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ABSTRACT

Extrapolating from the trends in postsecondary instructional delivery systems identified by Brown, Lewis and Harcleroad, this report attempts to identify how these trends might be implemented in Oregon. Separating the systems into technology-centered and people-centered, the report proposes future applications of dial access systems, self learning centers, learning cassettes, individualized instruction, correspondence study, traveling workshops and exhibits, audiovisual service centers, storage and retrieval systems, educational broadcasting, telephone systems, satellite communications, and computer-assisted instruction. Extension, people-helping-people, field-centered delivery systems and ad hoc institutes are also discussed. Perspectives and priorities for the state are outlined, and recommendations for specific goals and objectives made. A bibliography is attached. (SK)

FINAL DRAFT

Goals for Postsecondary Instructional Delivery Systems

submitted at the request of the Educational Coordinating Council

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INTRODUCTION

Comment on the future of postsecondary instructional delivery systems is necessarily tempered by, at least, the complexity of the task and by the awareness that, historically, a review of the accuracy of projections is humbling. Developments said to be certain have sometimes materialized, but more often, assumptions have been incorrect and predictions, in retrospect, appear ridiculous.

In retrospect this, too, may appear terribly naive. Still, there are some trends worthy of projection into the future and some desireable goals for postsecondary education in Oregon worthy of seeking.

Brown, Lewis, and Harcleroad suggest that the following are trends.

1. Systematic education. There will be more planning of educational programs, particularly those emphasizing individualized learning.

2. Increased individualization of instruction. Concern for individual differences will gain importance.

3. More independent learning. Opportunities to learn on one's own in learning centers and similar facilities will abound.

4. Decline of large group teaching. Recognition of the ineffectiveness of this method as compared to individualized methods will lead to the decline of large group teaching.

5. Modularization of instruction. Some learning objectives will be self-contained with students determining their own entering levels as determined by proficiency tests.

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1 James W. Brown, Richard B. Lewis and Fred F. Harcleroad. AV Instruction--Technology Media and Methods, (4th edition), New York: McGraw-Hill, 1973, pages 432-440.

6. Altered teaching roles. New teaching roles will emerge. Learning and media specialists as well as paraprofessionals will be needed.

7. More continuing education. There will be more learning opportunities for people of all ages and physical locations.

8. More accountability. The public will continue to demand proof of value for the investment.

These educational trends are complicated by trends in the more concrete technology related to instructional delivery systems. Although in relatively few years there have been tremendously impressive developments in applied technology in some realms, transportation, for example, there is still a long way to go in applying technology to education. Likely trends include comprehensive learning resource centers, improved media equipment, increased use of media packages, computer-managed instruction, computers for instruction, computers for direct instruction, expansion of locally produced materials, emphasis on both visual and aural literacy, adoption of various books rather than a single adoption of a text.[2]

Given these likely trends, let us sketch how instructional delivery systems might function to serve the educational needs of Oregonians in the 1980's.

INSTRUCTIONAL DELIVERY SYSTEMS

INTRODUCTION

In the 1980's all Oregonians could be served by delivery systems which

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2 Brown, Lewis and Harcleroad, pages 440-448.

meet the goals for education in Oregon by:

1. taking into account each individual's needs,
2. being diverse and flexible,
3. providing equal access,
4. relating to careers,
5. aiding the development of citizenship,
6. assisting individual growth,
7. encouraging discovery,
8. enabling lifelong continuity,
9. facilitating freedom,
10. focusing excellence,
11. providing service,
12. including integrity,
13. functioning efficiently,
14. being accountable, and
15. responding to revitalization.[3]

These systems would serve all citizens--Eastern Oregon ranchers, Beaverton engineers, Ashland actors, Coastal loggers, and all others. The content would vary, but the systems would respond to all.

TECHNOLOGY CENTERED

Dial access systems would allow for specific, immediate responses to specific inquiries. Each citizen could be provided access at central points, such as offices of the OSU Extension Service. Such systems might initially be

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3 For development of the goals, please see the cover document.

institution based and might include centralized academic and advising information. Eventually, the dial access systems might be expanded to include the introduction of dial access computer terminals into individual homes.

