Learning Environment Transformation: Connecting Accreditation and Facilities

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Introduction:

A primary objective of any credible academic program is to maintain learning environments and facilities that meet the approval of our accreditation bodies. In recent times, an increased emphasis on providing spaces that enrich collaboration and amplify opportunities for productivity has been witnessed. A student’s ability to absorb information and work in partnership with each other is greatly affected by the built environment. This includes such influences as the available classroom technology as well as the furniture and other equipment being used within the learning space. A well-designed instructional environment can also enhance camaraderie between scholars and aid in recruitment and retention. But what happens when a program has limited resources or imperfect prospects related to physical space at the institution?

Purpose:

This paper explores the discoveries made by one design technology program that was found in a recent accreditation visit to retain weakness related to facilities. The authors of this paper outline the conditions that led to the insufficiencies, explain the crucial steps that were subsequently taken to identify the challenges at hand, illuminate the ways in which funding and resources were obtained to improve the facilities, and discuss the renovated environmental changes that have been created. Student reactions to the conversion as well as faculty observed changes since the renovation are also a substantial part of the evaluation.

In addition, this paper reviews the literature that discusses related research and observations that seek to analyze the built environments embedded within our higher education institutions. It also examines other similar study environments in places of design technology education. It provides a basis for this particular paper by means of reflection and evidence while seeking to draw out strategies for other program administrators who wish to examine their facilities. These strategies relate not only to accreditation compliance, but also in support of everyday function and usefulness correlated to teaching and learning. The definitive aspiration is to inspire academic programs in any discipline to carefully analyze and thoughtfully create academic spaces that meet the approval of our accreditation bodies as well as to support program objectives at one’s respective institution.

Ultimately, it is the authors’ intent to discuss this topic within the framework of a pilot study that may serve as a template for others to follow as they travel through the confusing and unfamiliar territory of modern learning environments. Continued advancements in technology, furniture innovations, curricular change, and other factors that support academic progression will most certainly drive future assessment and outcomes. The paper will begin with a discussion of the literature and context that forms the foundation of our particular approach.
Literature Foundation:

Research has proven that students and instructors alike are positively impacted by the existence of teaching and learning environments that support the specific curricular functions of the end users. An improved learning environment has proven to support improved student/teacher relationships and attitudes about teaching and learning when it is designed to be part of a culture of collaboration and productivity [1].

According to Ahrentzen and Evans [2] the presence of perimeter walls in classroom environments allows teachers to regulate curricular activities that are free of disturbances; the fewer architectural features, the higher the level of student distraction. However, when students desire the ability to be alone and focus, students prefer the existence of secluded study areas or corners within the isolated classroom. Such spaces may include moveable walls, visual partitions or other simple barriers that allow for “heads down” study when needed. Offering both collaborative zones as well as opportunities for privacy are appreciated by both the teacher and the student.

Further examination of table arrangement and privacy in the higher education studios or laboratory classrooms by Demibas and Demirkan [3] found that the definition of privacy differs for each individual. Within their study, half of the students surveyed claimed that they preferred being at tables when seeking privacy. Others reported that it is impossible to achieve privacy in the studio/laboratory environment. Table arrangement was important as 60% desired to locate their table in a way that was grouped with friends while 30% said they had to be alone in order to concentrate. This points to the fact that while scholars want to work “alone”, in reality modern students also appreciate intimacy with friends.

Two modern studies that examine color theory published by Jalil, Yunus, and Said [4] and Stone [5] both found that appropriate use of color in an educational environment may contribute to longer spans of concentration in learning, improving performance and influencing positive emotions and perception of one’s surroundings. Furthermore, a lack of appropriate color use may contribute negatively to student learning, subsequently leading to more mistakes in completing certain tasks, feeling sleepy, and a lack of concentration which affects a student’s performance as a whole. The authors conclude that a learning environment should be visually stimulating as learning itself requires motivation, mood, and action from the learner.

It is also notable to examine the literature related to classroom climate. Hill [1] found that particularly in those disciplines that are applied in nature, classrooms and laboratories should strive to create personal connections between students, provide cooperative learning experiences, minimize opportunities for hostile and demeaning exchanges between students, and clarify course expectations and evaluation standards in order to facilitate a positive studio classroom climate. Faculty should respond to changing student populations by providing opportunities for these activities to occur through the creation of settings that have the potential to maximize student achievement.

When considering the occupancy patterns that surround higher education studio/laboratory spaces, Dixon [6] observed a noticeable increase in student classroom occupancy relating to project deadlines. During the periods of low usage between project due dates, he noted that
energy systems (i.e. HVAC and lighting) could conceivably conserve by adjusting building systems to run less frequently. Furthermore, results from surveys and interviews revealed that students appreciate 24-hour access to such facilities and value the space when it contains the proper equipment and materials for successful project completion.

Also related to facility design are the standards and objectives set forth by our accreditation bodies in engineering and technology fields which outline minimum expectations to be upheld in order to achieve compliance. While each institute retains its own semantics, the majority of the directives are subjective in nature and outline nonspecific, universal outcomes that must be observed by a visiting team during a site visit.

The current accreditation criteria for the Accreditation Board for Engineering and Technology (ABET) [7] states that “classrooms, offices, laboratories, and associated equipment must be adequate to support attainment of the student outcomes and to provide an atmosphere conducive to learning. Modern tools, equipment, computing resources, and laboratories appropriate to the program must be available, accessible, and systematically maintained and upgraded to enable students to attain the student outcomes and to support program needs. Students must be provided appropriate guidance regarding the use of the tools, equipment, computing resources, and laboratories available to the program [7]”. It goes on to say that “the library services and the computing and information infrastructure must be adequate to support the scholarly and professional activities of the students and faculty [7]”.

Similarly, the National Architectural Accrediting Board (NAAB) [8] states under Standard 3.8 that “the accredited degree program must provide the physical resources appropriate for a professional degree program in architecture, including design studio space for the exclusive use of each student in a studio class; lecture and seminar space to accommodate both didactic and interactive learning; office space for the exclusive use of each full-time faculty member; and related instructional support space. The facilities must also be in compliance with the Americans with Disabilities Act (ADA) and applicable building codes [8].” It goes on to request labeled floor plans of the above mentioned facilities, a description of the computer hardware and software resources available, as well as plans for change and identification of weaknesses.

Also, the Council for Interior Design Accreditation (CIDA) [9] under Standard 16l indicates that “instructional facilities and work spaces (classrooms, offices, exhibition and critique space, etc.) are adequate to support program objectives and course goals [9]”.

Process:

In the spring of 2014, one design technology program, which resides in the Midwest U.S., participated in a customary accreditation site visit of its academic program. A significant amount of planning, preparation, and assessment went into the visit, yet upon the conclusion of the visit the faculty and administrators were alarmed to learn that significant weakness was cited in relation to the instructional facilities and workspaces. More specifically, the faculty were informed that through direct observation of the visiting team the instructional facilities and student work spaces were not adequate to support the program objectives and course goals. This
unexpected declaration set off a series of inquiries and activities that sought to remedy the problem as quickly as possible.

Upon the departure of the visiting team, administrators and faculty immediately met to discuss the criticisms of the team and how improvements might be made. Of significant priority were addressing the site visitors’ recommendations that a dedicated space be created where design technology students might collaborate and work productively between regular class sessions. This space was explicitly desired to support students in design technology programs who participate in hands-on learning activities, and who utilize a myriad of materials and tools to produce their work.

Faculty and administrators examined the existing spaces within the building as well as classroom schedules and other existent resources. It was subsequently decided that the three dedicated classrooms that supported the academic program be condensed into two course delivery classrooms, leaving the third space to be exploited as a support space where students of the program could gather to collaborate, produce, and fabricate projects between regular courses. One particular classroom was chosen for a variety of reasons. This ‘third’ classroom space had not undergone significant renovation or updating since the 1990’s, other than paint and carpet. The existing furniture in this room consisted solely of stationary tables which were weighty, cumbersome, and detrimental to a modern learning style. In addition, many of the existing task chairs were broken, dirty, and lacked adjustability. The space also lacked storage and modern technology.

It was proposed that the students of the program be an integral part of the transformation process, providing valuable input and ideas that would convert the space into a practical studio, capable of supporting both individual and collaborative work. The design problem was subsequently distributed to a junior-level course that spent several weeks assembling new design ideas in friendly competition. Meanwhile, faculty located and applied for an internal grant that would support the renovation and improvement of the learning environment. Ultimately, a $75,000 grant was secured and the winning student idea (with some faculty changes) was submitted to the University Architect’s Office for review and construction over the successive two academic years.

The renovated space seeks to enhance productivity as well as the quality of student work being produced across all levels of the curriculum. New movable and adaptable furniture, including individual table seating, soft seating, and conference style seating, seeks to improve the flow of information throughout the learning space and provide students with enhanced self-esteem and camaraderie. New touch screen monitors with smart technology further enrich the possibilities within the room, while built-in casework storage for instructional supplies and student lockers allow for the stowing of materials needed for long-term work. A plotter for printing and whiteboard wall for communicating also augment the new room. In addition, recruitment and retention are aided with the showcasing of this distinct environment, which is supportive of design technology students in the school and competitive with other programs at both a local and national level.

Approximately one year after finished renovation of the space, the students and faculty in the program were surveyed to obtain their pre- and post-renovation perceptions. An anonymous
survey (utilizing Survey Monkey) was administered to all declared majors in the design technology program (n=122) using an internal listserv. In addition, the program faculty were sent a similar survey (n=4) to gauge pre- and post-renovation observations. The student response rate was 17% while the faculty response rate was 100%.

Students responded that pre-renovation, only 33% were satisfied or highly satisfied with the classroom. Post-renovation, 62% of respondents report being satisfied or highly satisfied with the renovated learning space. Similarly, 62% reported experiencing a positive impact on learning and 67% indicated that they are satisfied or highly satisfied with the way that the new space suits informal learning outside of class. Open-ended student comments point to particular appreciation of the new resources provided, such as the microwave, the soft-seating hub, and the lockers available for student use. Some common criticisms of the learning environment that emerged include the temperature of the room, accessibility difficulties utilizing the new door scanner, and the need for yet more storage.

Faculty responded that pre-renovation, only 25% were satisfied or highly satisfied with the classroom. Post-renovation, 100% reported being satisfied or highly satisfied with the renovated learning space. Similarly, only 25% of faculty reported being satisfied or highly satisfied with the way that the classroom accommodated a variety of learning activities, pre-renovation. Post renovation, 100% reported being satisfied or highly satisfied with the ability of the space to support learning activities. Some open ended commentaries by the faculty suggest appreciation for the augmented technology, while common criticisms include a need for additional storage as well as some added attention to the furniture placement in the room.

Evaluation and Implications:

Maintaining accreditation is of great concern to every academic program, yet the ways in which we manage and maintain our facilities present significant challenges to some. This study concludes that with thoughtful effort, it is possible to update and enhance learning environments that support both program goals and accreditation requirements. It is critical that hasty decisions not be made in order to induce change, but that all consequential parties be involved in the improvement process. Similarly, facility evaluation should occur on a regular basis so as not to yield unexpected surprises during times of expert evaluation.

Several challenges still exist related to teaching and learning environments at higher education institutions. Limited resources, particularly financial and spatial confines, make the prospect of improvement and change difficult. In the case of this study, an increase in credit-hour enrollment has required that the new studio space be scheduled with minimal classes in order to support the program, reducing the availability to students outside of class time. In addition, the new technology installed within the studio continues to be challenging to operate and utilize. These trials will most certainly require further evaluation as the academic program continues to evolve and prior to the next accreditation site visit.

In the end, all academic programs are encouraged to commence on their own journey of self-discovery related to the effectiveness of their instructional facilities. This study serves as a useful tool at highlighting the process and procedures used by one academic unit to evoke change related to learning environments. It is recommended that these procedures be used prior
to participating in a site visit with accreditation visitors in an effort to avoid unexpected insufficiencies being identified, which may lead to bitter consequences.

References:


