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AUTHOR Horsley, Kathryn; And Others
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ABSTRACT

A variety of practical matters about initiating and extending effective population education are dealt with in this paper. In the first section, a summary of teachers' experiences and needs is offered. Teachers who had demonstrated an interest in population studies were contacted to determine what they have done in the classroom, how, with what results, and what kinds of materials/assistance they felt were needed. Responses are statistically indicated and discussed. A survey of school administrators of various levels is discussed in the next section. They were asked: if they considered population growth, its causes and consequences, important for young people to know; if they considered information on population dynamics an important/appropriate element in the curriculum; and whether they would support integration of such units into existing curricula. Over 95% of the responses were affirmative, however numerous qualifications accompanied this support. Other questions dealt with curriculum change processes, willingness to support materials development, and mechanisms for teacher training. The final section of the document deals with recommendations for next steps. These fall into three categories: 1) using existing network of interested persons/institutions; 2) the need for special teacher training; and 3) the need to assess available materials so that the best of these can be made known and available nationwide. (Author/JLB)

Population Education in the Secondary Schools: A Survey of the Art

Kathryn Horsley
Project Director and Principal Author

Mary Lou Love
Ann Foncannon
Researchers and Participant Authors

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INTRODUCTION

Regarding the field of population education, a Population Bulletin in 1970 concluded: "The state of the art is so preliminary that not even the state of the art has been surveyed." During the summer of 1971, The Institute for the Study of Health and Society, under contract with the Population Reference Bureau, carried out such a survey of teachers, administrators, and materials to obtain as much information as feasible from educators themselves about what is going on in the field of population education.

The survey reveals a variety of commitments, difficulties, student viewpoints, etc., which previously we may only have guessed about: Some teachers tell us their students are "satiated" with the general population crisis message through the mass media, but want a more in depth exploration of specific variables. A few "inexperienced" teachers indicate they are unwilling to teach population issues because they fear community and parental pressure, while the majority of "seasoned" teachers of population concepts indicate they have experienced very few problems from outside groups or parents. While these teachers who actually have taught population dynamics say they are confident in their own knowledge and skill with this new subject area, at the same time they express a need for further in-service training.

The reaction of students exposed to a variety of both issues and processes are described. Teachers tell us that students will no longer respond to the traditional methods of reading or lecturing. They do, however, become excited about population issues through direct participation in activities.

The summary report makes no attempt to define perameters, establish goals or theorize over tactics. Rather practical matters are dealt with - the expressed needs of teachers who want to do a good job of teaching population dynamics in the classroom, and the administrative and organizational steps required to see that more and more teachers are able to do that. The concluding section recommends next appropriate steps in expanding and improving the early efforts in the population education movement.

I. SUMMARY OF TEACHERS' EXPERIENCES AND FUTURE NEEDS IN POPULATION EDUCATION

Until quite recently, most population education material was developed because whomever designed it had either a sincere concern over our population "problems" or an academic interest in demographic trends. Little was designed with teacher, student or classroom needs in mind.

If real learning is to result from our present efforts, we must be fully cognizant of what materials and techniques "work" in the classroom. Ideally, criteria for evaluation of materials and classroom methods are based on the eventual behavior of students. Presently, however, because the behavioral objectives and measuring tools have not been specified for a program of population education, we rely on the assessment by teachers of what has worked in their own classrooms. In an attempt to ascertain just such information, we contacted teachers who have demonstrated an interest in the field of population studies to find out what they have done, how they have done it and with what results, and what kinds of additional materials and assistance (e.g. in-service training) they feel they need at this point.

Most of the teachers from whom we have responses were contacted where they were available in groups--settings such as the Urban Life-Population Education Institute in Baltimore, the National Science Foundation Conference on the Population Explosion in Cincinnati, and the Population Curriculum Study session at the University of Delaware. A large group of these "experienced" teachers were participants in the Manresa Workshop on Population Education in April 1970. A total of 58 questionnaires were tabulated to give most of the information. Where questions concerning material and training needs of teachers were asked, responses from prospective teachers -- those who have not so far engaged in the teaching of population dynamics--were also included. For these questions, a total of 118 questionnaires were tabulated.

To measure the diffusion of the population education innovation, teachers were asked, "In what year did you first include population as a subject for classroom study?" The 58 responses indicated a steady pattern from 1965 up to 1969-1970-1971 when there was a notable increase in teachers' attention to population issues.

