WASHINGTON HIGHER EDUCATION COORDINATING BOARD

January 2006

Competency-based Transfer Pilot Project – Final Report Executive Summary

Background

In 2003, the legislature and governor enacted House Bill 1909 to create a pilot project on competency-based transfer between two- and four-year colleges and universities. The legislation directed the Higher Education Coordinating Board (HECB) to select institutions to define transfer requirements in several disciplines on the basis of students' skills and knowledge. Eastern Washington University and the two community colleges in Spokane, which volunteered to undertake the project, began the pilot in fall 2003. The participating institutions, in collaboration with the Higher Education Coordinating Board, were directed to report on the progress and status of the project to the legislative higher education committees by December 1, 2005. This report, subject to the approval of the HECB, is intended to fulfill that requirement.

Competency-based transfer is described in the statute as "the knowledge, skills and abilities students should possess in order to enter an upper division program in a particular academic discipline." In contrast to the current system, it does not necessarily involve "seat time" or the successful completion of a specified number of classes as a measure of student achievement and preparation for transfer. Rather, students must demonstrate that they have mastered the necessary knowledge through a series of assessments. The objective of the legislation was to create a pilot project that explored how these "competencies" could be developed and assessed so that they could be used as the basis for transfer evaluation and admission to upper division programs.

Eastern Washington University, Spokane Falls Community College and Spokane Community College collaborated throughout the project with the HECB, the Council of Presidents (COP), and the State Board for Community and Technical Colleges (SBCTC). Academic leadership and faculty from the three colleges identified criminal justice, elementary education, and computer information systems as the pilot project disciplines. Faculty from the two- and four-year institutions worked together to reach agreements on the core competencies in each major, as summarized below:

Summary of selected academic disciplines

Criminal Justice: Faculty at EWU developed a list of expected competencies for two foundational criminal justice courses: Basic Research Methods and Introduction to Statistics. When they developed an assessment tool and administered it to both EWU students and a limited

number of community college students, they found the community college students were not exposed to enough instruction in statistics or research methods to attain the skills they needed to transfer.

Computer Information Systems: Faculty at EWU aligned the entire curriculum to conform to national standards in computer information systems education and have shared updated course descriptions with the community colleges. This standards-based information will, in turn, be used to align community college coursework with the expectations for entry to computer information systems majors at EWU. All students are currently required to pass a placement test before they requesting junior status in the department.

Elementary Education: Faculty from EWU, SFCC, and SCC developed competencies for the Introduction to Education classes that are taught at all three institutions. Faculty workgroups made preliminary recommendations regarding assessment of students but did not test them.

Findings and recommendations

Developing a statewide competency-based transfer system would take significant investment of funding and faculty and staff time. However, most competency-based initiatives are too new to have produced outcome data that would indicate whether students are actually moving through the system more efficiently and effectively than through the current system, which requires the completion of specific academic credits. Thus, policy makers have little data with which to evaluate the prospective value of the large new investment that would be needed to refocus the current transfer system. It is therefore the joint recommendation of the pilot project participants and the Higher Education Coordinating Board to maintain the current system until outcome data from groups that are defining competencies can be subjected to cost/benefit analyses.

In the meantime, if the legislature finds that the pilot project should be expanded statewide, or, on a more limited basis, to other academic disciplines, the HECB and the participating institutions recommend the following steps be taken:

- The state should allocate funding to support planning at the state level and to expand opportunities for ongoing communication between two- and four-year faculty;
- Institutions should develop competencies for the general education requirements that are required for most transfer students, regardless of their desired majors;
- Institutions should develop oversight committees to designate and/or update competencies and design student assessments;
- The departments at receiving four-year institutions must describe the standard body of knowledge required for entry into their programs; and
- Four-year institutions should communicate their expectations to transfer students early in their community college careers so that they can pursue coursework that will adequately prepare them for transfer.

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Competency-based Transfer Pilot Project
Final Report on House Bill 1909

Background

In approving HB 1909 (see Appendix C) during the 2003 session, the legislature found that "the focus of transfer between institutions of higher education has been on students' accumulation of credits" to certify student achievement and preparation for entry into junior/senior level coursework. The accumulation of these course credits varies by institution and academic discipline because the courses "necessary for entry to each successive level of higher education" have been individually identified by each institution (HB 1909, Sec. 1). It was the legislature's intent to change the focus of transfer from accumulation of course credit to defining and recognizing student skills and knowledge.

