Ten Years into the 21st Century Core Curriculum: Our Experience, Insight, and Future

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Abstract

The last ten years of applying a new core curriculum to undergraduate programs has become a valuable learning experience for the College of Agriculture and Life Sciences, for the University of Vermont, and for other colleges and universities that are implementing, modifying, or assessing their general education requirements. Today there is a national trend to upgrade general education throughout higher education in America. As the world becomes a more mutually dependent society in the center of massive social, political, economic, and cultural changes, higher education in America is redefining itself in general education to prepare students for the 21st century and beyond. This article covers the ten year experience of implementation and evaluation of the College of Agriculture and Life Sciences' core curriculum, the growing general education movement in America, and what we have learned that can be helpful, not only to our College and the University of Vermont, but to other colleges and universities that are modifying their general education.

Introduction

In September 2001, the College of Agriculture and Life Science [CALS] at the University of Vermont [UVM] adapted a new core curriculum (see Table 1). Based on competencies of knowledge, skills and values, this core curriculum represented a new focus of general education required by all CALS undergraduate majors. It took roughly five years of committee work to establish the new core curriculum and get it approved by the faculty of the most diverse school or college at UVM. CALS majors range from traditional science, e.g. Animal Science, Food and Nutrition, Molecular Genetics, to social science, e.g., Community and International Development, Community Entrepreneurship, Public Communication. Based on the assumption that students should graduate with specific knowledge, important values, and skills in critical thinking, communication, teamwork, complex problem solving, and interpersonal skills, the new core curriculum was voted in by the faculty in May 2000. (Patterson et al., 2001)

Students in the College of Agriculture and Life Sciences would fulfill the core curriculum through satisfactory completion of an integrated series of courses and academic experiences such as internships and research apprenticeships. These competencies were deemed essential for a person's effective function in the 21st century society, and they would foster an attitude that promoted lifelong learning and responsible citizenship.

CALS Departments and Programs with undergraduate majors were given a full academic year to prepare for the new core curriculum by revising their programs and major checklists to meet the new core curriculum requirements that were implemented the fall 2001 semester. During the past ten years of implementation, a two-semester first-year Program was developed; all CALS undergraduate checklists were updated; the CALS Administration weighed in; online checklists were developed at the University level; some core curriculum evaluations were completed; the original core curriculum was reexamined and redefined; and the universal concept of general education has become a UVM and a national priority.

Ten Year Experience since Implementation

Foundations Program

During the time between the CALS faculty approval of the new core curriculum in May 2000 and its implementation the fall semester of 2001, all departments revised their checklists and altered, if necessary, their courses to meet the new requirements. The biggest change, however, was the development and implementation of a two-semester first-year program, entitled, Foundations.

Previously, there was a required two credit course for all new first-year CALS students, called Beginnings, that was offered every fall semester. The major goal of Beginnings was to help students make the transition from high school to college. In addition, the former CALS distribution requirements included courses in both oral communication and information technology. The new core curriculum included these two skill courses and added the concept of developing a sequence of courses, in which advanced courses would build on the skills of previous ones.

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The year-long Foundations Program integrated the first-year transition concepts of the Beginnings course with skills of the two courses of oral communication and information technology. Developed and currently taught by two faculty members who were on the original committee that developed the new core curriculum, Foundations provides all CALS first-year students with the basic skills of oral presentation and computer technology. Students then take additional "build on" courses throughout their undergraduate major in which to further implement and develop these Foundational skills.

Beginning the fall 2001 semester, CALS 001, Foundations: Communication Methods was a required public speaking course for all new first-year students. The spring 2002 semester, all CALS first-year students then took CALS 002, Foundations: Information Technology. The Foundations Program has been a successful integration of CALS core curriculum requirements to the benefit of CALS first-year students.

CALS Administration

After a few years of implementation, the CALS Administration took a few steps to deemphasize the new core curriculum. They began to believe that the CALS core curriculum was a factor in keeping students from entering the college. They believed that some students were turned off to either applying or transferring to CALS when they compared the CALS core curriculum with the general requirements of other UVM schools and colleges. Thus, the Administration moved the CALS core curriculum to a more difficult page to find on the UVM website.

In addition, this CALS Administration received some negative feedback on the term "requirement." Some students were unhappy having to take any general mandatory course; regardless of how important or useful it was to them, especially the CALS first-year students who realized that cohorts in other schools and colleges did not have to take a "required" course. The term "requirement" was a negative term for some students. Thus, the administration was successful in getting the course instructors and the CALS faculty to agree to change the definition of the Foundation program from "requirement" to "highly recommended."

The result has been that a vast majority (approximately 95%) of CALS first-year students still take the Foundations courses, although more students take the fall oral communication course than the spring information technology course, indicating that first-year students learn that they do not have to take a "highly recommended" course.