The following question, "What was the scope and major focus of your unit or short course in population as you most recently covered it?" was asked in an attempt to understand what kinds of concepts and factual information teachers actually consider and teach as "population education." The four categories used to group the responses to this question were environmental, social, demographic and health focuses. As expected, most of the 64 responses fell into environmental (28) and social (27) categories. A very few teachers (9 out of 64) indicated their primary focus as demographic or health. Responses to this question of scope and major focus support the statement that population education is problem or phenomenon-oriented. With 55 of the 64 focuses listed primarily as social and environmental problems, and these taught in as many as 20 different courses at the secondary level, it is apparent that teachers consider population a subject appropriate to a wide variety of discipline areas.

What kinds of materials have these few teachers been relying upon? Who has produced these materials? Are they good? Only adequate? Or poor? Categorized responses appear below to the two questions: "What teachers' aids or guides on population have you used?" and; "What printed materials have you distributed as textual or discussion material for student use?"

	Excellent		Adequate		Poor	
	*T	S	T	S	T	S
Institutional Publications (PRB, Pop Council, U. Delaware)	12	10	11	3	-	-
Curriculum Projects	4	4	3	2	-	1
Books, Texts	5	15	1	3	-	-
Periodicals	3	7	7	7	-	-
Audio-Visual Materials	18	3	6	-	-	-
Others	5	4	4	3	-	-

Most significant is the evaluation of all the existing material as either excellent or adequate. One explanation might be that teachers are so desperate for any material on population, use of almost anything makes them feel further ahead. It is alsopossible that teachers know so little about the complex relationships linking population to other issues, that they

accept almost any information as credible and responsibly presented. A more positive interpretation is possible when considering the specific written materials listed. Several teachers cited materials from the Population Reference Bureau, from the Population Council, the Population Curriculum Study (University of Delaware) and the BSCS Green Version textbook. These materials for the most part, even though not all designed for classroom use, present factual information and draw responsible relationships between population variables and others. In summary, the information does indicate that teachers consider most audio-visual materials very useful, while judging many of the periodicals inadequate. Most other written materials (books, texts and various bulletins) are used with reasonable satisfaction.

Of central importance to the entire survey is the following question: "What kinds of teaching and student materials would you like now if you could have them developed to order?" In essence, this question is asked to get a direct statement of teachers' present needs from the teachers themselves. Of the three categories into which types of materials seemed to fall for teacher use (audio-visual, books and other printed materials, and other), audio-visual materials were mentioned most frequently. The actual breakdown is audio-visual aids--112, books and other printed matter--30, and other--54. Out of the 196 items desired, only 30 were for books and reading materials for teachers. Those specifically mentioned are included below:

- paperback essay collection
- abstracts on theory and population dynamics
- factual pamphlets (non-emotional!)
- teacher's manual
- revised edition of O.J. Sikes Reference
- short texts
- position papers by experts
- newsletter
- reference books
- periodical reprints
- teacher's handbooks
- PRB Bulletins

The "other" category is a more diverse listing of expressed needs and includes 54 out of the 196 items listed. Some of these materials are listed below:

- simulation game
- inductive learning lessons
- inquiry lessons
- labs (fly or yeast culture)
- a national curriculum (K-12)
- centralization of what's already available
- curriculum guides
- individual learning units
- testing materials
- group discussion guides
- speaker lists
- case study guides
- vocabulary lists

For student use more written material is requested and many fewer audio-visual aids are called for. The actual breakdown is: books and other printed matter -- 66; audio-visual -- 40; and other -- 47. The specific reading material listed includes the following:

- paperback essay collection
- easy reading related to student's own lives
- reprinted articles on psychology of crowding
- factual material with cases in opposition to Ehrlich's arguments
- paperback textbook
- extension of World Population Data Sheets with more detailed data on the United States by age and region
- readers such as People and This Crowded World
- newsletters
- workbooks
- comic books
- dittoes supporting transparencies
- short textbooks
- brief stories to promote discussion

The specific "other" needs for student material expressed are listed here:

- guides to legislation on population-related issues
- student publications
- vocabulary lists
- lab demonstrations
- case study guides
- simulation games
- guide to experiments on effects of population
- individual learning packets
- role playing suggestions
- cartoons

Questions regarding material availability and teacher initiative were asked specifically of the teachers who had not previously taught population dynamics. To measure the commitment of these inexperienced teachers, the following questions were asked: "Would you include classroom discussions and activities on population dynamics in your lesson plans if you had teaching and text materials to rely on?" and, "If you had to design your own?" As expected, if sufficient material is available, nearly all respondents would spend class time to cover population issues. Not unexpectedly also, fewer

teachers would be willing if they have to design their own materials. The number, nevertheless, is still high: 41 of 54 respondents still agreed to include population dynamics even when it meant designing their own materials. This degree of willingness is somewhat surprising from many of these teachers, who, at that time, had not ever included this subject area in their lesson plans.

