CHAPTER II

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This chapter provides an overview of the literature available in the field of architectural education and evaluation of educational programmes or systems.

A review of related literature consists of a summary of research carried out in the past on the same or related topics. This review provides an insight to the researcher regarding what is already known, and what remains to be investigated regarding the topic of research. Thus, a review of literature guides the researcher to avoid duplication, and provides useful suggestions for further research.

The findings of different studies may agree with or contradict the findings of the researcher, and help to logically define and refine the existing knowledge on the subject.

The review of literature related to the present research is classified into two main types:

A. Empirical literature in terms of prior research studies

B. Conceptual literature in terms of opinions, views, recommendations, and suggestions of eminent educationists and architects, concerning architectural education.

The review of empirical literature incorporates the descriptions of the main features of each study such as the theme, objectives, sample, and suggestions for improvement and/or findings. Besides, the material in this section is further classified into two categories.

I. Research studies conducted in India.

a) Studies related to architectural education.
b) Studies related to management of architectural education.

c) Studies related to technical education.

d) Studies related to evaluation of education.

II. Research studies conducted abroad.

The conceptual literature deals with opinions, views, suggestions, and recommendations given by eminent educationists and architects at various symposia, conferences, and seminars, conducted in India as well as abroad. It also includes articles written in different journals.

**REVIEW OF THE EMPIRICAL RESEARCHES:**

I. RESEARCHES CONDUCTED IN INDIA:

a) Studies related to architectural education:

Anantha Krishna and Yalavigi (1989) conducted a case study of architectural aptitude test and course performance at Manipal Institute of Technology. In the case study, scores in aptitude test were correlated with various course performance variables for three successive classes of students.

The objective of the study was to investigate, through a case study, whether any linkage could be established between performance in aptitude tests and the performance in the various courses in the B. Arch. Programme, which require similar types of skills as those evaluated in the aptitude test.

They conducted the study at the Department of Architecture, Manipal Institute of Technology. Three successive classes, namely, the class of 1987 (n=19), the class of 1988 (n=26), and the class of 1989 (n=35), were selected for the study. The scores of the students in the aptitude test and scores for only those courses, which involve direct
application of skills evaluated in the aptitude test, were considered for this study. The selected courses were a) basic design, b) geometrical design, c) free hand drawing, d) architectural design, e) solid geometry, f) sciography, and g) perspective drawing.

The aptitude test had four components, namely, Visualisation, Observation, Free hand drawing, and Aesthetic sensitivity.

The first step in the analysis of data was to examine whether the four components of aptitude test had any relationship among themselves, in view of assumption that they are related. After the analysis, it was inferred that the four components of the aptitude test were independent of each other. Each component was treated as a separate variable, as was the aggregate score of the components.

The next step in the analysis was to correlate each of the five test variables with the performance of the students in the selected courses. This was done for the three classes selected.

The conclusions were as follows: The case study indicated that aptitude tests, which are assumed to measure the creative abilities of incoming students, may not be reliable indicators of subsequent performances, even in studio courses presumed to require similar creative skills as assessed in the test.

Four explanations are offered for the overall lack of significant correlation, which may be taken as tentative hypotheses.

a. The three components and contents of the aptitude test, namely, visualisation, free hand drawing, and aesthetic sensitivity, may not be adequately testing the type of skills that need nurturing in the course.
b. It may be probable that the effect of variables intrinsic to students, like motivation, priorities, and application may be strong enough to overcome the effects of initial lack of capacities and skills in creative ability.

c. The significant correlations become more numerous in small classes as compared to bigger classes. Higher competition and group dynamics might be the strong modifying factors of course performance in bigger classes.

d. The architectural courses, as they are being taught and evaluated, do nor require any special skills

According to the researchers, it is very desirable that studies of a similar nature be conducted, preferably embodying research, which tests a cross section of all schools and departments of architecture in India.

Kaur (1999) conducted a study on ‘Architectural Education- Futuristic Approach towards the Twenty-first Century’. The aims and objectives of the study were as follows:

a) To identify the various emerging trends and needs due to social, cultural, and technological factors, related to the developments in the field of architecture.

b) To identify the drawbacks in the present system of architectural education.

c) To identify the challenges which the profession has to face in the twenty-first century.

d) To identify the changes required to be done in the architectural education to make it fit for the twenty-first century.

e) To identify the role of architects in the present situation.
f) To identify the vital issues in the education of an architect.

g) To formulate a model based on the findings.

