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*The credit hour is the basic unit of measuring student progress toward a degree. Today, nontraditional delivery systems impact the way credit is offered and received. Faculty must consider how these changes affect what graduates know. The definition and validity of the academic credit hour is the key to the validity of the college degree. This article discusses the definition of credit hour and its relationship to current social, political, and educational changes.*

# The Definition of Academic Credit Hours

Scholarship is defined as knowledge resulting from study and research in a particular field, or the process that produces such knowledge. The concept of scholarship for the sake of scholarship has changed to the quantification of study and acquired knowledge. Student assessment and achievement levels are now debated in the national media; national and state educational outcome standards have been written; and testing systems for evaluation of these outcomes are being written and are currently employed in many states. The academic community must be involved in these decisions in order to ensure that scholarship and professionalism are improved by these changes, not damaged by them. The capstone to the K-16 educational system is the baccalaureate degree; and, although the total college education is more than the academic instruction involved, at the core of the degree are the graduation requirements of the institution as stated in academic credit hours. The definition and validity of the academic credit hour thus become the keys to the validity of the college degree.

## Background

The much-discussed accountability crisis in education today is a product of the historic interaction of at least four very different factors: scholars, the printing press, the electronic media, and the entry of society into the process of setting educational outcome standards. Analysis of demands for academic accountability and the definition of academic credit hours in higher education can be formed by consideration of each of these factors.

Early scholars were typically the masters of their disciplines. Before the wide dissemination of informa-

tion through printed and electronic media, scholarship tended to be restricted to a very small number of individuals who worked through oral communication or with manuscripts that were literally handwritten and hand-copied. These individuals were educated for their times and often had knowledge of languages, mathematics, history, science, and theology. Their true scholarship, however, was basically in knowing the state of the art in *one* of the special areas of learning. The scholars of the time “were” the state of the art in their disciplines. What contemporary could have taught Mendel about genetics, or J. S. Bach about music theory?

The development of written language, and the subsequent invention of the moveable-type printing press (in 1456), essentially ended the era in which the scholar and scholarship were inseparable. The ability to record knowledge in a written form not only made it easier for scholars to obtain information derived by several individuals, to combine scholarly information, record it in a “permanent” form, but also infinitely easier to pass it on to many more people, and from one generation to the next. Scholarly information no longer had to be communicated on a one-to-one basis. The scholar remained important through time, to expand and to communicate information, but the printing press made its transmission forever independent of the scholar. The printing press also made possible the tradition of universities as knowledge centers, and they contained the two vital elements of scholarship for centuries, a community of scholars and an assemblage of scholarly documents, i.e., the university library. This basic system, which made the university the focus of scholarship and research, has existed for hundreds of years. While there were other libraries, perhaps most notably the Great Library of Alexandria—thought to have had nearly 700,000 works at its height—it was primarily the university system that made scholarship available throughout the civilized world after the printing press came into wide use and books were progressively less expensive and more readily available.

The electronic age, with computerized systems disseminating information on a worldwide basis, both threatens and challenges the traditional university community. For example, if the written/printed work separated scholarly information from its ancient connection to the scholar, then the electronic age threatens to separate the scholar *and* the student from the university. The scholar is still necessary to generate and integrate the information, but when massive amounts of information can be electronically transmitted to all industrialized areas of the earth in seconds, scholarship need no longer be tied to universities. The future roles of the university and the electronic media are not clear, but educational systems as we have known them will never be the same.

Finally, somewhere in this historical process, probably in the context of publicly-funded education, society demanded that educational standards be defined to meet social and economic goals. Whether we choose to call this academic assessment, academic measurement, academic standards, academic credit, or outcome goals, learning was broken down into manageable and measurable units that met the expectations and needs of the society and its economy. It is simplistic to say that the students became the raw materials, the educational system became the process, the graduate became the product, and the society/employers/graduate schools/professional schools became the

consumers, but there are certain parallels. Students may consider themselves the consumers in schools, and admissions recruiters may possibly see potential students as consumers, but once the students have selected their university, they become part of the student and educational-system team effort to meet the overall educational expectations of society, employers, and graduate or professional schools. The ultimate standards, then, are set not by educators or students themselves, but by the requirements of the social structure, workplace, and post-graduate educational programs of the nation. Whether educators and students like it or not, the evaluation of the K-16 educational structure is, in the final analysis, the suitability of the college graduate to the social/economic/professional needs of the society!