Self-learning centers could enable individuals to select what they want to learn and allow them to proceed at their own rate. Such self-paced, individualized centers could utilize film, videotape cassettes, audiotapes, computer-assisted instruction, simulations and gaming. After determining learning goals, students can be advised of available appropriate materials, helped to get started, and assessed as they proceed. Self-paced instruction would be an important feature of such centers. These centers could be incorporated into homes or moved to communities like mobile libraries. The Fourth Revolution proposes a variation on this theme--learning pavilions--which could be built and used as learning centers in densely populated areas.[4]

Universities are currently experimenting and improving this concept. On-campus learning centers provide centralized places to study with various learning media. These should be improved and extended to serve the "place bound" citizens of Oregon.

Learning cassettes would facilitate self learning. Xerox is working on audio and audio/visual cassettes, sometimes called "talking books," that a person can carry and play when appropriate. Similar experimentation with cassettes is occurring elsewhere. At one university, for example, a dendrology course has been put onto cassettes which students carry to appropriate trees. While standing before the tree, the student listens to the cassette,

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4 The Fourth Revolution. Carnegie Commission Report, New York: McGraw-Hill, 1972.

observes what is being discussed, and can replay the cassette as many times as desired.

Individualized instruction is needed, since, although citizens share some common goals, other goals are unique and optimal cognitive learning styles vary. Opportunities to develop personalized courses of study need to be provided. Too often "individualizing" has led to "grouping." The notion that each person learns differently and has differing needs and goals seems a difficult one for this culture. Perhaps it is because of our concept of a teacher and a class being prerequisite to "education." The focus must shift to individualizing while simultaneously providing education for all.

Correspondence study as a delivery system should also be more fully developed. Courses of particular interest to Oregonians could be developed and a competency based and carried on by mail. Support services and assistance with correspondence study could be provided through cooperation among universities, community colleges, proprietary schools, and cooperative extension centers. Short courses could also be delivered by correspondence.

Traveling workshops and exhibits could be developed to serve groups with special interests. Credit and non-credit bearing courses could be offered by groups of professionals and non-professionals traveling around the state. There appears to be interest in such programs since one university's non-credit courses at the coast has met with outstanding success. Lectures, films, exhibits, and non-credit workshops focusing on the marine environment have been well attended. Speakers and exhibits from throughout the state have

been used.[5]

Extensive audio visual service centers will be needed to facilitate learning. Ready access to records, tapes, films, filmstrips, slides, and photos will be needed. Regional resource centers with quick distribution would be an efficient way to service these needs. The Carnegie Commission concluded that there is a need for a centralized agency to "provide equipment and materials, assist in the preparation of programs, and aid in the presentation of programs."[6] Ashby supports this position with his identification of four revolutions in education envisions the centrality of electronic media. The fourth revolution in Ashby's view "is portended by developments in electronics, notably, those involving the radio, television, tape recorders, and the computer."[7]

Courses, as delivery systems, need to be altered. Hesburgh, Miller and Wharton, after studying what is needed for lifelong learning propose the following alterations,

> The principle implication of preparation for lifelong education is that students must acquire the skills and techniques to help them know how to go on learning as long as they live. A great deal of independence must be generated in the learning process. The faculty members should be used as resources, just as the library, the laboratory, television tapes, programmed learning, and other resources are used. Students need to be involved not only in self learning but also in groups, which is the way much of the work in life is performed.[8]

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5 For more information: Donald E. Giles, Marine Extension Specialist, Oregon State University's Marine Science Center, Newport, Oregon 97365.

6 The Fourth Revolution, page 5.

7 Eric Asbhy, "Machines, Understanding, and Learning: Reflections on Technology in Education." The Graduate Journal, Volume 7, Number 2, Austin, Texas, 1967.

8 Theodore Hesburgh, Paul Miller and Clifford R. Wharton, Jr. Patterns for Lifelong Learning, San Francisco: Jossey-Bass Publishers, 1973, page 11.

This and other comments suggest that preparation of educational specialists need to be changed. People will need training to perform new roles--media specialists, developers of individualized learning and as other specialists not currently trained. Thus career preparation as now designed needs change.

Libraries will need to cooperate extensively. The skyrocketing costs of library materials make cooperation an economic necessity as well as a practical approach. Duplication should be seen as wasteful and inefficient. Instead, pooling of library resources should be facilitated. This could be done by a combination of cable and telecommunication paired with viewing screens and reader printers.