The researcher has used qualitative methods of research. The research includes a review of the literature, and a review of historical perspective of architectural education.

It includes a study of syllabi of colleges of architecture in the northern region of India, for which, a sample of five colleges was selected by the researcher. National level survey was conducted to find out views of eminent architects/ academicians regarding architectural education. (Six architects responded to this survey.) Regional level survey was conducted to find out the views of students, teachers, and fresh graduates regarding architectural education. The sample consists of 20 students, 20 teachers, and 20 fresh graduates.

The researcher has prepared questionnaires for the preceding survey. The available data were analysed qualitatively. Based on the findings of the study, a comprehensive course curriculum and a model of architectural education have been evolved. The main features of this are as follows:

a. Architectural design and theory of design have been amalgamated.

b. Subjects of energy, efficiency, environment, concept of sustainability, and research methodology should be integral parts of the design studio.

c. Rural architecture and low cost construction techniques have been proposed to be taught in the subject design for semester IV.

d. Designs of structures, and of structural systems have been combined.

e. Sociology, human psychology, and ecology have been combined.

f. ‘Computers in architecture’ has been proposed as a subject for all semesters.
The researcher has given some recommendations concerning sessional work, and co-curricular activities.

Mathur (2000) conducted a study on ‘Design for a School of Architecture in Consonance with Social Change’.

The following were the objectives of the study:

a) To study architectural education in the context of social and technological framework of a changing world.
b) To study the existing schools of architecture.
c) To study the existing situation of Uttar Pradesh Varanasi University and Banaras Hindu University regarding schools of architecture.
d) To formulate a design programme on the basis of the preceding data, by which the ‘built environment’ could be suitably configured to facilitate the development of a professional with relevant skills and attitudes.

The thesis is limited to the designing of a school of architecture and its related facilities. The course content and pedagogic methods are studied in the context of their influence on physical form of the school. The thesis does not suggest any changes in the syllabi or the pedagogic approach.

The researcher has studied political events, and technological and social changes in development of architecture and simultaneous development of architectural education, ranging from 1850 to 2000, in Europe, America, and India.

The researcher has studied the designs of existing schools of architecture, and has given a design proposal for a ‘school of architecture at Varanasi’.
The proposal is given in the form of a number of drawings. The proposal includes design of a college building and the surrounding areas. It includes detailed design of internal spaces such as classrooms, studios, and administrative areas. It also includes design of outdoor spaces such as gardens, parking areas, and spaces created for informal group discussions.

b) Studies Related to Management of Architectural Education

Singh (1999) conducted a case study of the Academy of Architecture in Mumbai. The researcher studied the following aspects of the institution from the perspective of management of architectural education:

1. Academic teaching-learning environment.
2. Availability of infrastructural facilities.
3. Curriculum and teaching methodology.
4. Facilities for human resource development provided by the Academy, as perceived by its students and teachers.

Based upon the study conducted, the researcher puts forth the following recommendations to the management of institutions of architecture.

1. If the institutions are to be kept alive, the building should be planned for variety of activities, such as continuing education programmes, conferences, seminars, and workshops.
2. Use of the latest teaching aids, gadgets, and equipment, provision for staff amenities, and employee-oriented policies, have a direct impact on the quality of education in an institution of architecture.
3. Teacher-student ratio in an institution of architecture has a direct impact on the teaching-learning environment. Small groups for tutorials and large groups for lectures and audio-visual presentations are recommended.

4. It should be possible to combine the studio classes to allow interaction of students from different classes.

5. Institutions should strive to develop quality, and should continuously upgrade themselves in providing appropriate facilities for students, and create better conditions of employment for the teachers by providing staff development programmes, and encouraging them in academically oriented pursuits.

Mishra (2000) conducted a study of management of institutions for architectural education in Mumbai.

The researcher studied the following aspects:

1. The managerial processes of planning, organising, leading, decision-making, and controlling for the management of the following nine activities, namely, teaching, curriculum, co-curricular activities, examinations, staff development, financial resources, study tours, laboratory, equipment, and library.

