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ABSTRACT

A research study in Utah had two objectives: 1) determine the extent of dissemination of a new vocational electronics curriculum guide among the state's electronics teachers, and 2) measure the value of an instructional television program for teachers as a means of disseminating the guide. Questionnaire results, which must be regarded as tentative due to limited returns, indicated that use of the guide was increasingly widespread and that it was employed mainly as a teaching guide and as a reference. Viewers responded that they were using new methods, materials and equipment and that they gave more attention to helping students to enter the labor market. Administrators were indifferent to the program and the electronics teachers remarked that other types of dissemination activities, such as workshops were also needed. It was recommended that future dissemination and instruction programs be revised to facilitate the examination of specific behaviors, that better evaluative strategies be developed, and that alternative dissemination and teacher inservice methods be considered and experimentally tested. (PB)

EVALUATION OF TELEVISED ELECTRONICS INSTRUCTION PROGRAM

Utah State Board of Education

Walter D. Talbot, State Superintendent of Public Instruction

October 1973

EVALUATION OF TELEVISED ELECTRONICS INSTRUCTION PROGRAM

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FOR
VOCATIONAL AND TECHNICAL EDUCATION

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Salt Lake City, Utah
October 1973

FOREWORD

It is the desire of the Utah State Board for Vocational Education and its staff that programs designed for the occupational preparation of the State's young people be the very best possible. Adequate in-service training of teachers, together with up-to-date curriculum materials, are essential parts of such quality programs. Results of dissemination and training efforts, such as described herein, suggest that steps being taken throughout the State will continue to enhance the quality of all programs.

Walter D. Talbot
State Superintendent
of Public Instruction

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EVALUATION OF TELEVISED ELECTRONICS INSTRUCTION PROGRAM

The Utah State Board for Vocational Education has established the philosophy that efforts should be made to articulate high school courses with offerings at the post-secondary institutions. In keeping with this philosophy, committees of educational and industrial personnel were formed to develop curriculum guides in several vocational subject areas to be used by teachers in programs at both the secondary and post-secondary levels. One of these guides was in the field of electronics.

The electronics guide was developed in summer workshops between 1968 and 1972. During the 1972-73 school year, a program of instruction was broadcast over KUED-TV for the purpose of assisting teachers to develop the technical skills needed to effectively use the new curriculum guide. The specific objectives of the TV series were:

1. To demonstrate to electronics teachers methods of teaching the objectives in the State Electronics course guide to their students.
2. To update electronics teachers' competencies to teach electronics as a vocational discipline.
3. To cause electronics teachers to use the state guide as a common tool for directing curriculum.
4. To provide a method for getting inservice education to electronics teachers.

Purpose of the Research

There were two purposes in this research. These were: (1) to determine the extent of dissemination of the new vocational electronics curriculum guide in terms of the amount and kinds of use made of it by electronics teachers; and, (2) to determine the value of the televised instructional program as the means of dissemination.

Specifically, answers to the following questions were sought:

(1) Is the new guide being very extensively used by teachers in their programs?

(2) What is the nature of any use which is being made of the new guide?

(3) What changes have occurred, or will occur, in electronics programs since dissemination and instruction in use of the new guide?

(4) What help, in addition to the TV program, is needed to facilitate use of the new guide?

(5) What are the attitudes of local administrators toward use of the new guide?

(6) What was the general value of the TV program as a means of disseminating the new guide?

(7) Have instructors acquired new skills as a result of watching the TV series and using the new guide?

(8) Was the TV series viewed by students?

(9) What general comments did the teachers viewing the series have about it?

Data Collection Procedures

A 23 item questionnaire (see Appendix) was developed and mailed to all electronics teachers in the State who had indicated they were watching the TV program and/or who had registered for academic or re-certification credit in the program with one of the colleges in the State or with the State Board of Education.

The questionnaire was kept anonymous to encourage response and was mailed twice to everyone on the list. The first mailing was done April 20, 1973. Nineteen responses of 68 questionnaires mailed were returned by May 4, 1973. The second mailing, accompanied by an additional letter requesting response, was done May 24, 1973; this mailing resulted in receipt, after 7 days, of only one additional response.

A total of 20 questionnaires (29%) was received.