### **Quantifying Scholarship**

Standardization of the public education system was inevitable in the United States. First, with the general mobility of the American population, it was necessary that the outcomes of the system be nationally similar. As an example, if students could transfer within the national education system, then the levels of education had to be interchangeable. It is also true that the education system evolved to fit the changing political, social, economic, and professional needs of the entire nation, with a standardized matrix of grade levels and exit points; for example, completion of eighth grade, graduation from high school, and finishing college. These levels were determined by a combination of the needs of the society, and the ability of the system to meet them, and were thus set by the total society rather than the educational system as such.

This standardization within American schools originally took place in the classroom matrix. The assumptions that go with the classroom matrix are that all students must enter each level of instruction with proper preparation in the previous levels, that they must be taught by methods appropriate to the average maturity and educational level for each stage of instruction, that all instructional materials must be appropriate to each level of the system, that instruction takes place for an agreed-upon time for each level, that instructors are properly trained for their assigned teaching level and that all of these requirements are enforced by an assessment system that accurately determines if the expected outcomes are being met.

The educational system and the requirements for defining college academic credit hours involve the total K-16 matrix. This matrix consists of three traditional components, grade school, high school, and college.

For the level of grades first through eighth, the grades, or yearly unit systems, have considerable validity. As long as we follow the guidelines outlined above, and teach with methods and information that are appropriate for each age group, for the appropriate time, with a properly trained instructor, we should obtain the expected outcomes. Generally one year of instruction becomes three quarters or two semesters, and the content and level of instruction fall within fairly narrow windows for each grade. Standardized testing is not universally accepted as a measurement of the achievement levels of students throughout the schools in the United States, but such tests show that the academic material taught in each grade is relatively standard. The achievement

levels of students throughout grade schools—as measured by the Iowa Test of Basic Skills (ITBS) and the Stanford Achievement Test (SAT)—give a comparison of the functional achievement level of students, of schools and of school districts, because the basic material is so uniform by grade level that a single set of tests gives relatively comparable results. Society expects that each grade level will produce growth in the maturity of the students, and a “one year growth in their educational level.” In present day American society it is nearly universally expected, in addition, that the student is prepared to enter and succeed in high school.

High school instruction is based on the same guidelines of classroom instruction given above, but the curriculum becomes more flexible. The standard unit also shifts from one year of school to one year on one subject. We speak in terms of units, that is, in years, of English, algebra, biology, accounting, and the like. The total of these units becomes the measurement standard of the academic knowledge expected of the high school graduate. Some other standard expectations exist, however, and if the basic factors of classroom instruction are followed, the outcome expectations of the society should be met, and the student should graduate with the maturity and at the educational level expected of a high school graduate. It is also generally expected that the high school graduate is to enter and succeed in college, as a college education has become the widely expected educational level for those entering the American working world. These outcome expectations stem from our society and are quite apart from the outcome goals set by the educators and the schools themselves.

The undergraduate college degree evolved in recent history to take the college-bound high school graduates and prepare them to lead an enriched personal life, to be informed participants in our political system, and to enter into a career or a post-graduate/professional education program. The undergraduate educational program developed as a four academic-year program, with an instructional and social matrix adapted for the emotional and intellectual development of the student, and generations of students who graduated from colleges and universities and have gone on to successful lives, careers, and professional training testify to the validity of the baccalaureate degree as the bridge between high school and life, work, and professional school.