Storage and retrieval systems are needed to provide the citizens of Oregon with necessary information. Central data storage with general public access is called for. Such equipment should be designed to enable people to obtain medical, legal, and library information, for example.

Educational broadcasting and cable television are other delivery systems of considerable merit. With seventy-two cable systems in Oregon, the possibilities for a state network for educational purposes may lie in the future. However, a network using videotaped instructional materials is technically feasible today using a shuttle system with voluntary cooperation of the cable systems having recorders to transmit these materials to their subscribers.

The State ETV network has microwave links one-way from Eugene and Corvallis to Portland. These are unused except during broadcast hours. They have the potential of future carriage of television materials, computer data, audio materials, and facsimile reproduction of materials for print-out on paper

for educational and other purposes. By making these links two-way, the three large universities could share and store library and other information during the non-broadcast hours. Such a link could be used for medial and hospital interchange of information also.

With KOAC-AM and KOAP-FM augmented by a substantial number of FM educational stations, an audio tape distribution system for a variety of purposes is possible now in Oregon.

With public service a factor in the FCC regulations, the commercial radio and TV stations should not be overlooked in planning for future delivery systems involving information of general value.

Telephone systems could be used. Telelectures and telephone communication could inexpensively and quickly provide information and direct contact with experts.

An experimental two-way video communications system that enables people separated by geography to hold "electronic conferences" with each other is being tested by a GT and E British Columbia Telephone company subsidiary. In another test a teleconferencing system that combines stereophonic sound and rapid facsimile transmission of documents is being tested by the Union Trust Bank of Connecticut. Such developments should be carefully watched for ways in which they might facilitate delivery of educational services to geographically separated areas in Oregon.[9]

Satellite communication should not be neglected. The recent developments in satellite broadcast transmission make it technically possible to interchange

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9 FutuREport, 12 Shattuck Street, Nashua, NH, June 10, 1974, page 4.

television information and educational materials anywhere in the world. Future plans for the ETV state network might well include carrying the BBC from London, for example, as a part of the state network.

Computers can assist as a delivery system application to: (1) problem-solving, (2) model development and simulation, and (3) computer-assistant and computer-managed instruction. Support for the development of computer hardware is essential for the refinement of these applications. The proper use of computers can make education more productive and effective and allow for greater individualization and provide for greater equality of educational opportunities.[10]

Faculty reluctance has been a considerable barrier to computer integration into the teaching/learning process. Teachers need opportunities to learn about instructional design and educational technology.

This suggests that people are critical to the success of instructional delivery systems as well as serving as delivery systems themselves. The following section indicates some roles of people as delivery systems.

PEOPLE CENTERED

People-centered instructional delivery systems should be thoroughly developed. Some of these already exist while others need to be begun.

Extension has historically been an effective delivery system. Based in the Land-Grant -- and now Sea Grant -- College concept, its emphasis has been on tapping the knowledge base of higher education to provide citizens with practical information that helps them solve problems. Its strength has been

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10 Ernest J. Anastagio and Judith S. Morgan, Factors Inhibiting the Use of Computers in Instruction, Educom, 100 Charles River Plaza, Boston, MA 02114, 1972.

in systematic assessment of local need through the work of agents who are faculty members of the university who live and work with citizens of every county. As the 6th Annual Report of the National Advisory Council on Extension and Continuing Education emphasized:

> . . .Extension has credibility at a time when other Federally supported programs leave people incredulous. Its voluntary, apolitical and objective approach to the solution of problems, and the very personal manner in which this approach occurs, has won for the Service considerable individual and community support. It is, after all, unusual to have the Federal, State and local governments and the universities represented to the public by a single person--an agent--whose name is known. [11]

There is every reason to believe that a locally based education delivery system that rewards responsiveness to local needs will continue to be a highly important and valued source of practical educational programs. It will continue not only to provide the efficiency of a professional staff and a central knowledge bank based on the latest research results, but also to combine these elements with a credible citizen-oriented delivery system. The Oregon State University Extension Service will continue to adopt new educational technology to improve the effectiveness of its delivery systems. It may be expected to rely increasingly on programmed learning packages, closed-circuit and cable television, telecommunicated delivery, rapid information retrieval systems, computer simulation models with remote terminals handy to users, and other technological innovations discussed in this paper. But these delivery tools should be integrated into the system without sacrificing its personal contact with citizens.

