DOCUMENT RESUME

ED 341 839 CE 060 357

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TITLE Developing Industry Specific Training for the Classroom of the Future.
PUB DATE 8 Dec 91
NOTE 19p.; Paper presented at the American Vocational Association Convention (Los Angeles, CA, December 8, 1991).
PUB TYPE Speeches/Conference Papers (150) -- Viewpoints (Opinion/Position Papers, Essays, etc.) (120)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Business; *Corporate Education; Curriculum Development; Education Work Relationship; Futures (of Society); Industrial Training; *Inplant Programs; *Job Training; *Nontraditional Education; *School Business Relationship; Two Year Colleges; Vocat..onal Schools
IDENTIFIERS *Customized Training; Indiana

ABSTRACT

Two forces define a real problem for industries struggling to retain or develop a place in a competitive world market: demographics and the rising level of necessary skills. An examination of Indiana population demographics shows a shortfall of approximately 140,000 workers. The majority of new jobs will require some postsecondary education. The new workforce is to be drawn from a part of society that has not traditionally been well served by public education or training. A solution may be found in state-established networks of postsecondary public vocational-technical colleges or schools offering associate degrees. These institutions are typically located throughout the state and within easy access to most population centers. The challenge for these institutions is to expand their services significantly at a time of diminishing or straight-line budgets. The answer may be industry-specific training and education developed by the college but delivered in the industrial facility. Instruction can be delivered by college instructional staff, company employees, or a combination of both. The Client Centered Model for curriculum development can be used both as a decision model through the project development stage and as a curriculum development tool for design and evaluation of the training. The most difficult part of the project may be maintenance of communication with all concerned. (14 references) (YLB)

DEVELOPING INDUSTRY SPECIFIC TRAINING

FOR THE CLASSROOM OF THE FUTURE

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Presented at
The Annual Convention of
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Los Angeles, CA, December 8, 1991

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Introduction

Recently, Rob Fowler, Vice President of Economic and Business Development for The Indiana Chamber of Commerce issued the challenge and problem statement for workforce development in the 1990's and beyond when he said "Two forces are at work over which we have little control. They are demographics and the rising level of skills necessary in the modern work place." An examination of the data reveals the impact of his statement. Indiana is fairly typical of many in the United States, in the past, rich in coal mining and steel production as well as agricultural production and manufacturing. In the past 25 years, as with much of what has been called the 'rust belt', many mines have been closed, as have steel mills and many manufacturing plants. The family farm has also fallen upon hard times. Many cities have shrunk to a fraction of their former size, and a significant portion of the population is considered economically disadvantaged.

On the positive side, the Japanese auto industry has recently discovered Indiana, as has the multinational chemical industries and some Japanese electronics firms. Some of the American auto industry has remained as has the manufactured housing industry, but most low skill jobs are gone.

Demographics

An examination of the Indiana population demographics exhibits a disturbing trend. The number of 18 to 24 year olds in Indiana will decrease by about 100,000 people between 1980 and 2010 (Indiana Business Review, 1983, p. 7) (see Figure 1).

Insert Figure 1 about here

Further examination reveals that the percentage of the population between the ages of 20 and 39 will decrease by four percent by 2020. At the same time the percentage of the population age 40 to past 80 will increase by over 13 percent (Indiana Business Review, 1983, p. 2) (see Table 1).

Insert Table 1 about here

This population shift will cause a decrease in the 20-29 age group of 133,870 or 13.6 percent (Indiana Business Review, 1983, p.6) (see Table 2). Twenty to twenty-nine year olds is the age group of the traditional entry level work force.

Insert Table 2 about here

If we factor in the number of retirements, 450,000, and the number of new workers available, 310,000, we find a new workers

'gap' or shortfall, of approximately 140,000 workers (Carnevale, 1991) (see Figure 2).

Insert Figure 2 about here

Examination of the enrollment trends in the public schools confirms this projection (Department of Education, 1985) (see Figure 3).

Insert Figure 3 about here

The obvious question is, if the segment of the population from which the workforce is traditionally drawn is decreasing so dramatically, where is the workforce to come from? The answer comes from our culturally diverse society. In the United States between 1980-1990 the white population increased by 6.0 percent, the black population increased by 13.2 percent, the hispanic population increased by 53 percent, and the asian population increased by 107.8 percent (U.S. Bureau of the Census, 1990). According to the Hudson Institute (1987), by the year 2000, the percentage of native white men in the workforce will decrease from 47 percent to 15 percent. The other 85 percent will be made up of native white women, native non-white men and women, and immigrant men and women; all non-traditional workers (see Table 3).