Competency-based transfer is based on defining and assessing the skills and abilities students must possess to enter upper division courses in a particular discipline. In contrast to the current system, it does not necessarily involve "seat time" or the successful completion of a specified number of classes as a measure of student achievement and preparation for transfer. Rather, students must demonstrate that they have mastered the necessary knowledge through a series of assessments that certify transfer readiness.

Competency-based transfer initiatives are becoming increasingly prevalent within higher education because access to learning opportunities is greater now than at any previous time. In short, students are obtaining education differently than they did in the past. Whether students are entering college later or returning to college later in life, taking courses through interactive television or on-line, or acquiring skills and knowledge through their jobs; they are learning "anytime, anyplace, anywhere" and increasingly want academic credit for the competencies they have gained through life experience.

House Bill 1909 directs the Higher Education Coordinating Board to "recruit and select institutions of higher education to participate in a pilot project to define transfer standards in selected disciplines on the basis of student competencies". The legislation requires that the pilot project participants, in collaboration with the Higher Education Coordinating Board, "report to the higher education committees of the legislature by December 1, 2005, on the progress and

status of the pilot project. The report is to identify any barriers encountered by the project and make recommendations for next steps in developing a competency-based transfer system for higher education.

The Higher Education Coordinating Board worked with the Council of Presidents (COP) and the State Board for Community and Technical Colleges (SBCTC) to identify one public baccalaureate and two community colleges "that regularly transfer a substantial number of students to that four-year institution" to participate in the pilot project. Eastern Washington University (EWU), Spokane Community College (SCC), and Spokane Falls Community College (SFCC) volunteered to serve as the pilot project participants. HB 1909 also directed the Higher Education Coordinating Board to recruit "one or more private career colleges that prepare students in the academic disciplines selected under the pilot project". The Art Institute of Seattle and Crown College volunteered to participate.[1]

Once the participants were identified, academic leadership of these institutions worked internally and with the Higher Education Coordinating Board to identify academic disciplines. The disciplines were selected based on their student demand, employer need, volume of transfer students, and potential links with career colleges, as well as faculty willingness to participate. Elementary education, criminal justice, and computer information systems were selected.

The project was managed by a steering committee that included representatives from the Higher Education Coordinating Board, Council of Presidents, and State Board for Community and Technical Colleges, as well as faculty members, academic leadership, and staff from the pilot schools and private career colleges. The steering committee was responsible for developing a working definition of competency-based transfer that would guide the work of the faculty workgroups. In addition, the committee participated in the selection of disciplines for the pilot, the identification of faculty work groups, and the identification of proprietary partner institutions.

Faculty work groups from each of the selected disciplines met regularly and included representatives from the two-year and four-year institutions. Each group included a lead faculty member who reported monthly to the steering committee. The faculty groups were charged by the steering committee with defining the competencies required for major-specific entry at the junior level and with developing methods to assess whether students adequately met those standards.

[1] *Identifying the private career colleges was difficult and required more time than originally anticipated, which resulted in the schools being selected *after* the steering committee selected the pilot project majors. Therefore, only Crown College had an academic discipline connection to the pilot project. Representatives from both colleges, however, played integral roles in the pilot project's implementation.

Pilot Project Objectives

The steering committee agreed in March 2004 that the working definition of competency-based transfer would be, "what students need to know or learn at the lower division to properly prepare for entry into a major at the upper division". The objective of this work was to create a pilot project that explored how these competencies could be developed and assessed so they could be used as the basis for transfer evaluation and admission.

HB 1909 specified that two and four-year institutions would have separate, but closely related tasks. Section 3 directed the four-year institutions to work in collaboration with the two-year institutions to "define the knowledge, skills, and abilities students should possess in order to enter an upper division program in a particular academic discipline".

Once the competencies were defined, the institutions providing the lower-division preparation (predominantly two-year schools) were responsible for certifying that a student met the expected standards. The institutions were granted the flexibility to determine how to assess whether students met the standards; however, House Bill 1909 did specify that the assessments, "need not be based on completion of particular courses or accumulation of credits" (Section 3).