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11 National Advisory Council on Extension and Continuing Education, "A Question of Stewardship: A Study of the Federal Role in Higher Continuing Education, 6th Annual Report and Recommendations." Washington, D.C., March, 1972.

The OSU Extension Service is charged, by federal and state law, with conducting informal, non-credit off-campus education in areas of wise use and management of natural and human resources, in family life, and in youth education. It may be expected that, through the direction of federal, state and county funding sources, this emphasis will be continued, although the thrusts of its educational programs in those broad guidelines will be flexible to meet the varied and changing needs that people identify.

Tying together existing community resources into functioning instructional delivery systems is critical. Each community in Oregon has resources to contribute. Expertise in forestry, farming, accounting, sales, and mechanics, for example, abounds throughout the state. Mechanisms designed to encourage such skilled persons to share their expertise should be developed.

People should continue to be seen as a central instructional delivery system. These people will likely be resource people. Teachers should be guides to where knowledge can be found. The prediction is that schools in the form we have known them will practically disappear. Education will take place via multimedia systems and human assistants located in neighborhood learning resource centers.

Personal interaction of students and teachers is another type of delivery system. Teachers should be encouraged to leave the school or the campus and engage themselves with citizens who are geographically removed from formal educational institutions. Perhaps mobile learning centers with special programs and learning specialists would be appropriate to serve "place-bound" individuals.

A people helping people approach could be employed. So many people have so many skills and are often willing to help others learn these skills. These

resources should be capitalized upon. A data bank of human resources should be established and incorporated as an educational delivery system. Ad hoc learning alliances of pairs or groups should be encouraged. Another dimension of this is the involvement of paraprofessionals. These people can be trained as facilitators.

A related idea is the encouragement of neighborhood study groups. Such groups could supplement other delivery systems and provide nearby support and assistance. Side effects include rekindling a sense of community and fuel savings.

Field-centered delivery systems could be set up. Experiment stations, Oregon Museum of Science and Industry, Teaching Research and other field agencies should be developed to work in conjunction with other educational agencies to provide field experiences.

Business, industry and other community agencies should be developed to deliver educational services. Neither isolated knowledge nor disconnected work experience is maximally valuable by itself. By contributing to each other and providing varying perspectives for the academic and the work. The aim should be "to build a new learning system that combines the intellectual vigor of the core academic system with the authenticity of life experience." [12]

Ad hoc institutes might be another approach. Existing departments in colleges and universities could be viewed as an impediment to responsive delivery systems. Straus lamented that,

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12 Hesburgh, Miller, and Wharton, page xiii.

> A major impediment to changing the nature of scholarly activity is found in the internal organization of universities and in the role played by departments as bases of power. As they have emerged and become intrenched in American universities, most departments have been oriented toward and identified in terms of specific disciplines.[13]

Thus, organizing interdisciplinary institutes around contemporary concerns might serve to loosen the disciplinary grip in our institutions and encourage experimentation and flexibility.

Consortia should be developed as instructional delivery systems. Oregon is fortunate to have a variety of postsecondary institutions--public and private. Needless to say, each of these institutions cannot do everything by itself. However, through cooperation and capitalization upon the strengths of each institution, the total services can be more complete and more economical. Materials and programs developed by one institution should be shared with others. Currently, programmed materials, videotapes, films, etc. are developed in one institution and most often other institutions are not even aware of the existence of such materials. This is a wasteful and inefficient approach. More cooperation is needed. There are some attempts at this. For example, Oregon State University, Blue Mountain, Lane, Linn-Benton, Portland and Chemeketa Community Colleges are currently pioneering in this area with a Special Services Consortium (formerly 7 schools). Plans for other consortia should be developed.

The unthinkable instructional delivery systems may be yet the most important. Surely there are means of delivering education that not only have not

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13 Robert Straus, "Departments and Disciplines: Stasis and Change." Science, November, 1973.

been mentioned in this paper, but have not been thought of. As technology develops, goals are clarified, strategies sought, and citizen input solicited and analyzed, currently unthought of systems will undoubtedly emerge.

PERSPECTIVES AND PRIORITIES

This list of instructional delivery systems, though intended to suggest directions for development, needs to be put into perspective.

