suggest that H3 would also be 2efuted. Finally highly obedient people, n an environment oriented towards obedience. may find it less enjoyable to be given responsibility for their time.

I found no evidence to suggest improvements on traditional criteria. Thus, students on the time contract are not expected to:

H4 do better on tests of knowledge about the subject, or
H5: rate the course (or faculty member) higher.

For H4 the results are quite likely to be negative because students are not expected to allocate time to satisfy the faculty members' needs. Similarly, H5 might be negative because students rate a course higher when the course aims at knowledge [15] and when ft can be completed with less effort

TEST GROUPS

A search in the Current Index to Journals in Education for 1970 through November 1979 did not yield any papers that studied the use of time contracts. The evidence, then, is limited to five test groups run at the Wharton School. Students in these classes, taught by the author, were provided with an opportunity to select the time contract. A sample time contract is presented in Table 1. (The contract for the first test group differed somewhat: They were asked to set a target number of hours and that was agreed upon, in advance, as their grade for the course).

TABLE 1
SAMPLE TIME CONTRACT

Required activities include the following:
____ submission of a copy of this signed contract before the 4th class session.
____ diary (submitted by date shown on the schedule).
____ mastery report (submitted by date shown on the schedule).

I agree to keep a diary on a daily basis. This diary should:

a) describe what I did each day on course activities. This includes only highly directed efforts on listed activities or on activities where you have obtained written agreement from the instructor. Do not include time spent on other courses even if it overlaps. Do not include time when you are on a paid job. include planning time, class, group work, reading, analysis, and writing.
b) list the time spent on each activity.
c) describe what you learned. (Assume that you had amnesia and that this and the mastery reports were the only records you had at the end of the course). Do not evaluate things outside you. That is, do not take positive or negative evaluations of instructors, peers, textbooks or exercises.

The grading scheme for this course is:

Less than 130 hours	No credit
100-124 hours	Pass
125-140 hours	High Pass
141 hours and up	Distinguished

_____ _____ _____
Print your name   Signature   Date

The second copy of this contract must be submitted on the last day of the course.

"I certify that I have met the above requirements and have spent_____hours on this course."

_____   _____   _____
Print your name   Signature   Date

I also provided students with n description of learning tasks and with time estimates for each task. This allowed for more rational planning. The time estimates were based on my own estimates with some evidence provided by students who had used these learning tasks in previous years. The use of student input ns shown to be important in [4] a study which found that faculty members typically underestimated the time requirements *for* learning tasks.

Implementation

Initial reactions to the time contract by students were not enthusiastic. Most students seemed puzzled and skeptical. Some students got upset and left the course even though the traditional track was available. Turnover was about 30%, which was well above that for the typical Wharton course. [Why] this occurred was unclear; my speculation is that some students were uncomfortable in a situation where all of the roles were not defined in the traditional mariner.

Of those who did remain in the course, most elected the time contract. Table 2 summarizes results from the five test groups. The full titles of these courses were Marketing Management, Business Regulation and Responsibility, and Advertising Management.

TABLE 2
STUDENT SELECTION OF TIME TRACT

Course Title (program)	Date	Number of Students	Time Track Percentage: Orig.	Final
Marketing (MBA)	Summer '78	42	74	74
Social Responsibility (MBA)	Fall '78	15	100	100
Advertising (undergraduate)	Sprirtg'79	30	80	57
Advertising (undergraduate)	Fall '79	12	75	67
Marketing (MBA)	Fall '79	31	97	94
	Unweighted Averages		85	79

To help students to feel responsible for their tine, it is desirable to reduce outside control. Unfortunately, because cheating is the norm in some programs, as it is in the Wharton Undergraduate program, it was necessary to audit

the diaries. About 20% of the students failed this audit and were transferred to the traditional track. In the Advertising Management class of Fall 1979 (Advertising F '79) I also included a requirement for a "minimum accertable quality level" for the project work.

Do the students actually control their time? My impression based on a review of their diaries and their performance on learning tasks was that they did a better job of controlling their time than did students that I have had on the traditional track. This was also their perception: In the last test group, Marketing F '79 72% reported at the end of the course that they had more control over their time than in the typical Wharton course, while only 17% said they had less control.

Results

Few data were collected from the first three test Groups. A short survey was, however, run at the end of the third group, Advert Thing 5 '79. Of the 20 respondents who used the time contract, "45% said they found time contracting to be very helpful," 30% said it was O.K. and 25$ said it was a "bad Idea."