The HECB, the steering committee, and the faculty work groups were advised that no funding would be allocated to the project. Section 4 of the legislation stated that development costs for the project would be absorbed within existing institution and agency budgets. For this reason, the steering committee and faculty work groups decided that the work of the pilot project would include defining only the competencies specific to the major, rather than those gained through general education requirements. For instance, faculty did not pinpoint competencies gained through coursework in English composition, though it is part of the required coursework for transfer preparation. They did, however, identify competencies for introduction to education coursework, since it is specific to an elementary education major. Pilot projects participants agreed that identifying general education competencies would be too expensive and time consuming to be readily absorbed within existing budgets.

Faculty Workgroup Outcomes

Criminal Justice

Faculty from the Department of Sociology and Criminal Justice at EWU worked together with the faculty at SFCC and SCC to identify competencies necessary to enter the department with junior-level status. A list of faculty workgroup members is listed in Appendix A.

The group determined that they would identify competencies in two, 200-level courses at EWU specific to the criminal justice major, rather than competencies gained through general education coursework. The courses were Integrated Research Methods in the Social Sciences and

Introduction to Statistics. Two faculty committees were established at EWU to identify competencies in each subject area. They are listed below in Table 1.1. A complete listing of the competencies is included in the faculty committee's final report included in Appendix B1.

Table 1.1
Required Competencies for Students Entering Criminal Justice Majors

Course	Competencies
Introduction to Statistics	• Acquire concepts basic to descriptive statistics • Appropriately select, interpret, and calculate values of measures • Understand the areas underlying hypothesis testing and errors • Appropriately select, interpret the results, and perform necessary calculations for inferential tests.
Integrated Research Methods in the Social Sciences	• Understand the scientific method as it is currently applied in social scientific research • Understand ethics of social scientific research • Be familiar with the basic principles of disciplinary writing in the social sciences • Interpret and critique published research on a particular topic • Create a research design to explore social scientific research question • Assemble bibliography of published research

Faculty committees developed pilot tests to assess whether students had mastered the competencies listed above. The exams included multiple choice, matching, and short essay questions administered by hand (i.e. they were not computerized). The pilot tests were not integrated into classroom work, rather they were intended to stand alone to certify that students had mastered the course content. For example, if a student were to pass the tests, they would have effectively 'tested out' of the 200-level coursework and would be well prepared for entry into a Criminal Justice Major. The full examinations can be found in Appendix B1.

Once the pilot tests were developed, they were administered to three sections of the Introduction to Statistics class and one section of the Research Methods course, both at EWU[2]. The faculty committees used this testing data to develop appropriate scoring methods for each competency. Once the scoring methodology had been established, the examinations were sent to SFCC and SCC to be given to samples of community college students who intended to be Criminal Justice majors. Spokane Falls Community College administered the exam and returned ten completed tests to the faculty committees at EWU.

[2] The pilot test was given to a total of 92 students enrolled in the Introduction to Statistics course at EWU and 38 students enrolled in Research Methods.

Findings

Analysis of the pilot tests from SFCC indicate that no students achieved competency in statistics or research methods, see Table 1.2 below. However, Criminal Justice majors at SFCC are not required to take courses in statistics or research methods and likely had not been exposed to the material through coursework or life experience. This suggests that competency expectations must be clearly articulated to community college faculty, so they can align curriculum (including opportunities for self-study) to the competencies necessary for entry into four-year institutions.

Table 1.2
Results of Competency Testing for Criminal Justice Majors

School	Course	Number of Students Tested	Total Points Possible on Test	Average Points Scored
EWU	Statistics	92	18	9
SFCC	Statistics	10	18	6
EWU	Research Methods	38	30	24
SFCC	Research Methods	10	30	9

It is also of note that some students came very close to achieving transfer competency, based on their score on the pilot tests. These students had taken four or more classes in the social sciences or two classes in mathematics, suggesting that students who take more social science and math courses are higher achievers in competency testing. At a minimum, this indicates that with a modest increase of statistics and research methods content in courses, it may be possible for students to acquire a sufficient amount of knowledge to attain transfer competency. Augmenting current required coursework with self-study options could also better prepare students.

Elementary Education

The Elementary Education faculty workgroup met together for the first time on November 8, 2004, and held subsequent meetings on November 18, 2004; February 4, 2005; and March 16, 2005. The group communicated predominantly via e-mail between meetings to facilitate agreement on shared competencies. Appendix A contains a list of faculty workgroup members.