The purpose of the undergraduate college education requires both commonality and differentiation in the educational components of the academic programs. The resident “college education” has certainly always been more than the sum of learning associated with 120 credit hours, but the common standard for the degree itself is 120 credit hours of approved course work containing such components as skills courses, general studies courses, a minor, a major, and possibly language studies. Typically, the measurement of the academic side of each area is expressed in terms of individual courses and the credit-hour value of each, although other measurement methods (e.g., modular units, contact hours, ungraded semester courses) have been used. The common educational thread through undergraduate studies in American colleges and universities has been rather weak, however, so far as “core knowledge” and skills requirements were concerned. This situation, together with the differing vocational and/or preprofessional outcomes expected from undergraduate college programs, made the specific curriculum of college students extremely variable.

Two very important factors remained in common with the grade/yearly evaluation systems, however, and both are critical to our system of quantifying learning. The basis of all three levels in the K-16 school system is time in class, although colleges use credit hours instead of quarters, semesters, or yearly units, and there is also an expected outcome at each level of the process. The college education was also supposed to advance the student to become a person functioning at the personal, social, political, and professional level expected of the college graduate.

### **The Definition of College Credit**

The college credit hour can be defined as a single credit hour per semester, or as a fraction of the entire academic program of the college degree. In either case, the inescapable fact is that such a credit hour is certification by the institution of a certain amount of knowledge/skills/training. The two methods involve very different approaches to defining the fundamental unit of learning. In recent history, the process of defining the academic credit hour was to take college-bound high school graduates, enroll them in college full time, and then use the standard of three hours of “learning experience”—usually one hour of lecture and two hours of “study time” per class, per week, for fifteen weeks—as the standard basis of one credit hour of “learning.” If the students were adequately prepared for college, classroom presentations were made at the maturity and knowledge level of the students; appropriate information was presented at an appropriate pace; the instructor was properly trained, and expected standards of achievement were met at each stage of learning—these set the quantity of information involved for each hour of credit relatively well. Within each discipline, these factors set a relatively reliable window for defining the “knowledge” expected for each academic credit hour, and, in total, the academic minimum for the college degree. Some courses required more than three hours of work per week per credit, and some less, but on the average, this was a consistent and well-accepted standard for the content and learning for one academic credit hour. Conversely, the college degree represents a body of academic knowledge/skills/training expected of the college graduate, so 1/120th of that knowledge can be defined as one academic credit hour. When college/university instruction nearly always took the form of lecture/recitation/laboratory, these two approaches to defining academic credits were equivalent.

The advent of the widespread use of “alternative instruction methods,” particularly electronically-based distance learning, has challenged the use of instructional time blocks as the basis for defining academic credit, and led to the call for academic credits based on competency instead of “seat time.” This was true whether applied to one credit hour, an instructional unit other than the academic credit hour (for example, the instructional modular unit), or the total degree. Thus, we are entering the era of defining credits based on “competence,” not seat time; of the credit hour being a portion of the college education, rather than fifteen hours of lecture and thirty hours of study time. Have credits always been based on competencies? Of course they have, or standardized outcome levels would not have been possible, e.g., students ready to take the GREs or the MCATs. We were also able to set learning in the form of credit hours

based on the assumption of instruction at the appropriate level for an appropriate period of time with an appropriate level of nationwide achievement outcomes. Suddenly competency has become an alternative evaluation system for assigning, among other things, academic credits and academic degrees.

The exit expectations of our society for college graduates, however, remain unchanged. Increasingly higher education is facing demands for exit testing, i.e., the verification of the proficiency of its own graduates, and the working/professional world is getting more explicit about its expectations of college graduates. The authors have experience with alternative methods of instruction and are open to whatever methods of instruction are used, so long as the students are prepared for the unforgiving working world, the research laboratory, the GREs, the DATs and the MCATs. This presents the obvious conclusion that if we are to achieve the outcome expected of the present college degree, then each course must fulfill its proportion of the training necessary to prepare a college student for graduation, regardless of the instruction method involved. The three credit course must be 3/120ths of the academic component of a college education, whether it is taught in the classroom, in the self-paced facility, or on the Internet.

The problem of truly defining the content and outcome expectations of any course that has no anchor in class time is the critical issue. One of the authors sat on a writing committee that struggled with this problem, and the only conclusion the group could arrive at was that the course taught by "nontraditional methods" must be equivalent to the "Type A lecture course," or one that meets for a set number of class periods per week for lectures and laboratories. The issue is, of course, how we go about defining the content and standards of the "Type A course."