Limitations

At the time the mailing list for distribution of the questionnaire was made up, identification of respondents by teaching role (i.e., vocational versus non-vocational) was not included. The researcher erroneously assumed all respondents were to be vocational teachers when, in fact, others were included. Therefore, variation in response by teaching role is not indicated and value of the program to vocational educators specifically is unknown. Also, the proportion of respondents who were vocational teachers is unknown.

Potential respondents were those teachers who had indicated to the television instructor that they would watch the program. It could be that many of these teachers subsequently did not watch and, therefore, did not respond to the questionnaire. The actual potential population of viewers,

and hence the adequacy of size of the responding sample, is unknown. The percent of response might actually represent a greater proportion of viewers than is indicated by the number of teachers to whom the questionnaire was sent.

Results

The following discussion of results is organized on the basis of the research questions to be answered. The questionnaire included 2-4 items intended to solicit information relevant to each research question.

The first question asked whether the new guide was being very extensively used by the teachers. Three items of the questionnaire solicited information regarding the amount of use. To one of these items, respondents indicated they used the guide:

9 extensively (45%)
6 often (30%)
4 seldom (20%)
1 never (5%)

In an open-ended item, respondents who used the guide "seldom" or "never" indicated as reasons:

I only teach senior high level beginning electricity.

I am building that direction but have had little success in the intensive theory.

I don't have a copy of the new guide. I have a copy of the 2-year old tentative guide.

There are other times I have different information to present above or it may be different than that outlined.

Too deep for junior high.

The third related item asked for information regarding change in amount of use of the guide since viewing the TV program. Change in use was reported as:

1	much more (5%)
7	somewhat more (35%)
12	no difference (60%)
0	somewhat less
0	much less

The question is answered affirmatively. More respondents indicated they were using the new guide than indicated they were not, and there was an increase in amount of use since viewing the TV instructional series.

The second question asked what was the nature of any use being made of the guide. Two items of the questionnaire solicited information regarding kinds of use of the guide.

Table 1 displays response to the items which solicited information on specific kinds of use made of the guide before and after watching the TV series. A chi-square test for significance of the difference in frequencies was calculated, and is also reported in Table 1.

Table 1

Kinds of Use of Guide

Kinds of Use	Before[a]	After[a]
No use	4	1
Reference source	9	12
Major teaching guide	9	10
Source for student materials	4	4
Basis for measuring student achievement	3	4
Other: General outline for course content	1	1
Used old guide as reference	1	1

$X^2 = 10.10$ df = (7-1)(2-1) or 6 $P > .05$

[2]Adds to more than 20 due to multiple responses.

The extent of change in kinds of use made of the guide after watching the TV series compared to before watching was not found to be significant at the .05 level. Small changes of decrease in non-use of the guide and increase in use of it as a reference source were recorded.

Major uses of the new guide were reported to be as a reference source and as the major teaching guide, with other possible uses reported at a lower rate. The kinds of use made did not significantly change following broadcast of the TV series.

The third question asked what changes have occurred, or are planned to occur, in electronics programs since receiving and learning to use the new guide. Three questionnaire items solicited pertinent information.

Changes were indicated to have been made, or planned, in the areas of respondents' programs as shown in Table 2.

Table 2

Program Changes Made and/or Planned

Change	N	%[a]
None	6	30%
Teaching methods	9	45%
Materials/supplies	6	30%
Methods of evaluating students	5	25%
Program objectives	5	25%
Texts	5	25%
Equipment	4	20%
Methods of enrolling students	3	15%
Student placement methods	1	5%
Total number of changes	44[b]	

[a]Percentages based on response N=20
[b]Adds to more than 20 due to multiple response.

An area of important consideration with reference to changes made, or planned, in programs was whether more emphasis was being placed on training students for entry into the labor market and what the changes were. Emphasis was reported as::

2	much more (10%)
5	somewhat more (25%)
12	same (60%)
0	somewhat less
1	much less (5%)

Specific changes listed to facilitate job entry preparation included:

(1) use of more applied math
(2) solicitation of more administration support
(3) determination of students' educational goals
(4) providing the training earlier
(5) change in method of presentation
(6) use of more test equipment with less theoretical physics

Respondents had made or planned some changes in their programs. These included a broad variety in methods, materials, objectives, and equipment. About a third were changing to place more emphasis on labor market entry preparation.

The fourth question asked what help, in addition to the TV program, is needed to facilitate use of the new guide. Three items, comparable in content, solicited this information. Table 3 displays the response.