Most of the evidence came from anonymous end-of-course questionnaires in the last two test grouts referred to here as "Advertising F '79" and "Marketing F '79." Response rates were high as 100% and 97% of the students responded in Advertising '79 and Marketing '79 respectively. In all cases, the standard of comparison was to the typical Wharton course that you have taken. Below results are presented for each of the five hypotheses.

H1:   "Time contract students will spend more time on learning.'

Time contract respondents in each group reported spending more time on this course than in their typical Wharton course. The results, presented in Table *3,* were statistically significant ($p < .01$ using the sign test from [14]). (But the tests of statistical significance in this paper overlook the lack of independence among the observations and, as a result, they overstate the significance.)

TABLE 3
TIME SPENT BY TIME CONTRACT STUDENTS

		Advertising F '79	Marketing F '79
Much less	(-2)	0	1
	(-1)	0	2
About same	(0)	1	6
	(+1)	4	11
Much more	(+2)	3	9
Average		+1.2	+0.9

Evidence from the time logs the diaries supported the students' perceptions that they spent more time The average time expenditure for Marketing F '79 was 140 hours or ten hours per week. With a normal course load of five courses and with activities and part-time jobs. it does not seem that students would average as much as ten hours for their typical management course. Diaries :for Advertising F '79. a one-half semester courses. reported an average time expenditure of 12 hours per week. On the other hand, these time expenditures do not seem large in comparison with those reported in studies of undergraduate medical students. Including contact with patients these students reported average work weeks of 57 hours in [9] 60 hours in [6] , 52 hours in and as high as 72 hours in [8].

Another way to examine the impact of the time contract on time expenditure was to compare two versions of the same course. one with the time contract and one without. in my Social Responsibility course for Spring '78 I did not offer time contracts. Students were asked at the end of the course estimate how much time they had spent. Responses were received from 12 of the 19 participants and they reported spending an average of less than sic house per week. In contrast the 15 participants in Social Responsibility F '78, who were all on time contracts, reported in their diaries spending an average of more than 10 hours per

H2: "Time contract students will feel more responsibility for their

Students were asked: In which course did you feel more responsibility for your learning The results are presented in Table 4. In both groups, students reported feeling more responsibility for their learning under the time contract than in the typical course (p< .10). It is not clear. however whether such a question provides a valid way to assess feelings of responsibility

TABLE 4
PERCEIVED RESPONSIBILITY FOR LEARNING

	Advertising F '79	Marketing F '79
Much less (-2)	0	3
(-1)	0	3
About same (0)	4	4
(+1)	1	7
Much more (+2)	3	11
Average	+0.9	+0.7

An alternative approach to assessing responsibility was also considered. Time contract students in Marketing F '79 were asked the following question at the end of the course

Assume that you were offered one of two options it taking a course. Assume also that the content offering, time requirements, and all other aspects of the courn5 are the same. Which course would you choose? (choose one option only)

Option A: In this option you, as a student, would be asked to develop your own goals, to describe these goals in writing, and to decide how to measure success. You would then select learning tasks (from a large resource bank) and decide when you would accomplish each task; this would be summarized in a written plan. After each learning task, you would write a review stating what it is you would like to remember. Finally, you would make written promises to yourself as to which techniques you would like to practice and when you will practice with these techniques.

Option B: in this option, the Instructor would clearly state the objectives of the course and what t is that constitutes success in the course. The instructor also provides a schedule outline what tasks must be completed and when they must be finished. The instructor reviews clearly what has been accomplished and provides tests to measure the learning. Finally, the instructor describes exactly how various techniques can be applied.

Clearly, option A places more responsibility upon the student. The responses from Marketing F '79 were compared with those from a questionnaire administered at the end of the same course taught by another instructor (using the traditional approach the Spring 1979. As shown in Table 5, time contract students showed a higher preference for option A, the one that would give them more responsibility (p <.01 using X^2 from [14]). This adds modest support f or the results in Table

TABLE 5
RESPONSIBILITY FOR LEARNING: DESIRED PROGRAM

	Traditional Course S '79	Marketing F'79
Selected Option:		
Student Responsibility	21	20
Teacher Responsibility	56	9

H3: "Time contract students will be more successful at changing their attitudes and behavior.