The answer to this question is very important, because maintaining the academic and professional standards of all classes, whether presented in "traditional" or in "non-traditional" methods of instruction, is critical to the validity of academic credit and the credibility of higher education itself. We submit that the following guidelines would provide a foundation for the definition of college credit hours in all formats:

### ***Ensure Equal Content***

*The total content of all of the courses in the undergraduate curriculum, by whatever method they are taught, must at least equal the total content of the "Type A course" (lecture/recitation/laboratory).* There is no magic to the lecture method of instruction, and, in fact, there is a great deal of evidence that classroom instruction can be enhanced in many ways that will improve the learning experience of the students. It is true, however, that the content of our lecture/recitation/laboratory courses has been meeting the needs of generations of students, because they successfully have gone on to careers and professional schools. It is also extremely doubtful that, in our complex and technology-based society, all of the goals of the college education can be reached in a college degree program with reduced total content. In fact, many faculty members feel that programs need more instructional time/content material to prepare graduates adequately for the demands of living and working in a sea of new information and in a demanding professional milieu.



This situation has worsened with the problem of remediation required by many entering college students. The very serious issue here is that while we must adapt the content of each and every course, and each and every credit, to meet the total needs of the students and ultimately the society and careers of the outside world, we must not reduce the total content of the college degree unless we are absolutely sure that it is feasible and relevant. While we must be sensitive to keeping the content of each course appropriate, the only way we have to establish a baseline of the quantity of content of our present college degree is to determine the content of our present lecture/recitation/laboratory courses very carefully, to provide an informational content baseline for all future classes. This does not mean the official course syllabus, but a record of the real quantity of content of the class. This is the only standard we have to guard against a drift into a reduction of total content of courses during the many changes in instruction that will inevitably come about with competency-based and alternative instruction method classes of the future.

We must also remember that we alone do not set the outcome expectations for the educational structure. Higher education has been negligent in not actively seeking more input from graduates, employers, and postgraduate programs on the total quantity and relevancy of the content of its programs. This must be a cooperative effort, but colleges must not be turned into vocational schools. The academic community has the ultimate responsibility for assembling and communicating the body of knowledge required for the long-term needs of the college graduate. However, this content must not be dictated by the short-term needs of students, or the immediate needs of employers, in an age when the long-term expectation of every college graduate is numerous career changes. Until academics, graduates, employers, graduate schools, and professional schools—all together—agree that it is appropriate to reduce the total content of the academic program of the undergraduate degree, we better not do it! The present course content remains the only baseline we have from which to make changes, and we had best measure it while we still can.

### ***Match Content and Mode of Instruction***

*The formatting of all course content and materials must be specifically matched to the mode of instruction.* Effective instruction requires that the course content, presentation, and evaluation system fit the discipline. Alternative instruction methods complicate these conditions, however, and putting this information together, in a new format, and on an organizational level where the student can deal with it with a minimum amount of help, is a tremendous undertaking. All instructors should be well-organized, but an instructor in many alternate instruction methods course must have course content and materials so complete and well-organized that they are willing to hand the students the package of information on tape, disk, hard copy, or Internet, and tell them that this is the course; learn this material and you have completed this course. The less structured a course is in terms of time and place of instruction, the more structured it has to be in terms of course content, organization, format, and evaluation. Problems that can be handled relatively easily in the classroom are serious obstacles to the stu-

dent working alone, late at night, and at some distant location. The nonclassroom presentation also restricts the instructor to the physical limits of the "distance-learning" systems and limits the flexibility of instruction, in some ways, which typically requires a complete change in mode of instruction.

The first step of this process is that all courses should be examined by the curriculum approval process for appropriate content, pedagogy, and evaluation methods, and all courses used in "alternative instruction methods" should be reexamined through the curriculum approval process to ensure that content is at the level of comparable traditional courses, that the presentation method proposed seems effective for the discipline, and that evaluation of student achievement is adequately certified. The reputation of the institution rests on the validity of its academic credit hours, and this kind of requirement for the initial review of all academic courses and the reapproval of all changes in the presentation of academic courses is fitting.