2. The researcher compared the perceptions of principals and teachers of institutions for architectural education on the management of different aspects of architectural education.
3 The researcher compared the management of different aspects of architectural education in aided and unaided institutions, as perceived by the principals and teachers

Based on the analysis of the data, the researcher made the following recommendations

1. There is an urgent need to establish centres of study and research for the development of teaching material

2. Resource centres at the national and regional institutions need to be set up. These resource centres will develop and distribute library information, data processing, microfilms, and audio-visual teaching aids

3. Changes in learning attitude and method are necessary

4. The need for change in architectural education is required at all stages, from decision of location of the school to the formulation of curricula and syllabi

The researcher has suggested the implementation of Total Quality Management (TQM) in architectural institutions through the following stages

1. Identification and perception

2. Organisation, understanding, and commitment

3. Scheme for improvement

4. Critical analysis

The researcher has given suggestions for improvement in quality of education by updating the curriculum. The researcher also recommends the following to educational managers

1. Information Technology

2. Automation applied to buildings and manufacturing processes
3. New materials and new application of conventional materials.
4. New design methods and procedures.
5. New management concepts.

According to the researcher, the principals or education managers must acquire the following leadership qualities for effective institution management:

1. Vision.
2. Values.
4. Confidence.
5. Innovation.
6. Team Building.

c) Studies related to Technical Education:

Kulkarni (1985) conducted a case study of regional imbalance in vocational education and manpower planning in Marathwada. Major objectives of the study were as follows:

a. To study the facilities available in the colleges and polytechnics in Marathwada.

b. To study whether the contents of technical education were in conformity with the needs of Marathwada region.

c. To study the academic, administrative, and financial difficulties of institutions of technical education.

d. To study regional imbalance in technical education in Marathwada.

e. To improve technical education in Marathwada.
The sample of the research study included 7 institutions, 150 teachers, 150 Students, and 100 industrialists. The researcher also collected information from government records. The findings of the study were as follows:

1. Since the opening of colleges on no-grant basis, the facilities for technical education were on par with other regions of the state.
2. Regular monitoring was needed of the new institutions to see that they fulfilled the necessary conditions of staff and equipment.
3. The admission procedure needed improvement.
4. The older institutions had inadequate facilities as compared to those in other regions.
5. The decision to allow private institutions to start colleges for technical education needed a cautious approach.
6. New courses were recommended at the undergraduate and postgraduate levels for architecture, civil engineering, and chemical engineering.
7. Refresher courses were suggested for masons, carpenters, plumbers, and other site workers.
8. Admission by a common entrance examination was suggested.

Pallai and Mohan (1986) conducted a review of the semester system in Madurai Kamraj University. The objectives of the study were as follows:

a. To find out the views of the students and teachers regarding the semester system, teaching-learning techniques, evaluation procedures, and functioning of the system.
b. To study parents' opinion regarding the semester system.
The sample of the study included 83 colleges, out of which 40 colleges responded to the researcher. The study included 260 teachers, 1225 students, and 110 parents. The major findings of the study were as follows:

1. The courses were designed as self-containing units.
2. Ninety working days were ensured for each semester.
3. The teachers agreed that the courses were effectively planned, schedules notified and followed closely.
4. The teachers were found to favour a non-detention policy.
5. Most of the teachers were keen to ensure uniformity in awarding internal marks among various colleges and various subjects, by converting raw scores into standard scores.
6. A majority of the students felt that the courses were well designed as self-contained units, and they geared them to a tight work schedule.
7. Sixty-five percent of the students felt that they were involved in the learning processes, learnt more systematically, assumed definite responsibility for their progress, got periodical feedback from the results of sessional tests to improve their learning. The semester system left them little time for frivolous activities.
8. Students wanted the class size to be restricted to 40.
9. Students were satisfied with the existing ratio of internal and external assessment marks.
10. Forty percent of the students doubted the reliability of external assessment and suspected subjectivity in internal assessment.
11. Ninety percent of the students felt that the semester system was a good system.

12. Almost all parents favoured the continuation of the semester system.

d) Studies Related to Evaluation of Education:

Chitnis and Velaskar (1988) examined the qualitative aspects of the educational situation in Maharashtra. According to them, despite the quantitative advances in education, Maharashtra presently harbours serious regional, gender, and caste imbalances. There is all-round erosion in the quality and standard of education. The authors have also offered many suggestions, including the need for flexible syllabi and curricula at all levels. However, these suggestions are not data based. Many of the conclusions are based on the authors’ intuition and experience.