A series of questions following to get an idea of what resource material on population these teachers know are available to them. The three institutions specifically asked about were the teacher's school, the community library, and population or ecology-oriented organizations. About half of the respondents knew of materials available through their own school system; the other half either said they didn't really know or they said materials, in fact, were not available. Regarding any resource material available through the local community library, exactly half of the teachers frankly didn't know. For the 28 who checked, 23 found materials were available. A large majority of respondents knew that resources on population were available through various interest groups and national organizations. The five most often mentioned organizations were: Planned Parenthood, Zero Population Growth, Population Reference Bureau, Sierra Club and the Conservation Foundation.

One last question specifically for these teachers who had not yet taken the initiative with population education is: "If you would not consider covering the information about issues relating to population change in the United States and/or the world, why?" Only 6 of the 60 teachers said they would not and their reasons are the following:

- fear of outside pressure groups
- fear of trouble over teaching birth control, abortion, etc.
- population issues unrelated to classes taught
- unavailability of material and information

Three of the reservations expressed indicate a perception of population education as being a controversial subject. Because population education has some potential for being a sensitive area to be handled in the classroom, it is important to know what specific sensitivities have emerged from schools and communities when teachers have actually taken the initiative to include population issues in their courses. We find that of the 56 "experienced" teachers responding, 32 indicated they had had no difficulties at all, 22 said they'd met "some" problems, and only 2 said "many."

Some of the pressure coming from school systems and administrators was over such issues as rigidity of course schedules, school censorship policies, and lack of financial support. On the other hand, pressure coming from parents or community members was over issues such as the quick acceptance by students of abortion as a birth control method, defensiveness of parents with large families, and objections to visual representations of sex organs, contraceptives, etc. Such objections from and difficulties with parents resemble the controversies emerging from programs of sex education during recent years. But certainly not all teachers face such barriers depending on previous state or local school policy on matters of discussing sex, reproduction and family planning in the schools. Where rigid barriers do, in fact, exist, population education certainly need not cease to exist. Many of the topics within population education can be effectively included in the instructional program without recourse to materials dealing with sex, reproduction, and family planning.

The pressure felt from administrators by teachers who desire more emphasis on population issues is of quite a different nature. The majority of comments indicates that there are practical administrative problems which slow enthusiastic teachers down. With little financial support, little available material, and little time in an inflexible curriculum, few changes can be made. It is not surprising then to see why so many respondents stress a need for political and financial support from beyond their own school systems.

Acknowledging the pressures encountered outside the classroom, we thought it useful to know how confident teachers felt inside the classroom concerning their own teaching knowledge of and skills with population dynamics. Of the 56 "experienced" teachers, 21 indicated they were highly confident and 30 indicated they were moderately confident of their own abilities. Only five were "doubtful" that they could handle this subject area capably.

Even with this high degree of confidence most of these teachers expressed a clear desire to increase their teaching ability through participation in summer training programs. To the question: "Would you be interested in a multidisciplinary summer institute of about four weeks duration on the subject of population?" the response was overwhelmingly positive. To the "If credit given" qualification, 95 answered "yes" and 15, "no". And to "If credit not given," 73 said "yes" while 28 said "no".

Too few of the "activists" in the population education movement have ever taught school and consequently have little

sense for what materials and classroom approaches really "work". At the present time, we have little understanding of what kinds of issues and what kinds of learning processes are actually exciting to high school students today. . . . and exciting they must be to capture the attention of these students who are increasingly turned off to the whole fragmented, discipline-divided structure of formal education.

