GRADUATE EDUCATION – An Idealized Design

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Education, as previously noted, involves *subjects* and *practices*. A subject is a **body of information, knowledge and/or understanding that can be learned by** reading and listening to relevant material and, in some cases, by engaging in exercises. Examples of subjects are history, literature, logic, mathematics, and economics. Practices, on the other hand, are activities that can only be leaned by engaging in them. Such learning can be significantly supplemented and consolidated by reading and listening. Examples are the practices of medicine, law, and architecture.

The importance of the distinction between subjects and practices becomes apparent when we take the position that graduate education should be exclusively directed at practices, even the practice of teaching or conducting research on subjects. It is this characteristic of graduate education, as we see it that dictates many of the properties it ought to have. It is also this characteristic that differentiates it from undergraduate education.

In addition, we have distinguished between *teaching* and *learning.* As we have already noted, *being* taught is generally an obstruction to learning, even subjects. Teaching others, however, is a good way to learn a subject. But practices cannot be taught. They must be learned by engaging in them. Learning through practice cannot be organized into subjects, courses, semesters, and other discrete units, nor can it be coerced or imposed on students.

Faculty members should be preoccupied with transmitting their desire and ability to learn, not with teaching what they have learned. As stated above, the

principal objective of education should be *to learn how to learn and to be motivated to do so continually.*

A graduate program based on practice should take all its stakeholders into account. In the case of medicine, for example, patients, their families, insurers, doctors, nurses, technicians, and service personnel are some of the stakeholders.   It is only through engagement in practice that awareness and appreciation of the presence, desires and needs of all the stakeholders can be acquired.

Practice does not deal with sequences of independent (separable) problems. The problems with which they deal are interrelated and their solutions are interdependent. Reality consists of sets of interacting problems, systems of problems we call 'messes."   Problems are abstractions extracted from reality by analysis.   Therefore, education for practice should develop and apply methodology for dealing holistically with systems of problems.   Since messes are complex, this requires an ability to cope with complexity. It is much easier to deal with complexity through design in practice — for example, in designing a sky scraper — than in dealing with it academically in a class room or reach facility. The theory of complexity is *not* required for dealing with complexity in practice; design can handle it.

To avoid turning out graduates from a common mould, there should be no prerequisites for entry into a graduate program. *But there should be exit requirements;* a demonstration of an ability to practice effectively and responsibly in the chosen field.   The variety among incoming students increases the opportunities for their learning from each other, particularly of learning subjects not directly connected to their practice. To increase this variety further, students

should design their own educational programs without being constrained by "requirements." They should be able to make use of any source of learning that they want. Their designs should be reviewed by a committee consisting of experienced practitioners on and off the faculty. Their approval should b required. Any approved design may subsequently be changed by the student, but again with approval of the reviewing body.

A program's faculty should make available to students its opinion as to what information, knowledge, and understanding are required for effective practice in its field, and what is optional but desirable. They should also make available an up-to-date reading list with useful annotations.

If there is a fundamental disagreement among faculty members about the requirements and optional but relevant subjects, competing lists should be provided along with identity of members of the faculty factions. Students may or may not use the information provided by the faculty in designing their programs. However, they would be required to defend their choice of activities, subjects, and methods of learning when they review their designs with the reviewing committee.

Learning should be available through at least four different processes: classes and lectures, learning cells, research cells, and independent study.

Any and all traditional classes in the University should be open to students who desire them. Students may take them without or with grading. The choice of courses should be theirs. (Accumulating credits would not be a part of graduate education.) Continued attendance at any course should be the student's option. Continued or discontinued attendance is a valuable feedback to the faculty member giving the course.

Learning cells should be formed voluntarily by approximately five to ten students who work with one or more faculty members in teach a subject that may or may not be relevant to their practice. Students and faculty jointly design each learning cell. In addition to synthesizing what is known about the subject chosen, the cells should attempt to identify and penetrate the relevant unknown.

Students in learning cells should be responsible for educating each other. Each student should be evaluated by the other members of the cell with respect to how much they have learned from them, not how much the student has learned. The faculty member(s) involved should judge how much each individual student has learned. Continuous and close interactions between faculty and student members of learning cells remove any need for conventional examinations. In effect, students are evaluated by other students as teachers and colleagues, not as students. Obviously, one cannot teach what one does not know. This induces students to learn things that they and the others do not know.

Research Cells are organized around practice, engagement in the profession to which the program is devoted. The practice involved (e.g., an internship or apprenticeship) should be available in the program in which the student is enrolled, or in any other place approved by the reviewing committee. Students would self-organize research cells with one or more faculty members for the purpose of rising to consciousness what they are learning in practice and for the purpose of learning how to communicate it effectively to others.