Veerkar (1980) evaluated the B.Ed. colleges in Maharashtra State by means of a questionnaire, which included 75 questions. A stanine scale was prepared for rating the colleges based on scores obtained on the questionnaire, and the stanine scale was converted into a 5-point scale. While the scaling of the evaluative adjectives seems to be satisfactory, the reliability and validity of the scale are not ascertained.

Kohler (1991) made use of observations, interview, and document analysis for gouging the standard of occupational therapy (OT) courses in India. She also used a written tool combining the ‘Official World Federation Occupational Therapy Standards’ and a self-study checklist for quantitative and qualitative investigation of programme practices and discrepancies in the area of occupational therapy.
II) RESEARCHES CONDUCTED ABROAD:

Pace and Stern (1958) attempted to assess perceived college environment with college characteristics index (CCI). They attempted to implement the ideas of the Harvard psychologist Henry Murray about the personality 'needs' of an individual and the 'presses' of the environment that influence the individual's behaviour. The thirty scales of the CCI were part of a strategy to find environment presses that bore directly on the satisfaction or frustration of a psychological need. The approach seemed to focus on the individual's perceptions of the environment. Stern (1970) subsequently argued that these individual perceptions of the environment from CCI could be aggregated and averaged, to yield a portrait of the collective environment.

Pace further abandoned the press-need parallelism. He used the average scores of colleges as the unit of analysis, and selected items that seemed directly relevant to the college experience. The outcome of Pace's analyses was the College and University Environment Scales (CUES), which were used in a great many studies.

Peterson (1968) developed the College Student Questionnaire (CSQ), which was designed to do two things: first, to assess student characteristics that presumably will affect their adjustment to the college, or could be affected by their college experiences; and second, to assess aspects of the environment that could influence that adjustment or development. The questionnaire consists of two parts. Part I, covering students' backgrounds, attitudes, and plans, was designed to be used with entering students. Part II, which obtains information about the students' educational and vocational plans, college activities, and attitudes towards their college, was designed to be used with students who have had one or more years of college. Part I can be scored for seven scales: family independence, peer independence, liberalism, social
conscience, cultural sophistication, motivation for grades, and family social status. Part II can be scored for satisfaction with administration, satisfaction with major subjects, satisfaction with students, study habits, and extracurricular involvement. The CSQ assumes that the most salient feature of the environment is whether students feel satisfied that it is meeting their educational needs.

The next environmental approach measure, Institutional Functioning Inventory (IFI), was developed in the 'environment description' tradition, with a project to assess 'institutional vitality', that is, to identify the characteristics of colleges that seem to have strong individual atmospheres. This effort changed to one of identifying the major dimensions of college functions (Peterson et. al, 1970). In addition, the authors realised that in order to understand the college functions; they would need to assess the perceptions of faculty and administrators, as well as students. The eleven scales in the IFI thus represent the aspects that the authors considered the most important for institutional functioning: intellectual-aesthetic curriculum, freedom, human diversity, concern for the improvement of society, concern for undergraduate learning, democratic governance, meeting local needs, self study and planning, concern for advancing knowledge, concern for innovation, and intellectual Esprit.

Warren and Roelfs (1972) developed the 'student reaction to college' questionnaire for colleges, to be used in identifying students' views of institutional strengths and weaknesses. To maximise the instrument's usefulness to staff members, and its relevance to students, Warren and Roelfs interviewed students, faculty members, and administrators about what they thought was important to know about their colleges. On a pre-test version, students were asked to write on issues of importance to them that were not covered in the questionnaire. Its first 150 items cover
such areas as instruction, grading, faculty and staff contact with students, registration
and class scheduling, students' activities, financial problems, housing, food services,
and transportation. In addition, the questionnaire includes nine background questions
about the student, and space for twenty questions that the colleges can develop
themselves. The items asked students if they feel their needs are being met.

Anderson (1983) compared the functioning of a number of colleges defined by
scores on the IFI, obtained between 1968 and 1972, and scores obtained between 1979
and 1981, and related these scores to the financial conditions of the colleges. Anderson
found little relationship between changes in finances and changes in the IFI. The IFI
assesses perceptions of components of the environment that are important to faculty, as
well as components that are important to students. In that sense, it involves an implicit
recognition that there are multiple environments that are based on the experiences of
the responders.

