Record Card 27352

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Research record

01 · THE ITEM

erely an individual school, which, once freed of an imagined comprehensive role.

Aircraft Corporation (the prime contractor of the Mercury and Gemini programmes and the F4h fighter used by all three military services) we learned of a method of simulating the fighter on the electronic computer and 'flying' it many times, with major and minor changes made between each 'flight'. We asked, 'Why not fly a college on the computer?' We undertook a computer simulation of Meramec Community College, one of the three proposed campuses in the St Louis Junior College District.

The programmes for 4500 students, number and size of rooms planned, intended staff, and various time patterns, provided the input data. In five minutes the computer went through the thousands of combinations possible and started to print a schedule. Twenty-five minutes later the use of rooms, including each faculty member's schedule, each student scheduled, the percentage of rooms used, the percentage of seats occupied and other pertinent information covering some 100 pages was available for analysis.

From the outset we had been concerned about seat occupation as well as the use of rooms. If 25 students were in a room furnished for 50 students, this would involve 100 per cent use of the room for an hour but only 50 per cent seat occupation. Thus, in each of the 27 computer runs we changed the size of some rooms. In this way we reached 82 per cent use of the classrooms and 66 per cent of the laboratories.

The 7094 computer at McDonnell Automation Center was used with the GASP programme developed by Robert Holz of MIT. The final results were:

Room	Our total	Similar colleges Same enrollment A	B	C	Our room use per cent	Our seat use per cent
Classrooms	37	84	63	82	82	87
Lecture Halls	6	1	5	5	86	86
Science Labs	15	33	38	21	66	91
All Others	27	23	30	41	72	88
Total Rooms	85	141	136	149	77	88

In addition to proving that the desired occupation for each type of room could be obtained within the proposed master plan, it was shown how the master plan could best be modified. Conservatively this could mean a saving of $3,000,000 on this one project. Other studies would confirm that such concentrated use is possible—particularly with the use of the computer as a check in the development of a master schedule for planning and operation. These are dramatic figures and the $10,000,000 not invested in the three projects could provide the basis for quality education.

It may be possible to reject altogether the classroom as we know it. A revolution is already apparent in the ungraded classes of schools, team teaching, continuous progress, modular scheduling, instructional systems, the 'organic curriculum', and such hardware as TV, dial-access, and computer-assisted instruction.

The dispersal of education could be furthered by self-instruction and electronics in the home, the shopping centre and office buildings.

A possible programme for the node or education centre might be:

For the infant (under 2 years of age) and the elderly and infirm, educational toys or packages of materials to be checked out from the node and used in the home. These students could be visited on a regular basis, to determine their progress, interest, and reactions.

For the child between 3 and 6, the neighbourhood node would be available from 9 a.m. until 4 p.m. These would be prime hours and would provide both self-instruction and a large amount of group activity ensuring social interaction and the growing maturity of emotional responses. The major emphasis would be on the development of learning skills—reading, problem solving and techniques of investigation.

For the adolescent, from 7 to 12, the same node would be open from 7 a.m. until 6 p.m. The emphasis would be upon continued development of learning skills and the absorption of certain levels of information on arithmetic, English, speech, history, geography, etc.

For the teenager and young adult (ages 13 to 18), the same node would be open from 6 a.m. until 9 p.m. This group would have small group discussions in which they would compare and contrast interpretations of possible solutions to social and technological problems, as well as undertake work in social science and physical science areas. An introduction to the fine arts would begin with this age group, having approached them as recreational or play activities in earlier years.

Depending upon the demand, the nodes could remain open around the clock.

As the effectiveness of self-instructional materials increases, the need for tutors in the nodes will decrease. Similarly, the effect of curricula material development specialists will become increasingly effective, reducing the number of educationalists required. It is estimated that a staff–student ratio of 1 to 45 would suffice for the year 1980, a ratio of 1 to 60 for 2000, and a ratio of 1 to 150 for 2020.

As the need for teachers and media specialists decreases, however, the need for recreational/cultural activity supervisors and for monitors and leaders of discussions and social activities will remain about the same or increase slightly as the work-week is shortened, the retirement age is lowered, and the amount of free time for such pursuits increases.

The basic facilities required will include:

An administrative centre
Radio and TV studios
Information processing centre
Media preparation, production, storage and circulation centre
Instructional materials development and pre-test centre
Performing arts, conference, art collection and learning materials centre.

A node for cultural/recreational activities in each of the neighbourhoods. The nodes will be largely made up of open areas with varying sizes of self-study facilities and substantial storage and retrieval areas for unused material.

Many of the nodes will have a major facility for outdoor recreation, larger assembly facilities, and large areas for creative arts and crafts, including music and theatrical performances.

Nodes for study and discussion should be included in industrial, business and commercial establishments. These nodes would parallel the residential nodes and provide an environment for the adult at work, shopping, or waiting for children at the doctor or dentist, to maintain his speciality, learn new materials, and engage in discussions with others in a pleasant and convenient environment.

The primary changes in the educational process will involve the gradual and continuing shift away from hand skills, semi-skilled occupations, and narrow trade or vocational fields such as lathe operators, punch card operators, etc., and move toward intellectual/mental skills, semi-professional occupations, and generalized vocational fields such as metal forming, information processing, etc.

Additional facilities would be necessary to cope with the increase in non-employed adults resulting from combined effect of an increased life span and a lower age of retirement.

As education is moved from the school into the home and place of work, cultural/recreation centres will enhance and combine many of the cultural/educational/recreation activities formerly associated with separate institutions, such as the sports ground, art gallery, library, museum, elementary and secondary schools, university and factory.

If we wait for isolated efforts at innovation to make an impact on the educational establishment it will take fifty years or more to bring about change. Thus, with increasing numbers, costs will then be more or the same expenditures will result in lower quality education.

With the many restraints of deeply ingrained custom and tradition, it will not be easy for local school boards, civil servants and ministries to formally or informally bring about the desired changes, but it is possible.

Funds to further these innovations—outright experiments—must be found. The kind of funds needed for R & D (Research & Development) are essential to the free enterprise system of business and industry and are vital to military programmes, yet they are almost unknown in the field of education. With education consuming more of local and state finances, it becomes an increasing percentage of the gross national product. As more funds are invested for increasing numbers of students, 5 per cent (or even a start of 3 per cent) of the total R & D funds need to be invested in research on how humans learn, using different media and instructional strategies, with the knowledge that some 'Edsels' will come and some (like test missiles) will never become operational. If we do not do this, resources—financial and otherwise—will be consumed in ancient, inefficient organizational patterns and out-moded education.

A great teacher once viewed an innovation with alarm. He said, 'This invention of yours will produce forgetfulness in the minds of those who learn it, causing them to neglect their memory'. The speaker was Socrates—he was talking about writing. □

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02 · INITIAL RECORD

What's there?

A detailed account of a proposed education-centre network: its organisation, facilities, spatial requirements, operating arrangements and potential for growth and change.

What attracts attention?

The proposal moves beyond the individual school towards a distributed system of educational resources. The tabulated accommodation requirements, flexible provision and shared facilities suggest an institution organised around changing needs rather than a fixed building.

Recollection · 1972

To be recorded, if recalled.

03 · INVESTIGATION

Questions to investigate

1. How does this account of educational planning relate to the *Atom* project on pp. 232–235?
2. Does the emphasis on individualised learning correspond with *Atom's* proposed educational environment?

Further examination

Compare the article with the *Atom* pages.

Relationships

AD/5/68 <-> "What about Learning More?"

Relationship to be investigated, not assumed.

Findings

Open for subsequent entries.