Perhaps most important is citizen involvement in the selection and refinement of goals, as well as in the development of delivery systems. In fact, the statement of goals in the cover document, though helpful to the clarification process, may have been premature. First, questions such as who are to be the receivers of instruction and, what do they want, should be answered. The technology is important only as related to purpose. Instructional delivery systems must be subordinate to human needs and goals. Citizens should be surveyed as to their needs. Farmers in Athena, law enforcement people in Eugene, engineers in Medford, unemployed persons in Portland, Oregon, citizens in the Armed Services, and Oregonians in all other roles, should have input. Essentially, mechanisms to encourage real citizen input and assessment of local needs is needed. These mechanisms should be responsive enough to gather continual data since, obviously, needs will change. Community colleges, with a mission of responding to local needs, might be an ideal mechanism.

A related concern is that these systems be designed to serve the total population of Oregon--not just the traditionally served groups. The aged, the handicapped, cultural minorities, institutional persons and the young are examples of persons whose needs must be met.

Instructional delivery systems cannot be isolated from other components of the overall plan. All parts of instruction are interrelated. Staff development, as one example, has implications for instructional delivery systems as well as the reverse.

Responsivity and self renewal are other concerns. No system is immutable. Technology changes, people's needs are altered, and goals are clarified. Mechanism for self renewal should be incorporated into the plan.

Nothing should be sacrosanct. (All ways that we have done things before, are doing things now, and are considering doing things in the future should be questioned.) As Toffler warns, we must not assume that tomorrow merely repeats yesterday as occurred in earlier societies. By the way, Toffler also commented that, "Just as all education springs from some image of the future, all education produces some image of the future." [14]

Since we do not have the best way at our immediate command there is a tremendous need to try new ways, take risks, and experiment with alternative goals and means. Alexander Meikeljohn in an address to the American Association of University Professors chided that we have "become timid and defensive":

> As the owners of a great tradition, we work, not to produce, but to enjoy, not to cultivate but to defend, not to explore, but to exploit.

Accepting and even refining existing delivery systems is nowhere near sufficient. Bold exploration and cultivation of new alternatives is needed.

Included with healthy skepticism and risk should be ridding of the pervasive notion that what we face with regard to delivery systems is a "problem to be solved." The whole notion itself, wrote Philip Slater,

> "implies that the social environment is static, that those who are trying to deal with it are outside and above it -- looking down on it like a math student looks down on a piece of paper. It also implies that the 'solution' represents a cognitive beginning -- an initiated action rather than an emotional reaction to what has already happened. This is all illusion and self-deception -- we do

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14 Alvin Toffler, Ed., Learning for Tomorrow, New York: Vintage, 1974, page 3.

> not initiate social programs, we react to our experience, which alters as we do so. Furthermore, we are not and cannot be outside our social 'problems.' We are inside them -- they are the medium in which we swim." [15]

Thus expending great efforts to analyze the problem is not viewed as particularly productive. Instead a view of this subject as a continuing question such as proposed by Barzun seems much more appropriate.

> Human affairs do not contain problems with solutions. They contain predicaments, difficulties which are at best only partly overcome--when it is possible to overcome them at all--a very different thing from solving problems.[16]

We should not expect to be confronted with a solution to the problem of instructional delivery systems. From this writer's point of view this would merely be time-consuming and unproductive. Instead, we should play around with possibilities and see what happens.

Another caution relates to proceeding to approach instructional delivery systems through a cause/effect model. The scientists and pseudo-scientists among us press for thorough looks at effects of specified techniques and what will cause what to happen. Again we have a seemingly fruitless approach. In some other cultures such notions do not even exist. Things just are. Causes are either presumed non-existent or too complex. Beyond that, in most cases, the "cause" seems to be an extended event encompassing a great time span. This point of view might be commended as we contemplate delivery systems since the interactions seem so complex. As Howard Rachlin at SUNY Stoney Brook has commented, the search for cause/effect unnecessarily obscures the search for true causes of behavior because it looks for them in one place rather than

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15 Philip Slater, Earthwalk, Garden City NY: Doubleday, 1974, page 150.

16 Jacques Barzun as quoted in "This Stable World," MANAS, May 15, 1974, page 6.

in the past and in the future, where he believes they actually lie.