Another approach to the environment was taken from the literature on
organisational theory and behaviour. One consistent theme in the literature is that it is
critical to understand the goals of an organisation in order to understand how it
functions (Georgian, 1973). This idea has been applied to universities by sociologists
such as Gross and Grambsch (1968, 1974), who studied the goals of 68 Ph.D granting
universities, as seen by faculty and administrators in two different time periods. The
results were that the universities in both the periods were heavily committed to
research and scholarly pursuits, with much less attention given to students and their
needs.

Peterson and Uhl (1977) adapted the Gross and Grambsch strategy by designing
an Institutional Goal Inventory (IGI), so that respondents can rate each of the 90
statements of goals, according to how these goals are currently emphasised at the college, and according to how they believe the goals should be emphasised. The differences between these 'is' and 'should be' ratings show how closely the present campus goals match the goals that people prefer, and they identify areas where changes may be needed. Furthermore, differences among groups of respondents show how much agreement exists about institutional purposes and objectives. In a study of 105 California colleges, the 'should be' scores were higher than the 'is' scores on every scale of IGI, suggesting that few institutions are currently meeting their goals, according to their constituencies. The discrepancy was particularly large for scales of community, intellectual orientation, individual personal development, and vocational preparation. In addition, a study comparing the IGI scores of the students, faculty, administrators, chancellors, regents, and residents of local communities of the University of California revealed some large differences with the institutions.

**REVIEW OF CONCEPTUAL LITERATURE**

1) **CONCEPTUAL LITERATURE FROM INDIA:**

Kothari\(^1\) (1988) is of the view that schools of architecture are required to be oriented in the larger context of the community. It should be the concern of the schools to increase the knowledge, proficiency, and capacity to attain the goals.

Malecha\(^2\) (1988) suggests that the educational plan for architecture must take into account that it is concerned with physical, social, and mental wellbeing of students, as well as their intellectual growth. Architecture is an applied discipline, and must be taught as theory and skills, with a full knowledge of history.
A general plan for architectural education should follow the following six points:

1. Creative thought.
2. Clear thinking.
3. Natural ability and learning skills.
4. Issues before society.
5. Case studies.

Raori³ (1988) asserts that in academic programmes for architecture, an emphasis should be laid upon the following:

1. Encouraging students to develop scientific and technical intuitiveness to resolve problems in a creative and innovative manner, by promoting good understanding of indigenous and vernacular solutions, and a thorough grasp of modern technology.
2. Making them aware of the national context, cultural, historical, technological, and various environmental constraints in the different geographical and cultural regions of the country.
3. Inculcating a strong sense of service and professional attitude to work in the context of economics of poverty, concerns for the degradation of environment and for energy saving.

Bakshi⁴ (1995) opines that there is a need to carry out a review of the existing scenario of architectural education in India, where there is a wide disparity in the standards of education, a mushrooming of institutions, and unlimited potential for the
profession in a developing economy. He also suggests that there is a crying need to take stock of the situation, to deliberate on the issues involved, and to arrive at a consensus for a clear-cut educational policy/direction, and to devise measures to regulate the same, before chaos takes over.

Chhaya (1995) expressed the following views regarding architectural education

1 Faculty: In a balanced faculty structure, it is important to have those who communicate and encourage students into learning and self-realisation. It is also equally important to have those interested in research aimed at developing new areas of materials, design, and the educational process. Good co-ordination among the faculty members is also required. Each stream of subject needs infrastructural support and vertical co-ordination of faculty, to develop the teaching process for the subject. Horizontal co-ordination of faculty members teaching various subjects in each semester is also necessary

2 Educational planning and programming: The present policy of the Council of Architecture to provide a minimum infrastructural facility and syllabus, has its own merits. But it is often found that these are misinterpreted, both by the inspection team, and by the concerned institutions. It is very important that each school develops its own personality, the thrust area, and its role in the society, because this depends on the local and regional contexts, availability of faculty, and their resources at a given time.
Chotmarda (1995) opines that the management is the most neglected of all matters. Architectural education in India has unfortunately not kept pace with the fast changing needs of the Indian society. It is most unfortunate as the system is self-vitiating, because untrained personnel are let loose in the system, who tend to take the situation from bad to worse. In architectural education, this problem is compounded because of the present choice of policy makers and managers of institutions.