Table 3

Assistance Needed

Item A	Item B	Item C	Area of Need
8	6	4	No Need
3	*	16	Other Materials (text books, AV materials)
0	8	*	More materials (additional guides)
1	3	7	New/better equipment
*	2	0	Shop changes
5	1	5	Additional in-service (organizing class, stimulating students, developing projects, managing individualized program)
*	1	*	More administrative support
1	*	2	More time
*	*	1	Equipment maintenance repair

* indicates the "area of need" not included in the item.

As is apparent, there was some (unexplained) discrepancy among the responses regarding the assistance needed (or not needed) for any given area. However, there were some definite trends suggested. Of the respondents, 4-8 (20-40%) indicated no help was needed while as many as 16 (80%) indicated, at least once, that other materials were needed and 8 (40%) indicated they needed more materials. In addition, as many as 7 (35%) indicated at least once, a need for new or better equipment, and 5 (25%) felt they needed additional inservice training.

The fifth question asked what the attitudes of local administrators are perceived to be concerning use of the guide. Three items solicited this information.

The first item requested information as to whether administrators encouraged (or directed) use of the guide. Five respondents (25%) indicated they had been either encouraged or directed to use the new guide. Fifteen (75%) of the respondents indicated they had not been so encouraged or directed. One respondent was uncertain about encouragement or direction given him (two of the alternatives, "no" and "uncertain," were marked).

To suggest the extent of administrative interest in teachers' use of the new guide, respondents were asked: (A) whether school time was made available to them to watch, or prepare to watch, segments of the TV series; and (B) whether they were ac ively encouraged to maintain and/or acquire skills that would allow them to function competently in an industrial setting. Response to the former question was:

0 - Frequently
2 - Occasionally (10%)
17 - Never (85%)
1 - No response (5%)

To the latter question, responses were:

5 - Yes (25%)
12 - No (60%)
2 - Uncertain (10%)
1 - No response (5%)

It would appear that if encouragement to use the guide was not extensive, neither was there direct interference with or objection to its use. There was not much encouragement, however, to maintain or acquire skills of industrial currency which would be helpful in - and a consequence of - using the new guide.

The sixth question asked what was the general value of the TV program as a means of disseminating the new guide? Four items were intended to obtain an answer to the question.

The first item was concerned with the extent of helpfulness the respondents thought the TV series held for learning to use the new guide. Table 4 displays the responses.

Table 4

Helpfulness of TV Series in Learning to Use Guide

Helpfulness	N	%
Great help	8	40
Some help	9	45
Little help	1	5
No help	1	5
Detrimental	0	--
No response	1	5

It was felt by 85% of the respondents that the TV series was at least of "some help" in learning to use the new guide.

Respondents were also asked, as an indicator of the series' value, whether they thought the "level of instruction" was appropriate. Most (65%) indicated it was "about right," while only 20% thought it was "somewhat too basic," and 15% thought it was "somewhat too technical."

As well as being at least of "some help " in learning to use the new guide, the TV instruction was presented at a level of difficulty that was "about right" for the majority of the respondents.

Value of the TV series as a dissemination means was also considered to be a function of the audience to whom the instructors seemed primarily to be directing their presentations, and whether there were alternative instructional methods that would have been preferred by the responding teachers.

For the former case, 9 (45%) of the respondents felt presentations were directed primarily toward electronics teachers while 13 (65%) felt they were directed toward electronics students. (Two of the respondents marked both alternatives). Of those who indicated teachers as the audience, 5 thought these were primarily new teachers, 3 thought these were experienced teachers, and 1 did not indicate either group. Of those who thought the audience was students, 6 thought they were beginning students, 5 thought they were intermediate, 1 thought they were advanced, and 1 did not indicate any sub-group. One of the respondents marked the alternative, "other," and indicated the presentations seemed directed toward "all" levels.

Although there was a difference in opinion as to the "target" group of the presentations, they were thought to be helpful and geared at an appropriate instructional level.

Finally, respondents were asked to indicate alternative modes of instruction they thought would have helped them acquire more electronics proficiency and sophistication than the TV series. The selected alternatives are displayed in Table 5.

Although most respondents thought the TV series to be of at least "some help" and at an appropriate level, most would have preferred some alternative mode of instruction. Workshops (either regional or statewide) was the preferred alternative method (55%). Only 3 respondents (15%) preferred the TV series as the instruction mode.

