The Integration Method in School Curriculum Design

T. Chelliah
Fakulti Pendidikan
Universiti Malaya

Oleh kerana bidang dan sifat sesuatu subjek mengalami perubahan revolusionari akibat dari kemajuan yang dicapai dalam penyelidikan atau akibat dari penemuan hubungan-hubungan baru antara bidang-bidang dalam berbagai disiplin, strategi-strategi baru mestilah diadakan untuk menyerapkan bidang-bidang pengetahuan baru ini ke dalam kurikulum. Salah satu dari teknik-teknik yang paling popular yang digunakan bagi tujuan ini adalah kaedah integrasi (penggabungan). Prinsip-prinsip tertentu harus menjadi dasar kepada satu program integrasi yang rasional. Jika soalan mengapa bergabung dapat dijawab, jawapan ini akan memberi panduan kepada perancang-perancang kurikulum supaya mereka dapat menghasilkan teknik-teknik tentang bagaimana penggabungan dapat di laksanakan. Oleh itu, sebelum penggabungan dan pertimbangan mengenai teknik-teknik bersabit menjadi tumpuan perhatian, terdapat tiga langkah yang perlu diambil: pertama menentukan disiplin-disiplin asas bagi subjek itu, kedua memutuskan sama ada disiplin-disiplin asas ini adalah dengan sendiri subjek-subjek berasingan, dan ketiga, sama ada ia membenarkan cantuman ke dalam satu subjek yang sama. Integrasi isi baru ke dalam kurikulum boleh dicapai melalui tiga cara asas, iaitu pembentukan satu kursus baru, sebagai bahagian-bahagian dalam satu kursus, atau dirancang secara ko-kurikular.

It is fundamental to the function of a curriculum planner that he is not only constantly cognizant of the major advances in the body of modern knowledge but is consciously renewing educational techniques for the proper dissemination of that new data to pupils in schools. As the scope and nature of a subject undergoes revoluntionary changes with the progress achieved in research or with the discovery of hitherto unknown links between areas in various subjects or disciplines, new strategies will need to be devised to cope with new areas replacing frontiers that are being frequently pushed back. Quite apart from issues relating to the incorporation of new areas of knowledge or the updating of the content of education[1], the curriculum designer has the additional responsibility of ensuring that such necessary revision reflects at the same time, the concept that Education is indeed a life-long process of preparation for life. Thus changes made at one level must be harmonious with other levels, in such a way that they take account of the process of child mental development[2] whilst ensuring, at the same time, that pupils will have been trained in the intellectual skills that are currently available in the world of learning.

One of the most popular techniques that is being employed for the purpose of curriculum renewal is the *integration* method. The meaning and function of this approach have been rather ambigous for two major reasons. The first is that the method does not and indeed cannot remain uniform in its application for all subjects; the social sciences (and its internal divisions), economics, engineering, mathematics, education are disciplinary-based areas that have their own methodologies and which can be integrated internally or externally with the areas only after the most careful attention to the nuances of each subject area. The second, and more crucial difficulty is owed to the varying interpretations amongst the proponents of the integrative method as to what is in fact understood by the term. Some have used the word *integration* to describe a *system of interrelationship* between activities that fall within different sectors of development. Another group regards integration as substitute for the processes by which a selectivity of activities are arrived at and are meaningfully put together. Many others adopt the more simplisistic attitude in which integration refers to the particular manner in which special programmes or activities are linked to the general framework to obtain optimum results. Economists such as Sharma and Malhotra interpret

integrated development to mean the object of the total development of an area through necessary economic and social transformation [3].

Objectives of Integration

In general terms, however, the function of integration is understood to mean *to make up a whole* or *to make entire,* it therefore has the vital attribute of contributing towards the organic wholeness.

It is in the realm of techniques for integration that some of the differing notions of the substance of integration become especially relevant. Techniques designed to achieve *integration* do, most naturally, spring from the meaning attributed to the integrative method. It raises a fundamental question for the design of techniques, for example does integration mean a simple breakdown of the barriers that currently exist between broad subject areas or disciplines? If it is held to go beyond that, how will subjects taught in a school be related to each other after traditional boundaries have been dismantled? Does integration mean only the updating of the subject curriculum through the introduction of new content? Most educationists could agree that padding of the syllabus with new content is not *integrating* a curriculum but what would the reaction be if the *padding* were in terms of new areas of interests in a particular discipline, recently introduced concepts or even modules to explain certain links or phenomena? To what extent would such *incorporation* be *integration.* Or does integration mean the avoiding of premature specialization in any one subject area thereby two or more subjects become combined.

