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**ABSTRACT**

The use of different instructional methods/materials in a college course on the behavioral aspects of drug action (caffeine) was studied at the University of Guelph, Ontario, Canada. The course employed the Personalized System of Instruction (PSI). Although students were highly successful in completing the course, student evaluations indicated that the course was not as interesting as they had expected. Student attitudes concerning highly interactive graphic material in the form of videotext presentations (TELIDON) were assessed. Over 300 students participated in the evaluation. Two sections of the course were taught using traditional lecture and seminar techniques. Two sections of the course were taught using a PSI format with module quizzes presented via a VAX computer system. Two other course sections also experienced the PSI format but these students took quizzes via TELIDON. The combination of a PSI format and the use of the color/graphic/text TELIDON mode of presentation produced enhanced student performance and course satisfaction without increasing student study time. Overall, TELIDON was accepted by students as a superior mode of communication. Information presented via TELIDON was judged to be more definitive and helpful than the same information provided by a lecturer or via computer text. (SW)

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**"TELIDON" as an Enhancer  
of Student Interest  
and Performance**

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## **Abstract**

**Over 300 students participated in an evaluation of the use of TELIDON in a course which students reported as not achieving their expectations. The combination of a PSI format and the use of the color/graphic/text TELIDON mode of presentation produced enhanced student performance and course satisfaction without increasing student study time. Overall TELIDON was accepted by students as a superior mode of communication. Information presented via TELIDON was judged to be more definitive and helpful when compared to the same information provide by a lecturer or via computer text.**

In recent years, by focusing on the learner rather than on the teacher, new approaches have been developed toward education which produce measureable improvements in student's retention and attainments. One such method is that developed by Keller ( 1968), the so-called "Personalized System of instruction".

The great advantage of such a system is that it shifts the responsibility for covering course material from the instructor to the student. As a result the participants (AKA students) prefer this type of course and its inherent responsibility (Herrmann and Leppmann, 1982). Consequently improved student performance (determined by relatively standardized instruments ) and increased student satisfaction with the course as the commonly reported behavioral results. (Leppmann and Herrmann, 1982) At least those were the common findings here at the University of Guelph in most courses when the PSI option was made available. Recently however, the author experienced a variation on this theme. In one particular course the introduction of the PSI method improved student performance ( one letter grade on average ) but not satisfaction with the course.

Behavioral Aspects of Drug Action is a broadly focused course treating information from the fields of pharmacology, psychiatry and psychology. The course is presented to students of widely differing academic backgrounds, to and including continuing students ( this course is usually offered during the evening hours).

While the course is considered to be a popular one, a consistent flaw has been noted by the students. Students, by and large, expected that the contents of the course would be vividly and dynamically demonstrable. It is true that the effects of caffeine can be ethically and simply demonstrated but with few exceptions (depending on the student population of the course) the effects of

other agents are not ethically demonstrable. Even worse, according to the students' point of view, the basic pharmacologic action of the agents, are rarely ( for most students ) clearly portrayable and highly boring. Consequently, the student expectation of a very "vivid" course experience is not met.

This later point was determined via a series of open ended questionnaires, personal interviews and instructional analysis of the course over a period of 2 years.

This problem has been reduced somewhat by the introduction of film and other graphic material which have reduced the students discontent with the delivery of information and the inclusion of a PSI option which has improved performance. There remained however a recurring theme in student evaluations that even though students were highly successful in completing the course, the course was not as interesting as they had expected it would be. What we therefore attempted, was augment this course with highly interactive graphic material in the form of videotext presentations.

Following the dictum of McLuhan that it is the medium not the message that is important, we reasoned that, while we were unable to present the demonstrations which students would have preferred, the inclusion of colorful, graphic and interactive material into the course might alleviate the felt discontent.

## Method

## SUBJECTS

Over 300 Undergraduate students at the University of Guelph participated

the series of variations of presentation of the course herein describes. The variations occurred over a two year period during which different sections of the same course randomly received different treatments. Two sections of the course were taught using traditional lecture and seminar techniques. Two sections of the course were taught using a PSI format with module quizzes presented via a VAX computer system. Two other sections of the course also experienced the PSI format but these students took quizzes via TELIDON whereby material consisted not only of questions but highly graphic or colorful presentations.