Where the practice normally involves recipients of a service (e.g., clients) they should be involved in all student practices. Students should not be able to affect clients without supervision. Clients should have the right to reject any

student trying to serve them.   Clients or their surrogates should pay for the services received.   This is necessary to make the practice realistic enough to yield a great deal of learning. It is also necessary to assure the client giving the practitioner the support he/she needs, the income generated in this way should be used to contribute to self-support of the program and to provide financial support to students.   It should also be used to pay for attendance by faculty and/or students .at important gatherings of practitioners or relevant others.

The faculty members involved in a graduate program would divide their time between learning and research cells, and engaging with students in independent study (tutorials). They would work a full year with one month off for (a paid) vacation. Vacations could be divided in parts that are taken at different times during the year. Each faculty member should be allowed up to four days per month for individual consulting or lecturing. What he/she learns from his/her individual practice would have value to students?

Each program should encourage publication either of articles written by faculty and/or students in relevant journals, or of books. The program itself should publish a journal reporting on outcomes of research and practice taking place within it. Such a journal should come out no less frequently than quarterly and should be edited by students.

Graduate programs should be directed by their respective Committees-of-the-Whole in which each student, faculty member and support personnel has one vote.   Their approval would be required for selection, retention, and dismissal of a faculty member.

These committees should control all policies, but not faculty salaries. Compensation would necessarily be controlled by the university's or its college's administration.

The chairman of the program would be jointly selected by the relevant Dean and the Committee-of-the-Whole. That committee would also select a Deputy Chairman from the student body.

CONTINUING EDUCATION

Because of the rapid development of new knowledge and the rapid obsolescence of the old, those who have left school are increasingly faced with the need for further education, for keeping up-to-date... Most white-collar workers above the clerical level already require occasional "retreading." This is particularly true of those in the professions.

The percentage of time spent in learning while engaged in a professional practice is bound to increase. Therefore, the distinction between work and learning will become less and less important. Learning will be part of work and work a part of learning. The amount spent annually by corporations on the education and training of their employees already exceeds the combined budgets of all the colleges and universities in the United States.

Educational institutions already provide some of the continuing education that is required, not necessarily on campus, but much of it at places of work. However, it treats experienced professionals much like naïve graduate students, taking little if any advantage from their experience. Such education should be

conceptualized in a very different way than that for students not yet indoctrinated in the real world.

Those attending continuing education programs should have abundant opportunity to exchange what they know with the others attending. They should be able to take advantage of the opportunity to compare notes on what they know and their practices.

The materials presented to them in classes should always end with a "so-what" discussion and examples of relevant applications of what has been presented. There is nothing as convincing to those attending such courses as successful applications of what is presented to them. Supplemental visits to places at which such applications have taken place can be particularly effective.

Finally, every one attending such a program should be required to produce at least one proposed significant change in the behavior of their organizations, a proposal that either they can implement or that will be submitted to one in their organization who can authorize action on it.

Reports of progress should be fed back to those running the programs within three and later twelve months after completion of the programs. These should in turn be circulated among those who have attended the course. They should also be used as inputs to those attending subsequent courses.

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FACULTY [relates to college/university as a whole]

All faculty members in any program should have the same rank and title. This is intended to make each program a classless society. It will also reduce internal

political maneuvering that currently occupies much of the time of many on faculties of colleges and universities.

Tenure would not be provided to faculty members because it protects incompetence more than academic freedom the initial appointments of those who have no previous faculty experience would be for three years. Subsequent appointments would be for six, nine, and twelve years. The final appointment would last until retirement. Initial appointments for those with previous academic experience would take their experience into account. For example, a person who had been in academia for ten years would receive a nine-year appointment; those with twenty years, a longer appointment.

Each new inexperienced appointment to a faculty should be assigned to or could select an experienced member of the faculty who would serve as a "big brother/sister" for a year.

The Committee-of-the-Whole should be able to dismiss any faculty member who has retired intellectually. It should also be able to extend appointments as long as those involved are able and valuable to the program.

Academic freedom in each institution should be protected by a board of five members, two from other academic institutions and three from outside of academia, each appointed for renewable and staggered five-year terms. This board would hear any appeals concerning violation of such freedom, and its decisions would be final. For appointment board members would require approval by a majority of the standing faculty members of the institution over which the board will have jurisdiction.

FACULTY EMPLOYMENT {also for colleges and universities as a whole]

All faculty members would operate as profit centers. Their income would consist of a specified amount for each student registered with them and attending ca cell in which they participate. In addition they would receive a share of the funds they bring into the program through contracts and grants. Any faculty member who does not at least break even would receive no increase of salary or financial support for any outside activity such as attending conferences.