Insert Table 3 about here

Future Skill Requirements

A look at the second force referred to by Fowler reveals no less change than the first. According to the Hudson Institute (1987) by the year 2000, the majority of new jobs will require some post-secondary education for the first time in history. Only 27 percent of all new jobs will fall into low skill categories, compared to 40 percent of jobs today. Jobs that are in the middle of the skill distribution today will be the least skilled occupations of the future.

A review of the literature reveals considerable agreement with the conclusions of the Hudson Institute report. Hull and Sechler (1987, p. 14), state that "input from company managers, instructors, and trainers familiar with the manufacturing sector indicated that higher level skills are needed in today's workforce than were needed five years ago." Susan Imel (1988, p. 20), in an extensive literature review found that "research results (Carnevale, etc. at 1988, Gainer 1988, Mikulecky, etc. 1977) indicate that the range of skills needed by workers is expanding." Stoker, (1980, pg. 245), found that "The development of employees to operate and manage new equipment is a fundamental need of every successful company." Gainer (1988, p. 5) also stated that "...a mix of technical changes and heightened

completion is increasing the skill level needed for work in America."

The two forces at work, of which Fowler spoke, define a very real problem for industries struggling to retain or develop a place in a competitive world market in an era when the traditional workforce on which the industry has depended for skilled workers is shrinking and skill requirements are rapidly and steadily increasing. The new work force is to be drawn from a part of society which has not traditionally been well reserved by public education or training. Obviously, a challenge has been created. The question posed is who can meet the challenge? Fortunately, an answer is apparent.

An Available Solution

Most states have established, (or are in the process of establishing) a network of post-secondary public associate degree level vocational or technical colleges or schools. These institutions are typically located throughout the state and within easy access to most population centers. But a relevant question exists, are these institutions willing and able to be a part of the solution? An answer may be found by examining mission statements found in their catalogs. The sample we examined in Indiana included: "[The college] is sensitive to manpower needs of society...To prepare students for successful [employment] through occupational education (Vincennes University, 1991, p. 6). " "...[A] state post high school educational institutions devoted primarily to occupational

training of a practical technical...nature. The college will offer...education consistent with economic development needs (Indiana Vocational Technical Colleges, 1990, p. v).

It could also be argued that it is in the interest of the colleges to serve the emerging non-traditional population segment and the industries in need. It has been, after all, the traditional young white school age male population from which students have traditionally come. With that group shrinking, services may need realigned. But how can these institutions expand their services significantly at a time of diminishing or straight lined budgets?

We believe that the answer may be industry specific training and education developed by the college but delivered in the industrial facility. The instruction can be delivered by either college instructional staff, company employees, or a combination of both. All of the elements required for this solution are already in place, and it is a solution which should appeal to all parties involved. The company receives cost effective customized training, and the college is able to expand its service and increase its enrollment without over extending its resources.

Like most complex solutions, however, there are potential problems. Many industrial personnel have a negative "ivory tower" image of college personnel. Such an image is very detrimental, and must be overcome if the two are to work together effectively. Some college faculty have a 'public institution' orientation which must be overcome if a partnership is to be

successful. Other potential problems for academics may include lack of familiarity with legal contracts, inexperience with time-cost projecting, scheduling and faculty release constraints, and problems regarding compensation for non-university sources.

A Decision Model

Experience has shown that when planning or developing any outcome focused or performance based project, a systematic modeling approach will yield the most predictable results. All systematic development models are based upon the Input-Process-Output universal systems model, and several good curriculum development models are available (Pucel 1987, Putnam, 1980, Putnam 1984, U.S. Army Institute, 1979).

Most models designed for systematic development of curriculum work well for their intended purpose, but they do not provide guidance through the critical decision making stages leading up the actual curriculum design project. The Client Centered Model for curriculum development, however, can be used as a decision model through the project development stage, as well as a curriculum development tool for actual design and evaluation of the training (see Figure 4).

Insert Figure 4 about here

The following is a description of how to use the Client Centered Model to guide you through the necessary decisions and

negotiations leading to the design of an industry specific customized training project.

