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ABSTRACT

This document presents a plan for conducting productivity workshops sponsored by state vocational education agencies for state agency staff, field vocational educators, and representatives of businesses and industry. The rationale is discussed, and workshop goals and objectives are stated. Suggested procedures are described for the attainment of each of the five objectives: to present evidence of the productivity problem, to demonstrate why productivity is of critical economic and social importance, to discuss major factors that have contributed to productivity decline, to explore the significance of social trends in shaping vocational education's role in productivity improvement, and to identify possible strategies for vocational education intervention. Procedures contain a discussion of recommended workshop strategies and are accompanied by references to sources of additional information. Workshop evaluation is considered, and a tentative agenda is provided. Three appendixes include workshop transparencies, a prototype copy of a document for pre-planning for a vocational education productivity emphasis for use in the workshop, and a productivity workshop evaluation form. (YLB)

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PRODUCTIVITY WORKSHOP PLAN

by

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FOREWORD

Productivity is a critical economic concern. Sagging productivity growth coupled with rising costs and heightened foreign competition are placing American business and industry in an increasingly vulnerable position. In an effort to strengthen its competitive position, American business and industry is investing heavily in capital-intensive technology which can have a significant positive effect on productivity growth. However, productivity is people-dependent and its improvement conditioned upon their possessing the technical and organizational skills necessary to utilize technology to its fullest advantage. The development of the work skills required to contribute to the revitalization of America is the central challenge to vocational education.

In recognition of this challenge, the Department of Education, Office of Vocational and Adult Education, contracted with CONSERVA, Inc. to investigate the role of vocational education in productivity improvement. In the course of the project, nine papers were produced:

- "Working for America: A Worker-Centered Approach to Productivity Improvement";
- "Technologies of the '80s: Their Impact on . . ." (one document for each of the seven vocational education program areas); and
- "Vocational Education: Its Role in Productivity Improvement and Technological Innovation."

Investigation indicated that State vocational education agencies have a unique opportunity to exercise leadership in meeting the productivity challenge. One direct means is by assuming responsibility for

Increasing vocational educators' awareness of and stimulating commitment to productivity improvement through an in-service training function.

It is therefore proposed that State vocational education agencies sponsor productivity workshops as a means of providing an awareness, orientation, and training function. The present document represents a plan for conducting productivity workshops. Workshop goals and objectives are defined, strategies for their attainment described, means for evaluation provided and a tentative workshop agenda offered.

PRODUCTIVITY WORKSHOP PLAN

RATIONALE

Productivity is much on the American mind. Productivity statistics are regularly reported in our nation's newspapers. Analyses of productivity trends and comparisons with other countries have been the subject of frequent articles in both popular magazines and professional publications. Productivity centers have been established around the United States to study the problem of declining productivity and recommend strategies for improvement. President Reagan has established a Commission to investigate the impact of productivity on economic revitalization. Congress has held and is continuing to hold hearings focused on productivity and its role in economic recovery. According to a recent Harris poll, nearly 80 percent of the general public believes that productivity is one of the most serious problems facing Americans during the 1980s (Harris, 1981).

Considering the salience of productivity to national prosperity and the role of vocational education as a major skills deliverer, it behooves vocational education to explore the problem with the intent of determining what contributions can be made. State agencies of vocational education are in a particularly unique situation to exercise leadership in this endeavor. One significant way in which the leadership role can be exercised is through the media of in-service orientation and training workshops. Thus, it is suggested that State vocational education agencies consider offering a series of Productivity Workshops. The intended audience would be State agency staff, field vocational educators and representatives of businesses and industry.

GOALS AND OBJECTIVES

Productivity workshops could be expected to serve the following goals:

1. To facilitate awareness of State and local vocational education professionals regarding productivity as a national problem;
2. To convince workshop participants that productivity is important and improvable;
3. To engender a sense of professional responsibility for productivity improvement.

These goals are to be achieved by attainment of the following objectives:

- a. To present documented evidence of the productivity problem;
- b. To demonstrate why productivity is of critical economic and social importance;
- c. To discuss major factors that have contributed to productivity decline;
- d. To explore the significance of social trends in shaping the role of vocational education in productivity improvement;
- e. To identify possible strategies for vocational education intervention.

PROCEDURES

Suggested procedures will be described for the attainment of each specific objective. Procedures will contain a discussion of recommended workshop strategies and will be accompanied by references to sources of additional information. In the majority of instances, references will refer to specific sections in project reports.

Objective: To present documented evidence of the productivity problem.