Undergraduate Checklists

The sixteen CALS undergraduate Bachelor of Science majors incorporated the CALS core curriculum into their undergraduate major checklists. CALS faculty advisors generally use checklists to explain the CALS core curriculum and major course require-ments to their undergraduate advisees. In addition, faculty regularly fill in the blanks on the checklists with courses that students have passed that meet the requirements.

However, how the CALS core curriculum (see Table 1) has been defined and listed is almost unique to each of the 16 checklists. In compliance with the highly decentralized nature of UVM and to get faculty to approve the CALS core curriculum, the original committee gave each department the final authority on how they would meet the core curriculum. Hence, the consequence was non-standard compliance with the spirit of the core.

Here are some examples on how the different undergraduate major checklists have dealt with the core curriculum:

A list of the core curriculum categories with blanks to fill in for the course that has fulfilled the requirement.

An inventory of combined courses that meet the core curriculum and the undergraduate major. The courses are not identified as meeting either the core curriculum or the major, but simply listed in the order in which they should be taken.

A list of only the CALS core competency courses that are not met by the undergraduate degree requirements.

A separate listing of core curriculum knowledge, skills and values, and how each requirement is met by a particular course, set of courses, or the program undergraduate degree requirements.

A thorough CALS core competency list, including the definitions of the knowledge, skills, and values; a list of courses that fulfill each competency, including the "build on" courses that will meet the requirements to "redraft 3 papers," and give "3 graded speeches;" and written definitions of critical thinking skills, interpersonal skills, citizenship & social responsibility, environmental stewardship, and personal growth.

Only six of the 16 checklists even mention the two complex CALS core competencies of critical thinking and interpersonal skills. Three of the six, all from one department, list courses and specify that these complex skills are "fulfilled by curriculum requirements" and are developed by the major "…through a series of courses and experiences…" Two checklists simply list the names of the complex skills and that they are satisfied by "program core requirements." And one checklist was never updated and still contains the original 2001 text that, "(c)ompetency may be met by the satisfactory completion of any course or series of courses…"

One course checklist misinterpreted the writing and oral communication sequence to first take a foundational skill course and then "build on" courses, by incorrectly stating that the student can meet the competency by taking either a foundational skill course or a course or series of courses that grade skills.

Beginning the fall 2010 semester, physical student folders, in which all the paperwork has been kept in the department offices for advisers to use, have been eliminated. The new student folders are now electronic and are accessible to CALS advisors and administrators through the UVM computer system. Since written material can be posted on to the electronic folders, advisors are still encouraged to use the written checklists. Whether or not undergraduate majors will continue to use the written checklists and post them on the electronic folders or completely drop them and simply use the University CATS system is not known at this time.

CATS Report

While there are many ways in which the CALS core curriculum is listed on undergraduate checklists, there is a common approach on the internet Degree Audit program called CATS – Curriculum Audit Tracking System. The CATS system was developed in 2005 and is managed by the UVM Registrar's Office. Administrators, faculty and students can access a CATS student record by submitting the student's UVM nine digit ID code. The CATS system is defined as, a "curriculum audit report" that "tracks your (student) progress toward completion of your degree program." In addition, although it is stated as an "advising tool, not an official document," the CATS report is checked by a CALS administrator who works with advisors to insure that it is complete for fulfilling all degree requirements of graduating CALS seniors.