Students were asked to rate the success they had in changing both attitudes and behavior. The results, shown in Table 6, indicate greater

success with the time contract than with the traditional approach (p (.05 for attitudes and behavior in Advertising F '79, and pc .01 for each criterion in Marketing F '79 using the sign test [14]).

TABLE 6
REPORTED SUCCESS IN CHANGING ATTITUDES AND BEHAVIOR
(first number refers to attitudes and second to behavior)

		Advertising F '79	Marketing F '79
Greatest in		0,0	1,1
typical course	(-2)		
	(-1)	0,0	2,2
About the same	(0)	2,3	3,3
	(+1)	4,4	16,19
Greatest in			
this course	(+2)	2,1	6,3
Averages		+1.0, +0.8	+0.9, +0.8

H4: "Time contract students will not learn more content."

A common midterm examination in Marketing F '79 allowed for a test of the student's knowledge. This essay test was written by faculty members in other sections of the course and it was blind-graded by former students hired for this purpose. The graders worked with suggested answers prepared by the other faculty. In effect, the test was biased against the time contract people. However, the average for the time contract group was not worse than that for each of the other three sections. The average score for the 29 time contract students was 47, and for the 240 students in the other sections it was 44. This superiority for time contract students was not statistically significant

Time contract students did not report that they had more success in gaining knowledge But end-of-course questionnaires provide a poor way to assess gains in knowledge: Students; perceptions of how much they have learned do not correlate with test scores of learning [2]

H5: Time contract students will not rate the course or faculty member higher.

For Social Responsibility F '78, ten of the 15 students replied to the Wharton School faculty evaluation completed at the end of the
course. They rated the faculty member (the author) slightly below average and the course slightly above average. These ratings were not significantly different from those for the typical course at the Wharton School.

My impression as instructor was highly favorable towards time contracting. I enjoyed my role as a helper rather than a judge. All test groups seemed to enjoy themselves and there was a highly cooperative feeling among the students. I did not have the feeling of being in an adversary relationship, as I have when I run courses in the traditional tanner.

The end-of--course questionnaire in Advertising F '79 and Marketing F '79 indicated that each course was rated as favorable as the typical course. However, in Marketing F '79 a bimodal distribution was observed: Some students were favorable and some felt hostile. The extent of this feeling is illustrated by the ownership question from the end-of-course questionnaire (see Table 7). I believe this feeling was typical for each of the five test groups.

TABLE 7
OWNERSHIP OF THE COURSE
(Marketing F '79; n=29)

Which word best describes your relationship to this course?	Percentage
1) owner	17
2) interested participating member	48
3) participating member	17
4) non-participating member	0
5) non-member	0
6) hostile participant	10
7) hostile alienated objector	7

Limitations

The limitations of these initial studies of time contracts are serious:
1) The students using the time contract were self-selected.
2) The measure of the key criterion, behavioral change, is of questionable validity.
3) Only one faculty member (the author) was involved. It may be that other aspects of the course (e.g. experiential exercises) were more important than time contracts. Furthermore, because I had directional hypotheses, the problem of bias is present in the interpretation of the outcomes.
4) The sample of students was narrow (Wharton only) and small (only five courses with 100 students). Clearly the statistical tests overstate the significance because of the interaction among group members.

I plan further work to deal with the behavioral measure (#2) and with sample size (#4). Hopefully, other instructors will experiment with time contracts (#3). The problem of self-selection (#1) remains a serious one, however. It is easy to solve conceptually but is extremely difficult to implement. This problem is common to almost all published educational research.

CONCLUSIONS

Time contracts are simple to implement. The7 create some initial stress in the class, perhaps due to the opportunity for students to become responsible for their own learning. Also, the student 's role is changed: Instead a: trying to do q job in the least time, the student is rewarded for spending more time. As e result of this stress, some students decide not to take the course, even though they 2ould take It in the traditional way

Five hypotheses were proposed on the effects of the time contract. The alternative hypotheses of no effects or even negative effects also appeared to be reasonable.

No previous evidence was found on the value of time contracts.

Results from five test groups at Wharton provided mild support for each of the five hypotheses. In comparison with their efforts in traditionally run courses, students using time contracts reported that they:

> H1: spent more time on learning tasks.
> H2: felt more responsible for their learning,
> H3: were more successful in changing attitudes and behavior,
> H4: did not do better in learning content, and
> H5: did not like the course or professor any more,

Additional evidence was found to corroborate student perceptions for H1 and H4.

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