Government-run institutions are controlled by people who have little or no idea of what educational methods and principles are. A board of sponsors generally governs private architectural schools, more for their financial acumen than for their technical knowledge. It is probably only the autonomous institutions, which can claim to have the semblance of a healthy organisation by being at least free from this particular disease. Poor managers and management system, lack of awareness in the general populace about architecture, and lack of the definition of the role of architect in society and industry are strong reasons for calling for a change in the present system.

George (1995) is of the view that the technical education system suffers from the following threats and deficiencies:

1. Dwindling finances.
2. Reduced faculty positions.
3. Demotivation in a large proportion of the staff.
4. Insufficiently trained and inadequately qualified staff.
5. Rigid and generally irrelevant curriculum.
6. Ineffectual examination system.
7. Ineffectual utilisation of space, equipment, and general facilities.
8. Insufficient linkages with business, industry, and the community.
Quarry (1995) states that schools of architecture must foster the following:

1. The capacity of the individual to think creatively and to communicate the thoughts, i.e. the attributes of an artist.

2. An ability to manipulate and probe masses of knowledge, both existing and emergent, i.e. the attributes of a scholar.

3. A sense of responsibility to the immediate needs of the community, which the architectural project is to fulfil, and ultimately to serve the whole human race, i.e. the attributes of a humanitarian.

Bhalla (1998) has given some guidelines regarding architectural education.

• Create a realistic base for all creative work.

• Train students to have an organisational command over large-scale projects, including programming, planning, and management inherent in this scale of work.

• Impart training, which should aim at research, data collection, detailing, and management during execution in terms of good and economical workmanship.

• Encourage leadership qualities and community involvement, to enable students not only to design, but also be able to implement the same.

• Develop a capacity for teamwork, when different disciplines are involved.

• Develop a capacity to evolve new techniques, materials, and methods of construction.

• Impart training, which will enable an architect to be deeply concerned and aware of the financial aspects of the scheme.
According to him, these attitudes towards architectural education will aim at developing a system of values in the student, whereby he will not only evaluate his usefulness in terms of unique and monumental creations for individuals, but also in terms of creation of a healthy environment for a growing and developing community.

Contractor\(^{10}\) (1998) is of the opinion that architectural education in India is at least half a century behind contemporary practice, although common sense dictates that education should be ahead of practice, establishing an experimental base. The average Indian architect cannot compete successfully in the international market. It is not that the Indian architect is wanting in personal initiative or curiosity, but a rigidly pedagogic education holds him back to a certain extent.

Deobhakta\(^{11}\) (1998) is of the opinion that there is a lack of awareness about the peculiar needs of architectural education among the university administrators, as well as managers. There is a lack of independent physical facilities, a lack of dedicated and trained faculty, and in some cases, a lack of vision and direction. University of Mumbai, having eight affiliated colleges of architecture, does not have an independent faculty of architecture or a regular board of studies.

According to Padamsee\(^{12}\) (1998), the traditional ‘jury system’ has been unfortunately distorted to a judgement of the product, rather than an ‘augmented tutorial’, wherein the refinement of the process becomes the focus of attention, rather than a cursory appreciation of form, with the occasional side swipe at dysfunction.

Pitkar\(^{13}\) (1998) has the following views regarding the admission process for the architectural course:

1. The students come from the science stream, where there is no exposure to arts, crafts, sculpture, painting, or architecture. It is observed that most of
the students do not consider architecture as the first choice. Indeed, for some of them, it is the last of the professional course choices.

2. Admission brochure is legal and administrative in outlook, rather non-explanatory and complex.

3. Aptitude test has lost its original intention of selecting the right students, who have an aptitude for architecture. The pattern of the aptitude test has not changed for years and now even a sample copy is printed in the brochure, with a view to help the students to acquire aptitude and pass the test.

4. The admission process creates confusion in the minds of parents, with its emphasis on technical jargons, like 1-2-3, a-b-c, 4-special, OMS, etc at various admission centres. The process lasts two and a half months, during which, the students keep changing their status in the list, and their colleges.

5. The dual fees structure creates a different class of students within a class and what is most inappropriate is that a ‘merit’ or ‘payment’ status is continued, irrespective of the subsequent performance of the students.

According to Varkey (1998), there are two components of architectural education. The first is on the basis of theory and information, taught in a range of subjects, from building construction to history, and theory to laws of practice. The second is the synthesising discipline of design, taught in the design studios.

Theory can be developed, upgraded, and constantly re-evaluated. Design education, on the other hand, is more crucial.