To gain a better understanding, therefore, of what topics and techniques the experienced teachers used--and to what end, they were asked: "What particular issues turned your students 'on' or 'off' most quickly?" and "What particular processes turned your students 'on' or 'off' most quickly?" Responses to the "issues" question are grouped under the following category headings along with student reaction, positive and negative:

	Reaction of Students	
	Positive	Negative
1. Contraception, Reproduction and Abortion	27	2
2. General Population Issues	31	9
3. Urban Related Issues	16	2
4. Environmental Issues	14	4
5. Values and Ethics of Change	14	10
6. Demographic Concepts	7	5
TOTAL	109	32

Not surprisingly, when teachers touch on issues of sexuality, birth control, reproduction, their students are interested. This general subject area is mentioned by 29 respondents and only 2 indicate any negative student reaction. Clearly, students are eager for this information which so often is withheld by parents and by school systems controlled by parents.

In the next grouping, General Population Issues, it was apparent from supplemental questions that negative student reaction resulted from a focus on world-wide problems (versus United States and local) and on "historical developments" and Malthusian theory. In addition, a teacher indicating a negative student reaction to the issue stated as "mere recognition of the problem," said that her students were "satiated" with the "population crisis" message; therefore the lack of interest. This explanation might also be applicable to the negative reaction to "population explosion" concept of which many

students undoubtedly become aware through mass media coverage. At the same time these students probably have little understanding of what the growth patterns really are or of the socio-economic, political issues surrounding them. Teachers will have to go beyond building a surface awareness if students are to maintain interest in the subject.

The issues particularly relevant to urban life seem to capture most student interest--and not surprisingly, for these issues are probably "closer" to the student's own circle of reality. Here they are dealing with problems in housing, transportation, crime, noise, crowding--things that they already know something about. The positive reaction to "psychological effects of overpopulation" is also expected; in these cases students can so easily personalize the questions involved. Teachers should be cautioned about the lack of research and information available on these issues, however. Too little is known about how population growth and distribution affects these phenomena.

Issues of a more controversial nature--those dealing with value change and ethics of controlling family size--elicited excitement from a number of students. The ratio (14/10) between positive and negative reaction is quite low in this case; two interpretations are possible. The 10 teachers indicating students were quickly "turned off" by these issues could have meant that students simply disliked dealing with the issues themselves or that they simply disliked the implications of many control alternatives, i.e. coercion. It is unclear which, but the latter seems more likely.

There is also a noticeably high proportion of negative reaction from students to the study of strict demographic concepts. This topic area was mentioned the fewest number of times by teachers as either an exciting area or one to which students "turn off." Perhaps teachers are giving very little attention to demographic variables as background material. Perhaps, too, students simply react in an indifferent way to them when they are presented.

Equally as important as the issues focused upon in the classroom, are the ways in which they are handled. The learning process in the formal school setting is something we know so little about, yet more and more educators are insisting that the traditional modes of exchange between teachers and students are no longer effective. More noticeably, students themselves are telling us--in any number of ways--that the old systems of knowledge transfer will not work with them!

Of all persons, teachers should know when their classroom methods and activities are, in fact, working for their students. Hence, the survey question, "What particular processes turned your students 'on' of 'off' most quickly?" Reactions of students--as reported by the teachers--seem to fall into four broad categories. These four are listed below with the number of positive and negative student reactions to each:

	Positive	Negative
Student-Centered Activity	66	4
Audio-Visual	20	6
Lecture and Reading	3	24
Other (most were ambiguous)	4	3

From the above table, the pattern is clear: the traditional passive methods for exchange of information in the classroom setting, those of teachers lecturing and students listening and reading, will not suffice. Not surprisingly, at the other end of the activity scale, students thrive on processes which require their own active participation. What are some of these processes which seem to capitalize on student excitement? Those listed by teachers in the survey appear below, in various degrees of specificity and generality.

- small group discussion
- inquiry lessons
- labs-plant and animal
- general personal student involvement
- survey of own community
- field trips
- games
- debates
- group presentations
- computer program work
- visit to ZPG and PP/WP
- role playing
- community action project
- preparation of "population issue"of school newspaper
- collage making
- film making
- writing of essays and reports
- individual research

To the question: "Do you have any specific or general suggestions for extending population education on a much broader basis within the school system?", 103 suggestions were made. The breakdown pattern of these suggestions deserves attention as do the specific ideas expressed. The three response categories into which most of the suggestions fall are discussed in the next three paragraphs:

Materials: Student and Teacher Material needs expressed are not numerous (6). At this point in time perhaps teachers

with support from their administration could get by with existing population materials if they receive in-service training. In fact, many teachers did stress the need for district workshops and summer conferences to give more teachers the necessary information and skills.