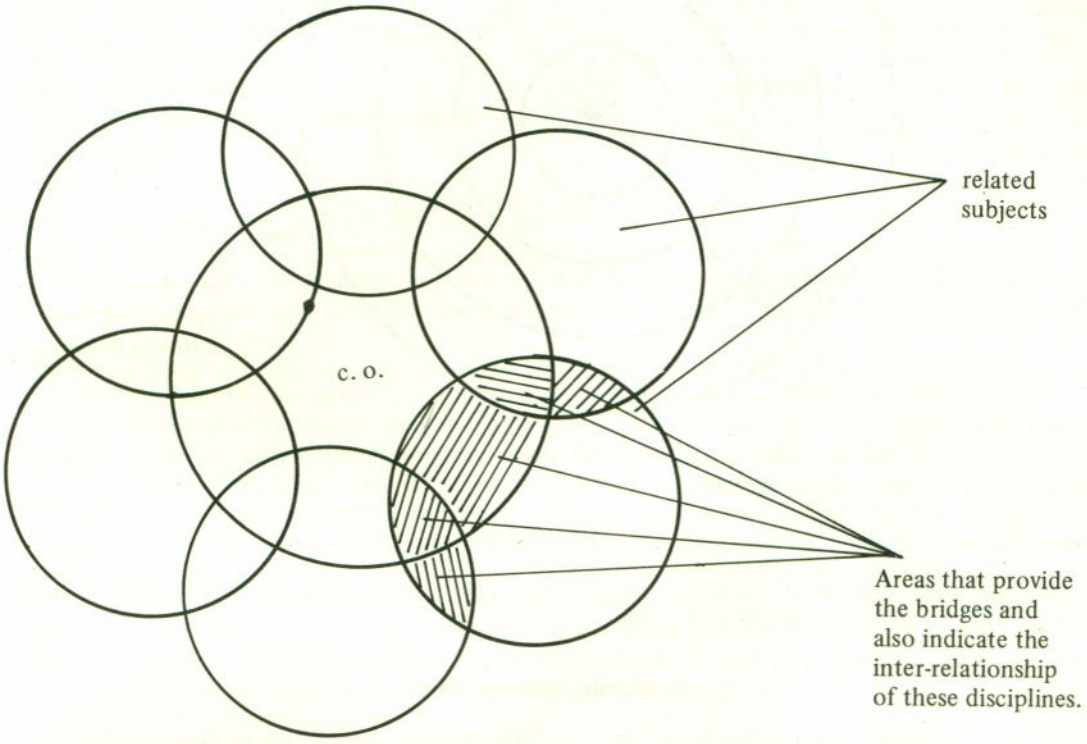
These question are relevant to the revisions to existing curricula at the two levels at which they are being attempted. At one level, it is envisaged that a totally new curriculum for the whole of the school system will be evolved. In this overhaul, the primary emphasis will be on pupil-centered subjects in the context of social goals rather than the more orthodox rigidity implied in a subject-centered curriculum. At the other level, the interest lies in the retention of the existing school-subjects, but with it the addition of new data and areas of concern; this expansion is the focus of revision. Also, the object of widening current curriculum is sometimes accomplished through a process of collapsing two or more subjects into one subject bearing a new label. Illustrations of this process are the present Integrated Science syllabus for the Lower Secondary level, the General Science Syllabus and the Biology Syllabus in the Upper Secondary level. The changes effected at the second level of revision have tended to gain favour principally owing to the constraints placed upon the time available for the teaching of subjects and the administrative considerations that need to be taken into account.

However, operational expediency ought not to tempt the curriculum planner away from certain crucial principles that govern a rational programme of integration. The fundamental academic consideration should be the purpose for which integration is proposed, and includes why certain content ought to be integrated, if integration is the best possible method in terms of practicality, need, and economy. It is important that both the content as well as the choice of subject to which it is to be integrated are carefully chosen for their appropriateness and not to create a new super-subject with a curriculum variegated for its own sake or esteem. There ought to be a meaningful organic link that is clearly evident between the various topics discussed under the rubic of a subject so that it will have all the characteristics of a well balanced course of study[4].