The motivation of our citizens is critical. The finest technology is of little value if people aren't interested in using it to learn. Critically, this motivation "can best be aroused by the feeling that changes are being controlled or at least influenced by those affected. Therefore, a major concern of education is not only to train for adaptability, but to train the individual to master changes that affect his own situation. Too often we set out with noble goals of doing things for people but fail to equip and encourage them to act for the improvement of their own lives." [17] Thus, involvement of all citizens in the development of instructional delivery systems is essential if these systems are to be successful.

Our instructional delivery systems should be designed for lifelong learning. There has been a lot of talk about this, but not much action. A lot is wrong with the way we have been structuring educational services. Hesburgh, Miller, and Wharton, speaking of the entire population, stated what should be.

> In the future, the United States should be conceived of as a learning society. Educational policy planning should begin with a comprehensive framework that addresses the needs of the entire population, for infancy through adulthood. The entire population should be seen as a national resource comprising a society in which continuous, purposeful learning is not only talked about but carried out in a great variety of settings and formats.[18]

Coordination and integration of instructional delivery systems is important. Suffice it to say that systems should relate constructively rather than destructively. Perhaps a central agency could aid this coordination.

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17 A Choice of Futures, page 39.

18 Hesburgh, Miller and Wharton, page 6.

Not only should delivery systems be responsive to the existing needs of Oregon citizens, but should also anticipate needs. Mechanisms seeking to project needs should be incorporated into delivery system strategies. Small scale experiments can then be tried and expanded, if successful.

Though it has been implied in previous statements the need for open instructional delivery systems is critical. Each citizen should be able tc and encouraged to enter, and reenter the systems at all levels and times. Flexibility and modularization are, thus, prime requisites.

Career preparation of media specialists capable of developing, implementing, and evaluating instructional delivery systems is another component. New forms of preparation and alteration in teacher training will be called for. Competency-based programs will assess what a person can do. Examinations, such as the College Level Examination Program (CLEP) can aid this assessment.

Some rethinking of physical structures is still another need. We have been talking about flexible learning systems and concomitant building flexibility is another component. Classrooms, if at all they are needed, for example, will be different.

In addition, continuous evaluation and redesign is important and a greater understanding of the learning process is essential. Optimum learning styles seem to vary from person to person. This needs to better be understood. This ultimate question is central if we are to know what delivery system works best under what circumstances. The goal is to look at what it is a person wants to learn, why it should be learned and then measure the extent to which the goal was reached. Thus tools for accurate measurement are critical. Waste should

be minimized. A fuller and more economical use of existing resources must be sought. Inefficient and ineffective use of Oregon's resources is intolerable.

RECOMMENDATIONS

Given: (1) the goals for postsecondary education in Oregon; (2) the seeming as well as the desired trends; and (3) the perspective through which this is all viewed the following recommendations appear important and appropriate:

1. That the Educational Coordinating Council (ECC) be charged with monitoring developments in instructional delivery systems, advising postsecondary education of developments, and with the encouragement of the advancement of postsecondary instructional delivery systems in Oregon.

2. That, more specifically, the ECC study: (a) dial access systems, (b) self-learning centers, (c) learning cassettes, (d) individualized instruction, (e) correspondence study, (f) travelling workshops and exhibits, audio-visual service centers, new approaches to courses, new modes for preparing educational specialists, new approaches to libraries, storage and retrieval systems, educational broadcasting and cable television, telephone systems, computer systems, satellite communication, people-centered delivery systems, extension, use of community resources, personal interaction approaches, field-centered systems, ad hoc institutes, consortia, and the yet "unthinkable" systems.

3. That the ECC direct research on appropriate systems for Oregon and assist with the introduction of these systems.

4. That the ECC develop and implement methods for soliciting citizen input on current and future goals and means for postsecondary instructional delivery systems.

5. That financial support for the development of software (instructional programs and materials) be provided.

6. That cooperative structures for the sharing of knowledge and materials related to instructional delivery systems be developed.

7. That regional centers for the advancement of instructional delivery systems be established.

8. That provision be made for training faculty members in the use of educational technology.

9. That schools of education be required to provide extensive training in those areas relating to instructional delivery systems.