Political and Financial Support The number of teachers (17) indicating a need for support from their administrations and ultimately from state and federal levels undoubtedly reflects the frustration of teachers having tried to do more with population education in the curricula, but finding little backing, either philosophically or practically. These individual teachers undoubtedly recognize that if other less innovative teachers are to include population issues in their course outlines, the whole subject area must be legitimized by higher-level educators and those who have the financial backing to see that good materials are provided and training opportunities available.

Implementation and Content Teachers responded with 80 suggestions for the content of population education programs and for the implementation of programs. The most frequently stressed points center around involving several disciplines at several levels. The need, as seen by many of these teachers, is for a multidisciplinary program starting in the elementary grades. Concern was expressed by a number of teachers that establishing a program at the high school level would be of little educational use unless population concepts had been established in earlier grade levels. The other concern expressed frequently was the need for teacher training sessions.

II. THE SURVEY OF SCHOOL ADMINISTRATORS

Before one can talk about extending population dynamics education into the secondary schools on a broad basis it is vital to understand how curriculum changes take place in various school systems. To this end, a questionnaire was designed and distributed to approximately 250 school administrators. An attempt was made to survey a variety of administrative levels so the sample includes responses from area supervisors, principals, curriculum coordinators and superintendents. Over 200 school systems in all parts of the country are represented. This, of course, means responses on decision-making powers concerning curriculum change reflect varying degrees of centralization from the state level and below. Because of these state to state differences few generalizations can be made in terms of the best policy to follow in each state when introducing this new subject area into the curricula.

In a series of three questions, the administrators were asked: if they considered population growth, its causes and consequences an important body of information for young people to know today; if they considered information on population dynamics an important and appropriate element in the school curriculum; and finally, would they support integration of units on population into existing curricula? Over 95% of the responses to these three questions were affirmative. These school officials are generally in agreement over the importance of this curriculum change. Numerous qualifications, however, accompanied their verbal support.

In theory, most agreed that the learning of population dynamics is important and that the schools are a logical vehicle for that learning to take place. At the same time these administrators face tightening school budgets and already overloaded curricula. While respondents felt that population problems are of vital importance. . .so are many other current issues. Some of these other issues have already been incorporated into school curricula in the forms of drug education, sex education, black studies, urban studies, etc. Undoubtedly much community and "interest group" pressure was applied in the adoption of these problem studies and cases made for the"immediacy" of curriculum changes. Administrators seem less likely to recognize the immediacy of population problems.

Since an objective of the survey was to learn about curriculum change processes, each administrator was asked who is responsible for curriculum changes in his respective school system. In most all cases, a number of persons and positions in the system are involved. The most frequently named positions are teachers, principals, superintendents, and most often, department heads and curriculum supervisors. Least often mentioned are students, local school boards and state boards of education. To get a better sense of the specific division of responsibility, administrators were asked to indicate whether each of four position categories were usually or seldom involved in the processes of initiating curriculum changes and giving final approval to changes. The four positions are given in the following two tables with responses to their relative involvement.

INITIATION OF CURRICULUM CHANGE

Position	Usually	Seldom
1. Teachers	71	5
2. Curriculum Specialists	64	11
3. County or City Board	9	61
4. State Department of Education	8	67

FINAL APPROVAL OF CURRICULUM CHANGES

Position	Usually	Seldom
1. County or City Board	51	24
2. Curriculum Specialists	42	22
3. Teachers	35	28
4. State Department of Education	32	45

This information indicates that there is a much stricter division of responsibility with initiation than with final approval. As one would expect, the two positions closest to the classroom are most involved in instigating the introduction of new subjects or the changes in old subjects. Teachers and curriculum specialists are indicated as the "initiators" while higher levels of administrators in city, county, or state systems are rarely involved.

As seen from the second table, division of responsibility in the final approval process is much less clear. Once again, the State Department of Education is the least often involved; beyond that no clear pattern emerges. The city and/or county boards apparently make most final decisions on changing curriculum, yet in many systems both teachers and curriculum supervisors are involved as well. The ambiguity here undoubtedly results from one or both of the following: 1) final approval is sometimes the responsibility of a curriculum committee composed of teachers, curriculum specialists, board members, community members, etc. (According to some teacher union contracts, teachers must be represented on such committees) or 2) respondents to this question were thinking about differing levels of changes - major and minor - where teachers might approve small changes but more significant, far-reaching changes would require school board action.