In general, the TV series was seen as a valuable method for dissemination of the new guide, but other methods would have been preferred. In addition, the TV method may have lost some value, as the presentations were perceived, by at least half the respondents, as being directed to

students rather than teachers.

Table 5

Alternative Methods of Instruction

Methods	N	%[a]
No change	3	15
Regional Workshops	7	35
Statewide Workshops	4	20
Summer School	4	20
Written Instructions	1	5
Other (summer industrial work experience, special instructional packets)	2	10

[a]% based on N=20 although there was 1 double response

The seventh question asked whether instructors had acquired new skills as a result of watching the TV series and using the new guide.

Respondents were asked: (A) whether they felt they could function more competently in industry since viewing the TV series: and, (B) whether they were better able to train their students for labor market entry. Table 6 displays responses to these items.

As shown in Table 6 fewer than half of the respondents (45%) felt they could function more competently in an industrial setting since viewing the TV series, but more than half (65%) felt they could better prepare their students for labor market entry since watching the series. It is not apparent whether in the former case, those who responded negatively or as "uncertain" did so because they already had the skills and were therefore competent before the series or because they were unable to

acquire sufficient skills. Therefore, it would appear that if new skills were acquired, it was to only a limited extent.

Table 6

Skills Acquisition

Responses	Better In Industrial Competency		Provide Better Labor Market Training	
	N[a]	%[a]	N	%
Yes	9	45	13	65
No	11	55	3	15
Uncertain	1	5	4	20

[a]N is greater than 20 due to one double response: "no" and "uncertain"

The eighth question asked whether the TV series was viewed by students. Two items solicited relevant information.

Respondents were asked: (A) whether they encouraged their students to watch the TV series; and (B) whether they had knowledge of students watching the series. Table 7 displays responses to these items.

Table 7

Student Viewing of TV Series

Responses	Encouraged		Known	
	N	%	N	%
Always	1	5	n/a	
Frequently	9	45	1	5
Occasionally	9	45	16	80
Never	1	5	1	5
No response	0	-	2	10

As shown in Table 7, the majority of respondents encouraged students to watch the series at least "occasionally," and knew students did watch it at least that often.

The ninth question asked what general comments the respondents had concerning the series. Respondents had been specifically invited to make such comments. The following quotations (with personal references deleted) were transcribed from returned questionnaires.

> Human element very good and down to earth.
>
> I appreciate the State guide and wish to thank (the instructors) for their hard work this past year in presenting the TV series to us.
>
> An excellent course for all levels.
>
> I have been told by my administrators that vocational electronics should be a shop experience and theory is not important. If the work is challenging it will not attract large numbers of students (hence the program is not economical to operate). I have only an average load of 18 students and spend 40% of my time in the class - 60% in the shop. I cannot teach the material in the guide if more time is given for project work. If this is out of balance I need help in classroom management. If not, I need help in training administrators about vocational education.
>
> I want to commend (the instructors) for their excellent presentations for the entire series. They have spent untold hours in preparation of materials for the shows and the dedication of these men for this effort will be long remembered. Thanks for a job well done.
>
> The TV reception here is terrible on channel 7. The presentations I have watched were well done but students became disinterested because of the poor quality of TV in this area.
>
> The TV series would be very beneficial to the instructor who was weak in the basics such as "AC" and "DC." However, if an instructor is teaching at the college level he should have a good grasp of these basics before becoming employed. There were definite benefits derived from viewing parts of this TV series. However, in my case, I felt that they were not sufficient to warrant my viewing every lesson.

I think that (the instructors) should be complimented for the very fine job that they have done this year in presenting this TV program.

Too many films.

I'm sure I would be lost if I were a beginning student without additional help. The course content was excellent and also the instruction but I found it very difficult to get the time for adequate study. The material was just too much for the time I've had available. I've attended two lab periods thus far and felt there was too little accomplished in them. The discussion was helpful but the lack of any central lab experience was a waste of time.

None.

On the TV series people with personalities could present the material better. [Instructor] is a monologue and hard to listen to.

Twice I ordered the book for this course of study without results. I tried to watch each program twice, but I just couldn't keep up without the textbook and guide.

My time was limited; I have many meetings that conflicted with the show time. I was not able to watch most of the shows. I tried to get the district to tape the shows for learning packets but there was no interest on their part. The shows I watched were excellent. Even though I was not able to catch all the shows I appreciated those that I did see.

Discussion

Rate of response to the survey was poor (29%), and answers to the research questions posed are therefore tentative.

