

A Computer Network Simulation towards the Design of a School Library Media Center: In Relation to the Role of Computerized Systems in Developing Modern Institutional Structures

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Abstract--- According to libraries are no longer places established for the sole purpose of storing and distributing books. In addition, these places are no longer restricted to studying. Instead, technological changes have prompted alterations in library operations.

Keywords--- Network Stimulation, Developing Modern Institutional Structures, Library Operations.

I. INTRODUCTION

ACCORDING to Rumsey (2008), libraries are no longer places established for the sole purpose of storing and distributing books. In addition, these places are no longer restricted to studying. Instead, technological changes have prompted alterations in library operations. As affirmed by Shumaker (2011), these places have continually adapted by assuming a people-centric approach, rather than a book-centric path. The eventuality is the libraries in settings such as elementary, middle, and high schools have emerged as community resources for making, creating, and collaborating. Some of the areas or facilities that the design process needs to consider include computers, meeting places, audio/visual labs, media storage, book storage or shelves, and the outdoor seating area. Others include the indoor seating area, bins for recycling, a small office for the library staff, and the librarian's desk (Rumsey, 2008). This study's central aim was to conduct a computer network simulation exercise to design a school library media center. The motivation was to predict how computer network processes might inform the future of structural designs.

II. RELATED WORK

Based on the insights gained from the context of elementary, middle, and high school library designs and requirements, mixed outcomes are observed. In particular, these facilities are observed to exhibit differences but parallels can also be drawn relative to their designs and requirements. From a personal survey, common

characteristics associated with the design of libraries in the three institutions revealed several types of space. These broad types included special use space, meeting space, staff work space, and user seating space. Others included the electronic workstation space and the collection space. However, computer workstation clusters were dominant in the high school compared to the elementary and middle school libraries. On the other hand, collaborative learning spaces dominated the context of the elementary school library, including the presence of gaming environments that were deemed suitable for the learning stage of the students or facility's users.

Similarly, the high school library was marked by the presence of a multimedia presentation center or presentation support center in the form of an electronic classroom. Hence, there was a marked difference between the three sets of libraries and these differences could be attributed to the learning stage of the students in those institutions. Despite the variations, the common theme observed was that the three libraries were designed in such a way that they reflected privacy and personalized study areas.

Zone planning formed another aspect of consideration. In particular, the libraries exhibited notable similarities in the design and requirements, with zone planning in focus. For instance, the design of the three libraries indicated that the librarian's desk is located next to the entrance and the bag store and display boards would follow. Whereas the high school library had the bag store next to the librarian's desk while the display board was in the opposite direction but still at the entrance, the elementary and middle school libraries

had the librarian's desk, bag store, and display board on the same side and in that order. The zone planning assessment revealed further that the materials or spaces that addressed common themes or were complementary to each other were located in the same direction. For instance, the three libraries had the classroom collaboration space and the teacher's resources located next to each other. A similar arrangement was observed regarding the media production space and social networking gaming, the staff offices, work space, and the circulation desk, as well as the fiction and non-fiction sections. It is also worth noting that in the three libraries, most of the spaces and facilities mentioned above were located towards the extremes or surrounding walls of the libraries. Hence, the central part of the libraries was used as a space for studying, teaching, reading, viewing, and listening. The difference in these arrangements was that the high school library dedicated part of the central space for purposes of browsing and collaboration. The following figure illustrates the floor plan of the high school library, as obtained from the simulated computer network design.



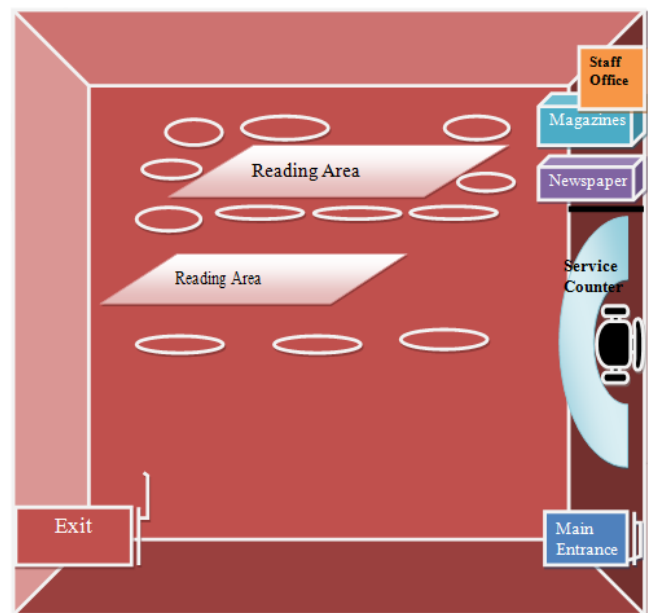
III. RESULTS

From the perspective of the simulated physical environment and library environment, the three libraries were observed to exhibit various common characteristics. For instance, the work areas were sufficient with book stacks organized in a way that enables the users to access them with ease, complemented by plenty of light to work and read. However, special activity corners were observed to be dominant in the elementary school library compared to the case of the middle and high school libraries. In the elementary school institution, the special activity corner had a games corner, the author's corner, and the children's corner from which educational activities would be conducted, reflecting an engaging environment, decorations and displays were also observed to dominate the elementary and middle school libraries, compared to the physical space and environment of the high school library. Particularly, the

decorations and displays sought to reinforce academic content and reflect the national, as well as local culture.

Overall, the three libraries had sufficient working areas where users can access chairs and reading tables and read comfortably. Indeed, the facilities were not crowded. The reading environment in these libraries was also observed to be promising in such a way that they were marked by good lighting, minimal noise, and adequate ventilation. Another physical aspect concerned the stock of books. In particular, the libraries displayed a state of variety whereby these books were arranged based on the broad and specific subjects to which they belonged. The use of technology was another dominant feature in the three libraries and this trend can be linked to the pressure towards keeping abreast with changing technologies and the evolution of library user demands in these institutions. Apart from the availability of books in physical form, sections of the copies were available in the soft copy and this feature was pronounced in the case of the high school library. The libraries were also different in terms of the overall physical sizes but this attribute could be attributed to the differences in the expected number of users. For example, the middle school and high school libraries were larger compared to the elementary school library visited but this outcome could be explained by the smaller number of library users in the selected elementary school. Hence, it can be inferred that the expected number of users dictates the overall and physical size of a school library.

3.1 The Simulated Design of a High School Library Media Center



3.2 Insights Gained

From the library design above, several insights can be gained. From instance, the design points to the criticality of considering the ease of access and movement. Regarding movement, the shelves and other facilities are designed in such a way that the users can access the materials without significant challenges that include obstruction. In addition,

the design emphasizes the importance of grouping materials or facilities that serve similar purposes in the same region via zone mapping. For instance, magazines and newspapers are seen to be placed next to each other because they serve a similar purposes and this arrangement prompts convenience. On the other hand, the main entrance and the exit of the library are located at the extreme ends to minimize congestion. Given that the decision to locate the entrance and the exit close to each other could introduce the adversity of congestion and compromise the movement of users, this decision that separates the avenues aids in enhancing a smooth flow of traffic. It is also worth noting that areas requiring group sessions, which are bound to discussions that could translate into interferences, are separated from those requiring individualized and silent reading. Indeed, this arrangement is deemed appropriate because it curbs the possibility of interruption and inconvenience among library users.

Another notable attribute arising from the selected library design concerns the allocation of physical space. In particular, it is evident that there is a need to consider or predict areas that are likely to experience more traffic and allocate them more space, compared to those that are likely to receive fewer users. For instance, the main area housing the book shelves and the reading area is projected to serve a higher number of library users. As such, this zone is allocated considerable space to ensure that it accommodates the expected and high number of facility users. On the other hand, locations such as the computer zone and the silent reading area are allocated less space because it is predicted that fewer library users are likely to visit the zone. As indicated earlier, the design reflects a library poised to serve users from the context of a school. Hence, the dominant user group is expected to constitute students. Given that most of the activities of the learners are expected to involve academic research and reading, it becomes essential to allocate more space for book shelves and the reading area. The implication is that the expected number of library users determines the manner in which space is allocated to different facilities, services, and activities.

An additional component, as deduced from the library design above, concerns universality. In particular, the student community could entail learners with mixed abilities and needs, with those requiring special needs inclusive. Therefore, the need to assure inclusivity forms a crucial component of an ideal library design. In the design above, the audio-visual room seeks to cater for the needs of different facility users, assuring universality. A specific example is a case in which learners are expected to attend sessions involving PowerPoint presentations. In such a case, the audio-visual room becomes appropriate and is expected to be included in the floor design. On the other hand, some situations could involve learners with special needs, including the visually impaired groups. With the presence of the audio-visual room and its associated facilities, the needs of such learners can be met with ease; a trend that reflects the universality of the designed library. Overall, the computer

network simulation exercise suggests that major issues to consider in a library design are seen to entail inclusivity, the ease of movement, and the predicted number of users in the respective sections (for purposes of ample space allocation).

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