Strategy. This objective is best accomplished by verbal presentation with supporting graphics. Graphics suitable for making overhead transparencies are presented in Appendix A. It is recommended that the graphics be presented in the following designated order:

Transparency 1: Productivity: Key to Prosperity

Transparency 2: Productivity: What Is It?

Transparency 3: How Are We Doing?

Transparency 4: How Do We Compare Relatively?

Transparency 5: How Do We Compare Absolutely?

The "key" analogy in Transparency 1 can be further used to establish the image of productivity as leading to prosperity. Barriers can be likened to a door and productivity the key that opens the door (removes the barriers). Another image is that of productivity as a "tonic" for economic growth. The important point is that the central role of productivity be conveyed.

Reliance on authority should also be used to communicate this message. Three particularly emphatic quotes are:

- "The chief means whereby humankind can raise itself out of poverty to a condition of material affluence is by increasing productivity." John W. Kendrick, noted economist.

Source: Understanding Productivity: An Introduction to the Dynamics of Productivity Change, 1977.

- "Only an increasing productivity will improve the lot of man on earth and increase the capacity of mankind." George M. Low, former Deputy Administrator, NASA.

Source: Application of Technology to Improve Productivity in the Service Sector of the National Economy, 1973.

- "... if the U.S. economy is to return to a position of international prominence, Americans must make some crucial compromises to reverse the present decline in productivity growth." Lester Thurow, MIT economist.

Source: Technology Review, 1980, pp. 40-51.

Transparency 2 poses the question, What is productivity? and answers the question by providing a definition. The definition flows from a basic input-output model of a generic production system. The concept of productivity as the measure of the efficiency of a production system should be emphasized and distinguished from effectiveness. Differentiation of resources according to labor, capital, material and energy might also be addressed and then used to illustrate the definitions of single factor and multi-factor productivity. The BLS measurement of productivity as total U.S. dollar output divided by hours of employment paid for should be stressed. Material in "Working for America: A Worker-Centered Approach to Productivity Improvement," Chapter I, should provide a ready reference source as well as providing supplemental topical material dealing with productivity measurement and associated problems.

Transparency 3 illustrates the general downward trend in productivity growth. The "free-hand" curve through the data points conveys the image of a slide with a downward momentum. The discussion leader should point out that the statistics represent annual growth rates. Only when the growth rates are negative does productivity actually decline. A good way to illustrate this is to use the example that for these years--1978 to 1980--workers actually produced less at the end of the year than they did at the beginning.

Comparisons with other countries can be illustrated by using Transparencies 4 and 5. Differences in relative growth rates are shown in Transparency 4. The apparent clustering with USA, Canada and U.K. at the bottom, W. Germany, France and Italy in the middle and Japan as the undisputed growth leader provides a vivid display of the disparity in productivity growth and the basement position occupied by the USA. The difference in growth rate and absolute productivity comparisons is shown in Transparency 5 where the U.S. productivity is assigned a base of 100. The fact that Canada is assigned 92.1 means that Canadian productivity is 92.1% that of the United States. The important message is that even though Japan's productivity is increasing at the most rapid rate, their productivity in absolute amount is only about two-thirds that of the U.S. However, W. Germany and France, because of their more rapid rate of growth, are projected to exceed the United States in absolute productivity in 4 to 6 years.

Objective: To demonstrate why productivity is of critical economic and social importance.

Strategy. This objective is considered to be best met through verbal presentation with accompanying graphics. It is recommended that the following graphic be used:

Transparency 6: Why Is Productivity Important?

Transparency 6 contains the definition of the concept of "total profitability." This concept is important because it provides a direct link between productivity and profitability. Whereas profit = revenues - costs, total profitability is defined as the ratio of total revenue to product costs. The direct role of productivity should be highlighted by pointing out that total profitability is the product of productivity and

price recovery. The price recovery ratio illustrates that profitability can be improved by (a) increasing productivity or (b) increasing product prices. The inflationary effects of rising prices without a consequent increase in productivity can be shown by arguing that increased prices will ultimately be followed by increased labor, capital, materials and energy costs.

The example shown in Transparency 6 is taken from "Working for America: A Worker-Centered Approach to Productivity Improvement," Chapter I and illustrates how improved productivity makes possible increased profits, constant total profitability and an increased return to the factors of production. The example is couched in the context of a single firm and thus is easier to comprehend. The role of productivity is most directly observable in the Situation A vs. Situation B comparison. In Situation B, the effects of lowering the product price is to sell more units. Although this will not always happen, there are many examples of goods that the discussion leader can offer that illustrate the point (homes, autos, clothing, luxury items). The audience may be asked to anticipate what would happen if the product price was raised instead of lowered. The discussion should provide the discussion leader the opportunity to indicate the inflationary pressures that would be generated.