Faculty members should be evaluated annually by (1) students who have worked with them that year, (2) their peers who have participates with them in cells or research and consulting projects, also in that year, and (3) the directors of the programs and research centers in which they have participated. Each year the program's chairperson would review with each faculty member his/her evaluations. These evaluations would be made a matter of record and used in determining salary of faculty members.

Renewal of a contract should require approval by a majority of the program's faculty members and a majority of the students currently active in the program and who have worked with that faculty member.

SCHOOL BUILDINGS

Schools, particularly public schools are among the least well used public facilities; they are in use for only about 20% of the time. They should be designed to serve as community centers, including facilities that make them usable in evenings and nights and on weekends. The facilities can be those currently found in recreational and health clubs and clinics, and offices for

heavily used public services; for example, for providing licenses and tax information. The proximity of many active adults during school sessions would be a calming and steadying influence on students. Furthermore, by placing schools near or adjacent to such public service facilities as police and fire stations, hospitals and town halls, opportunities for using these services in learning experiences would be enhanced.

THE ACADEMIC YEAR

The academic year at all levels would be divided into trimesters, each fifteen weeks long. There would be two two-week breaks and one three-week break between trimesters. With air conditioning and heated schools, there is no reason to have long periods off.

Undergraduate students not employed on a continuing basis by a research center or as assistants to faculty members would engage in in-house learning for two trimesters each year and be involved in relevant work (paid or voluntary) for the third trimester. (See Figure……) As a result, institutions of higher learning would have only two thirds of their undergraduate student bodies in session at any time. This would require significantly fewer facilities than are currently required.   Furthermore, this schedule would enable college and university research centers and other external as well as internal employers to have a student workforce of constant size throughout the year. It would also enable students at each level above those entering to work period and to instruct them on the work to be done.

Trimester/Year	1	2	3
1	SCHOOL	SCHOOL	WORK
2	SCHOOL	WORK	SCHOOL
3	WORK	SCHOOL	SCHOOL

FIGURE 00. Division of school year.

AN ALTERNATIVE VOUCHER SYSTEM

The continuing debate about school vouchers assumes incorrectly that there is only one voucher system. Vouchers are a theme that has many variations. The one presented here takes care of most, if not all, of the objections that have been leveled against the theme.

Much of social progress derives from a struggle for survival. This is as true for organizations and institutions as it is for biological species. Public schools have not had to be concerned with survival. Their survival is independent of their performance because they are subsidized and are supplied with customers, most of whom have no choice of supplier. They do not have to compete to survive, and they do not have to satisfy their customers. To survive, all they need do is satisfy their subsidizers (governments and boards of education) and comply with regulations. Consequently, they tend to be indifferent to the needs and desires of those they serve.

What follows is a significant variation of the basic voucher system designed by Christopher Jenks., onat focuses on the needs and desires of the students.

The parents or guardians of each school-age child would be given an educational voucher worth the current average cost per student in public schools. The vouchers would be redeemable by the government. This would be the only source of income to public schools. This voucher would cover tuition. A supplementary voucher would be provided to cover transportation, if the student attends a school outside the area in which he/she lives. This voucher would be redeemable by the school with responsibility for the area in which the student lives this would provide an added incentive for schools to satisfy their students and their parents/guardians who live in the area assigned to them. . If there is no such school, the government would redeem the transportation voucher. The voucher could also be used to cover all or part of the tuition to private schools with no religious affiliations. (This would force competition between public schools and between public and private schools. Like competition in general, it would lead to better service to the system's consumers.)

Public schools would be autonomous with regard to hiring and compensation of teachers and administrative personnel. This means they would have to compete for personnel as well as for students and, therefore would have to be as concerned with the quality of work life they provide to their employees as they would be with the quality of education they provide to their students.

Parents could apply to any nonreligious school, public or private, for admission of their children they would not have to use the one in the area in which they live. However, public schools would have to accept applicants who

reside in the areas assigned to them. Selection of others for admission would have to be made at random. This would assure equal opportunity for access to all applicants to any school out of their areas. It would also make desegregation of schools possible because race, religion, national origin, sex, or ability could not be used as an admission requirement. (The need for busing would be completely eliminated.)

Because public schools would have no source of income other than what they obtained by redeeming the vouchers they receive, they would go out of business if they did not attract and retain applicants, No one employed by a schooln should have tenure that extends beyond the life of the school. Public schools, like private schools, should have the ability to get rid of ineffective employees, and the system should have the ability to get rid of ineffective schools.