The group agreed that their main goal was to match competencies gained through the "Introduction to Education" courses taught at SCC, SFCC, and the counterpart course taught at EWU.[3] This course was identified as a 'basic survey course' that explored a broad range of issues relating to the teaching profession. It was selected for the pilot project because it not only imparts principals that lay a solid foundation for future educators to master upper-division coursework necessary to become successful educators; but it also provides enough breadth to allow students to explore a teaching career and realize it may not be the right career choice for

[3] The introduction to education course at SFCC is ED 202-Survey of Education, at SCC it is ED 201-Introduction to Education. At EWU, the course is entitled EDUC 201 – Introduction to Education.

them. Faculty members state in their final report, "the legislative goal of efficiency is better achieved when our collective students embark on the right career path early in their educational experience". Appendix B2 contains a complete version of the group's final report.

At the second meeting, faculty members began to discuss the commonalities embedded in their respective coursework. The group identified five broad subject areas covered in their introduction classes, which included the following:

- Philosophy and history of public education
- Legal, ethical, and moral issues faced by educators
- State and national standards for curricula development
- Teaching strategies and the need for continuous professional development
- Challenges of teaching to a diverse student population

Faculty then began the work of articulating competency statements based on these broad subject areas. The group also discussed how the competencies should be integrated into standards specified in the Washington Administrative Code (WAC). The faculty workgroup focused on aligning competencies for a common entry course, rather than creating a 'stand alone' assessment. Therefore, the following table lists the shared competencies for the Introduction to Education course, as well as potential assessment tools tied to course completion.

Table 1.3
Required Competencies for Students Entering Elementary Education

Competency Statement	**Assessment Tool**
Articulate a personal philosophy of education based on knowledge of historical, philosophical, and social foundations of education.	Philosophy of education essay
Explain school organizational structure and the importance of partnerships among educators, parents, students, community agencies, and potential employers.	Reading quiz and class discussion
Articulate the roles and responsibilities of educators as well as the personal and professional qualities of successful educators.	Reading quiz, class discussion, and reflection on portfolio artifacts.
Describe the legal, ethical, and moral issues related to the education of all children	Pre-practicum requirements, current issues, and school law assignments
Demonstrate an understanding of learning and human development and respect for linguistic, gender, cultural, and ethnic diversity represented among children, families, and colleagues	Lesson plan activities
Practice reflective thinking on beliefs, attitudes, and actions, as well as documenting continuous professional growth	Development of professional portfolio

Observe, identify, demonstrate, and evaluate teaching strategies, methods, and assessments that accommodate the needs of all learners in a typical classroom; relate the Grade Level Expectations and Essential Academic Learning Requirements of the State of Washington.	Development of professional portfolio
Make tentative decision on education as a career choice	Development of professional portfolio

Barriers

The faculty group identified three barriers to completing the pilot project. The first related to EWU faculty availability and meeting attendance. Given that many of the EWU faculty members were absent from the project meetings, the team had to rely on course syllabi, rather than in-depth cross-institutional conversations. The group did not have a list of specified competencies from EWU, which negatively impacted their ability to refine the broad competencies listed above. This suggests that expansion of the project would entail a commitment, from both two and four-year sectors, to honor professional obligations throughout the duration of the project.

The lack of faculty participation was likely related to the second barrier; the fact that the project did not include a budget for faculty incentives, meeting preparation, and meeting time. The lack of funding limited the project scope. For instance, faculty members concentrated their efforts on competencies specific to the major rather than on general education competencies because project tasks were added to the regular duties of faculty with full workloads. Though this barrier was specifically identified in the final report of the Elementary Education workgroup, each participating discipline noted that dedicated funding was necessary to expand competency-based transfer to more disciplines and institutions.

The third barrier related to the use of common terms, specifically the “disconnect” between terms used in a legislative environment versus those used by educators. National trends toward performance based programs in teacher education have begun to replace terminology used in competency-based models. Though the frameworks share overlapping themes, semantic differences could lead to different work products and outcomes.

Computer Information Systems

Faculty from EWU, SCC, and SFCC met together to explore competency-based transfer into an accredited computer information systems program at a four year institution at the junior level. A list of participating faculty can be found in Appendix A. During the time that faculty conversations regarding competency-based transfer were taking place, the Computer Science Department at EWU was in the midst of the accreditation renewal process. Academic leadership

decided to update its curriculum to conform more closely to national standards in computer science education.