Although the example is descriptive of the behavior of a single firm, the effects can readily be generalized to the economy as a whole. The inflationary pressure can be underscored by suggesting that the firm may be General Motors or some other giant corporation. The notion of a price leader and the general tendency for all other companies to adjust their prices accordingly can be used to demonstrate how a price increase of a single firm could have a contagious effect.

Considering the entire economy as a single entity, the example may be used to show how productivity can be used to improve international trade through increased price competitiveness. The role of productivity in making possible a price reduction, yet maintaining or improving the returns to the factors of production should be emphasized. The same argument can be used to show how productivity improvements make possible lower product price for consumer goods (electronic calculators is a prime example). Increased amounts of goods/services available at lower prices serve to ensure that more people can acquire these material goods/services thereby leading to an improved standard of living, at least as indicated by material wealth.

The material contained in "Working for America: A Worker-Centered Approach to Productivity Improvement," Chapter I under the heading "The Benefits of Productivity Improvement" provides useful supplementary information. The discussion leader should review this section for additional points to be made in the presentation.

Objective: To discuss major factors that have contributed to productivity decline.

Strategy. This objective appears ideal for a group discussion strategy. Because the complexity of the topic allows for discussion from numerous vantage positions, a strategy should be adopted that solicits input from all participants. A structured group process is therefore recommended.

In order to facilitate and guide discussion, a set of factors affecting productivity should be identified as topics for discussion. A recommended set of discussion topics is as follows:

- Availability of capital
- Labor force participation of youth, minorities, women
- Shift from manufacturing to service
- Restrictive management climate
- Increasing emphasis on worker rights and entitlements
- Decline in work ethic

Each discussion topic could be introduced as a factor that is commonly agreed to have contributed to sagging productivity. A question for each discussion topic should be phrased. An example might be: How does (Factor name) contribute to a decline in productivity growth? Each workshop participant should be requested to provide one answer. Answers should be recorded on a flip-chart. If responses from two or more participants are excessively duplicative, they should be modified to remove redundancy. The cycle may be repeated if the discussion leader has reason to believe that there is sufficient interest and that additional input remains to be mined. Materials in Chapter II of "Working for America: A Worker-Centered Approach to Productivity Improvement," especially those in the "Problem Diagnosis" section should provide a useful overview for the discussion leader.

The decline of the work ethic may be of especial interest to workshop participants. To capitalize on that interest, an additional workshop exercise could be focused on that topic. Workshop participants might be asked to guess what percentage of the general public responded to the following statements in a recent Harris survey:

- Most people today have less pride in their work (76%)
- Employees today are less loyal to their employers (76%)
- People's motivation to work today is not as strong (73%)

- In general, workmanship is worse (71%)
- Most people today do not work as hard as they did ten years ago (63%)

An interesting extension of this activity would be to ask participants to account for these results.

Objective: To explore the significance of social trends in shaping the role of vocational education in productivity improvement.

Strategy. This objective is oriented to an exploratory mode that allows free rein for spontaneity and creativity. For this reason, a "brainstorming" approach is suggested as a recommended strategy. To facilitate a free and spontaneous approach, a select number of social trends should be identified and participants asked to generate implications that the trend might have for vocational education involvement in productivity improvement.

The following major economic-social trends are offered. Each trend is identified by labeling the condition that the society is moving FROM and the condition that it is moving TO. Each trend should be the subject of a separate brainstorming session.

FROM	TO
An industrial society	An information/service society
An integrated economy	A segmented economy
Scientific management	Worker participation
Labor-intensive production	Capital intensive production
Surplus of highly skilled labor	Shortage of highly skilled labor
Authoritarian management	Theory Z management
Telephone	Telecommunications

The discussion leader should be prepared to answer questions for clarification purposes. Information contained in Chapters III and IV of the project paper "Vocational Education: Its Role in Productivity Improvement and Technological Innovation" should be helpful in providing further insights regarding the social forces and their potential implications.

Objective: To identify possible strategies for vocational education intervention.

Strategy. The use of quality circles is enjoying widening application as a participatory technique in productivity improvement efforts. Because of the nature of the topic and the saliency of the experience offered workshop participants, it is recommended that the "quality circle" approach be used in the achievement of this objective.

A quality circle approach is basically a problem-oriented mode wherein problems are identified, solutions defined and implemented. Workshop participants should be divided into groups of 8-12 members. Each group should have a nominal leader who serves as moderator and group facilitator. Space permitting, groups should be arranged into self-contained circles.