Responses indicated that although the new guide was being fairly widely used by the teachers the frequency of use was not influenced by broadcast of the TV series.

The guide was used most often as either a "reference source" or as the "major teaching guide," but other uses were mentioned. Some of these were as a source of student materials, a basis for measuring student achievement, and as an "outline" for course content. These uses of the guide did not change significantly after viewing the TV series compared to before. However, there were changes being made or planned in the in-

structional programs since watching the series. About one third of the changes were toward making programs more job entry oriented.

Most respondents indicated they could profit more from further "assistance" in the form of "other materials" (e.g., text books, AV materials), than any other way although other kinds of assistance were also mentioned.

Although there was little direct administrative encouragement toward viewing the series and/or using the new guide, neither was there discouragement nor rejection. In general, administrators were perceived as being indifferent.

The TV series was viewed as helpful and the instruction generally appropriate in acquiring electronics and guide use skills; however, TV was not seen as the most desirable mode of delivery. In addition, although seen as appropriate in instructional level, the programs were felt by many of the respondents to be directed more toward students than teachers.

Most respondents did not feel they could personally function appreciably better in industry as a result of viewing the series; nevertheless, they felt they could better teach their students to do so.

Students were encouraged to view the series and they were known to have done so with some frequency.

Comments concerning the series were generally favorable and encouraging. Comments that were "unfavorable" tended to relate to lack of time availability on the respondent's own part, or other similar external interferences.

Conclusions

The small response obtained and uncertainty of the nature and size

of the population represented preclude far-reaching or definitive conclusions. However, it was tentatively concluded that objectives (see page 1) of the televised dissemination/instruction program were fairly well achieved. Responses were such as to indicate that the TV series can tentatively be considered to have been an effective method of instructing responding teachers in implementation of the new guide, although extent of dissemination of the guide cannot be determined. Among the respondents, however, the guide is in use and respondents' technical skills are vocationally adequate.

Recommendations

It is recommended that:

(1) As additional guides are developed, and dissemination undertaken, methods to more adequately facilitate evaluation be included;

(2) Alternative dissemination and training methods be considered and experimentally tested;

(3) Objectives of the dissemination and instructional programs be revised to facilitate examination of specific behaviors and/or procedures; and

(4) Future similar evaluations should explicitly identify the status (vocational versus non-vocational) of the viewers to determine variation in effectiveness from that source.

APPENDIX

UTAH STATE BOARD OF EDUCATION

1400 UNIVERSITY CLUB BUILDING, 136 EAST SOUTH TEMPLE STREET
SALT LAKE CITY, UTAH 84111

WALTER D. TALBOT, STATE SUPERINTENDENT OF PUBLIC INSTRUCTION

M E M O R A N D U M

TO: Teachers of trade and industrial electronics

FROM: David Gailey, Coordinator, Post-secondary Education
G. Warren Gaddis, Research Assistant, Research Coordinating Unit

DATE: April 20, 1973

SUBJECT: Television series of instruction in use of "State Vocational Electronics Guide."

The special television series of instruction in the use of the new State guide in electronics education, "State Vocational Electronics Guide," has been broadcast weekly for your viewing since October 12, 1972. We hope you have been watching it and that you have found the series useful and helpful in acquiring new or up-dated electronics skills and/or skill in the use of the guide. Now it is necessary to determine whether our hope is well-founded; we need to evaluate the TV program.

We want to find out:

1. The amount of use the new guide is getting;
2. The kind of use the new guide is getting;
3. Whether changes have occurred in your program goals as a result of watching the TV series and using the new guide;
4. Whether other assistance besides the TV series is needed in implementing the use of the guide;
5. What administrative support is being given to viewing the TV series and implementing use of the new guide;
6. How useful the TV series is in learning to use the new guide;
7. Whether new or additional skills need to be acquired to use the new guide; and,
8. Whether the new guide and the TV series are being used by students.

Please read over the attached questionnaire and then go back and fill in your answers. Try to answer all items--or say why you can't--and feel free to make any comments you want. We want to find out as much as we can.

The questionnaires are unmarked and your answers will be anonymous. However, if you wish to identify yourself so you can be contacted for future additional information, it will be appreciated.

Please complete and return the questionnaire in the attached self-addressed envelope by May 4. Thank you for your very valuable assistance.