The new standards adopted by EWU followed the model set by the Association of Computing Machinery (ACM) Computing Curriculum for 2001 (CC2001). CC2001 is the de-facto standard for the courses and topics that should be taught in a computer science degree.

The body of knowledge is organized hierarchically into three levels. The highest level is the "area" . Each area, with the exception of Computational Science and Numerical Methods, is required as part of the core national standard.[4] The areas are broken down into smaller divisions called "units", and the units are broken into a set of topics, which form the basis for core and elective coursework. Given the level of detail specified in the recommendations for the national standard, specific information regarding the competencies within each area can be found at http://www.sigcse.org/cc2001/.

As a result of the computer science program revision, EWU is writing descriptions for all courses in the revised program. The new descriptions for freshman, sophomore, and entry-level junior courses are being shared with faculty at SCC and SFCC. With the new standards-based information, community college faculty can align their coursework with the expectations for entry at EWU. Further, community colleges will have the ability to prepare their students for transfer without regard to the number of courses necessary for entry.

As with other disciplines, assessment is a key component in validating students' knowledge. The computer science department at EWU has already developed and is administering an advancement exam. The exam is used to certify that students have mastered freshman- and sophomore-level competencies. All students (including both direct entry and transfers) are required to pass the exam before they can request junior status in the department and begin taking junior-level classes at EWU. The material on the advancement exam has been made available to SCC and SFCC, so they can align their curriculum to better prepare their students for the exam. The faculty workgroup agreed that adding additional testing at the community college level is also necessary.

Barriers

The faculty work group relayed several concerns regarding potential barriers to increasing the scope of using competencies as the basis for transfer evaluation and admission. First, program content varies widely on an institution by institution basis, and faculty make decisions regarding what to include and exclude in courses. Thus, the body of knowledge required for entry is necessarily different.

[4] The CC2001 Task Force has defined the core requirements as those for which there is a broad consensus that the corresponding material is essential to anyone obtaining an undergraduate degree in the field. Units that are taught as part of the undergraduate program but which fall outside the core are considered to be elective. (ACM, CC2001 Task Force, Chapter 5, Section 1.1)

Second, even if a fundamental body of knowledge is demonstrated, programming language for core coursework used at the four-year institutions differs. Transfer students would be required to take remedial coursework or self-study electives in the language used by the four-year institution, despite demonstrating mastery of core curricular requirements.

Third, there could be friction between institutions over who gets to teach courses. In the face of rising education costs and shrinking resources, four-year institutions cannot sustain offering more costly, upper-division courses without the benefit of enrollment in cost-effective lower division courses.

Finally, the faculty workgroup noted that some four-year institutions may simply have standards beyond what community college students can readily attain. These four-year institutions may be unwilling to participate in competency-based transfer models.

Recommendations

Participants in the pilot project saw value in a number of the steps involved in identifying competencies and student assessments. Faculty developed a better sense of the commonalities and differences embedded in their curricula. Ongoing communication between two- and four-year colleges sparked by this pilot project helped faculty to align curriculum and program expectations across institutions. This type of collaboration is also happening outside the competency-based transfer pilot through informal relationships and specific initiatives, like the development of targeted associate degrees for transfer students in specific academic fields.

Washington State already has a relatively efficient transfer system. Research by the State Board for Community and Technical Colleges indicates that community college transfer students take an average of one additional quarter of credits more than their direct-entry counterparts on their way to a baccalaureate degree.[5] This demonstrated efficiency represents a significant finding, given that transfer students enter the state's higher education system in a different institution from where they finish. Developing a new statewide competency-based transfer system would take significant investment of funding, and faculty and staff time to address an efficiency issue that may not be as significant as originally thought. Other states that have undertaken this approach have spent several years and millions of dollars doing so.

The question then becomes, would the significant investment required to develop a statewide competency-based transfer system be justified given the potential for relatively modest returns? Using performance-based measures as a basis for transfer would be easier in some disciplines than others, but would still represent a significant challenge for the academic disciplines involved. For instance, those disciplines that already have defined state or national standards must still agree on how to assess them—a process that can often be the most difficult aspect of

[5] Source: State Board for Community and Technical Colleges and public university study, *Role of Transfer in the Bachelor's Degree at Washington Public Baccalaureate Institutions*, 2003.

competency based transfer. If the legislature does find that the competency pilot should be expanded, doing so in targeted disciplines would be a logical first step.

The largest (and most expensive) challenge in developing a new transfer system would be the definition and assessment of general education requirements. Many disciplines have extensive pre-major requirements fulfilled by general education coursework. This process would necessarily involve two- and four-year faculty from a wide swath of disciplines, i.e., composition, mathematics, social sciences, foreign language, to commit to several years of work. For example, faculty who developed competencies and assessments several years ago for the Western Governors University, met once a month for two consecutive days for three to four years. Costs associated with each meeting included faculty release time, staff time to plan and coordinate meetings, as well as expenses for facilities, food, and transportation.

Academic leadership and faculty at each four-year institution in Washington would need to replicate this process, since each is responsible for developing the coursework for their institution. Though there are broad similarities in curriculum across institutions, faculty members have the freedom to design their own competency expectations and curriculum to ensure that the quality of instruction in each discipline meets the requirements set by each institutions governing body. Thus, adopting a standard list of competencies developed by another group (Western Governor's University) for all public four-year institutions in Washington, would not be feasible.

Most competency-based initiatives are too new to have produced outcome data that would indicate whether students are actually moving through the system more efficiently. Thus, policy makers have little data with which to evaluate the degree to which efficiency would be increased given the large investment. As more data is developed, cost/benefit analyses could be conducted to assess whether the appropriations would result in helping more students attain their degree in the most cost effective way possible. Therefore, it is the Higher Education Coordinating Board's recommendation to delay the expansion of the pilot project to other disciplines and institutions, until outcome data can be analyzed from groups, such as the Western Governors University, who have defined general education requirements.

However, if the legislature does move forward to expand the pilot project to other institutions and disciplines, several recommendations from the faculty work groups should be followed.

Next Steps for Policy Makers:

Allocate resources for planning at the state level

The lack of funding for the pilot project appears to have prevented the participating institutions from making in-depth commitments to address the breadth of issues necessary to expand competency-based transfer to other disciplines and institutions. All pilot project faculty groups stated that identifying, assessing, and maintaining the applicability of competencies as the basis for transfer will require an on-going monetary commitment from the state. At a minimum,

funding to grant faculty course release time so they could adequately prepare for and participate in on-going planning meetings and committees, is essential if the project is to continue. Funding would also be necessary for travel, meeting facilities, and staff time to coordinate meetings. When HB 1909 was introduced in 2003, the cost of the pilot project was estimated at $80,000 per year for one baccalaureate institution and two community colleges to define competencies specific to three majors.

Develop oversight committees to designate and update competencies and assessments

Accurately defining and assessing the skills and abilities that undergraduates must master to transfer to a four-year institution is the key element in successful competency-based initiatives. Therefore, policy makers should instruct the public baccalaureates and community colleges to form standing committees to designate and update competencies and student assessments. The participants should mirror the pilot projects discipline-specific faculty committees, though membership should be expanded to include more faculty members, as well as external stakeholders. Their responsibilities could include the following:

- Establishing specific competencies required for all students for graduation;
- Maintaining the currency and quality of those competencies;
- Establishing the assessments that will be used to measure the competencies; and,
- Participating in program evaluations and accreditation renewals.

Next Steps for Institutions

Develop competencies for general education requirements

While each major includes a core of coursework specific to a particular department, many of the requirements for upper-division major entry are fulfilled through general education requirements. The process of developing the competencies and the assessments is a long-term prospect. Based on nationally-established competency-based transfer models, on-going two- and four-year faculty conversations (both within and across disciplines) must be coupled with input from external stakeholders, like employers and outside professional practitioners, to identify general education competencies. In other settings, this process has taken roughly four years to complete.

Expand opportunities for ongoing communication between two-year and four-year faculty

Solid communication between sectors facilitates appropriate and timely adjustments to competency expectations and curricula. Faculty must honor their professional commitments to adequately prepare and attend planning meetings throughout the duration of the project. Further conversation could also help align programs across sectors to ensure that community college students are developing the appropriate competencies required for admission into four-year

institutions. On-going communication would also help faculty to adapt curricula to reflect changes to state and national standards. It is important to note that this step is already occurring outside the context of this pilot. Faculty and staff have been meeting via the development of the 'major ready pathways' as mandated in House Bill 2382. Communication between the sectors should continue, regardless of whether the competency based transfer pilot is expanded.