1. Description Phase - Be sure that you know who you are working with and what they actually want. Are you dealing with a branch office, subsidiary, or a corporate headquarters? Do they want instructional materials, training. or a training program? Do they want you to provide printing production, instructional aids, or in-service staff training? Is the product to be plant specific, company specific, or generalizable to the entire industry? Upon completion of the product, what about ownership, distribution, etc.? Is the company willing to commit adequate resources to complete the project? Can you work within the company time frame?
2. Content Phase - Be sure that you can actually do the job. Do you have the personnel with the knowledge and skills needed? Do they want to be involved with the project? Do you have access to the needed facilities? Will problems arise regarding release time, compensation, scheduling, or faculty load? What advantages and/or constraints will the university provide?
3. Instruction Phase - Be sure that both you and the company are able to provide the necessary instructional organization. Will the company identify a team with whom you are to work? Has the company arranged for adequate access to necessary technical and other company resources you may need? Will you be able to work within their schedule? Will your personnel

be able to work with theirs? Can you provide a product that will 'fit' the company?

4. Evaluation Phase - Be sure you know who is in charge. Who will make final decisions regarding the product? How will assessment be done? How will organizational communication be maintained? Are resources available from both sides for any necessary post evaluation revision?

Final Considerations

Finally, before entering into any agreement or commitment, be absolutely sure that the written approval of college administration has been secured. At this level, communication is vital to the entire project. Administration must understand generally what is planned, with whom, and why. They must also be aware of any financial arrangements. It is very important for them to have an understanding of the approximate timeline of the project.

The most difficult part of the entire project will be maintenance of communication with all concerned. The strain of time, activity, and unavoidable difficulties are a constant abrasion on lines of communication. If any of these lines wear through while the project is underway, the entire project may be imperiled. The single most important part of the project coordinator's job is to establish and maintain effective communication with everyone concerned with the project.

Good Luck

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Table 1

Indiana Age Distribution

Age	1980 Percent	2020 Percent
0-19	33.4	24.9
20-39	31.4	27.4
40-59	20.2	25.2
60-79	12.7	19.4
80+	2.3	3.1
Total	100.0	100.0

Source: "Indiana Population Projections to the Year 2020," **Indiana Business Review**, July-August, 1983, p.2.

Table 2

Indiana Shifts in Age Groups: 1980 to 2020

Age	2020 Number	Change Number	% Change From 1980
0-19	1,521,940	-314,340	-17.1
20-39	1,669,530	-55,590	- 3.2
40-59	1,536,400	426,720	38.4
60-79	1,184,620	489,950	70.5
80+	188,510	63,990	51.4
Total	6,101,000	610,800	11.1
20-29	847,650	-133,870	-13.6
30-39	821,880	78,280	10.5

Source: "Indiana Population Projects to the Year 2020," Indiana Business Review, July-August 1983, p.6.

Table 3

New Labor Market Entrants
Compared to the Current Workforce

	Labor Force 1985	Net New Workers 1985-2000
Total	115,451,000	25,000,000
Native White Men	47%	15%
Native White Women	36%	42%
Native Non-White Men	5%	7%
Native Non-White Women	5%	13%
Immigrant Men	4%	13%
Immigrant Women	3%	9%