Table 1. General Education Comparison: AACU, CALS, and UVM

AACU Essential Learning Outcomes	CALS Core Curriculum, now entitled Core Competencies	Proposed UVM General Education
Knowledge of Human Cultures and the Physical and Natural World Through study in the sciences and mathematics, social sciences, humanities, histories, languages and the arts. **Focused** by engagement with big questions, both contemporary and enduring	**Knowledge: Students develop a fundamental base of knowledge that will serve as a foundation for lifelong learning.** **A. Science**: Students use the scientific method to understand the natural world and the human condition **1. Physical and Life Sciences** (2 courses) **2. Social Science** (2 courses) **B. Humanities & Fine Arts**: Students develop an understanding and appreciation for the creative process and human thought. (2 courses)	**Knowledge: Students will have a collegiate-level knowledge of**: · **Physical & Life Sciences**: The content and approaches used in the physical and life sciences including basic laboratory methods. · **Social Sciences**: The content and approaches used in the social sciences · **Humanities & Fine Arts**: The content and approaches used in the humanities and fine arts · **Health, Environment and Sustainability**: An understanding of human health and wellness, the environment and connection between the two.
Intellectual and Practical Skills, Including Inquiry and analysis Critical and creative thinking Written and oral communication Quantitative literacy Informational literacy Teamwork and problem solving **Practiced extensively**, across the curriculum, in the context of progressively more challenging problems, projects, and standards for performance	**Skills: Students develop abilities and use tools to effectively communicate, analyze, problem solve, think critically and work with others.** **A. Communication Skills**: Students express themselves in a way that is easily understood at a level that is appropriate for the audience. **1. Oral**: Students show confidence and efficiency in speaking before a group. (1 public speaking class, plus 3 graded speeches in additional courses) **2. Written**: Students effectively communicate in writing. (1 English writing course, plus 3 redrafted graded papers in additional courses) **B. Informational Technology**: Students demonstrate mastery of technology for communication, data gathering and manipulation, and informational analysis. (1 information technology course) **C. Quantitative Skills**: Students demonstrate the ability to understand and use numbers. **1. Mathematics:**(1 math course) **2. Statistics**: (1 statistics course) **D. Critical Thinking Skills**: Students demonstrate ability to comprehend, judge, and present written-oral arguments and to solve problems. Students learn to distinguish between fact, conjecture, and intuition. **E. Interpersonal Skills**: Students demonstrate the ability to work well with other people by understanding and using skills of leadership, conflict resolution and group process.	**Skills**: Students will have collegiate-level skills that enable them to communicate effectively, gather and analyze information, solve problems, think critically, and work well with others. · **Quantitative Reasoning**: Students are able to apply mathematical techniques appropriately, including algebraic and symbolic manipulation, logical thinking, and statistics and probability. · **Communication**: Students are able to communicate effectively in writing in a manner that is appropriate for both general and specialized audiences. Students are able to express themselves clearly and effectively to convey their ideas and to inform or persuade by oral communication. Augmentative or alternative communication may be used where appropriate · **Critical and Creative Thinking** Students are able to acquire, integrate, and interpret information; understand logical connections between ideas; detect inconsistencies in reasoning; formulate reasoned conclusions; be aware of personal biases and perspectives; and distinguish between fact, conjecture, and intuition. Students are able to raise significant questions, generate original ideas, use abstract concepts in developing thoughts, and be open to alternative systems of thought. Students demonstrate an understanding of the issues and processes involved in making ethical decisions. · **Scientific Reasoning**: Students are able to 1) recognize patterns in observed phenomena, 2) generate hypotheses, 3) predict logical consequences of hypotheses, and 4) evaluate whether a particular conclusion is justified based on evidence. · **Information Literacy**: Students

Table 1. Continued		
AACU Essential Learning Outcomes	**CALS Core Curriculum, now entitled Core Competencies**	**Proposed UVM General Education**
		are able to 1) find information and evaluate it for accuracy, thoroughness, and reliability; 2) use information to make decisions and solve problems; 3) use information in a manner that is responsible, ethical, and legal; 4) apply appropriate technologies to collect, analyze, and manage data and other information; and 5) use technology to communicate effectively with others.
Personal and social Responsibility, including Civic knowledge and engagement – local and global Intercultural knowledge and competence Ethical reasoning and action Foundations and skills for lifelong learning **Anchored** through active involvement with diverse communities and real-world challenges	**Values: Students are exposed to values that are expressed through relationships with community, the environment, and themselves that are consistent with the missions of the College of Agriculture and Life Sciences and the University of Vermont campus compact known as "Our Common Ground."** **A. Citizenship & Social Responsibility**: Students develop an understanding appreciation and empathy for the diversity of human experience and perspectives. Students are exposed to solving problems for a community and contributing to the common good. **B. Environmental Stewardship**: Students develop asensitivity for the interconnected relationship between human beings and the natural world and the responsibility for stewardship of the environment.	**Diversity and Cultural Competency**: Students will have an understanding of the diversity of human experiences, cultures, and perspectives · **Collaboration and Leadership**: Students are able to work well with others by using skills in leadership, conflict resolution, and group process. Students demonstrate an understanding of personal civic responsibility, including the need for engagement, constructive debate, and community/global service.
Integrative and Applied Learning, including Synthesis and advanced accomplishment across general and specialized studies **Demonstrated** through the application of knowledge, skills and responsibilities to new settings and complex problems	**C. Personal Growth**: Students develop an understanding and appreciation of a healthy lifestyle and a love for learning that will lead to continuous growth and development throughout their life-span. Students continue to improve self by developing and affirming the values of respect, integrity, innovation, openness, justice, and responsibility.	

satisfied by successful completion of all courses required in the major, as verified by your advisor."