If the question *why integrate* is answered, it will provide the curriculum planner the clue to the *how to integrate* techniques and mechanisms. When a case has been adequately prepared for a particular subject area or topic, it will become evident if such conditions tend to create the characteristics of a *devised subject* or an *applied subject.* Thus, before integration, and the consideration of relevant techniques become the area of concern, the first obvious task would be to identify the foundation discipline of the subject. Secondly a decision will have to be made as to whether these foundation disciplines are themselves individuals subjects (as those found in the school curriculum) and whether it will allow for combination into one subject, such as the Integrated Science curricu-

lum. If they are single subjects, it is necessary for decisions to be made as regards the incorporation of important concepts into the appropriate topics bearing in view the psychological and philosophical foundations of curriculum planning.

The model planner should begin by focusing on a central or core objective followed by the incorporation of all the related disciplines that could contribute to the development of this central objective. **The function, interrelationship and interdependence of the subjects will** become clear and obvious if the design is developed as shown in Figure 1.



c.o. – central
objective

for example Environment
and Quality
of Life

FIGURE 1

The next step would be determine the sequential development of each of these disciplines within qualitative and quantitative parameters, keeping in mind the learner, the teacher and the content at a specific level. **Figure 2 explains diagrammatically what this step should attempt to achieve.** The progressive qualitative and quantitative development of each subject is indicated by the concentric circles; each segment represents one discipline; and the circle cutting through the various disciplines illustrates the inter-relatedness of the subjects, their scope and limit at a particular level.

The Mechanics Of Integration

Once a common philosophical objective for the subjects to be taught within the system has been arrived at, the mechanics of integration have to be carefully assessed against the pos-

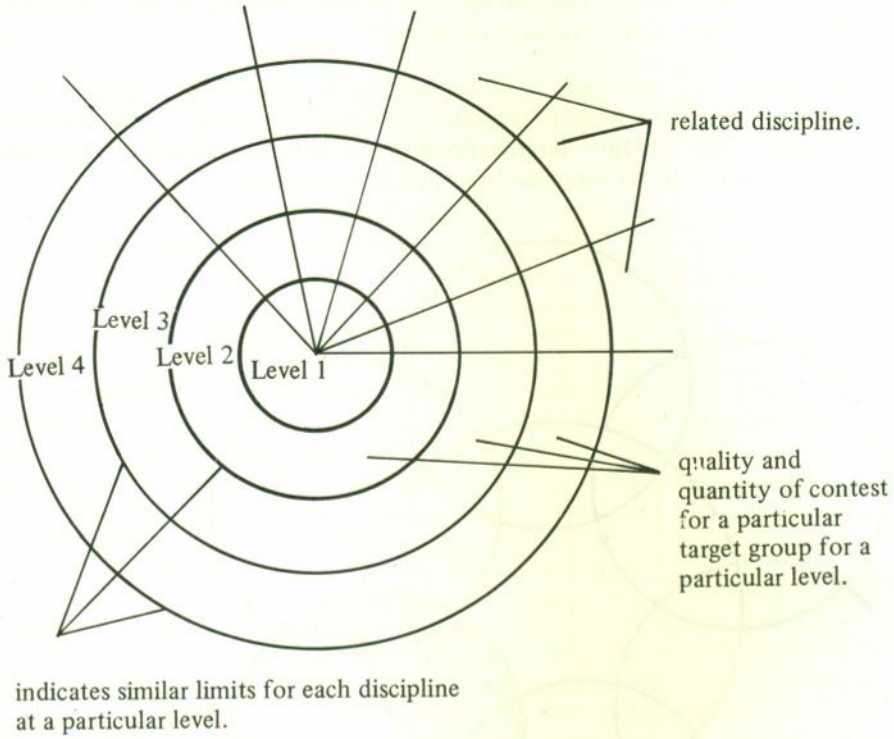


FIGURE 2

sible difficulties that are likely to be encountered. The problems may be classified into its academic and non-academic aspects as follows:-

Academic Considerations

In formulating the strategy most likely to fulfil the objectives of integration, the following factors are paramount:–

1. There ought to be clarity in the vertical linkage[5] between the various topics in the syllabus, and an indication of the smooth flow of the theme of the subject right through the syllabus.

2. It is necessary to maintain clarity in a horizontal linkage between related topics in different subjects to avoid repetition and compartmentalization in the understanding of the topics.

3. There must be maintained a logical and linear relationship and a logical sequence between the various topics so as to ensure that one topic leads comfortably to the next.

4. The position allocated to the new topic in the syllabus must be accounted for in terms of its objective and role.

5. A concept map must be developed in order to visualize clearly and in detail the relevance and functions of each of the concepts.