Each circle should be requested to identify and prioritize a list of productivity related problems. These problems should be derived within the context of the experiences generated by the prior consideration of major forces impacting upon productivity and the social forces shaping vocational education. Circle members should be encouraged to identify problems from their individual perspectives. Once a list of problems have been identified, these problems are to be evaluated

according to criticality and the extent subject to vocational education influence. Those problems that are judged both as critical to productivity improvement and subject to vocational education control would be assigned a high priority.

Each circle should select a priority problem for consideration. Priority problems may be independently selected or adjusted so that each circle is working on a separate problem. Once a priority problem has been assigned to a circle, the task of the circle is to analyze the causes of the problem and to develop solutions. Causes may be prioritized in the same manner as problems; i.e., taking into account both significance (importance) and the extent to which the cause is subject to vocational education intervention. High priority causes should be selected and solution efforts focused on these causes. Possible causes of action should be identified and discussed by each circle in terms of feasibility and resource requirements. Each circle should select at least one intervention strategy for influencing each priority cause.

In order to share circle decisions, all workshop participants should reconvene as a whole. Each circle should elect a spokesperson who should report circle results, both in terms of priority problems selected and intervention strategies devised.

As a final activity, each participant representing an educational constituency should be requested to complete a pre-planning document. A prototype copy is included in Appendix B. The purpose of this document is to structure each participant's thinking about what specifically might be done in their district or institution regarding productivity improvement. The document is organized so as to consolidate respondents' thoughts as to ways that productivity might be infused

into vocational programs, services and activities; what individuals should be involved, how to get them involved; what external groups would be required to support the effort, how could their support be attained; barriers to achieving desired ends, and ways that these barriers might be overcome.

EVALUATION

Workshop evaluation provides feedback that is especially valuable when the process is replicated and recommended changes can be incorporated into subsequent workshops. To facilitate workshop evaluation, a sample evaluation form is included as Appendix C. The form allows for both quantitative ratings and qualitative responses.

For analysis, it is suggested that a frequency distribution and a mean be computed for each rating item. For the open-ended response items, the various responses should be separately recorded. If desired, these responses could be classified into content categories and the categories used for evaluative interpretation.

As a means of providing further information, the evaluation data could be analyzed separately for each type of workshop participant as identified in Question 1 of the Evaluation Form. The resulting means and open-ended response categories could be compared to determine how well the workshop met the needs of specific workshop constituencies. For instance, it might be that the interests and needs of business and industry types would differ significantly from secondary school personnel. If so, then the content of subsequent workshops may have to be changed to accommodate the needs of both groups.

SCHEDULING

Considering the amount of material suggested to be covered, the workshop would best be planned for a full day. A tentative agenda is provided below:

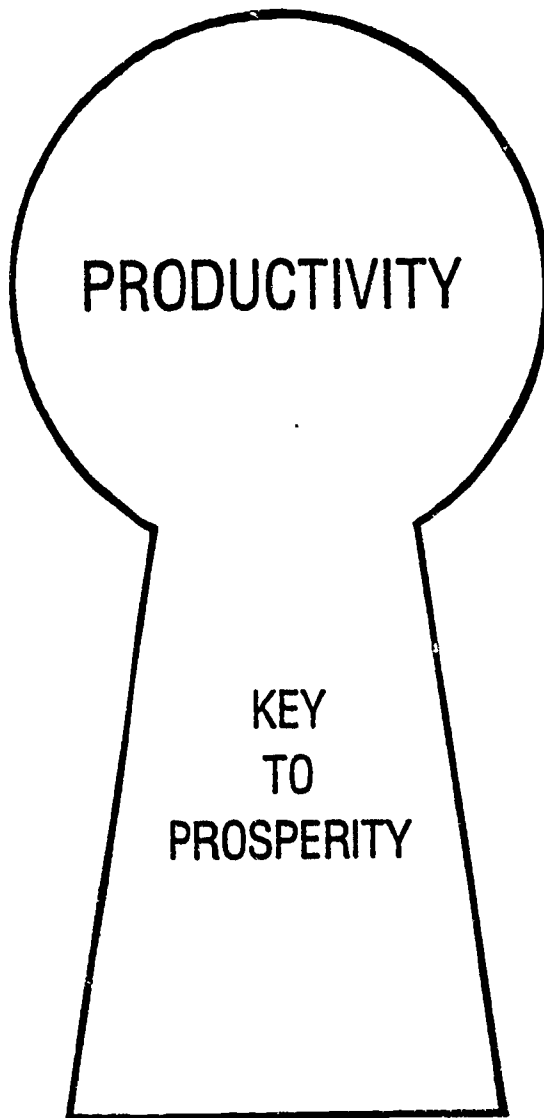
PRODUCTIVITY WORKSHOP AGENDA

8:15 - 9:00 A.M.	Registration
9:00 - 9:15 A.M.	Welcome and Opening Remarks
9:30 - 10:15 A.M.	Presentation of Background Materials (Objectives A and B)
10:15 - 10:30 A.M.	Coffee Break
10:30 - 12:00 NOON	Structured Group Discussion (Objective C)
12:00 - 1:30 P.M.	Lunch
1:30 - 2:30 P.M.	Brainstorming Sessions (Objective D)
2:30 - 2:45 P.M.	Coffee Break
2:45 - 3:30 P.M.	Quality Circles (Objective D)
3:30 - 4:00 P.M.	Individual Circle Reports (Objective D)
4:00 - 4:30 P.M.	Individual Planning Exercise (Objective D)
4:30 - 4:45 P.M.	Evaluation
4:45 - 5:00 P.M.	Wrap-up

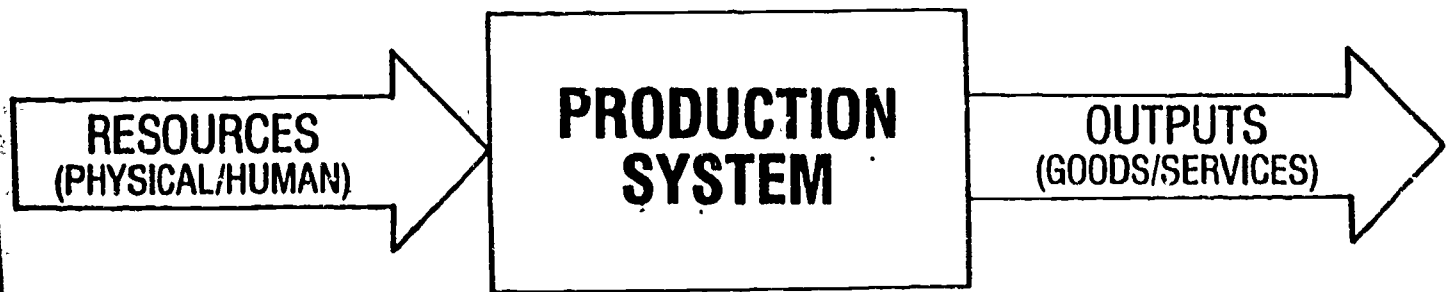
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APPENDIX A