CALS Curriculum Committee

In spring 2009 the CALS Curriculum Committee was asked by the administration to revisit and revise, if necessary, the CALS core curriculum that was adopted by the CALS Faculty and went into effect the fall 2001 semester. Periodic re-examination of the CALS core curriculum was actually a recommended procedure of the original committee that got it approved by the CALS Faculty in 2000. Interestingly, by 2008, the Curriculum Committee members were all new, so they were able to review the CALS core curriculum with a fresh perspective with over eight years of implementation experience. Ultimately the Committee brought a recommendation to the general CALS Faculty who approved it in September 2009. Essentially, the CALS core curriculum was reconfirmed, with a few minor changes:

The name was changed from CALS core curriculum to CALS core competencies to better reflect the meaning of the CALS general education requirements.

For every CALS major the CATS report has divided the core curriculum into two sections: the "Distribution Requirements" section and the "Advanced Requirements" section. The "Distribution Requirements" section lists all the core curriculum requirements that are met by full courses, e.g., an oral communication course, two humanities and fine arts courses, a math course, etc.

The CALS core curriculum requirements for students to take additional "build on" skill courses for three graded speeches and three redrafted graded papers are not dealt with by the CATS system. "Advanced Requirements" are those curriculum requirements that are met by a combination of courses and experiences, e. g. Critical Thinking Skills, Interpersonal Skills, Personal Growth, etc. They are also not dealt with by the CATS system, which simply states, "CALS core curriculum requirements beyond the distribution requirements will be

Two "build on" skills requirements were dropped, under the assumption that students were already applying the skills in many classes at this time. The Information Technology requirement to take an "additional course or series of courses that uses computers for a minimum of two applications in total" in which Information Technology is applied was dropped, as was the Quantitative Skills Application which was met by "satisfactory completion of one course that utilizes principles from math or statistics."

Interpersonal Skills and Critical Thinking Skills were kept on the CALS core curriculum, but the statements of how they were to be completed were taken off. Both of these complex skills had original sentences that stated the "competency may be met by satisfactory completion of any course or series of

courses." Again, the thought of the CALS Curriculum Committee was that the skills "…to comprehend, judge and present written-oral arguments and to solve problems…to work well with other people in understanding and using skills of leadership, conflict resolution and group process," were still important, but they were wide-ranging competences that were not met by one course or even a series of courses. The thought was that these competencies were naturally met by courses, experiences and the maturing of students at UVM.

Evaluation
CALS Advisory Board

The CALS Advisory Board, a three-year term of 18 industry leaders, elected officials, students, and Vermonters, meets twice a year to provide feedback and advice to the CALS Dean and administration. In addition, they review the College Strategic Plan and provide information on future trends of agriculture and life sciences.

In October 2007, the Advisory Board was led through a process to give feedback on the CALS core curriculum. The members were given five different colored stickers; each one rated a different number, from one to five. The Board members were told that they were to read a list of topics that were printed on several large papers attached to the wall, and then to individually rate their top five choices in terms of the "most critical to personal and professional success after college." They were not told that the list was the current CALS core curriculum, only that the listed topics were knowledge, skills, and values for them to rate. Their top choice would get the sticker rated five points, the next choice received the sticker with four points, down to their fifth choice which received the one point sticker.

After each CALS Advisory Board member posted their five different colored stickers on their top five choices, they were then asked as a whole group if there were any topics to add to the lists. There was a short discussion, but there was no consensus of any additional knowledge, skill, or value to be added. They were then told that this list represents the current CALS core curriculum and were given the opportunity for more discussion. The vast majority of the mem-

bers were not aware that the list they rated was the CALS core curriculum. After the process and discussion, members were positive and, in fact, enthusiastic about the current core curriculum.

The results of the CALS Advisory Board process led to an interesting conformation and ranking of the CALS core curriculum. Detailed in Figure 1, there were two related ratings of the items – the number of stickers for each item and the total number of points. Skills received both the highest number of stickers and points as well as the lowest number of each. The Advisory Board rated the top two CALS core Competencies as Interpersonal Skills – "the ability to work well with other people by understanding and using skills of leadership, conflict resolution and group process" (19 stickers, 69 points), and Written Communication – "effectively communicate in writing" (12 stickers, 38 points). The lowest rated Competencies were Math – "the use of numbers for problem solving" (4 stickers, 8 points) and Statistics – the use of numbers for data analysis and inference" (4 stickers, 8 points).