6. An understanding must be reflected of the fact that integration is not a patch-work exercise or a jig-saw puzzle but a meaningful infusion of related information.

7. Care should be exercised to avoid repetition or duplication of topics or concepts that are already included, implied or covered in other topics.

8. The contribution of subject specialists must be maximized in the integration exercise.

9. The examination system must meet the objectives of the new curriculum, and that is likely to require the development of a totally new scheme for the evaluation of teaching and learning.

One of the problems that might arise is related to the learner. If the entry requirements are not satisfactory or are inadequate, the student would encounter frustrations from the very beginning and may contribute to the total failure of the curriculum. For example, in new areas of study such as Environmental Sciences or Population Studies, the content can become so scientific and technical as to cause tremendous confusion and exasperation for the humanities students or it can become far too descriptive and therefore not sufficiently challenging for the science students[6]

Non-academic Issues

Some of the non-academic issues impinge upon the academic ones and can therefore be quasi-academic, but it is possible to overcome them through administrative means. Some of the non or quasi-academic considerations that needs to be kept in mind are as follows:-

1. Staff personal relationships have to be carefully studied and understood in order to ensure success of the exercise. No staff should feel threatened due to the dissolution of his particular subject due to the integration of that subject with another, nor should another staff member develop a sense of superiority and importance due to the extension of his subject area. In terms of human resource, there will be need for cooperation among the teaching staff in order to carry out team-teaching and theme-teaching[7] wherever appropriate in the new integrated curriculum which may demand specialized pedagogical approaches. It cannot be assumed that any single teacher would be competent to handle the new syllabus since the range of topics from the different disciplines contributing to the one single new applied syllabus would be wide and mastery of all the topics would be too ambitious an expectation[8], especially when the preservice and inservice training are lacking in this competency.

2. A second area relates to the perceptions that might be held on the economic value of this new curriculum. Educationist may not share the same view and philosophy as prospective employers, economists or politicians. The question here is whether the integration exercise in a particular subject is the result of and hence the reflection of specific needs expressed by the larger society, and related to that question is the issue of whether the products are marketable given current development or alternatively if the exercise is one purely to satisfy the educational preparation of an individual in a course of study.

3. The physical set up of the system in terms of space and time availability, and infrastructure such as equipment and library facilities are pre-requisites as vital as human resources and the design of appropriate academic methodology.

Approaches To Integration

The integration of new content into the curriculum can be achieved in one of several different ways, or through a combination of more than one method.[9]

Separate Course

Where the new content becomes a subject by itself along side other school subjects and is taught at progressive levels in the school system. This might appear to be, by far and large, the

most suitable form of integration. In such an arrangement, total attention can be devoted to the prime focus of the content. Attempts could also been made to offer on an optional or elective basis, short term courses on such subjects. This would of course necessitate administrative re-arrangements.

Parts Of A Course

This can be achieved when the new section is incorporated within an existing subjects or is included in a total new course that is being planned for launching. In both cases, the new content can either be introduced as separate topics, or as sub-topics under a main topic which has the flexibility of accommodating the proposed new areas.

This approach seems feasible where the curriculum planner finds it convenient to introduce, for example, population and family life education into subjects such as the social sciences, general science, biology, mathematics, home economics, health sciences, physical education, geography, to name a few. But the problem here is to ensure that the content is developed in the manner of a logical follow-up to the previous topics, without causing the smooth development of the main subject to suffer undue interruption as a result of the introduction of the new topic. Moreover, as this is such a highly special technique, teachers must be specifically trained and should posses the experience to be sensitive to the horizontal and lateral inter-relations of this topic with the rest in the syllabus. Only then can the new information be shown to be organic to the understanding of a whole concept that is being explored.

Blending Into Existing Content

The approach here is to include concepts, ideas, data and activities into the already existing topics in the normal process of teaching in such a blended form as not to be noticeably identified as having been derived from some other disciplinary area or subject base. The difficulty that will be confronted here is qualified and experienced teachers who have a thorough understanding of the inter-relatedness of the new topic (such as family life education) to the main subject (such as Geography). The decision on how to introduce such content and when to introduce the topic during teaching would be entirely taken on their own discretion, apart from whatever assistance can be given in the form of suggestions and teaching notes. Perhaps it is too ambitious an expectation at this stage, especially in view of the limitations experienced by teachers in terms of the skills and techniques, required for the success of the 'blending' approach to integration.