He is of the opinion that the best schools in India are those that make an effort to choose better student material, support them with curricula that are clear on priorities
of design, and have built a faculty of high quality. They have chosen, or have been
blessed, by creative administrative systems, and have demonstrated that high quality
design education is possible. Regrettably, such institutions are rare.

The collective statement of the symposium on 'New Directive in Architectural
Education', organised by HUDCO\(^{15}\) (1999), is as follows:

Architecture is a discipline, which is concerned with defining and realising a
harmonious relationship between human habitation and the environment. Technical
advances of the recent past require that educational structures and teaching methods
may be made more open in scope and deeper in content. The focus of architectural
education should include the rural areas, where the majority of the population stays.

To encourage the growth of knowledge and appropriate skills within the
architectural profession, the educational system requires to be made more democratic,
ensuring operational autonomy to each educational institution and making community
involvement a feature of professional accountability.

The following recommendations were put forth at the symposium:

1. The present requirement of affiliation of architectural schools to universities
   should be re-examined, in the light of necessary autonomy of the
   profession.

2. Studio-based learning practices should be recognised as the essence of
   architectural education, the core of such practices being the concept of peer
   group valuation.

3. A special effort has to be made for the professional development of teachers
   in architectural education.
4. There is an urgent need to produce appropriate teaching material, which would be relevant to the regional schools of architecture.

II) CONCEPTUAL LITERATURE FROM ABROAD:

a) Studies related to architectural education:

Tarn\(^6\) (1958) has discussed the issues from the proceedings of RIBA Conference on Education. In this conference, the need for changes in architectural education was considered through the following questions:

1. How can a more fruitful working relationship be developed between the schools and the practice?  
2. Does architecture have a real future as an academic discipline in higher education?  
3. What research can the schools of architecture develop in the current circumstances?  

According to Tarn, it is necessary to understand the present situation in architectural education, embracing issues about course contents and course structure, teaching methods, and adjustment of the education to the professional need of the future. The schools should be adequately established, and equipped with resources so that they can carry on research and enrich the profession. The schools should be capable of responding to the changing needs of new courses.

He has further expressed that the profession should be adequately prepared to enter the twenty-first century. A profession that expounds its own success and explains what it is doing, encourages the public to understand what good architecture is, and finally a profession which is more integrated, and which accepts that research is an
activity which takes place naturally both within the schools of architecture and within the practice itself.

Sheffield Centre for Environmental Research\textsuperscript{17} (1996), in its report on `Total Quality Management in Architectural Education' mentions that higher technical and architectural education can play a pivotal role in promoting socio-economic development of a country.

Architectural education, therefore will have to strike a balance in generating the right number and the right quantity of trained manpower, with the right cost, at the right time. The adoption of two concepts in educational system, namely, Total Quality Management, and Architectural Institution as a service industry, can take the system a long way in achieving the national goals. The report further states that the principles of Total Quality Management should be applied to all the components of education system, so as to make both conceptual environment and physical environment more and more productive. The major components of any education system as listed in the report are as follows:

1. Staff members (like men in industry).
2. Laboritories (like machines in industry).
3. Students (like raw material in industry).
4. Curriculum (like sequencing and scheduling, a part of production planning in industry).
5. Education technology (like methods in industry).
6. Management (like policymaking, planning, and auditing input-output in industry).
7. Money (like financial management in industry).
8. Services and utilities.

b) *Studies related to evaluation in higher Education*

The literature on evaluation of higher education during the 1960's and 1970's focuses mostly on technical aspects of the evaluation process. Evaluation was motivated mainly by the assumption that the knowledge about a programme's strengths and weaknesses would lead to an improved programme. Evaluation appeared to be based on internal initiatives for knowledge generation, reared to internal decision-making, and directed towards internal audiences.

Significant changes in the nature of evaluation of higher education occurred in the early 1970's. The economic crises coupled with subsequent declining enrolments, led to a period of retrenchment and accountability, in which operations and outcomes of higher education academic programmes came under close public inspection. The period extending approximately from 1973 to 1980 was one in which the demands for increased evaluation information created a need for improved methods and models of evaluation in higher education. One significant aspect of the accountability movement was that the demands for evaluation were external to institutions of higher education, which meant that the nature of evaluation questions had to change from an internal to an external focus.

Astin\(^\text{18}\) (1974) opines that the most difficult aspect of generating evaluation data to meet the demands of accountability is developing methods to measure the outcomes of higher education. Astin categorised student outcomes into cognitive and affective, and research data into psychological and behavioural. Cognitive psychological outcomes include knowledge, general intelligence, critical thinking
ability, and basic skills. Affective psychological outcomes include self-concept, values, attitudes, and beliefs. Cognitive behavioural outcomes include educational and occupational attainment, while affective behavioural outcomes include choice of career, mental health, and interpersonal relationships.

Bowen\(^{19}\) (1974) argued that the significant steps in attaining true accountability are as follows:

1. To define the goals and to order the priorities.
2. To identify and measure the outcomes.
3. To compare the goals and outcomes, and then to judge the degree to which the goals are being achieved.
4. To measure the cost, and then to judge the degree to which it approaches a reasonable minimum.

Barak\(^{20}\) (1979) identified a general trend towards increasing formalisation of the process. The stated purposes of the internal approval process include a desire to determine if documented needs justify the programme, and to determine if the programme is consistent with the institutional role and mission.

Craven\(^{21}\) (1980) perceived a trend among institutions towards increasing self-study to determine the best allocation of resources to maximise institutional goals and missions.

Hacleroad\(^{22}\) (1980) identified four levels of external agencies that demand accountability in administration of higher education academic programmes:

1. Institutions.
2. Multi-campus system co-ordinating boards.
3. Statewide boards of higher education.
4. Regional and national accreditation organisations.

The primary focus of institutional concerns is on the distinctiveness and compatibility of programme objectives within the compass of the institution’s mission, and subsequently on providing resources to enhance quality and effectiveness (Muntiz and Wright, 1980).

Wilson (1980) identified four challenges to evaluators in higher education:

1. Better measurement of quality.
3. Methods for evaluation cross-programme institutional characteristics.

The review of the related literature indicates that no ‘Appraisal Studies’ are available in the field of architectural education, especially concerned with the colleges of architecture affiliated to the University of Mumbai.

One of the studies on architectural education concentrates on syllabus, and the other focuses on physical infrastructure and design of a building for an institution of architecture. The study on aptitude test suggests tentative hypotheses for further studies, and deals with predictive validity of aptitude tests for architecture.

Studies on management cover limited number of colleges, the research sample does not include students of architecture, and are action research reports dealing with single institutions.

The articles and technical papers express personal views of eminent educationists and architects, regarding various aspects of architectural education. Thus,
very little research is done so far, to collect scientifically and systematically, opinions of students and teachers on various aspects of architectural education.

APPLICATION OF RELATED LITERATURE TO THE PRESENT RESEARCH:

On the basis of the preceding literature, the researcher has drawn the following conclusions:

- It is necessary to review the admission procedure, current syllabus, evaluation system, and teaching-learning processes.
- It is essential to assess the available infrastructure and resources to the institutions, in terms of the current needs.
- It is necessary to study these dimensions of institutional environment, and these aspects of institutional system, as perceived by students, teachers, and principals.

The related literature has helped in the process of research design as follows:

- The research studies on technical education have helped the researcher to identify certain issues that are applicable to architectural education.
- The opinions and views of eminent educationists and architects have helped the researcher in formulating the statements in the research tools.
- The conceptual studies in the field of educational evaluation have provided information concerning purpose of evaluation, and technical aspects of evaluation process.
- Empirical researches in the field of institutional environment have helped the researcher, in the process of research design, as follows:
  1. The literature that related to studies on college environment has helped to understand the various approaches to studying the college environment.
The study of college environment by Pace and Stern (1950), using C C I has helped the researcher to understand the concept of perceived institutional environment.

CUES by Pace and Stern (1969), CSQ by Peterson (1968), and IFI by Peterson et al, were useful to the researcher in determining the dimensions of institutional environment for the present research.

Information about ‘Student Reaction to College’ questionnaire by Warren and Roelfs (1972) was useful to the researcher in the designing of unstructured questions concerning institutional systems for the present research.

The study by Peterson and Uhl (1977) has helped the researcher in operationally defining institutional effectiveness in terms of positive discrepancy scores between the actual and the expected performance of the functions of architectural education.

Thus, the published literature facilitated the decision of the present researcher in the following ways:

✔ Use of perceptual approach to institutional environment
✔ Determination of the dimensions of institutional environment
✔ Preparation of Institutional Systems Opinionnaire
✔ Identification of the output variables of the study
References:

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