The CALS core competency values received stickers and points that rated them in the middle of the Advisory Board ranking. Citizenship and Social Responsibility – "an understanding, appreciation, and empathy for the diversity of human experience and perspectives, and solving problems for a community and contributing to the common good" received 11 stickers and 37 points. Personal Growth – "an understanding and appreciation of a healthy lifestyle,
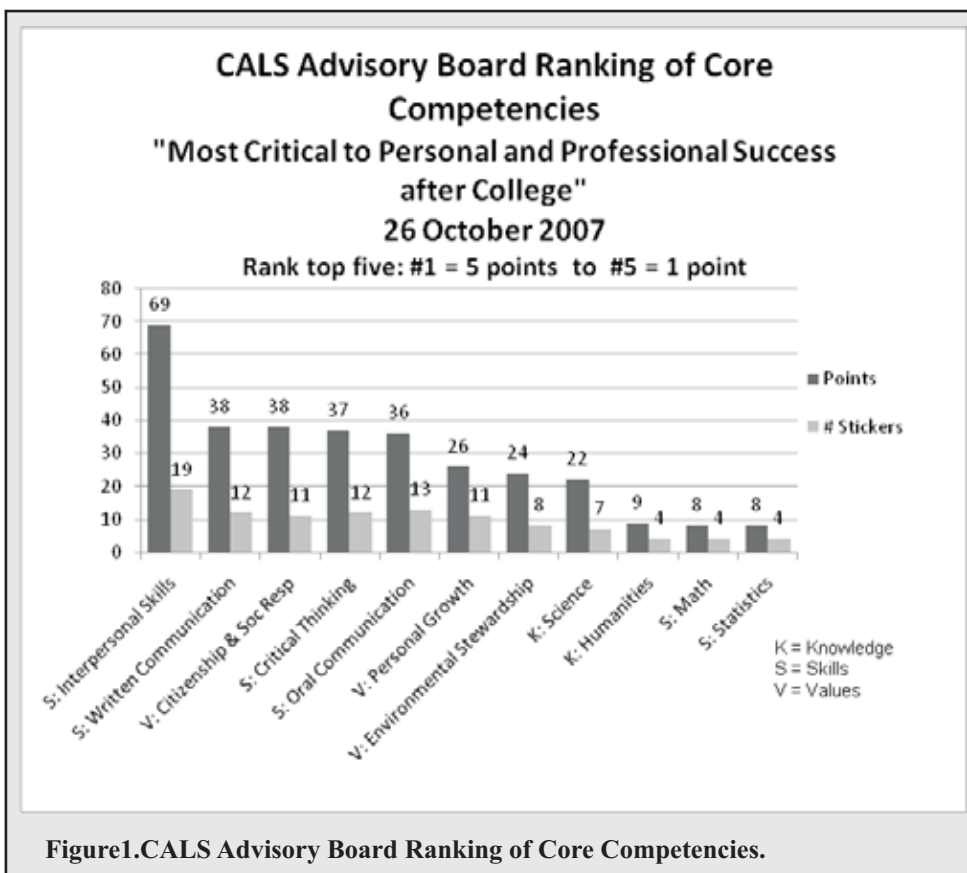

**Figure1.CALS Advisory Board Ranking of Core Competencies.**

a love for learning that will lead to continuous growth and development, and development and affirmation of the values of respect, integrity, innovation, openness, justice, and responsibility," received 11 stickers and 26 points. Environmental Stewardship – "a sensitivity for the interconnected relationship between human beings and the natural world and the responsibility for steward-ship of the environment," received 8 stickers and 24 points.

In general, the CALS Advisory Board confirmed the CALS core curriculum through this process and discussion.

CALS Graduating Seniors

In April of the spring 2008 semester, an email was sent to all graduating CALS seniors, asking them to complete an on-line ques-tionnaire. Eighty-two students, approximately 40% of the CALS graduating class, filled out the question-naire, which asked them to rank the CALS core compe-tencies according to two levels – how well they were prepared for each compe-tency by their undergradu-ate CALS program, and how important they rated each competency for their future personal and professional success. See the results in Figure 2.