10. That postsecondary institutions be staffed with specialists in the area of instructional delivery systems.

11. That cooperation in all forms be sought among postsecondary institutions so that they can work together toward the improvement of postsecondary instructional delivery systems.

SUMMARY

There are educational trends that seem to be developing and there are available technological and human resources. The goals seem legitimate. Oregon citizens need to function better in all their roles--vocational, social, and personal. Existing systems, generally centralized, are not adequate. Existing resources are simply not currently available to all of Oregon's citizens and they must be if we are to have a trained, educated, responsible

and personally satisfied populus.[19]

Decisions need to be made, priorities need to be set and effective instructional delivery systems that provide equal access to all Oregonians need to be implemented. The recommendations cited suggest how this might be accomplished.

Oregon should be a learning society. It is time to begin the transformation. Our current systems are inadequate. All of our citizens are not educationally well served. Expanded instructional delivery systems offer Oregon the option of meeting the educational needs of rural, urban and suburban Oregonians in an efficient, economical manner.

Still, the first step must be emphasized. Citizens need to be involved in this process. Assessment of citizen needs is critical. Immediate steps should be taken to assess personal, community, and state needs. As soon as these needs have been ascertained, plans should be developed and implemented.

Tomorrow is too long to wait for an educationally satisfied Oregon.[20]

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19 Access would, in addition, contribute to equalization of opportunity. Christopher Jencks and others are making it clear that schools are not functional in diminishing the social gap between the haves and have-nots. Inequality: A Reassessment of Family and Schooling in America, New York: Basic Books, 1972.

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Selected Bibliography

Printed

Adams, Stuart. "Higher Learning Behind Bars." Change, November, 1973, 45-50.

Alder, Douglas. "Instructional Development: An Antidote to Advocacy." Printed paper available through the Learning Resources Center, Utah State University, Logan, Utah.

Ashby, Eric. "Machines, Understanding and Learning: Reflections on Technology in Education." The Graduate Journal, Vol. 7, No. 2, Austin, Texas, 1967.

Berman, Louise. New Priorities in the Curriculum, Columbus, Ohio: Charles Merrill, 1968.

Brown, James W., Richard B. Lewis, and Fred F. Harcleroad. AV Instruction--Technology Media and Methods, (4th edition), New York: McGraw-Hill, 1973, 432-440.

Carnegie Commission reports: The Fourth Revolution: Instructional Technology in Higher Education; The More Effective Use of Resources: An Imperative for Higher Education; New Students and New Places: Policies for the Future Growth and Development of American Higher Education, and Less Time More Options: Education Beyond the High School. New York: McGraw-Hill.

A Choice of Futures. Report of the Commission on Educational Planning. Cabinet Committee on Education, Edmonton, Alberta, Canada, 1972.

Della-Dora, Delmo and House, James E. (eds.). Education for an Open Society. Washington, D.C.: Association for Supervision and Curriculum Development, 1974.

Diversity By Design. Commission on Non-Traditional Study, Samuel B. Gould, Chr. San Francisco: Jossey-Bass, 1973.

Edling, Jack V. "Individualizing Instruction - the Way It Is 1970." Audiovisual Instruction, Vol. 15, pages 13-19.

Gottesman, Alexander. "Education is the Seventies." Peabody Journal of Education. September, 1967, 76-81.

Harvey, Thomas R. and Charles E. Johns. "Deschooling: The Next Step." Occasional Paper #3, Claremont Institute for Administrative Studies, Claremont, California, 1974.

Hesburgh, Theodore M. and Paul A. Miller and Clifton R. Wharton, Jr. Patterns for Lifelong Learning. San Francisco: Jossey-Bass, 1973.

Hopkins, Frank Snowden. "Some Major Issues of the International Future." Washington, D.C.: World Future Society, 1974.

The Lifelong University. Task Force on Lifelong Education, East Lansing, Michigan State University, 1973.

Martin, Warren Bryan, Alternative to Irrelevance. Nashville: Abingdon Press, 1968. An insightful statement on how assumptions dictate practice.

Reishauer, Edwin O. Toward the 21st Century: Education for a Changing World. New York: Knopf, 1973.

Toffler, Alvin (ed). Learning for Tomorrow, New York: Vintage, 1974.

Vermilye, D. W. (ed). The Expanded Campus. San Francisco: Jossey-Bass, 1972.