The departments at four-year institutions must develop a standard body of knowledge required for entry into their programs

To ensure that competencies are both valid and reliable, with the aim of being fully "transportable" between institutions, competencies must be described in a uniform manner so they have the same meaning in a variety of contexts and for a variety of audiences. This work will include:

- Standardization of terminology so students, faculty, employers, and policy makers have a common understanding of shared terms and definitions
- Competencies must be defined at a sufficient level to be accurately assessed and aligned with state and national standards

Communicate expectations to students early in their community college careers

Faculty and staff must communicate the specific skills and abilities that students must master if they intend to continue their studies at a four-year institution. In some cases, students may need to augment their core coursework with self-study, depending the discipline or institution to which they anticipate transfer.

Appendix A

Competency Based Transfer Workgroup Participants

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Appendix B1

Final Report: Criminal Justice

Report
Criminal Justice Competency-Based Transfer Project
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Overview of Project

The Department of Sociology and Criminal Justice at Eastern Washington University participated in a project with community colleges in Spokane and Bellevue, Washington to determine the feasibility of measuring competencies in Criminal Justice to determine the transfer of credits toward a four year degree. It was planned that the competencies from three courses be specified and measured by paper and pencil tests in a pilot test of students at EWU, SFCC, SCC and BCC. The courses were: Introduction to Criminal Justice, Integrated Research Methods in the Social Sciences, and Introduction to Statistics. Due to the loss of a significant faculty member in Criminal Justice program at the beginning of the project, it was determined to remove the Introduction to Criminal Justice course from the pilot test and postpone until the following year.

Two committees were established at EWU, the Statistics Committee and the Research Methods Committee, to develop the expected competencies and a pilot examination. Once the examinations were developed, they were taken by three sections of the statistics class at EWU (92 students) and one section of the Research Methods course (38 students). These data were used to help determine the scoring methods for competency. The pilot tests were sent to the community colleges to be given to samples of students who plan to be Criminal Justice majors. Ten of these exams were taken by SFCC students and returned. We are waiting for the samples from SCC and BCC. Using the exams that have been returned, an analysis was done to determine the feasibility of this method of transfer. It was determined that students are not presently getting enough statistics or research methods in the community colleges to attain competency transfer. However, it was clear that students who had taken more social science courses and math courses were higher achievers in the competency testing. It may be possible to add more statistics and research methods content to present courses or to provide a self-study approach for students to prepare for these competencies.

Summary of Accomplishments

Both the Statistics Committee and the Research Methods Committee developed a set of competencies to be measured and the pilot tests for these competencies. The sample pilot tests are included in the appendices at the end of this report. The specific competencies with the designated questions for measurement are listed in the tables below.

Table 1

Competencies for Introductory Statistics

1. Acquire concepts basic to descriptive statistics that allow
   a. classifying variables
   b. organizing raw data into tables and graphs

2. Appropriately select, interpret, and calculate values of measures that describe
   a. key properties of distributions
   b. a score's relative standing in a distribution
   c. the degree of association between pairs of variables

3. Understand the ideas underlying
   a. hypothesis testing
   b. errors in testing hypotheses
   c. statistical power

4. Appropriately select, interpret the results of, and perform necessary calculations for inferential tests that
   a. compare a single sample mean to a known population mean
   b. compare 2 sample means
   c. compare 2 or more sample means of a single factor (One-way ANOVA)
   d. compare means of 2 factors in a factorial (Two-way ANOVA) design
   e. assess the relation between 2 nominally-scaled variables

A set of 18 multiple-choice questions was developed to assess these four competency areas. The correspondence between the competency areas listed in Table 1 and the assessment questions is shown in Table 2. The questions can be found in Appendix A.