Interestingly, the graduating CALS seniors rated the CALS core compe-tencies very similarly to the ratings of the CALS Advisory Board, regarding the impor-tance of personal and professional success. For example, exactly as the Advisory Board, the CALS seniors gave Interpersonal Skills the highest rating (4.6), and the two lowest
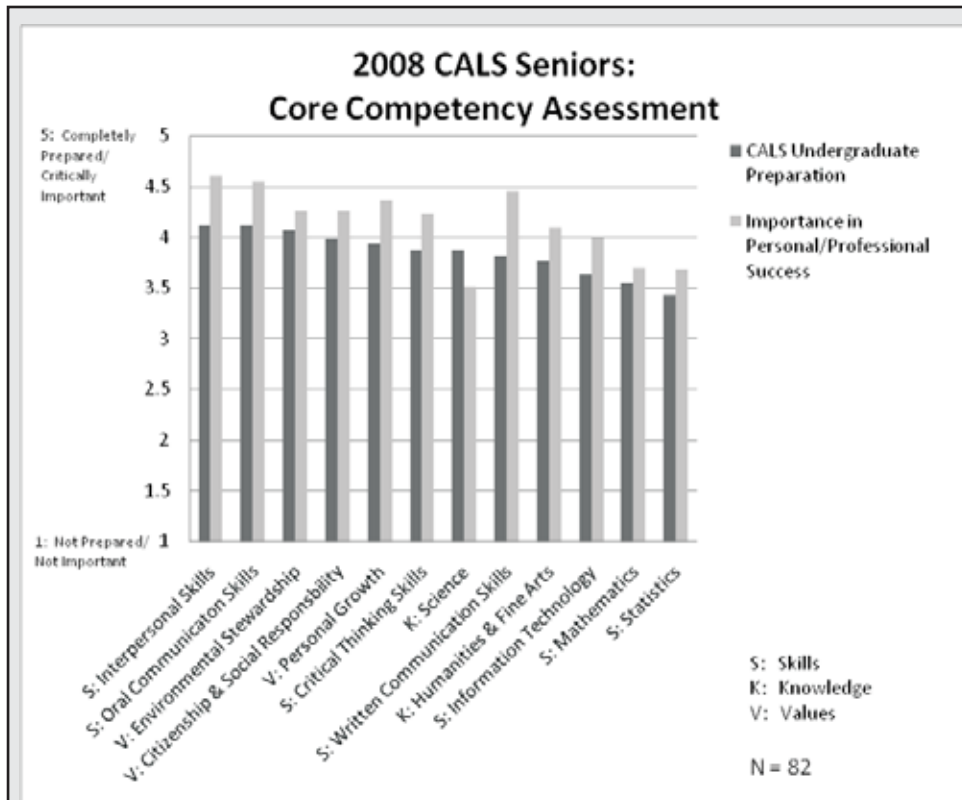
CALS Core Competencies
K = Knowledge: Students develop a fundamental base of knowledge that will serve as a foundation for lifelong learning.
S = Skills: Students develop abilities and use tools to effectively communicate, analyze, problem solve, think critically, and work with others.
V = Values: Students are exposed to values that are expressed through relationships with community, the environment, and themselves that are consistent with the mission of the College of Agriculture and Life Sciences and the University of Vermont campus compact known as "Our Common Ground."

2008 CALS Seniors Assessment of CALS Core Competencies, ranked from high to low in terms of "How fully has your CALS undergraduate program prepared you in each category?"

S: Interpersonal Skills: Students demonstrate the ability to work well with other people by understanding and using skills of leadership, conflict resolution, and group process.

S: Oral Communication Skills: Students show confidence and efficacy in speaking before a group.

V: Environmental Stewardship: Students develop a sensitivity for the interconnected relationship between human beings and the natural world and the responsibility for stewardship of the environment

V: Citizenship & Social Responsibility: Students develop an understanding, appreciation, and empathy for the diversity of human experience and perspectives. Students are exposed to solving problems for a community and contributing to the common good.

V: Personal Growth: Students develop an understanding and appreciation of a healthy lifestyle and a love for learning that will lead to continuous growth and development throughout their lifespan. Students continue to improve themselves by developing and affirming the values of respect, integrity, innovation, openness, justice, and responsibility.

S: Critical Thinking Skills: Students demonstrate ability to comprehend, judge, and present written/oral arguments and to solve problems. Students learn how to distinguish between fact, conjecture, and intuition.

K: Science: Students use the scientific method to understand the natural world and the human condition.
S: Written Communication Skills: Students effectively communicate in writing.
K: Humanities & Fine Arts: Students develop an understanding and appreciation for the creative process and human thought.
S: Information Technology: Students demonstrate mastery of technology for communication, data gathering and manipulation, and information analysis.
S: Mathematics: Students demonstrate the use of numbers for problem solving.
S: Statistics: Students demonstrate the use of numbers for data analysis and inference

Figure 2. 2008 CALS Seniors: Core Competency Assessment.

ratings to Mathematics and Statistics (3.6). Oral Communication skills (4.55) and Written Communication skills (4.45) completed the top three personal and professional ratings.

The seniors rated every CALS core curriculum higher in terms of the importance of personal and professional success, than how well they were prepared, except for Science, in which the students rated their preparation higher than their future importance. The average distance between the two levels of ranks was approximately 0.4 out of the scale of 1 to 5. The highest difference was Written Communication Skills (1.1), while the lowest difference was Mathematics (0.2). The reverse difference for Science was 0.4.

Graduating seniors clearly indicated that the CALS core Competencies were important to their future personal and professional success. Although there was a difference in rating among the competencies, the average of the senior ranking was 4.2 out of 5. The most important feedback came in the difference between the higher future importance and the lower current undergraduate preparation, which clearly suggested that students did not feel that their undergraduate education completely prepared them for their future needs.