Co-Curricula Activities

It is currently a popular approach especially in subjects such as consumer education, environmental education, nutrition education etc.. The method involves activities, special talks, exhibits, seminars, debates, films which are programmed outside the normal classroom schedule. It has some decided advantages such as the cost and time factors, but the seriousness with which such activities are likely to be regarded by the target population is a highly debatable issue.

The four possibilities cited above are capable of being employed either individually or in selected combinations. But what must remain in the forefront is the appreciation that the process of integration is not a *splicing and joining* sissor-like exercise nor is it a gimmick for making old materials more attractive. Rather, it is one that requires imagination and the most rigourous understanding of the fundamental objectives of the planned programme[10], and a skilled pedagogical review of approaches to ensure that the teaching and learning process achieves a greater constructive value through the medium of integration.

Notes

[1] For a discussion on the need to update knowledge and information and to decompartmentalize the curriculum, see Mayhew, Lewis B., "Patchwork Curriculum in Higher Education," *Educational Leadership,* Journal of the Association for Supervision and Curriculum Development, Vol. 36, No. 2, Nov. 1978, pp. 131-133 and Cohen, Mary, "Whatever Happened to Interdisciplinary Education," Educational Leadership, pp. 122-126.

[2] See Piaget, J., *Main Trends in Inter-disciplinary Research.* London: George Allen & Unwin Ltd., 1973 for further information on (a) interdisciplinary instruction as a condition of the growth of knowledge even though his work has been used mainly to bring mono-disciplinary instruction into harmony with stages of child development; (b) to integrate there must be a convergence of certain general problems, that these general problems do link up fairly directly with certain central questions and there must be recourse to certain cardinal ideals which actually rest on common mechanisms. (p. 13).

[3] The authors interpret integration as the process of planning and implementation of rural development strategy through the establishment of appropriate priorities and sequential time-phasing approaches for the realisation, over time, the broader objectives of planning. See Sharma, S.K. and Malhorta. *Integrated Rural Development.* New Dehli: Abhinav Publications, 1977. p.

[4] For further information on the strengths and weakness of integration, as seen synonymous with fusion, see Oliver, Albert I. *Curriculum Improvement, A Guide to Problems Principles and Process.* Englewood, Cliffs, New Jersey: Harper & Row, 1977, pp. 243-246.

[5] The need to ensure a horizontal and vertical linkage is to help pupils acquire a more unified view of learning and the structure of knowledge as it functions in the various disciplines. For further information see Nicholls, Audrey and Nicholls, S. Howard, *Developing a Curriculum,* London: George Allen and Unwin Ltd., 1972. Unwin Education Books 121, Chapter 5.

[6] For further details on the problems of subject integration as it relates to environmental Science, see Wigston, David L. "Problems of Subject Integration in Environmental Science." in *Environmental Education: Key Issues for the Future,* Ed. David Hughes-Evan, Pergamon Press, 1977. pp. 23-31

[7] For futher information on theme teaching and team teaching see Warwick David (Ed.), *Integrated Studies in the Secondary School.* London: University of London Press Ltd., 1973, Chapters 3 & 4.

[8] For a discussion on the reaction of most pre-service and in-service teachers to the teachin of an integrated syllabus and suggestions for remedying the situation see Cruickshank, Donald R. and Thompson, Linda L., "Do We Educate Teachers for a Patchwork Curriculum," *Educational Leadership,* Jornal of the Association for Supervision and Curriculum Development, Vol. 36, No. 2, Nov. 1978, pp. 127-130.

[9] For further information as it relates to Population Education of the UNESCO, *Population Education: A Contemporary Concern, Educational Studies and Documents,* No. 28, pp. 77, 78 & 79.

[10] Many differences of opinion exist concerning the orientation of the curriculum. See, for example, the review of curriculum designs by Neagley, Ross L., and Evans, N. Deem. *Handbook for Effective Curriculum Development.* Englewood Cliffs, New Jersay: Prentice-Hall Inc., 1967, pp. 2-5.

[11] For a case study of the process of curriculum planning for integrating multicultural education see Baker, Gwendolyn C. "The Role of the School in Transmitting the Cultures of All Learners in a Free and Democratic Society," *Educational Leadership.* Journal of the Association for Supervision and Curriculum Development, Vol. 36, No. 2, Nov. 1979, pp. 134-138, and Buethe, Chris, "Energy in Your Classroom," *Educational Leadership.* Vol. 37, No. 2, Nov. 1979.

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