SOURCE: Hudson Institute

Figure 1

18 to 24 Year-Olds in Indiana: 1980-2010

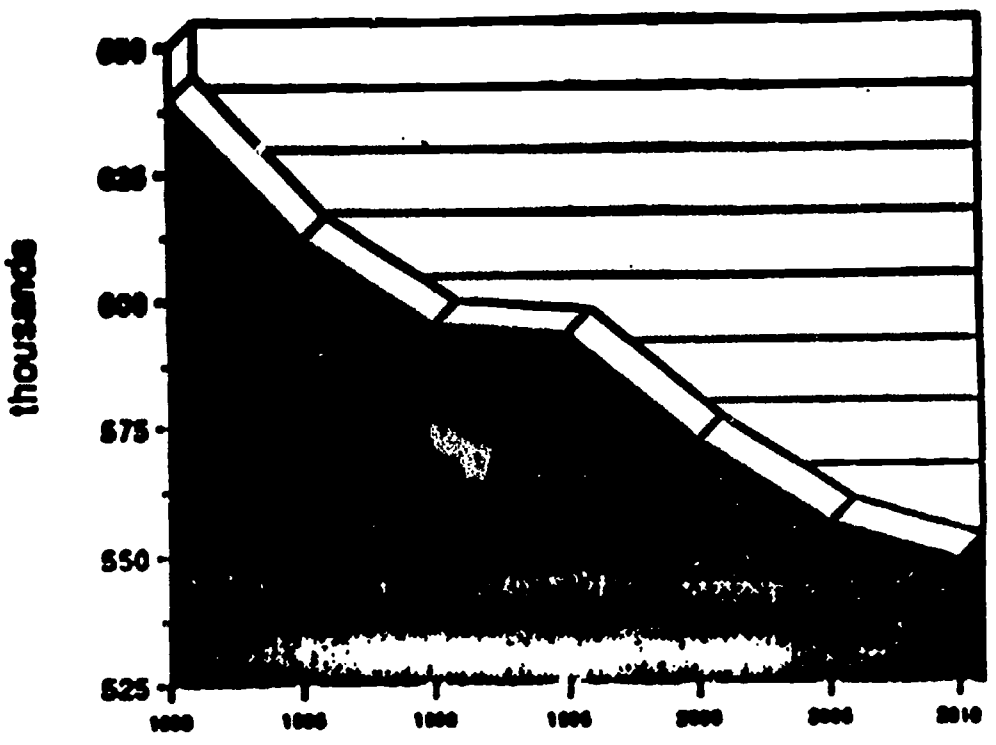


Figure 2

Workers Leaving and Entering Indiana's Workforce in Next Ten Years

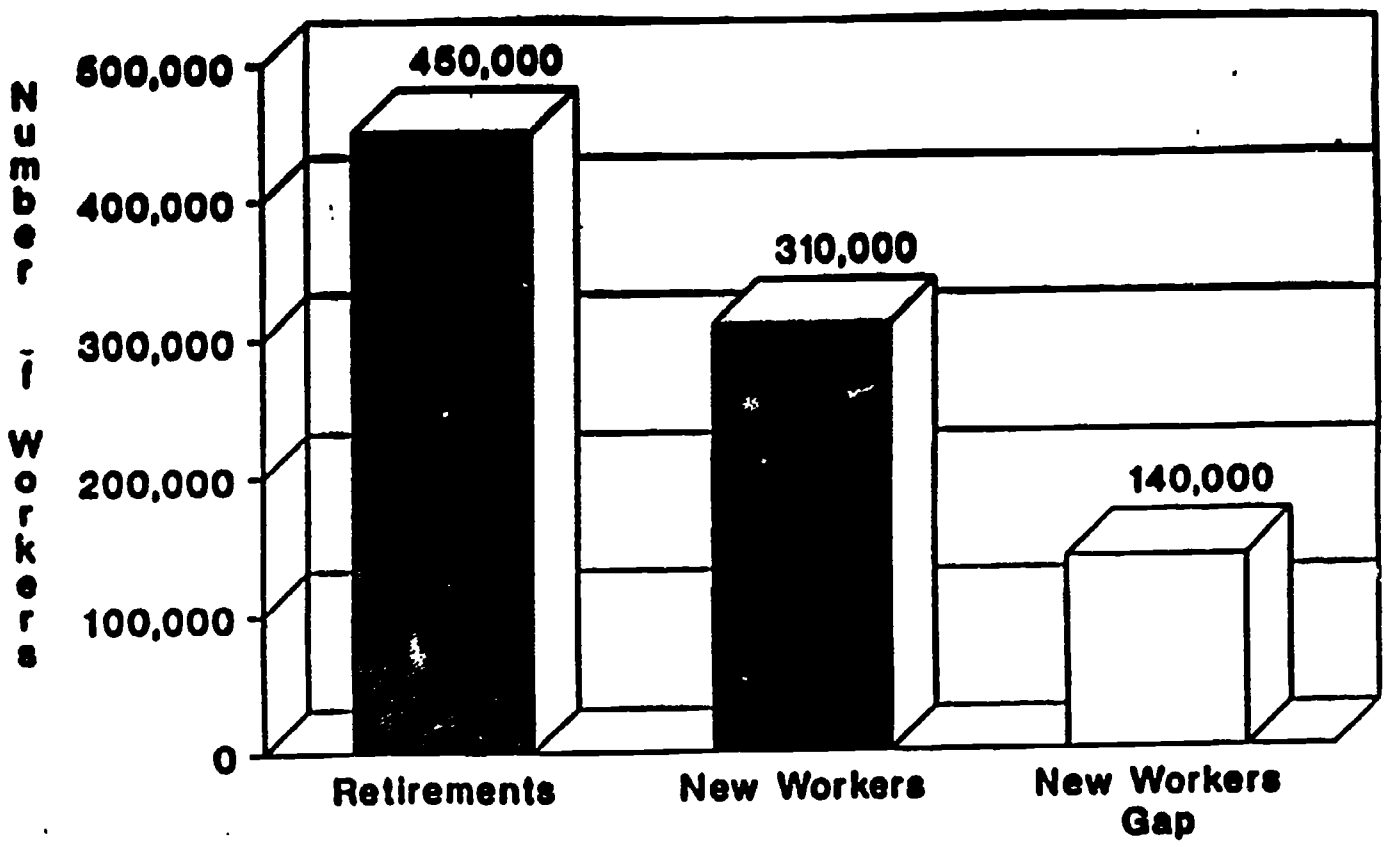
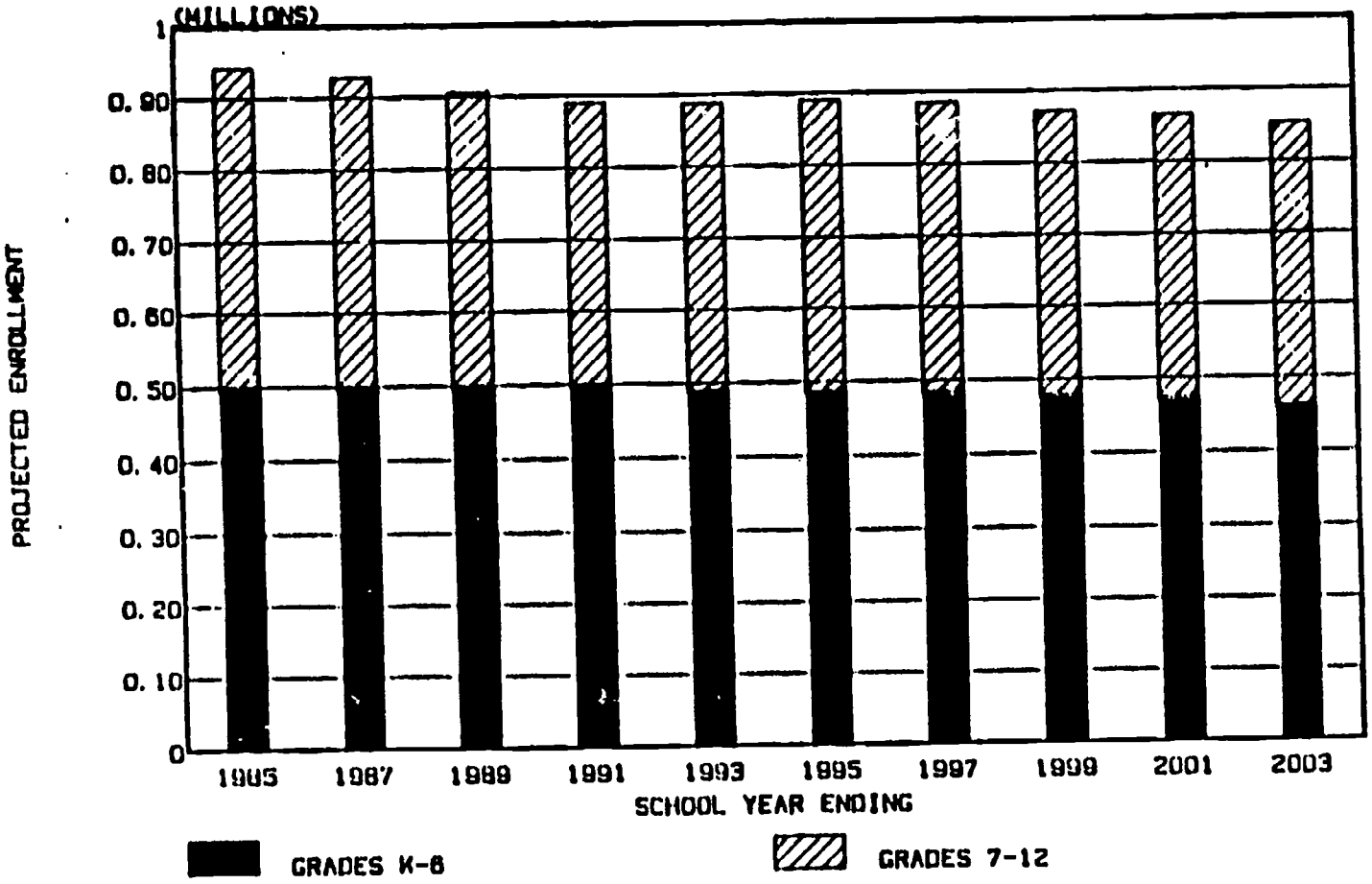