General Education Movement in America

Core curriculum was the term used by CALS ten years ago to define the general requirements that all undergraduate programs had to meet. Today there are still many terms used to define the same idea, e.g. liberal studies, core competencies, general studies, however, the most prevalent term used today is the one used in this article, general education.

AAC&U General Education

As the world shifts to "an interdependent … community in the midst of profound social, political, economic, and cultural realignments" (AAC&U, 2010a), the Association of American Colleges and Universities [AAC&U] has become a national leader in highly influencing American higher education to develop a consensus of general education to help all students of the 21st century "…thrive in a knowledge-intensive economy, a globally engaged democracy, and a society where innovation is essential to progress and success" (Humphreys, 2006, p.1). Since 1991, AAC&U has held an annual, weeklong conference for faculty and administrators to evaluate and advance the general education on their campus. (Gaston and Gaff, 2009)

AAC&U has a membership of over 1,200 representatives from all sectors of higher education and has developed a national campaign, "LEAP – Liberal Education and America's Promise…organized around a robust set of Essential Learning Outcomes." (AAC&U, 2010b) Through many years of working with hundreds of colleges and universities, the business community, and accreditation requirements, AAC&U has developed a list of general education knowledge, skills and responsibilities, and learning outcomes that all students, regardless of their undergraduate major, should learn.

Today, AAC&U is the foremost organization that colleges and universities will contact regarding general education. It has an extensive resource website on general education (http://www.aacu.org/resources/generaleducation/index.cfm) that lists initiatives, publications, campus examples, meetings and institutes. The aim of AAC&U is "… to ensure that every undergraduate student experiences a relevant and challenging general education curriculum." (AAC&U, 2011)

The original CALS core curriculum is very similar to the AAC&U Essential Learning Outcomes. The CALS knowledge, skills, and values directly line up with the AAC&U knowledge, skills and responsibilities and learning outcomes (see Table 1).

The majority (56%) of the 433 higher education chief academic officers polled by Hart Research Associates (2009) indicated that the priority of general education has increased at their institution, and a much larger majority (89%) specified that their general education program was undergoing assessment or modification (pp. 1-2).

Although AAC&U has a very strong influence on American colleges and universities in establishing, upgrading and unifying general education, there is even a more powerful general education authority in America today – Council for Higher Education Accreditation.

Higher Education Accreditation

General education has recently become one of the major themes of the six Regional Accrediting Organizations that reaccredit American colleges and universities every ten years. These organizations are affirmed by the Council for Higher Education Accreditation [CHEA], the "largest institutional higher education membership organization in the United States, with approximately 3,000 degree-granting colleges and universities." (CHEA, 2006a) The Regional Accrediting organizations are uniform in consistently applying the academic "quality, improvement, and accountability expectations that CHEA has established." (CHEA, 2010)

The CHEA higher education accreditation policy, revised in 2006, states: "All eligible organizations must meet the general standards enunciated in this recognition process. The recognition process will place increasing emphasis on the effectiveness of accreditation organizations in assuring the academic quality of institutions and programs through standards, policies, and procedures that address appropriate rigor, degree nomenclature, and at the undergraduate level, a general education program designed to ensure breadth of knowledge and at all levels, advanced intellectual inquiry" (CHEA, 2006b, p. 20).

In 2009, the University of Vermont was reaccredited by the New England Association of Schools and Colleges, one of the six Regional Accrediting Organizations. A major concern of the regional accrediting evaluation team was the complete lack of a university-wide general education for all UVM students. In response to the accreditation report, the university president wrote that UVM would work with the senate and the undergraduate schools and colleges to develop a "comprehensive undergraduate general education requirement which will entail well-rounded assessment procedures…" (Fogel, 2009, p. 3).

It is clear that all universities and colleges in America that now go through regional accreditation will be evaluated on their general education requirements, and will be recommended to upgrade if not meeting the CHEA standards.

University General Education

In the fall 2009 a committee was formed to develop the UVM undergraduate general education. Consisting of faculty members from each of the seven schools and colleges, and chaired by an Associate Provost, the committee met for the entire school year and developed a list of knowledge, skills, and competencies for all UVM undergraduates, again, very similar to the ten year old, CALS core curriculum, now called core competencies (see Table 1). In addition general suggestions for evaluation of the general education were created by this committee. At the time of this writing, the committee has been expanded and is using the 2010-11 academic year to work with the undergraduate staff, faculty, and administrators in departments, schools, and colleges, to educate them on the importance of general education and to develop their support when it comes to a vote in the Faculty Senate. At this time, it is unsure whether or not general education will be approved by UVM faculty to be implemented throughout the entire undergraduate curriculum at UVM.