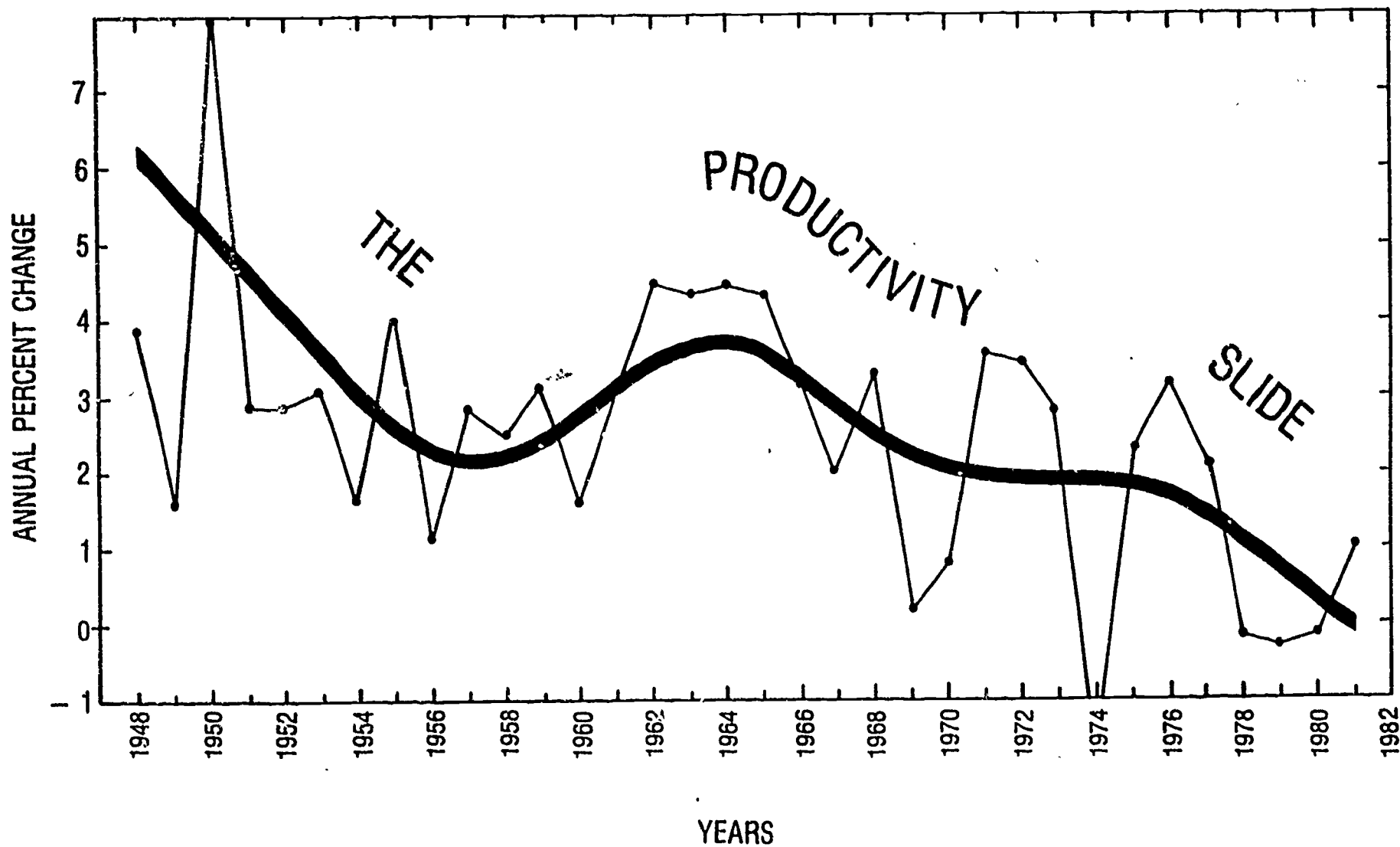


PRODUCTIVITY — WHAT IS IT?

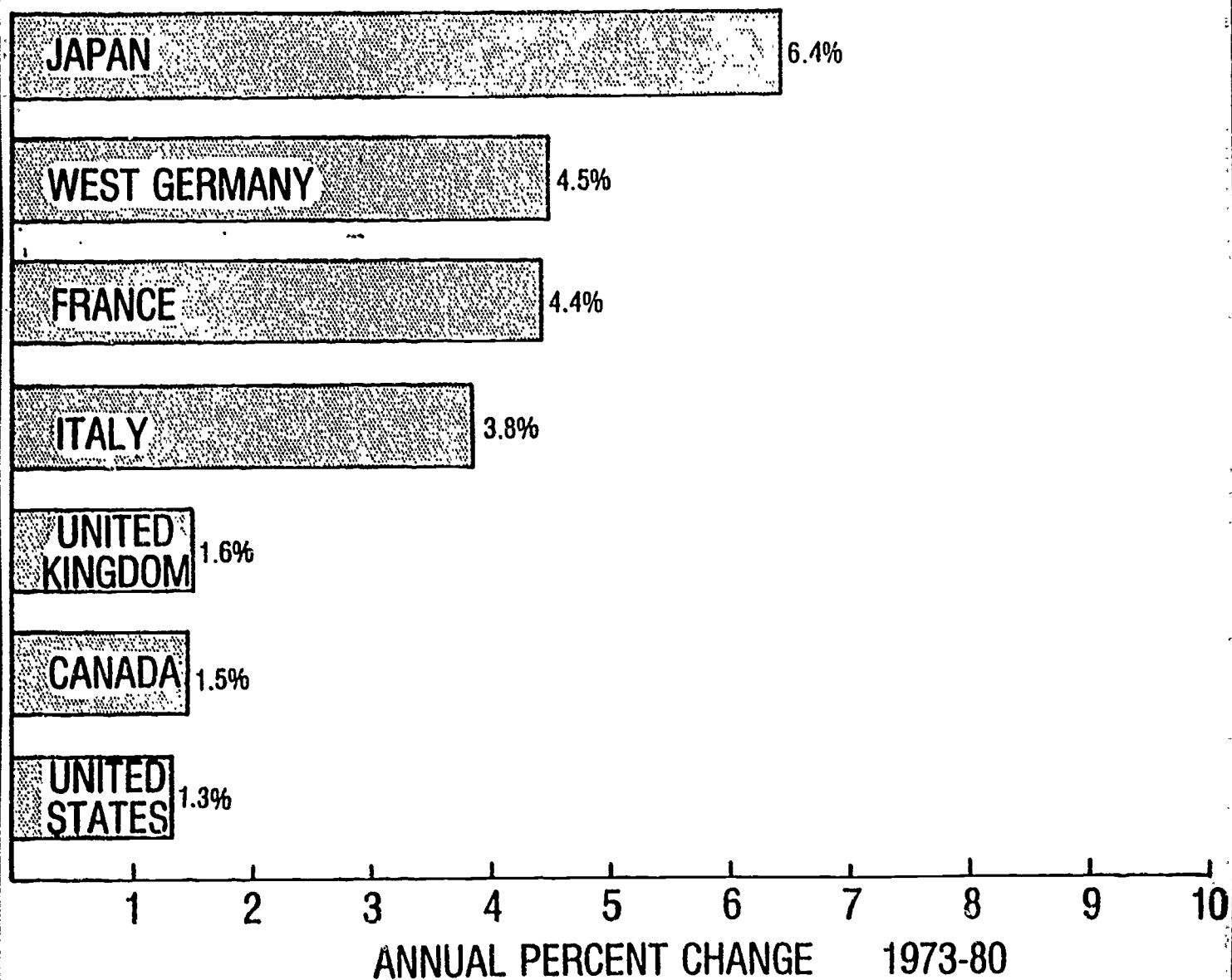


$$\text{PRODUCTIVITY} = \frac{\text{OUTPUTS (GOODS/SERVICES)}}{\text{INPUTS (PHYSICAL/HUMAN)}}$$

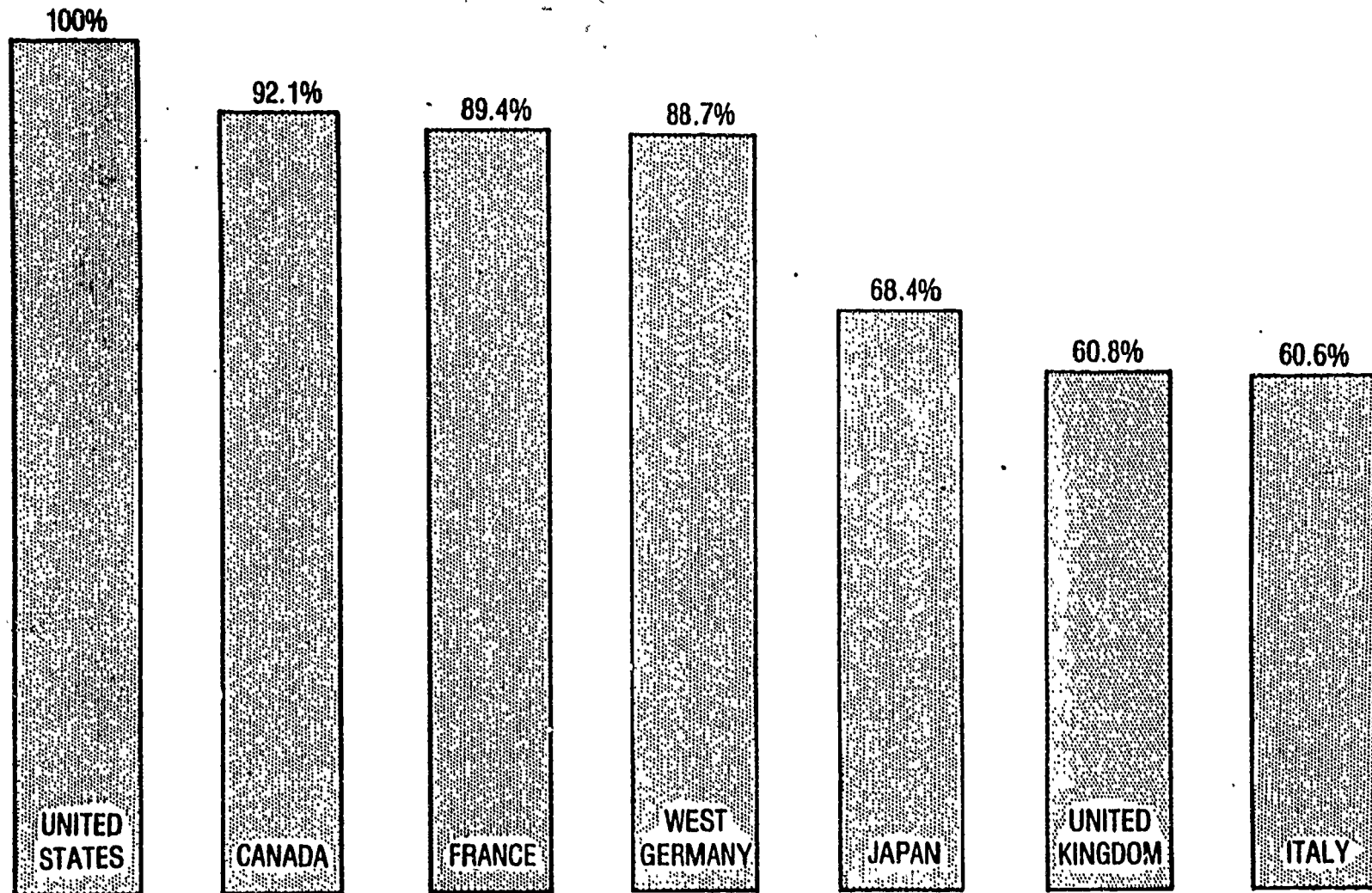
HOW ARE WE DOING?



