Technology-Oriented Or Learning-Driven?
A Case Study of Physical Learning Space Design in the Republic of Trinidad and Tobago

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Abstract

Using the design of learning environments as a point of engagement, this paper posits – in the Caribbean context – that the primary focus for Colleges and Universities should not be on technology, that is, technological products but rather, on learning as the product. The practice of learning space design in the Republic of Trinidad and Tobago has traditionally installed technology imitatively, reflexively, in a vacuum – that is, without an integration of technology with the learning philosophies of higher education institutions. The result of such an incorporation of technology into the learning space is an illusion of progressiveness instead of the best possible facilitation of teaching and learning. The paper argues for a strategic design process where stakeholders collaborate, space needs are identified, possible solutions are analysed, issues of adaptability and flexibility are considered and technological innovations are creatively and deliberately linked with the goal: learning for today and for the future.

INTRODUCTION

The incorporation of technology into learning spaces can give the illusion of progressiveness. In fact, when technology is installed without thought for its integration with learning objectives then technology gives us just that: a deceptive appearance of forward strides in our practice of teaching and learning. Are we technology-oriented or learning-driven? Using the design of learning environments as a point of engagement, this paper posits that the primary focus for Colleges and Universities should not be on technology, that is, technological products but rather, on learning as the product.

This paper serves to influence learning space design practice in the Caribbean context – specifically in the Republic of Trinidad and Tobago (T&T) – by providing a structure for the often omitted stage in the learning space design process, that is: the assessment and evaluation of spaces. Learning space design in recent times has relied heavily on goals-based, strategic planning techniques as described best by Jorn et. al. (2009) who state "it is critical to **PAIR**-up to design learning spaces". The acronym **PAIR** is explained as "**P**artner[ing] to form an interdisciplinary, **P**edagogy-rich design team; **A**ssess[ing] how learning is influenced in new learning spaces; **I**ntegrat[ing] ideas from many disciplines to **I**nnovatively design learning spaces; and **R**evisit[ing] current views on emerging technologies, diverse learners, strategic campus issues, new course design methods, and recent findings in learning science." While Malcolm Brown, Director of academic computing at Dartmouth College, defines learning spaces as those, which "encompass the full range of places in which learning occurs, from real to virtual, from classroom to chat room," this paper limits its scope to physical learning spaces precisely because this type of learning space remains a primary one in the T&T context. While learning institutions in T&T are moving to greater reliance upon virtual spaces as arenas of learning, there remains a divide between institutional infrastructure and students' resources outside the classroom. Physical spaces include but are not limited to large formal halls or theatres, classrooms and laboratories. What follows is the documentation of learning space assessment and evaluation carried out in May 2009 in both government and privately-owned learning institutions in T&T. In assessing and evaluating the learning spaces, the study also measures the nature of learning space design in T&T. Are learning institutions operating with an approach that focuses on outfitting classrooms with gadgets? Are learning institutions working with an approach that "focuses on the design of classrooms and labs driven solely by space needs, that is, one classroom for 300 students, three for 150, etc"? Are learning institutions using an approach to space

design that focuses on learning as a return-on-investment? The study uses the data collected to consider the learning institutions in terms of a binary, that is, technology-oriented and learning-driven. What is the current dominant approach to learning space design in the Republic of Trinidad and Tobago?

CONCEPTUAL FRAMEWORK

This study uses what Johnson and Lomas (2005) call a six-step "iterative dialogue" as its conceptual framework. This iterative dialogue comprises six strategic steps in the learning space design process. Each step reveals considerations for a design team and stakeholders of a learning space (see table 1). From this framework, a questionnaire was developed to collect data from faculty members of learning institutions participating in the study. The framework was also used as a basis for me to analyse the data.

Table 1: Strategic iterative dialogue among stakeholders in the learning space design process

1. IDENTIFY INSTITUTIONAL CONTEXT WITHIN WHICH SPACE IS CONSTRUCTED
2. SPECIFY LEARNING PRINCIPLES THAT ARE MEANINGFUL TO INSTITUTION
3. DEFINE LEARNING ACTIVITIES THAT WILL OCCUR IN THE SPACE
4. ARTICULATE DESIGN THAT SUPPORTS LEARNING PRINCIPLES AND LEARNING ACTIVITIES
5. COMMUNICATE REQUIREMENTS TO THOSE WHO WILL CARRY OUT CONSTRUCTION/RENOVATION
6. DETERMINE A METHODOLOGY FOR ONGOING EVALUATION AND IMPROVEMENT TO CREATE A SUCCESSFUL SPACE

DATA COLLECTION

Faculty members of each learning institution were asked to choose a preferred learning space in which they regularly teach and answer a questionnaire directed at understanding the space and its use from their point of view. This was followed by an on-site assessment of the space by myself in an effort to corroborate the physical and AV/IT components. The spaces chosen by the participating faculty members were categorised in accordance with the work of Fisher (2005) who links pedagogy and spaces by stating “pedagogical activities require specific spatial qualities to be effective.” Fisher proposes several possible types of learning settings for various learning activities. This study makes use of five types of learning spaces as described by Fisher in order to assess and categorise the spaces chosen by the participating faculty members.

These five types of learning space are:

- Group Learning Space: Facilitates informal discussions
- Collaborator Incubator: Facilitates teamwork and idea generation
- Presentation Space: Facilitates demonstration and performance
- Display Space: Facilitates the showing of ideas (works-in-progress and completed works)
- Specialised Focus Laboratory Space: Facilitates specialised equipment and skills

Although current literature no longer supports the ‘sage on a stage’ template, it became necessary, from the data collected, to include a sixth type or category of learning space: that of the Lecture space.

FINDINGS

Still Getting The Lecture

The data shows that the dominant pedagogical practice derived from the set up of the spaces was the Lecture type. While a little over half of the rooms had flexible seating, other factors debilitated collaborative or group work. One teacher observes: “The desks are too heavy to move around.” Another teacher notes that the shape of furniture does not facilitate group interaction. Furthermore, the number of desks and chairs crammed into some spaces negate any possible different arrangements. Very few spaces were designed with a variety of instruction techniques in mind. Even though most rooms were

perhaps designed before new learning theories arose I noted that even in newer spaces pedagogical issues seemed not to be taken into consideration during the design phase. Most newer spaces were not designed with instructional/educational activities at the centre which then began a ripple effect that spread to furnishings, layout, lighting, acoustics and technology infrastructure ultimately resulting in a lack of support for social and active learning strategies.

Supporting Technologies

An interesting finding of the study was the continuation of the “manual equipment delivery system” while the data points to the need for the “installed equipment classroom model” (Laurence 2008). Eleven percent of the spaces chosen by faculty had projection or some form of display technology installed while 73% of faculty stated that they regularly used projection to support instruction. Similarly, 50% of faculty used audio in some form to support instruction however audio technologies were a consideration in only 11% of the spaces. From such data it can be inferred that spaces that were not designed to support differing types of instruction are not being assessed by learning institutions for usage trends and/or the types of learning activities that actually occur so as to inform future expansions or retrofits. In the majority of cases, learning spaces are not being assessed yet technologies continue to be purchased and stored apart from learning spaces only to be delivered for use upon request. However, the literature shows that the total cost of ownership of a delivery based AV/IT system to support learning has proven to be more costly, labour-intensive and time consuming with no end in sight as campuses and student populations continue to expand (Laurence 2008), in contrast to a pedagogically-driven design of self-serve spaces with technology already installed (“installed equipment classroom model”) - ready to facilitate learning. What comes out of the data collected for this study is that generally, once a space has been defined as a speciality space such as a computer lab or a science lab technologies are installed. However, non-speciality spaces remain as empty shells to be configured and technology to be delivered between classes.

Pedagogically-Driven Technologies

Contrary to popular belief, the lecture-style approach has not disappeared. The data confirms the lecture-style approach to teaching even through the use of technology. What can be inferred from the data is that this lecture-style approach is being supported by the two most heavily used technologies: the projector and the computer. Respondents use DVDs and audio about half of the time even though the projector and the computer is used almost 100% of the time in the learning space. The observation here is that the lecture format has managed to transplant itself to fit its new environment: the digital age. While discussing this paper with a student, she shared that her experience of technology in the classroom for an entire semester was the ‘presentation via software’ format. The ‘sage and the stage’ has continued in its new form: The digital sage on the stage (and screen).

Involving All

Some institutions did not wish for their faculty to participate in this study citing the same reason that the sole role of their faculty was to teach - no more (and no less). These institutions held a director driven, near dictatorial view of design and expenditure where it seemed that the key factor for learning spaces became the numbers of students that could be placed with a member of faculty for instruction. Faculty played little or no role in learning space design so that there was no need to gather any data from them. Most of the surveyed faculty themselves either did not know who had designed their space. This could be easily attributed to the length of time that the respondents were employed with the institutions. A few did know and they cited that spaces were designed mainly by administration followed by architects and technical staff. When asked who they thought should be involved in the design process 100% of respondents stated the architect and technical staff. 91% of respondents then cited the need for faculty involvement. One respondent can be quoted as saying "I feel VERY strongly that faculty need to be ASKED about their learning space needs IF employers are serious about being student centred." The data also reveals a glaring omission of a key stakeholder in the learning space design process: the student. Approximately half of this study’s respondents thought that student involvement in the design process was not at all necessary. What emerges from the data is a perception of learning space design

stakeholders and partnerships that is different from that proposed in the literature. Jorn et. al. (2009) describe partnerships as engaging team members from a diverse group not limited to faculty, students, construction managers, learning technologists, librarians, facility experts, capital planning experts, professionals from design firms, and learning science experts. They further state, "these team members can then leverage their diverse expertise to create value and develop the most creative [design] ideas."

CONCLUSION

This paper pivots on the question of whether learning spaces in the Republic of Trinidad and Tobago are Technology-oriented or Learning-driven. What the data suggests is that learning space design in the Republic of Trinidad and Tobago is not Learning-driven. However, an answer to a question of whether they are Technology-oriented is not so simple. The majority of learning spaces, as mentioned before remain empty boxes, bereft of technology, that faculty are still expected to fill with creative and interactive learning activities. Speciality spaces on the other hand continue to be Technology-driven, replete with technology for technology sake, all in an effort to market or promote the learning institution as a modern, progressive one.

What has been presented in this paper is an initial study, which will be used to inform future explorations of learning spaces in the Republic of Trinidad and Tobago and in the wider Caribbean context. It should be noted that as the process of gathering data went along it became evident that in-depth assessments of individual spaces would provide institutions with a better understanding of the strengths and weaknesses each space. During the data gathering process, faculty communicated to me on multiple occasions that when there was a deficiency in a space they would request the use of another space that may satisfy their teaching and learning needs. Such concerns will have to be addressed, including a consideration of student experiences in the learning spaces that are assessed as well as support systems for infrastructure.

Brown and Philip (2006) note that "the unrelenting pace of technology change can make IT decisions rapidly obsolete" negating attempts to use technology as the focus or driver of change. They also correctly observe the continuing change in platforms and applications as contrasting with the stability found in the psychology of how people learn. They state: "constructivist learning principles, specifically activities identified as encouraging learning, can be translated into design principles that guide tactical decisions, ensuring that the designs we build and the technology we deploy serve a clear educational purpose."

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