### ***Create Strong Evaluation Systems***

*The system for evaluation of students in all courses must be carefully examined, because measurement is the final safeguard of academic and professional standards.* Theoretical course content means nothing if it is not covered in the class, and the evaluation system is the only way of validating this. The achievement outcomes for all students in all classes, regardless of the mode of instruction, must be at least at the level expected for students of "Type A courses." In order to teach courses to students we never meet or talk to face-to-face, we must be ready to say to them: "If you write these examinations and average 90%, without ever attending my class, we will give you an 'A' and the credits for the course." Maybe a midterm and a final examination are adequate for assigning a grade for a course, and maybe not, but they are not adequate to evaluate the student in many alternative instructional mode classes. We are moving into an era where achievement evaluation must do more than assign grades, but must evaluate the total academic learning experience regardless of the mode of instruction. We need to examine all evaluation systems carefully, because the authors do not believe that most current testing truly examines the total learning taking place in most courses.

The evaluation of the nonacademic co- and extracurricular portion of the "college education," including theater, music, and athletic events, is beyond the scope of our discussion here, although it is a very interesting segment of the special considerations involved with the commuting student. The evaluation of the academic portion of the college education, however, is and must remain the foundation for certifying intellectual and professional qualifications of the graduate. The evaluation of nonclassroom based classes requires that the evaluation system certifies that the student has the knowledge/skills/training expected from the course, because in many classes we will be granting academic credit hours to students the instructors never see. This calls for a total evaluation approach to student achievement.

### ***Make Evaluation Secure***

*The testing/evaluation materials and methods employed for all students must be absolutely secure and trustworthy.* All of our instructional efforts have no credibility unless our evaluation systems are beyond challenge. This question is a very current



one as scandal after scandal involving academic dishonesty come to our attention, and term-paper assistance can be found in the classified section of even nationally published magazines, to say nothing of the worldwide web. On our campus, the testing center will not administer a make-up examination unless the student is identified with a picture ID card. How can we do less than require positive identification and continuous monitoring of every student undergoing testing/evaluation off campus, when we do it on our own campus? When banks are using fingerprints or retinal scans to identify customers, should colleges give degrees to students being evaluated without positive identification and monitoring? Even if the tests do measure the “total learning experience,” they are meaningless if cheating cannot be prevented. The student who physically goes through the admission/registration procedure has been absolutely identified by the Office of Admissions and Records. The classroom instructor relies on this, but it is reasonable for the instructor of a nonclassroom course to expect that every student be identified with a passport, a picture ID card, a fingerprint scan or a retinal scan before being allowed to take any tests, and that the student be monitored for the entire length of the testing. We will not have credibility for any instructional format in which the testing/evaluation materials and methods used are not absolutely secure. Perhaps space age communication systems will require space age identification of the student performing in the evaluation process.

There are ways that we can have valid evaluation of noncampus students, including periodic on-campus evaluations, rising junior examinations, baccalaureate examinations, an unimpeachable network of testing centers, and, ultimately, technology that will reliably identify online test-takers. One thing is certain: if we let our alternative methods of instruction get ahead of our alternative methods of evaluation, our professional standards and our credibility will suffer. We can and should experiment, but widespread application of alternative methods of instruction require us to apply secure and valid methods of evaluation of student achievement, and we should proceed only as fast as our evaluation methods can validate the achievement of our students.

## **Conclusion**

Serious questions have been raised about the level of academic standards today, through all levels of the American education system. These conditions are particularly hard to meet in nontraditional class formats, but we should be very concerned about the possibility of professional standards falling if we do not protect academic criteria both in the classroom on campus, and, as we move into awarding college credit hours and, indeed, college degrees by alternate instruction methods. The urgency of this situation is highlighted by the movement in many parts of our nation, at all levels of the education system, to have achievement and outcome levels imposed politically. Someone out there is questioning our credibility right now, and we had best look at our systems and make the improvements required to win back their trust.

### ***Suggested Readings***

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