

DOCUMENT RESUME

ED 463 639

EF 006 072

AUTHOR Chan, T. C.
TITLE School Capacity Update: An Essential but Often Forgotten Planning Process.
PUB DATE 1998-00-00
NOTE 8p.
AVAILABLE FROM For full text:
<http://www.hehd.clemson.edu/SRCEA/YrBkvln1/Chan.htm>.
PUB TYPE Guides - Non-Classroom (055)
EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Building Design; *Educational Facilities Improvement; Educational Facilities Planning; *School Buildings; School Expansion; School Space; *Space Utilization

ABSTRACT

This paper discusses the process of updating school capacity, which is subject to change from a variety of factors (to comply with current building codes, changes in educational programs, changes in class size, expansion of educational services, and scheduling). The paper describes the two major components of updating school capacity: the program variation component (involving changes in class size and program), and the space management component (involving space utilization and school remodeling). The paper also discusses conceptual considerations regarding school capacity, including temporary, maximum, functional, practical, and reclaimed capacity. The paper concludes with a discussion of core questions: (1) "How efficiently is a school building being utilized?" (2) "What standard should be used to determine school capacity?" (3) "What are the considerations in reclaiming school capacity?" and (4) "What is 'best practice' in school capacity planning?" (Contains 17 references.) (EV)

School Capacity Update:
An Essential but Often Forgotten
Planning Process.

T. C. Chan

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES
INFORMATION CENTER (ERIC)

- This document has been reproduced as received from the person or organization originating it.
- Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

PERMISSION TO REPRODUCE AND
DISSEMINATE THIS MATERIAL HAS BEEN
GRANTED BY

T. C. Chan

TO THE EDUCATIONAL RESOURCES
INFORMATION CENTER (ERIC)

1

School Capacity Update: An Essential but Often Forgotten Planning Process

Dr. T. C. Chan

Associate Professor of Educational Leadership

Georgia Southern University

[\(Return to Contents\)](#)

School capacity is subject to change in response to five factors: (1) compliance with current building codes, (2) change of educational program, (3) change of class size, (4) expansion of educational services, and (5) scheduling (Chan, 1998). When change occurs in one of these factors, the capacity of a school needs to be updated to reflect the reality (Eubanks, 1985; Glass, 1994). School capacity update is an essential but often forgotten process of educational planning. With the updated information in hand, an educational administrator is able to make more intelligent decisions on the use of educational resources.

Why Updating School Capacity

A new school is built either to replace an old school building or to accommodate a growing student population. It is planned with a pre-determined capacity to meet the facility needs as identified by enrollment forecasting. After a new school is opened, changes in educational programs and physical environment will render the pre-determined school capacity invalid. Thus, updating the school capacity has become a justifiable cause of action because it (1) provides up-to-date information for educational planning, (2) accounts for the gain or loss of instructional spaces as a result of educational changes, (3) assesses the impact of program variations on school capacity, (4) evaluates the effectiveness of space utilization of a school building, and (5) explores options of making best use of the educational resources.

Components of School Capacity Update

The process of updating school capacity involves two major components: the program variation component and the space management component. The program variation component examines the impact of class size and program changes on school capacity. On the other hand, the space management component evaluates how space utilization and school remodeling effect school capacity.

The Program Variation Component

Class size.

The impact of class size on school capacity has been well documented (Haas, 1987; Chambers, 1993; Castaldi, 1994; Scott Valley Unified School District, 1995; Chan, 1998). Class size is directly proportional to school capacity. In many states, class sizes are either mandated or recommended by the state departments of education by grade and by discipline. The state departments usually require the school systems to maintain an average class size system wide. This allows the school systems certain degree of flexibility in assigning teachers to schools. Some local school systems may choose to go by

EF 006 072

smaller class sizes than what the state departments specify in order to focus on increasing teacher attention to individual students. Any change in class size needs to be examined when updating school capacity. The development of a spreadsheet is probably the best way to handle the class size update, to work on scenarios of class size changes and to assess the impact of class size changes on school capacity.

Program changes.

Another impact on school capacity is caused by the change of educational programs housed in the school building. The nature of educational programs dictates the capacity planning of a school building (Chan, 1982; Castaldi, 1994). Most educational programs today demand greater support of physical environment in terms of increased square footage and advanced technology. Any change of educational program will lead to changes in the educational specifications, physical requirements and eventually school capacity. Therefore, assessing the impact of program changes on school capacity is an essential step in school capacity update.

The Space Management Component

Space utilization.

Space utilization as a factor to determine school capacity has been supported by Conrad (1954), New Jersey Department of Education (1969), Day (1984), Chambers (1993), Castaldi (1994) and Glass (1994). As part of the space management component, space utilization represents an effort to schedule the time for the most efficient use of the school facility. The space utilization percentage of a school building is very mobile. It is sensitive to change in response to any scheduling action. A high percentage of space utilization is an indication of increased school capacity. Ideas such as double session schooling and year round schooling, when implemented, will revolutionarily change the capacity of a school. Therefore, in updating school capacity, the space utilization of a school has to be closely examined.

School remodeling.

School remodeling is the construction work planned to change the physical environment of a school building so that the building can better function to support the educational activities. In the process of remodeling, spaces in the school building may be partitioned, consolidated or converted to other uses as needed. Some remodeling work may even include classroom additions. As a result of the remodeling work, the number of instructional spaces in the school building will be changed and all the spaces will be reassigned. Accordingly, the capacity of the school needs to be evaluated and a new floor plan of the school needs to be prepared to indicate the updated capacity.

Conceptual Considerations

A review of literature about school capacity has revealed some very interesting concepts worthy of discussion in updating school capacity. They are centered around the interpretation of the term "school capacity". A school capacity update could be more meaningfully performed with reference to these basic concepts.

BEST COPY AVAILABLE

Temporary Capacity

After comparing school capacity numbers with real pupil enrollment numbers, Mitchell (1997) claimed that the school capacity numbers were deceptive because they were based on the state's complex and frequently changing definition of school capacity. In the same example, Mitchell pointed out that the school systems were instructed to include system owned portable classrooms in the school capacity calculation. As a rule of thumb, only instructional spaces in the permanent structures can be included in the school capacity calculation. Temporary classrooms only create temporary school capacity. Including the temporary portable classrooms in the capacity update tends to confuse the real need for educational facilities in the school.

Maximum Capacity

In her study of financing public school facilities in Texas, Haas (1987) engaged the maximum class size requirement as an independent variable. Maximum class size results in maximum school capacity. This concept of maximum capacity was opposed by Chambers (1993) who described maximum capacity as a somewhat meaningless number which represented the theoretical number of students impossible to be loaded in the given spaces. Even though maximum capacity is an impractical number, it helps establish the high limit of school capacity update which is worthy of planning references.

Functional Capacity

In a special publication entitled "School Capacity", New Jersey Department of Education (1969) described the term "functional capacity" as the number of pupils that can adequately be housed in a school building without overcrowding. Determination of functional capacity of a school building was described by Chambers (1993) as the program sensitive approach which involved the analysis of program characteristics, average class sizes, and scheduling efficiency. Chambers felt very strongly that only functional capacity would yield some realistic and meaningful numbers for use in school planning and operation. The effort of Chambers and New Jersey Department of Education has disclosed the fallacy of using "maximum" as a means of updating school capacity. At the same time, the idea of functional capacity leads to the development of Glass's theory of practical capacity.

Practical Capacity

Glass (1994) explained that the practical capacity of a school was the number of students who could be accommodated under the concept of best practice. By taking a situational approach, Glass gave school capacity a new interpretation. The best practice concept is program oriented and it throws new light to updating school capacity.

Reclaimed Capacity

The effort of reclaiming educational space was described by Gisolfi (1996) as follows:

Within the walls of many school buildings hidden usable space waits to be found. When identified, this unused or under-used space can be reprogrammed, redesigned and reconfigured to help meet changing educational needs. (p. 26)

The idea is great. It works hand in hand with the functional changes of educational programs. Examples of reclaiming space include: the conversion of an old auditorium to a new media center, a wood shop to a special education suite, and storage areas to office spaces. Furthermore, some of the over-designed

spaces can be identified and redistributed to other program uses. The reclaimed capacity will add to the total capacity update of the school.

Discussion

After exploring the different aspects of updating school capacity, the author would like to focus on several crucial points about the subject. Leading the readers through a practitioner's point of view, the author attempts to highlight the cores of the issues around school capacity. The following discussion is revolved around four basic questions:

(1) How efficiently is a school building utilized?

One of the main contributions of updating school capacity is to actually audit the school building space by space to determine the utilization factor of the school building. It is clear that if the spaces in a school building are utilized more frequently through scheduling, the school could accommodate more students. The net result is that additional classrooms may not be needed. In light of the high construction cost of a school building, it makes good sense to re-examine the facility needs and update the school capacity.

(2) What standard should be used to determine school capacity?

Each state department of education develops its own formula to determine school capacity for its intended purpose. Building departments of local governments set occupancy limits of schools with reference to the Building Code. Professional organizations have also established optimal school sizes at different levels. What standard should an educational administrator use to determine school capacity? The answer lies in identifying the line of authority and recognizing the appropriate entities having jurisdiction over different standards. A school has to meet various standards to survive professional screening. For practical purposes, the more stringent standard needs to be used in determining school capacity.

(3) What are the considerations in reclaiming school capacity?

As suggested by Gisolfi (1996), the capacity of a school building could be increased by reclaiming some of the hidden spaces which could be remodeled for instructional use. However, attention should be given to the involvement of remodeling work to these spaces. Because of the change of function, some of these spaces may be required to undergo extensive remodeling to meet the basic fire and building codes. When the remodeling work becomes too expensive, the reclaimed capacity may not be justified.

(4) What is "best practice" in school capacity planning?

Glass (1994) recommended the use of best practice to determine the practical capacity of a school building. Best practice could be interpreted as the majority practice of determining school capacity in the national perspective. Quantitative surveys could be performed to examine majority class sizes and school population. A qualitative approach could be taken to study the nature of educational programs and their supporting facilities. The findings of these national surveys and analyses may have significant bearing on the notion of "best practice".

Conclusion

The updating of school capacity, recommended to be performed annually, involves tedious work on the part of an administrator. However, an updated school capacity record provides such useful information

to make any educational planning work much easier. Understanding that the school capacity information is most reliable, an educational planner makes decisions with confidence. This may well justify the large amount of work involved in updating school capacity.

References

- Castaldi, B. (1994). *Educational Facilities Planning, Modernization, and Management*. Needham Heights, MA: Allyn and Bacon.
- Chambers, B. K. (1993). Program sensitive school capacities. *Journal of School Business Management*, 5(4), 37-41.
- Chan, T. C. (1982, October 30). School design and educational needs. *Ming Pao Daily News*, Hong Kong.
- Chan, T. C. (1996, August 16). What is an appropriate class size? *Ming Pao Daily News*, Hong Kong.
- Chan, T. C. (1998). Determining realistic school capacity. *Educational Facility Planner*, 34(3), 17-21.
- Conrad, M. J. (1954). *A manual for determining the operating capacity of secondary school buildings*. Columbus, OH: The Bureau of Educational Research, Ohio State University.
- Day, C. W. (1984) Facility formulas: A look at the space needs of school buildings will help you determine secondary school capacity. *American School & University*, 56(10), 32-38.
- Earthman, G. I. (1992). *Planning Educational Facilities for the Next Century*. Reston, VA: ASBO International.
- Eubanks, D. L. (1984). School facility evaluation: Physical plant and instructional program--do they work together? *School Business Affairs*, 51(1), 22.
- Gisolfi, P. (1996). Reclaim unused space for education. *School Planning and Management*, 16(4), 26-29.
- Glass, T. E. (1994). Lost in space: Assessing the adequacy of school facilities. *School Business Affairs*, 60(1), 13-20.
- Haas, D. S. (1987). *Financing public school facilities under the maximum class size requirements in Texas*. (ERIC Document Reproduction Service: ED 310543)
- McGuffey, C. W. (1979). What research has to say about facilities and pupil achievement, performance and self-concept in schools. Research report presented to the Georgia State Department of Education, Atlanta, GA.
- Mitchell, N. (July 14, 1997). School capacity figures deceiving, officials say. On line:
<<http://jacksonville.com/tu-online/stories/071497/2a4schoo.html>>
- New Jersey Department of Education (1969). *School Capacity*. (ERIC Document Reproduction Service:

ED 034386)

Parrish, D. M. (1975). Existing school facilities, capacities and current utilization. (ERIC Document
Reproduction Service: ED 128969)

Scotts Valley Unified School District, CA. (1995). School capacity. On line:

<<http://www.svusd.santacruz.k12.ca.us/schoolcap.html>>



U.S. Department of Education
Office of Educational Research and Improvement (OERI)
National Library of Education (NLE)
Educational Resources Information Center (ERIC)



REPRODUCTION RELEASE

(Specific Document)

I. DOCUMENT IDENTIFICATION:

Title: School Capacity Update: An Essential but Often Forgotten Planning Process	
Author(s): Chan, Tak C.	
Corporate Source: Clemson University	Publication Date:

II. REPRODUCTION RELEASE:

In order to disseminate as widely as possible timely and significant materials of interest to the educational community, documents announced in the monthly abstract journal of the ERIC system, *Resources in Education* (RIE), are usually made available to users in microfiche, reproduced paper copy, and electronic media, and sold through the ERIC Document Reproduction Service (EDRS). Credit is given to the source of each document, and, if reproduction release is granted, one of the following notices is affixed to the document.

If permission is granted to reproduce and disseminate the identified document, please CHECK ONE of the following three options and sign at the bottom of the page.

The sample sticker shown below will be affixed to all Level 1 documents

The sample sticker shown below will be affixed to all Level 2A documents

The sample sticker shown below will be affixed to all Level 2B documents

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL HAS BEEN GRANTED BY

Sample

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

1

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL IN MICROFICHE, AND IN ELECTRONIC MEDIA FOR ERIC COLLECTION SUBSCRIBERS ONLY, HAS BEEN GRANTED BY

Sample

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

2A

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL IN MICROFICHE ONLY HAS BEEN GRANTED BY

Sample

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

2B

Level 1

↑

Level 2A

↑

Level 2B

↑

Check here for Level 1 release, permitting reproduction and dissemination in microfiche or other ERIC archival media (e.g., electronic) and paper copy.

Check here for Level 2A release, permitting reproduction and dissemination in microfiche and in electronic media for ERIC archival collection subscribers only

Check here for Level 2B release, permitting reproduction and dissemination in microfiche only

Documents will be processed as indicated provided reproduction quality permits.
If permission to reproduce is granted, but no box is checked, documents will be processed at Level 1.

I hereby grant to the Educational Resources Information Center (ERIC) nonexclusive permission to reproduce and disseminate this document as indicated above. Reproduction from the ERIC microfiche or electronic media by persons other than ERIC employees and its system contractors requires permission from the copyright holder. Exception is made for non-profit reproduction by libraries and other service agencies to satisfy information needs of educators in response to discrete inquiries.

Signature:	Printed Name/Position/Title: DR. T.C. CHAN, Associate Professor	
Organization/Address: Georgia Southern University P.O. Box 8131 Statesboro, Ga. 30460	Telephone: 912-681-5250	FAX: 912-486-7104
	E-Mail Address: tchan@gsou.edu	Date: 2/28/02

Sign here, → please



(over)

III. DOCUMENT AVAILABILITY INFORMATION (FROM NON-ERIC SOURCE):

If permission to reproduce is not granted to ERIC, or, if you wish ERIC to cite the availability of the document from another source, please provide the following information regarding the availability of the document. (ERIC will not announce a document unless it is publicly available, and a dependable source can be specified. Contributors should also be aware that ERIC selection criteria are significantly more stringent for documents that cannot be made available through EDRS.)

Publisher/Distributor:
Address:
Price:

IV. REFERRAL OF ERIC TO COPYRIGHT/REPRODUCTION RIGHTS HOLDER:

If the right to grant this reproduction release is held by someone other than the addressee, please provide the appropriate name and address:

Name:
Address:

V. WHERE TO SEND THIS FORM:

Send this form to the following ERIC Clearinghouse:	National Clearinghouse for Educational Facilities National Institute of Building Sciences 1090 Vermont Ave., NW #700 Washington, DC 20005-4905
---	---

However, if solicited by the ERIC Facility, or if making an unsolicited contribution to ERIC, return this form (and the document being contributed) to:

**ERIC Processing and Reference Facility
4483-A Forbes Boulevard
Lanham, Maryland 20706**

Telephone: 301-552-4200

Toll Free: 800-799-3742

FAX: 301-552-4700

e-mail: ericfac@inet.ed.gov

WWW: <http://ericfac.piccard.csc.com>