HOW DO WE COMPARE GROWTH WISE?



HOW DO WE COMPARE ABSOLUTELY?



WHY IS PRODUCTIVITY IMPORTANT?

RELATION TO PROFIT

$$\begin{aligned}
 \text{TOTAL PROFITABILITY} &= \frac{\text{TOTAL REVENUE}}{\text{PRODUCT COSTS}} = \frac{\text{QUANTITY SOLD}}{\text{RESOURCES USED}} \times \frac{\text{UNIT PRICE}}{\text{UNIT COST}} \\
 &= \frac{\text{QUANTITY SOLD}}{\text{RESOURCES USED}} \times \frac{\text{UNIT PRICE}}{\text{UNIT COST}} \\
 &= \text{PRODUCTIVITY} \times \text{PRICE RECOVERY}
 \end{aligned}$$

EXAMPLE

	SITUATION A	SITUATION B
UNITS SOLD	40	45
PRICE	\$3	\$2.90
RESOURCES USED	20	21
UNIT COST	\$5	\$5.18
PROFIT	\$20	\$21.72
TOTAL PROFITABILITY	\$1.20	\$1.20
PRODUCTIVITY	2.0	2.14
PRICE RECOVERY	.6	.56

BENEFITS

- ANTI-INFLATIONARY
- IMPROVED INTERNATIONAL TRADE
- INCREASED STANDARD OF LIVING
- CONTRIBUTES TO QUALITY OF LIFE
- INCREASED ECONOMIC OPPORTUNITY

APPENDIX B

PRE-PLANNING FOR A VOCATIONAL EDUCATION PRODUCTIVITY EMPHASIS

The items listed below are for your use in thinking about or completing the initial stages of planning a vocational education productivity thrust. This covers such areas as defining potential needs for a productivity emphasis, evaluating the feasibility of a productivity effort and gaining support from key people in your locale.

Using information you have gained regarding the role of vocational education in productivity improvement, give some thought to the questions and jot down any ideas or conclusions you have. By consolidating your thoughts in this manner, you will have outlined a plan for pursuing the infusion of a productivity emphasis in your school district or institution.

1. Define at least three ways that a productivity orientation could be infused into your particular vocational education setting.
 - a.
 - b.
 - c.

2. Who within your school system or institution would be most appropriate for you to share your ideas with regarding the development of a productivity emphasis? Consider a variety of types of people who would be involved in the decision process or affected by program implementation. List positions or names.

3. What arguments would you make for the school district/institution to give further consideration to developing a productivity emphasis? Which argument would work best with whom?

4. List major problems or resistance you might expect to encounter in presenting your ideas to school personnel. How might you attempt to overcome each of the problems?

Problems

Ways
To Overcome

5. How would you plan to present your ideas to the different parties you listed above? Consider both existing communication channels, such as regular staff meetings, as well as special purpose techniques, e.g., memos and making individual contacts.

Target groups/
Individuals

Method
Contact

6. From what outside groups or individuals would support be required for successfully infusing productivity into vocational education programs?

7. What arguments would you use in securing the support of these groups?

8. What resistance might these groups or individuals offer? How would you plan to overcome the resistance or problems?

Problems

Ways
To Overcome

9. What existing linkages could be used to establish the support of outside groups? How else would you plan to make contact or gain support?

10. Synthesize your ideas for securing support for and pursuing further consideration for a productivity emphasis into a series of activities and list them on the form below. Consider how the planning would fit into the school-year cycle and lay out a time frame for completing the activities.

<u>Activities to Pursue</u>	<u>Who Should be Involved</u>	<u>Time Frame</u>	
		<u>Start</u>	<u>Finish</u>

APPENDIX C