/amb

E WINGET, Deputy Superintendent
e of Instruction Services

QUENTIN E. UTLEY, Administrator
Division of Research and Innovation
Telephone (801) 328-5891

1. I use the new State electronics curriculum guide in my teaching

____ extensively
____ often
____ seldom
____ never

2. I use the new guide "seldom" or "never" because: _____

_____

_____

(use other side of page, if necessary)

3. Since watching the TV series, the amount of use I make of the new State guide has changed so that I use it

____ much more
____ somewhat more
____ somewhat less
____ much less
(____ not sure)
(____ no change in amount of use)

4. The use(s) I now make of the guide are:
(Check as many as are applicable):

____ no use
____ reference source
____ major teaching guide
____ source for student materials
____ basis for measuring student achievement
____ other (specify): _____

_____

_____

5. Before watching the TV series, I used the guide as (check as many as are applicable):

____ no use
____ reference source
____ major teaching guide
____ source for student materials
____ basis for measuring student achievement
____ other (specify): _____

_____

_____

6. As a result of learning to use the new State guide, I have made, or will make changes in the following areas of my program (check as many as are applicable):

____ none
____ materials/supplies
____ equipment
____ texts
____ methods of enrolling students
____ methods of evaluating students
____ program objectives
____ teaching methods
____ student placement methods
____ other (specify): _____

_____

_____

7. In order to learn to use the new State guide as adequately and properly as I would like, I need the following additional assistance (check as many as are applicable):

____ no additional help
____ TV instructors and/or State specialist to visit and help:

a. ____ organizing class
b. ____ stimulating students
c. ____ developing projects
d. ____ management of individualized program
e. ____ other (specify): _____

_____

_____

____ other materials (books, supplies, AV materials, etc.) Specify: _____

_____

_____

____ more materials (books, supplies, AV materials, etc.) Specify: _____

_____

_____

8. The principal of my school and/or the district or institution vocational director has/have encouraged (or explicitly directed) me and other electronics teachers to use the new State guide.

____ Yes
____ No
____ Uncertain

9. In learning to use the new State guide, in general, I have found the TV series to be:

____ a great help
____ of some help
____ of little help
____ of no help
____ a detriment

10. Since viewing the TV series, the amount of emphasis I place on preparation of my students for immediate entry to the labor market is:

____ much more than before
____ somewhat more than before
____ the same as before
____ somewhat less than before
____ much less than before

11. The change in emphasis I have made is: _____

_____

_____

12. I feel it would be possible for me to gain more electronics skill proficiency and sophistication if instruction were provided in some mode other than TV, such as (please check only your first choice):

____ none
____ regional workshops
____ written instructions
____ statewide workshop(s)
____ summer school
____ other (specify): _____

_____

13. The principal of my school and/or district or institution vocational director has actively encouraged me to maintain and/or acquire skills of sufficient currency and sophistication that I could easily function competently in an industrial setting.

____ yes
____ no
____ uncertain

14. I believe that as a result of watching the TV series I could function more competently in an industrial setting than I might previously have been able to:

____ yes
____ no
____ uncertain

15. I want to use the new State guide in my program, but in order to properly and adequately do so, I need:

____ new shop equipment
____ new, remodeled, or enlarged shop
____ nothing
____ additional materials/supplies
____ other (specify): _____

_____

16. In order to properly implement use of the new State guide in my program, I need the following help:

____ no help
____ equipment
a. ____ acquisition
b. ____ installation
c. ____ use
____ materials/supplies
____ new, added, changed, or other space
____ additional in-service training
____ other (specify): _____

_____

17. I have encouraged my students to watch the TV series.

____ never
____ occasionally
____ frequently
____ always

18. I have knowledge that my students watch the TV series.

____ frequently
____ occasionally
____ never

19. As a result of using the new State guide, I will be better prepared to train my students for entry into the labor market.

____ yes
____ no
____ not sure

20. When needed, school time has been made available to me to watch and/or prepare to watch sements of the TV series.

____ frequently
____ occasionally
____ never

21. I felt that the TV instructors directed their presentations primarily to:

____ electronics teachers
a. ____ new
b. ____ experienced
____ students in electronics
a. ____ beginning
b. ____ intermediate
c. ____ advanced
____ other (specify): _____

_____

22. I felt the level of instruction and kinds of materials used in the TV presentations were:

____ much too basic
____ somewhat too basic
____ about right
____ somewhat too technical
____ much too technical

23. General comments: