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## *Essays*

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### **Teacher Input in Classroom Design: Configuring Computer**

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#### **Laboratories as Multifunctional Language Learning Classrooms**

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*This essay explores the connection between architecture and language teaching, and makes a case for greater consultation with teachers in the processes of classroom design. The essay discusses two background case studies and describes a typical computer laboratory configuration. It then outlines four alternative configurations, including an ideal multi-functional computer laboratory classroom.*

#### **Architecture and Design Principles and Processes**

The architectural aesthetics and design principles of Stanford White, architect of classic neo-Georgian American buildings, and “architect of desire”, embraced the harmonious design and placement of buildings in landscape, and detailed consideration of interior layouts based on how a building should perform.

Indeed, White extended architectural services to include interior decoration, the procurement of antiques for particular clients, and the planning and design of parties. All of which arose not only from a passion for beauty and harmony, but also from an understanding of and engagement with the way of life of his clients.

The architectural and design principles of schools and classrooms tend to be more mundane, driven by considerations such as building costs, compliance with health and safety regulations, the economics of floor space, and technical standards relating to the installation of technology.

Modern building techniques and architectural practices rarely begin with detailed information about how the interior of a building will be used. Modern office buildings, for examples, are usually designed with priority given to engineering and external design, with interior spaces retrofitted in the form of standard modular units once space has been allocated to users. Even the interior design of residences tends to be constrained by the specifications of modular building elements, rather than user needs or desires, while external appearances tend to be determined by the architect’s desire to impress other architects, or the client’s desire to impress neighbours. Rarely, it seems, are external appearances based on detailed prior configurations of internal spaces, or designed for harmony with landscape, urban or rural.

Furthermore and closer to home, in the process of designing and configuring classroom interiors professional architects and designers often assume that they know what users want and that if their designs comply with specified standards, that is as much as is required. At the same time, many buildings used for education have classrooms retrofitted like shops and offices in commercial buildings. Thus for classroom space, the degree of consultation between designers and users, between architects and teachers can vary from non-existent or minimal to very extensive.

As a consequence many classroom designs incorporate impediments to professional and dynamic language teaching and the implementation of sound educational principles. This tendency

becomes particularly acute in the design and layout of language laboratories and computer laboratories, where technologists, not educators, determine design.

It need not be so. Indeed, the following cases will demonstrate that detailed consultation with teachers can not only lead to better class rooms, but may also lead to considerable cost-savings.

### **Case 1: User Specifications for a Small Language Laboratory Design**

Language laboratories, since the 1940's, reflect the predominance of technologists rather than teachers in their design.

The language laboratory of the English Language Institute (ELI) of the Victoria University of Wellington (VUW), installed at the time of the institute's establishment in the early 1960's is one example. It had the teacher's master console entirely enclosed in a separate glass booth, raised to enable visual monitoring of student booths, each of which was also enclosed on three sides with glass walls. This laboratory, like the majority of laboratories then and now, was purchased as a package that included a range of technologists' design features and capabilities: support for two or more programs to be played to students; capacity for the teacher to discreetly monitor individual students; and, of course, the essential capacity for students to record their own voices as well as listen to language models in their own time.

The design and technological features of the laboratory reflected what technologists and American military language trainers supposed was appropriate to a form of language education that involved large amounts of individualized drills. The isolation booths were probably a technological solution to the problem of ambient noise from other students. The discreet monitoring capacity may have reflected a transfer of values from military intelligence and control. The sturdiness, reliability, and durability of the equipment certainly reflected the military specifications to which such equipment was originally built. Of course, there was a substantial price tag for this technological quality and sophistication.

In 1970, H.V. George, Director of the ELI at VUW, who had inherited this equipment when he was appointed to the position, wrote a seminal article, *Small Language Laboratory Design*, in which he questioned many aspects of the language laboratory package, from the viewpoint of its sociological and economic implications, and proposed specifications for the essential features of an inexpensive small language laboratory which could be used in a number of teaching modes in addition to laboratory work. When the original laboratory reached the end of its life, it was replaced with a simple tailor-made design incorporating George's essential features, at a small fraction of the cost of any package versions, and in a flexible classroom configuration that supported multiple teaching modes. The article is still worth reading by any educator involved in language or computer laboratory design.

H.V. George was first and foremost a teacher and educator, and his involvement in the design of the language laboratory led to economic efficiencies, and to a flexible room in which laboratory work could easily be part of a lesson incorporating other types of learning activities, or which could be used entirely for other activities – in other words, a multi-functional classroom.

### **Case 2: Consultation Between Teachers and Architects on Two Projects**

In the case of the replacement language laboratory at the ELI, VUW, it was a simple matter for the teacher's design to be implemented, because the teacher was also the Director of the Institute.

In other instances, the degree to which teachers can play a part in classroom design will

depend on the willingness of architects, designers, and administrators to consult and engage them.

In 1993, the La Trobe University administration decided to move its Language Centre from the campus centre to newly acquired, derelict high school buildings adjoining the campus, which were to be renovated and refurbished. The resistance of Language Centre teachers to this move was softened somewhat by the appointment of a teacher representative to consult and work with the local architectural firm engaged to design and oversee the renovations and refurbishment.

The results of a successful collaboration between architects and teachers can be seen today in buildings that from the outside are no different from other rather drab state high schools building in the state of Victoria. Visitors who enter, however, regularly comment favourably and in pleasant surprise at what they find. The purpose designed common room, canteen, Self-Access Centre, computer laboratories, language laboratories and classroom spaces are light, and airy, with attractive colour schemes. The classrooms are well configured in terms of size, shape, windows, whiteboard size and placement, and projection screens. They are equipped with light but strong modular furniture in attractive and harmonious colours. To any language teacher entering these classrooms it is clear that they support all the class dynamics, pair work, and group work of modern communicative language teaching.

The success of this project was a result of intense collaboration between the architectural firm's project officer and the institution's teacher representative, whose advice was backed by extensive consultation with other teachers, and considerably more detailed research into suppliers and costs than many architectural firms are willing to undertake. As a result, the outfit costs were in many instances less than the original budget estimates. Throughout the project, the project officer for the architectural firm made it her business to seek input from the teacher representative on every aspect of classroom design and outfit.

The outcome of this project contrasts starkly with the outcome of a second building project at the same institution, where the major design decisions were determined by the decrees of the Vice-Chancellor and the particular design interests and backgrounds of the non-local architectural firm, ignoring the strong advice of the direct clients on critical design parameters, and with almost no consultation with teachers. In this case the outcome was a building with exterior design flair, but major discomfort and functional limitations for teaching purposes. Incidentally the details of this project warrant a separate and extensive case study to draw out a number of lessons relating not only to design, but also to sound educational management.

### **A Typical Computer Laboratory Configuration**

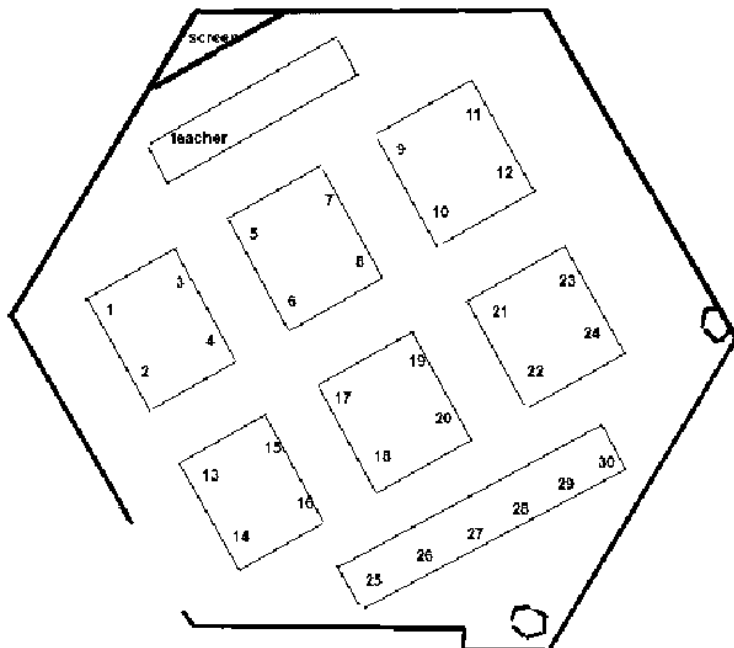
Nagoya University of Commerce and Business takes pride in its high national ranking, which includes a very high rating for computer technology. Within the Faculty of Foreign Languages this commitment to technology is expressed in, among other things, five computer laboratories, including two that also contain tape language laboratory facilities. It should be noted that the latter retain their valuable language laboratory facilities as a result of strong teacher lobbying. The University had planned, without consulting teachers, to remove them entirely when computer laboratories were initially installed.

In 2003, two of the five laboratories were refurbished with new computers, one of these additionally with new furniture. The latter, room 632, presents an interesting case study in the context of the main theme of this essay, and an opportunity for future consultation with teachers. Room 632 is of interest for two reasons. Firstly, the unalterable hexagonal room shape represents a challenge to creating an effective internal configuration of teaching space and computer facilities.

Secondly, the Faculty has two more computer laboratories housed in rooms of exactly the same shape, which sooner or later will need to be refurbished.

The refurbishment of room 632 was undertaken by the University's administration, typically without advice to or consultation with teachers. It is doubtful whether anyone within the faculty, including even the Dean at the time, was aware that renovations were planned, until the appearance of workmen and technicians removing and installing furniture and computers. It should be noted that the layout of the new furniture and computers followed exactly the layout of the old (figure 1).

Figure 1



While the result of this refurbishment is visually pleasing, with strong attractive blond solid wood furniture, modern iMac computers for students, and a spacious layout for individual work, the configuration has some limitations, from the point of view of space efficiency, and, more particularly, from an educational point of view.

Most trained language teachers wish to use a variety of learning activities, often within a single lesson, and certainly within a course program. The reasons for this are very simple. Language has, in addition to formal and structural features, social and communicative functions. For students to acquire the latter functions, essential to any practical language learning, exploration and practice are required. Exploration and practice activities are supported by dynamic pair work and group work. Experienced language teachers are very aware of the way a classroom configuration can constrain or support exploratory learning activities. "The Classroom Situation from the Learners' Point of View" (in George, 1982) is only one of several texts to draw attention to this aspect of language teaching.

The classroom configuration of figure 1, and the space between furniture, constrains group size to a maximum of four, and when groups are formed movement around the classroom is severely impeded. Many language class activities involve movement between groups, and groupings larger than four.

Education practices in which stimuli and support for exploratory behaviour play a significant part can be viewed as the antithesis of a transmission model of education. Typically in transmission models of education, the teacher, textbook, or a projection screen is the source and the learners are relatively passive recipients of information.

A web search for computer laboratory designs will bring up many pages with international technical standards and specifications for installation of equipment, all of which assume teacher transmission and individual computer work as the activities that will take place in these rooms. Thus in room 632, as in other rooms in the University, the size, location and visibility from all parts of the room of projection screens, and the space allocated to individual computers, meet these international standards.

Typically too in this model of education, there is strong formal separation between instructors and learners. In figure 1, the physical separation of the teacher from the classroom by a long fixed desk, which houses the teacher's computer and broadcast and projection equipment, presupposes and supports the transmission model, at odds with many parts of a typical lesson in modern language learning programs.

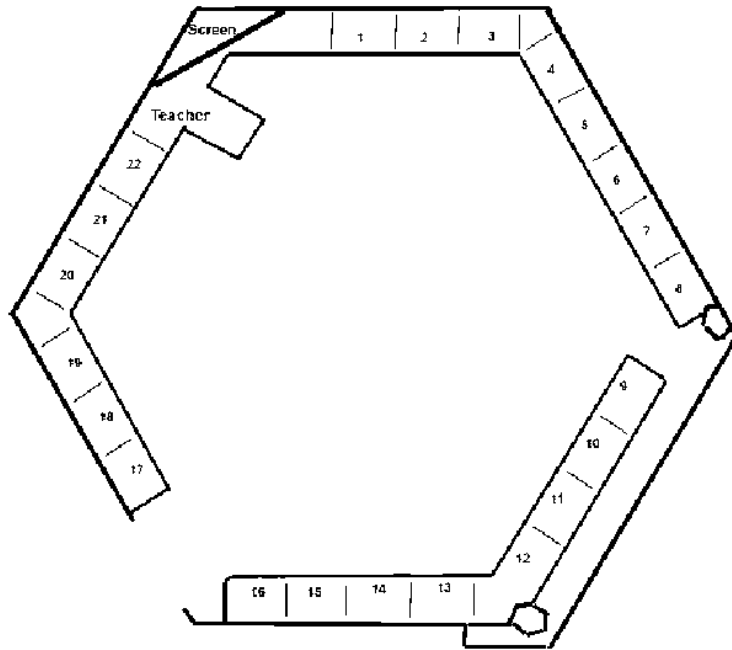
Most teachers who have taught in computer laboratories in classes where the computer work is just one part of lesson activity are aware that computers can be a major distraction when students' attention needs to be directed elsewhere. Ideally, in a computer laboratory used for multi-activity language lessons, there is a clear physical separation of the computer work from other student tasks. In this respect the figure 1 configuration of room 632 is no better than most other computer laboratories.

All in all then, the classroom configuration of figure 1 constraints the range of activities and tasks to two types, namely teacher transmission, and student individual computer work. In this respect it should be added that if it were the case that these were the only, or even the predominant types of language teaching and learning activities to be conducted in these rooms, the configuration would represent costly inefficiencies from a financial administrator's point of view, in terms of space utilisation and student teacher ratios.

### **Four Alternative Computer Laboratory Configurations**

When the University decides it is time to refurbish the other laboratories located in challenging hexagonal classrooms, it is to be hoped that it will take the opportunity to consult with teachers and to consider other configurations. Below are four possible alternatives.

Figure 2



In the configuration in figure 2 the students face their computers, which are against the wall, when they are doing individual computer work. They turn their backs to their computers when attention is required elsewhere. The teacher is not physically separated from the classroom, and all the teacher's equipment is also against the wall. There is a large open space for other types of language learning activities. This would represent the ideal small multi-functional space allowing up to 22 students to engage either in computer laboratory work or entirely different kinds of language learning activities.

Figure 3

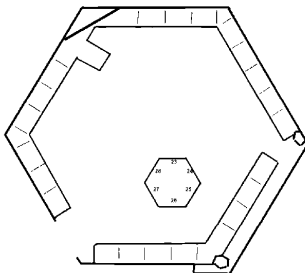
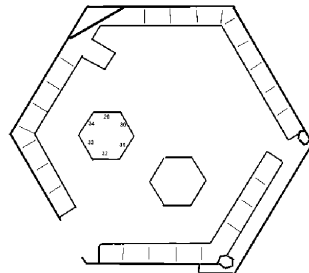


Figure 4



Figures 3 and 4 show two alternative configurations, one for 28 students the other for 34 students. In these configurations, some of the open space of figure 2 is compromised. However, both configurations retain enough open space for classes in which computer work is predominant but other types of activities and group work can still be conducted. It should be noted that figure 4 is more cost effective than figure 1.

**Figure 5**

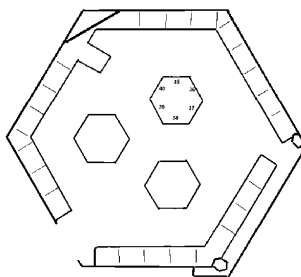


Figure 5 shows a configuration in which mainly teacher transmission and student individual computer work are supported. This configuration maintains international health and safety standards with respect to space allocation, but is considerably more cost- and space-efficient than figure 1, allowing laboratory work with classes of up to 40 students. At the same time it retains three spaces where groups of 7 or 8 students can gather in circles for group work when the room is used for a class of up to 20 –22 students.

## **Conclusion**

Whether or not any of these particular configurations are used, the case studies I hope support the principle of consultation with teachers in class room design. I look forward to discovering whether or not the University moves forward to international best practice by engaging in such consultation when it decides to refurbish other teaching spaces, and in particular the Faculty's other computer rooms.

## **References**

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**Note on contributor:**

Professor Gerry Meister teaches English, including a number of classes in computer laboratories, at NUCB. He has designed departmental office space at the Goroka Teachers' College of Papua New Guinea, classrooms and language laboratories for private language schools in Australia, and been involved in the design, preliminary specifications, construction, and fit out of two large building projects at La Trobe University in Melbourne Australia. He has also designed and helped to build two houses in New Zealand. Prior to coming to Japan he was Director of the La Trobe University Language Centre.