On the matter of material design and introduction, each administrator was asked what kinds of projects he would support to get population-centered teaching materials

developed and available. The specific project categories offered for approval or dissapproval are listed here:

	Yes	No
a) individual teacher-designed class units	95	7
b) local school or county curriculum design project (involving teachers primarily)	97	8
c) county, city or state curriculum design project (involving teachers, demographers, curriculum specialists)	86	11
d) purchase of commercially published and packaged materials	65	24
e) purchase of material from private institutions primarily concerned with population education	64	19

As seen from the above figures, most respondents support all five kinds of projects for material development. Clearly, however, there is much support for locally designed materials and considerable skepticism over "packaged" materials from publishing houses and population interest groups. This skepticism was countered by many administrators who recognize that institutions other than the schools usually have considerable more money, time, and expertise to develop quality materials. The process involving local teachers tends to take longer and often does not involve people with as much content expertise. On the other hand, it was argued that when teachers themselves put something together there is greater likelihood of it being used because of personal investment and familiarity.

A similar question was asked concerning certain mechanisms for training teachers. The Administrators were asked if they approved or disapproved of a variety of training situations, in-service and pre-service. A clear majority answered affirmatively to all categories. Some reservations were expressed, however, concerning some of them. It was felt that two to three days' time would hardly be adequate to cover the necessary information and issues; others felt four weeks was too much time and out of proportion to the importance of this particular subject area. The often expressed question concerning a 4 - week workshop was "where will the money

come from?" In addition to the costs of running such a workshop, most teachers will insist on some kind of stipend. Elective courses in population dynamics taken in various university departments seemed to be an acceptable way of training future teachers. This method, however, as acknowledged by several administrators, would not reach sufficient numbers of teachers. Some incentive would be required to interest more teacher candidates in this subject area.

Another question regarding in-service training programs was asked in an attempt to learn where decisions are made about the sponsorship and design of local training workshops. The responses indicate that approval most often comes from the district superintendent's office, either from the superintendent himself (indicated by 35 respondents) or the assistant superintendent of instruction (34). Other levels were mentioned as being frequently involved in this kind of decision, including local school boards (18), curriculum supervisors (15), state departments of education (11), and principals (10).

The initial idea for and planning of these workshops, however, rarely comes from the top levels of administration. Rather, teachers, principals, and curriculum supervisors, are much more likely to see a real need for training and submit requests for a workshop or conference to meet those particular needs.

This survey has given us some general guidelines for key persons and positions to work through depending on the various kinds of curriculum changes sought. Because, however, of the differences in degrees of centralization from state to state, a variety of strategies will be required.

III. RECOMMENDATIONS OF "NEXT APPROPRIATE STEPS"

Curriculum change is almost always evolutionary rather than revolutionary. Social conditions do not directly cause curriculum changes; it is, rather the pressure of interested groups in the society put on the educational institution that forces the move toward educational innovation.

As yet, no uniform sequence exists in which to change curriculum. However, some channels exist which ease to some degree the task of population education innovations. Rufus Miles has pointed out that "Until national curriculum revision became a reality, the American tradition was that of maximizing iniative at lower levels of structure, but with funding sources, especially for innovative work, often coming from above or outside the local structure. The combination of these two processes appears to be the most likely and effective approach to population education."[1/] Local and national efforts can be combined in a number

1/ Rufus E. Miles, (draft) "Suggested Statement of Principles for a U.S. Government Policy Concerning Population Education Through the Nation's Educational Institutions," p.7.

of steps for moving ahead with population education. Recommended "next appropriate steps" based on the information and viewpoints expressed through the survey will be discussed below following three priorities. Though we fully recognize these steps should be taken simultaneously, there are hard political and financial realities which necessitate an ordering of priorities:

I. The capitalizing on existing network of persons and institutions.
II. The training of teachers.
III. The design and/or use of materials.

I. Using Existing Network of Persons and Institutions.

As a result of the survey, a substantial number of isolated teachers, administrators, and organizations have been identified as being interested, if not involved in population education. Their commitment makes them potential agents for contact with other teachers and school officials. The much studied process of innovation diffusion depends heavily upon informal and local channels of persuasion; to ignore them in favor of more massive ambitious, and long-range programs is surely inefficient, if not a serious mistake.