Students in each section wrote a final examination that was prepared and graded independently of the course instructor. Each also completed a detailed questionnaire which examined their attitudes and study habits in this course (Herrmann, 1983).

### Results

Students in PSI sections of the course demonstrated the expected one letter grade improvement in final examination performance.

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Table 1 about here  
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Student who experienced the PSI format on Telidon reported a significantly greater satisfaction with the course than students in either the lecture / seminar or PSI via VAX sections. Detailed analysis of questionnaire material reveals that students using telidon also report other advantages such as less study time and greater satisfaction generally than that reported by other PSI

students.

## Discussion

We have previously demonstrated that one of the advantages of the PSI method of instruction is that students report spending more time engaged in systematic study than they do when taking traditional lecture type courses. (Herrmann and Leppmann, 1982). At that time we argued that this increased attention to the material might be a significant factor in improved performance. The present study, for the first time, presents data which contradict our initial suggestion. Students who participated in the TELIDON mediated PSI experience spent the same amount of time studying ( but in a slightly more orderly fashion ) as students in traditional courses. This amount of study time is considerably less than students in our other PSI courses. Yet both PSI sections demonstrated the same dramatic improvement in student examination performance.

Students also perceived the questions asked via a TELIDON as being fair while the same questions asked on a regular CRT were considered as being difficult. Moreover the same feedback given via TELIDON was considered as being more helpful than when given via the traditional two color CRT. Our previous research has revealed no difference in feedback when given by human or computer (Herrmann, 1983). Therefore the present data suggests that the addition of TELIDON to the educational repertoire offers some real advantages in courses where student expectations can not readily be met using traditional approaches.

The question now is, what is the advantage offered by TELIDON? The answer may be as obvious as the technique itself. TELIDON is presently the only practical method of displaying detailed graphic and textual information using a minimum of 16 colours available. Consequently, it is the only widely available

computer based delivery system which has comparable viewer interest to the Technicolor Movie or the home color television set. As McLuhan has previously suggested it may well be the medium rather than the message which has the greatest impact on students. This process when properly used, that may have significant impact on student satisfaction and performance without negative impact on student study habits.



## REFERENCES

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**FINAL EXAMINATION  
PERFORMANCE**

	<b>#</b>	<b><math>\bar{X}</math></b>	<b>SC</b>
<b>LECTURE/SEMINAR</b>	<b>107</b>	<b>66.3</b>	<b><math>\pm 3.43</math></b>
<b>PSI VIA COMPUTER</b>	<b>94</b>	<b>74.2</b>	<b><math>\pm 4.67</math></b>
<b>PSI VIA TELIDON</b>	<b>102</b>	<b>75.1</b>	<b><math>\pm 3.21</math></b>

**TABLE 3**  
**QUESTIONNAIRE RESPONSE PATTERNS**

<u>Question</u>	<u>Model Responses*</u>		
	<u>L/S</u>	<u>Computer</u>	<u>PSI</u> <u>Telidon</u>
1. Time and effort required compared to other courses at this level.	same	more	as much
2. Time spent studying each week	3 hours	3 hours	3 hours
3. Amount of effort required compared to other method (L/S vs PSI)	as much	more	as much
4. Method will result in a grade which is	same	higher	higher
5. Apply to other courses	no/no difference	yes	yes
6. Help needed for organizing a course	need help	little	little
7. Prefer course organized by	formal	framework	formal/ framework
8. Information source preferred	text for most	text for most	text for most
9. Exam material preference	text/lecture	text/lecture	text/lecture
10. Exam type preference	multiple choice	multiple choice	short answer
11. Normally prepare for exams	increase as exam approaches	increase as exam approaches	increase as exam approaches
12. Prepared for modules/ seminars	cram	systematically	systematically

\* answer/s accounting for greater than 2/3 of the responses.

Question

Model Responses

	<u>L/S</u>	<u>Computer</u>	<u>PSI</u> <u>Telidon</u>
13. Degree program	B.A.	B. Sc.	B. Sc.
14. Gender	female/male	male/female	equal
15. General opinion about the module method	N/A	like	like
16. Module tests were	N/A	difficult	fair
17. Module questions covered main points	N/A	always/often	usually
18. Feedback helped	N/A	little help	helpful
19. Study guide	N/A	most helpful	helped a lot/ most helpful
20. Mechanical details	N/A	easily understood /simple	easily understood /understandable