Private schools could charge whatever they want for tuition, but parents/guardians would have to pay whatever they charge above the value of the voucher. Private schools would be eligible for receipts of funds from vouchers *only* if they selected from among applicants at random.

Vouchers for special schools — for example, for deaf, blind, or retarded children — would be worth more than ordinary vouchers.

By introducing the market mechanism into the educational system, its customers and consumers would be encouraged to become familiar with the quality of the alternative schools available. Each community should provide information that enables school users to make intelligent choices.

Public education should be extended through undergraduate college and university levels. However, the vouchers issued for colleges and universities would differ from those issued for public schools. Anyone receiving a certified admission and registration statement from an accredited institution of higher learning would be able to obtain a voucher that would defray all or part of the tuition required by the school that had admitted the student. But this would be in the form of a loan that would have to be paid back after graduation. Failure to do so would be treated as a misdemeanor.

The voucher system has been frequently accused of putting private schools under no obligation to accept or keep students either fall below their academic standards, or become disciplinary problems. Clearly, the system described here is not subject to such criticism because private schools that accept vouchers would have to select among applicants at random.

This system would move much of the control of public and private education into the hands of parents and guardians of students. They cannot possibly do worse than so-called experts have done, and there is a good chance they will do much better.

FACILITIES

In most academic institutions faculty offices are arranged much like cells for monks. The privacy and inaccessibility of faculty members is maximized. Informal interactions among faculty members and between them and students are minimized. Nevertheless, such informal interactions, as the architecture of

most colleges preclude, can be very valuable learning experiences for both faculty and students.

Therefore, faculty facilities should be provided in open spaces where contact with other faculty members is very easy. Each faculty member should have a desk, facilities for a desktop computer, phone, files, book cases and two chairs for visitors. An easel and a pad should also be easily accessible for him/her.

Students should be similarly housed, in open spaces with the same facilities as the faculty. These facilities should be very close to those of the faculty with easy access to them.

Enclosed conference rooms should be available to faculty and students. They should have a glass wall that makes the activities taking place within them visible from the outside. In addition, small breakout rooms should be provided for individual or small group study or conversations. A small kitchen and coffee-making facilities should be available to students and faculty members together with a lounge where they can meet separately or together.

Of course, the usual copying, fax, secretarial help, supplies, and wash rooms should be readily accessible to all. Where appropriate, laboratories and workshops, as well as a lunch room, should be provided. Every program should have access to an auditorium and smaller lecture halls where visitors can make presentations to faculty and students.

COMPUTER-ASSISTED LEARNING

Computer assisted instruction is seldom successful because it automates teaching and, as we argued above, being taught is not an effective way of learning. But computers can be use to facilitate learning.

One cannot program or instruct a computer to perform a task that one cannot do oneself. Computers will only do what they are told to do, nothing more, and nothing less. Therefore, the computer is, in Industrial-Revolution terms, a perfect student; it remembers whatever it is told and only what it is told, and it does whatever and only whatever it is told to do. This makes it possible to learn a subject—for example, arithmetic— by trying to teach it to a computer. To do so requires the ability to communicate to a computer, but young people raised on computer games have little difficulty in this regard.

Currently, computerized instruction places the student and his/her computer in not-very-splendid isolation. Computers should be used to bring students together in mutual exchanges on information, knowledge, and understanding. They can be used to do so as the following example shows.

Three consoles with are arranged so that each of three students has access to one computer and that he/she alone can see the screen. Each is equipped with a light pen. Each student can see and talk to the other two students but they are told not to try to see what is on another's screen.

The computer address the same question to all three students on their screens The correct answer could be indicated by pointing the light pen. The computer tehn told them how many had the right answer. If all did it would go on to the next question. If one or more didn't the computer would so inform them

without identifying who or how many were wrong. They had to try to determine this through discussion. When ready they could re-answer the question. The process continued until all three had entered the right answer.

Between answers the students were free to consult any material they wanted, qt or away from their consoles. The computer did not teach in this situation but it did facilitate learning.

In this triangular situation the students provided answers to questions asked by the computer. Education is even better served if these roles are reversed. This becomes possible if computers are used to confront students with relatively realistic situations in which they must determine whether there is a problem and, if there is, how to solve it and test their solution. An example of such an application is provided by J. C. Porter et al.

Computers can be used to humanize and increase the effectiveness of the educational process. Once we get over the desire to mechanize the teacher whose current function, in general, is better eliminated, many effective educational uses of the computer suggest themselves. In none of them should the student and computer be pitted against each other. The computer should be used as an instrument *of* the learner, not on the learner.