To harness the energy of interested individuals and organizations, a communication network must be established. If one agency takes responsibility, two-way communication could be effectively channeled. Outgoing information could take the form of a newsletter sent not only to teachers but to local, district, and state school administrators. And if developments in the field would be channeled to the agency it could function as a clearinghouse.

II. The Training of Teachers

The theorists and teachers of population education seem to agree on one thing: teachers need special training to effectively handle the information and issues of population dynamics in their classrooms. Not only do teachers themselves express a need for in-service and summer sessions devoted especially to this subject, but so do they express eagerness to attend such programs with, and even without, credit given.

Besides just being a new subject area for most teachers, what other special characteristics does this particular subject have which would necessitate special attention? Two significant factors, closely related, present themselves: The first is a question of whether teachers would be able to handle the

content of this subject area in a professional way - even with highly regarded teachers, there is a serious lack of precision in the handling of information and ideas. As we witness a snowfall of instructional materials resulting from a perfunctory response to environmental and population problems - teachers in search for materials in these fields will be discovering a flood of books, articles, and teacher aids with little ability to distinguish between "responsibly presented" factual material and that devoted to an argument "proving" or "disproving" the role of population in various social and environmental ills. So few of the relationships linking population growth to various pressing problems are direct ones, yet so much of the mass media coverage and popular literature present impressive (to the unguided teacher) cases for population as the primary causal factor.

Closely related to this problem is the fact that teachers' own values on matters of population size, family size, and reproduction may easily influence their ability to operate intellectually in this area. All the approved, objective, many-sided, materials in existence could be used to no effective end, if a teacher's own biases interfere. Only through discussions and other group sessions in a teacher training program can these biases be brought out, and the teacher at least made aware of them.

This whole question of values is behind the second factor necessitating special teacher training. Because the issues of population growth and distribution are potentially sensitive ones to which teachers and students bring their own values, the process of educating about these issues is extremely important. Most teachers will need help in methods of value inquiry - how to contrive situations that "swing the students from one view to another," to give exposure to contrary ideas and evidence, leaving most conclusions up to the students.[2]

A. In Service

Short local conferences are useful for developing teacher motivation and better understanding on the part of administrators, but for little more. Based on informal evaluations of the few teacher workshops recently devoted specifically to population education, we propose the following workshop structure:

2. Population Bulletin, "Population Education: A Challenge of the Seventies." p.24.

- a minimum time period of two or three weeks for the development of content and teaching methods

- a follow up session of shorter duration to further emphasize techniques and to evaluate results of interim experiences

- both factual information and process (i.e. inquiry methods) are necessary components of any workshop (unless it is strictly for motivation purposes)

- teams comprised of teachers and administrators from the same school or district should be involved together in the training

With the above structural characteristics, either national, regional or local design should be successful.

Another appropriate step to further reach teachers is through the summer school curriculum of various schools of education. So many teachers are periodically required to return to school during the summer for certificate credits. It is possible that with considerable planning, a course, or a strong emphasis within a course, could be devoted to the teaching of population dynamics.

More attention should somehow be paid to the administrators and supervisors of these teachers we have mentioned. Not only must they be contacted for the communication of mere population awareness, so also must they be helped to see the kinds of direction and support needed by their own teachers.

B. Pre-Service

There are particular advantages of reaching teachers before they teach. Not only are they more likely to be more flexible in terms of their own values and teaching philosophy, but they are not yet bound to an established course outline and are more likely to consider population as an area to be included in what they eventually teach. Based on personal interviews with ten school of education faculty members (University of Michigan) a few possibilities for reaching these prospective teachers are listed below:

- undergraduate teacher candidates should be encouraged to take courses stressing issues of population in other schools and departments in the university.

- a course in the School of Education should be offered to cover important cultural problems of the day, one area of which would be rapid growth of population and the surrounding social, political, economic, and psychological issues.

- through general and particularly social studies methods courses, students should be encouraged to design pilot units around ecological and population concepts.

- through the elementary and secondary curriculum courses as well as through curriculum seminars, interested students should be encouraged to increase the awareness of others concerning the importance of curricular innovations which include population issues.

- any education course dealing with social and cultural change should foster increased awareness of population as a legitimate subject to explore.

III. The Design and Use of Materials

Less attention has been accorded materials than teacher training; more and better materials may not make a difference if, in fact, teachers are not trained in certain value inquiry approaches to the teaching of population concepts. Assessment of available materials suggests that if the best of these could somehow be made known (and available) nationwide, a number of specifically expressed needs could be quickly met.

Even though many of these new materials fall short of our ideals, they could be introduced, tested, and adapted now; much could be learned about their strengths and weaknesses. Common sense suggests that this be done before large sums of money are committed for major material development. A K-12 multidisciplinary complete curriculum exists as does a 7-12 multidisciplinary sourcebook. A variety of separate units exist (mostly for the social studies), as do essay collections and auxiliary textbooks. For an annotated listing of these materials, see the April 1972 issue of Social Education.

Gaps certainly do exist in meeting the material demands of teachers. The particular kinds of materials needed and expressed by the teachers surveyed, moreover, are not reflected in the thinking of most people writing about curriculum needs in population education. Teachers who we assume are sensitive to their students' reactions have stressed over and over again the need for student-centered activities - and here they mean action activities. Ivan Illich has pointed out to us "If a person is to grow up, he needs first of all access to things, to places and to processes, to events, to records. He needs to see, to touch, to tinker with, to grasp whatever there is in a meaningful setting."[3]

3. Ivan Illich, "The Alternative to Schooling" Saturday Review. June 19, 1971. p. 48.

All these needs demand "doing" in the classroom and demand that teachers promote processes that will facilitate self-directed learning.

Based on teacher assessment of much negative student response to reading as a process, our resources are not best spent for more auxiliary texts, readers, or major textbooks. A more useful kind of written material for teachers might be conceptual schemes and lesson plans for activities through which the concepts could be developed.

Thus far, the discussion has been focused on strategy steps which could be implemented in less than five years' time. These steps also are ones which could be taken under conditions of minimum governmental support. Looking further into the future, several recommendations seem appropriate.

A number of national population curriculum studies should be initiated and supported for at least five to eight years. Reasons[6] for this recommendation follow in this concluding discussion.

National projects can recruit talents which are not available to local curriculum projects. These content experts can work with curriculum specialists and teachers in a collaborated effort to produce teaching packages which reflect the most up-to-date research in the fields of demography, ecology, etc., put in a framework interesting and relevant to students.

A well-funded and staffed national project can operate a testing program for its materials which most local school systems cannot afford. A systematic evaluation can also be done - an on-going evaluation of curriculum materials as they are being developed with emphasis on getting information useful for revision. The major national projects presently in existence employ full-time staff evaluators so each product can be evaluated before its publication, not after.

Teacher training is an important part of the national projects. The summer institute has been institutionalized to carry out in-service training. The results of this process indicate to school systems that it is unwise to attempt the adoption of an innovation or new materials until their teachers have been prepared to handle them.

6. Thomas Switzer, "Curriculum Development: National or Local," unpublished, p. 13-15.

Given the nature of contemporary U.S. society, the development of curriculum materials by national projects seems realistic. This is a time when national goals - goals on which we find some degree of consensus - need to be emphasized. A national perspective can transcend the regional and local conflicts and bias and focus on the things beneficial to the society (and world) as a whole. Accepting the above, it should be made clear that this strategy recommends at the same time, that those persons in charge of each school system must retain responsibility for selecting the appropriate instructional materials. At this state in the development of population materials, many and diverse materials should now be available from the national projects so that each school system could select from them those that will be most effective in meeting their own local needs and objectives. Certainly, the population issues and concepts which would be meaningful to the inner-city child, are not necessarily those which would be appropriate for the child of the middle class suburb or of the rural south. So as long as the schools have a wide variety of high quality materials to choose from, there need be no fear of a federally controlled subject. And the fact that the projects do compete with each other is an important factor in assuring a wide variety of materials written on population, and thereby preserving local control of the treatment of the subject.

In conclusion, and in qualification of the steps recommended, we have based our insights and interpretation of "what's needed next" on the information and viewpoints of "grass roots" educators. There are not many of these teachers and school officials to make up what some would consider a "good sample size"for our survey of the art - but, in fact, there are not yet many teachers committed to the creation of population understanding among their students. This we knew; yet we feel confident in relying on the experiences and insights of the few teachers and school officials who have gained and maintained an active commitment to give us direction in this new and exciting endeavor.