What We Have Learned
Learning from Initial Guiding Principles

For the last ten years, the initial guiding principles of the committee, that helped get the CALS core curriculum approved by the faculty, have been a highly learning experience. In particular three principals have had a major impact on the implication of the core curriculum:

• Completion of a course or series of courses (approved by advisor) is assumed to satisfy the competency. In other words, specific courses would be matched to specific competencies.

• Where possible, the design will include sequences of courses yielding an integrated experience, with advanced courses building on earlier ones.

• The student's department and advisor serve as the ultimate judges regarding decisions of the appropriate selection of courses and non-course experiences (Patterson et al., p. 14).

The CALS Departments solely used the principle of courses to meet general education requirements. This was also adopted by the University CATS online system. Thus some very complex, but critically important, general education goals, e.g., critical thinking, interpersonal skills, environmental stewardship, that were not met by one or more courses, were simply avoided completely on the checklist or dealt with by indicating they were simply satisfied by program core requirements.

Having students take additional "build on" courses after taking foundational courses in writing and oral communication represented an important step in the development of an integrated experience. Very much like building on courses, from general to specific, in every undergraduate major program, the integration experience of skill courses is an important concept for general education, and is a significant consideration for all general education programs.

The variety of how the different departments have dealt with the CALS general education requirements is a clear indication that general education should be the responsibility of a higher up single administration that will give general education more consistency and clarity. This organization should also be in charge of evaluation to determine how well students are meeting the general education objectives, and to give feedback to the different schools and colleges, and, ultimately, to each undergraduate program.

Universal General Education

There should be a universal general education text that is used in every undergraduate checklist, as well as any electronic system. CALS ten year experience in having each independent department differently adopt the general education requirements clearly indicates that there should be a universal general education wording for all undergraduate programs.

Having the same general education text in all checklists will help undergraduate students to transfer from one program to another, and between the now universal colleges and schools at the same university. In addition, all general education competencies should be written into the universal text, even those complicated competencies that are not met by a single or group of courses, as it is critical that students completely understand what all the goals of general education are.

Even though CALS was the first college at UVM to update the general education into the 21st century, the implementation experience of the last ten years suggests that general education is still viewed as a group of courses for all undergraduate students to complete before doing their major, rather than it

being integrated into all undergraduate programs as a main focus throughout the entire four-year agenda. Thirty years ago, Gaff (1980) wrote an article in which he described the problems of a general distribution system as "…fragmentation of the curriculum, erosion of an accepted education rationale, lack of commitment on the part of the faculty, loss of interest by students, and absence of any central administration or supervision of the general education program" (p. 51). This still holds true today.

It is clear in the AAU&C literature (2010a, 2010b) that general education should be a focus not only of specific general education classes, but throughout all classes and learning experiences in each undergraduate major. Thus, a major sea-change for most undergraduate programs would have to take place in order to move general education from the outside edge to the central core of each program.

General Education Evaluation

A clear and direct evaluation of general education needs to be developed and implemented on the University level to determine if undergraduate students are meeting the goals of general education in all colleges and schools. The only evaluations done in the CALS ten years – assuming competence by passing a general education course, polling the CALS Advisory Board, and asking graduating students for their opinions – were indirect methods and did not truly evaluate whether undergraduate students had met the objectives of general education. There are many forms of direct evaluation, including:

• Developing and using rubrics to assess whether students have met particular general education goals;

• Contrasting the results of first-year students and graduating seniors using a professional student assessment system, e.g., CLA [College Learning Assessment], CAT [Critical Thinking Assessment Test], MAPP [Measure of Academic Proficiency and Progress], CAPP [College Assessment of Academic Proficiency] (National Institute for Learning Outcomes Assessment, 2010);

• Creating a capstone course experience for all undergraduate seniors, where they are responsible for demonstrating general education objectives through their undergraduate major ;

• Evaluating general education through faculty-evaluated internships, or service learning experiences;

• Having students develop an online portfolio in which students collect and manage data, documents, videos, etc. to demonstrate general education goals throughout the four years of their undergraduate program.

Summary

Ten years ago, a general education assessment survey of 226 higher education administrators in every state, clearly indicated that, "(c)olleges and universities that have worked to improve their general education curricula have derived important benefits. They tended to improve the quality and coherence of education for students, renew faculty members, and strengthen aspects of their institutions" (Gaff and Wasescha, 2001, p. 251).

It is clear that there is a massive push in America today for higher education to develop, upgrade, implement and evaluate general education. AAC&U and CHEA are two important and highly influential organizations that are helping American colleges and universities to move general education into the 21st century and beyond. The implementation of the University of Vermont College of Agriculture and Life Sciences' core curriculum for the past ten years has been an important learning experience in which many concepts and ideas have been identified that can be applied to other colleges and universities to help them improve their process of developing general education.

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