Figure 3

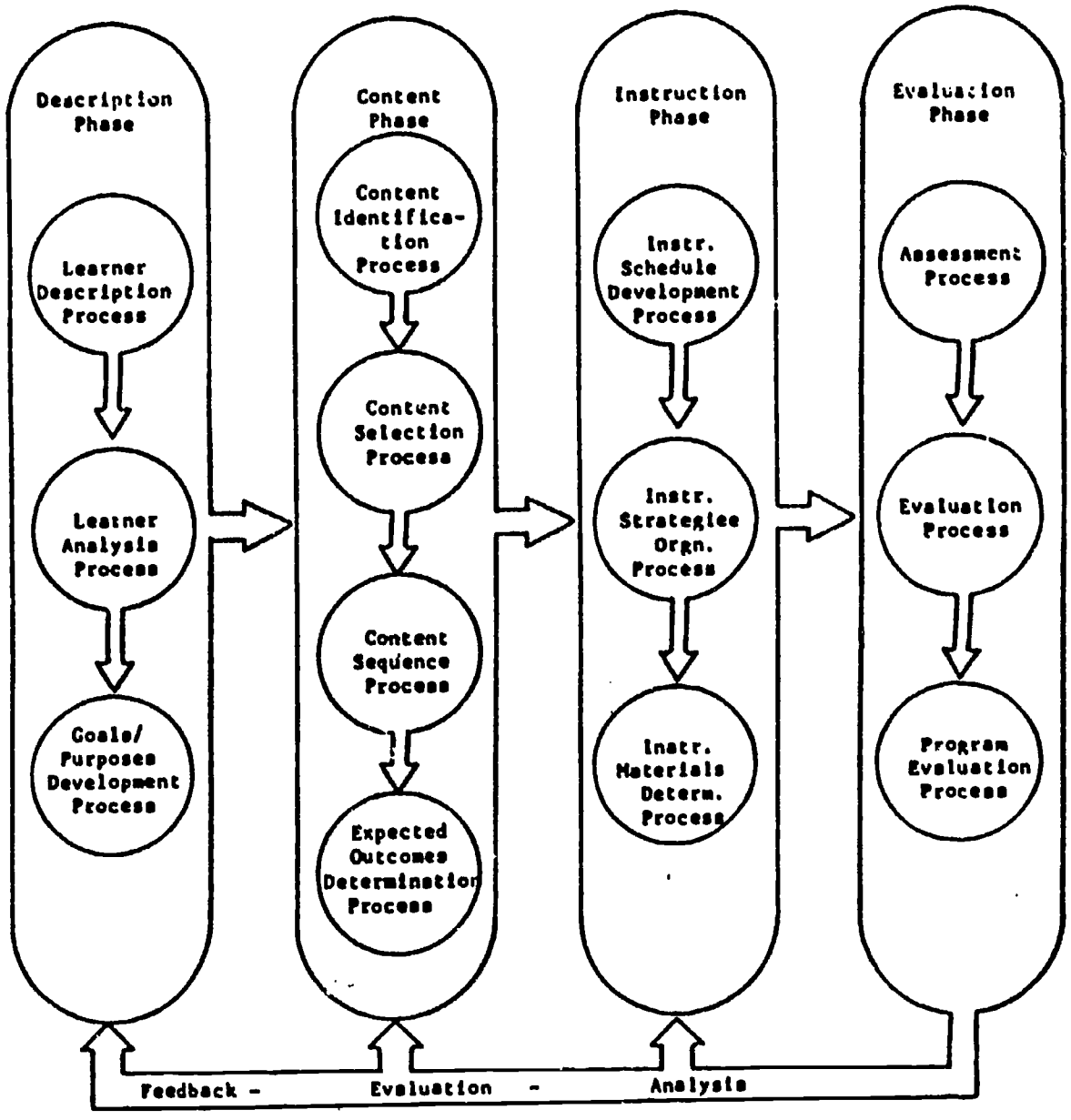
Enrollment Trends to 2003



Source: Educational Information and Research, Indiana Department of Education, 1985.

Figure 4

Client Centered Model for Instructional Design



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