Table 2

Statistics Competencies and Related Pilot Test Questions

Question #	Competencies	
5,17	1a.	classifying variables
9,16	1b.	organizing raw data into tables and graphs
2,6	2a.	key properties of distributions
1,8	2b.	a score's relative standing in a distribution
7,14	2c.	the degree of association between pairs of variables
4	3a.	hypothesis testing
3,11	3b.	errors in testing hypotheses
15	3c.	statistical power
none	4a.	compare a single sample mean to a known population mean
18	4b.	compare 2 sample means
13	4c.	compare 2 or more samples of a single factor
10	4d.	compare means of 2 factors in a factorial (Two-way
12	4e.	assess the relation between 2 nominally-scaled variables

The Research Methods Committee developed 6 measurable competencies and a four part examination to measure them. They are listed in Table 3 below.

Table 3

Research Methods Competencies and Performance Measures

Conceptual Area	Competencies	Performance Measures
Philosophy of Methods	1. Students will understand the scientific method as it is currently applied in social science research. 2. Students will understand ethics as applied to social sciences research.	Matching Part 1 5 Points The students should be able to match the different paradigms with the defining questions.
The Language of Methods	3. Students will be familiar with basic principles of disciplinary writing in the social sciences	Definitions Part 2 10 Points Random selection of 5 essential terms that student must define – 70% required.
Methodological Concepts	4. Students will interpret and critique published social science research on a particular topic.	Multiple Choice Part 3 5 multiple choice Questions – 5 Points
Application	5. Students will be able to create a research design/ plan for exploring a social sciences research question. 6. Students will be able to assemble a bibliography of published social sciences research on a particular topic.	Situational Short Essay Part 4 Worth 10 points, student must score at least a 7.

Results and Analysis

The results of the testing of EWU students in the designated classes and the SFCC students who are planning to major in Criminal Justice but have not had the designated classes are listed below in Table 4.

Table 4

Results of Pilot Competency Tests

School	Course	Number	Mean	Std. Dev.	Median
EWU	Statistics	92	8.48	2.32	9
SFCC	Statistics	10	5.90	1.37	6
EWU	Research Methods	38	24.28	3.58	24
SFCC	Research Methods	10	8.80	5.07	9

Note: EWU number of students is high because whole classes were used; SFCC number of students is low because only a sample of students was taken.

As the results indicate, no SFCC students have achieved competency in statistics or research methods at this time. This is not surprising, since there are no required courses in statistics or research methods at the community colleges for criminal justice students. There were some students who were close to achieving competency. These students had three or more classes in the social sciences (Anthropology, Sociology, Psychology) or math (Math 115). This indicates it may be possible for students to acquire a sufficient amount of knowledge in the courses available and with guidance for self-learning could pass the competency examinations without taking the specific required classes in statistics and research methods. See Table 5 on the following page.

Table 5

Competency Results Compared to Number of Relevant Classes Taken by SFCC Sample

Number of Relevant Classes Taken	Statistics Score	Research Methods Score
4 classes (no math)	5	19*
4 classes (no math)	4	14
2 classes (with math)	8*	9
2 classes (no math)	6	9
2 classes (no math)	7	4
2 classes (no math)	7	5
2 classes (no math)	4	10
2 classes (no math)	5	11
1 class (no math)	6	4
1 class (no math)	7	3

* near competency

The students with four social science classes had scores on the research methods examinations that were near competency. The one student with a Math 115 class also was close to achieving competency in the statistics examination. These results will be clearer when we get further samples returned.

Problems Encountered

The major problem with this approach is that competency tests need to be developed, coordinated with course content and objectives, validated, administered, and scored, with security measures in place. For the pilot test we used existing committees at EWU to do this process. If this becomes a standard process, then structure will have to created to coordinate and monitor these procedures.

Recommendations for Project Continuation

This is a viable approach to transfer if these recommendations are followed:

(1) All competencies must be distributed to community college students early in their community college careers so that they can set learning goals.

(2) Social science course work at the community college level should be encouraged to include some work concerning the competencies in these two areas – research methods and statistics.

(3) The competencies need to be distributed to faculty teaching in the social sciences areas.

(4) A test bank needs to be developed with items that have been tested through item analysis to assure validity and discrimination.

(5) This approach will work for Criminal Justice but may not work in a discipline that requires a stronger emphasis in research methods and statistics, e.g. Psychology and Sociology/

(6) Coordinating committees need to be established at the community colleges and the four year institutions to run this process.

Appendix A

Statistics Competency Assessment

For each question below, circle the letter (a-d) that corresponds to the best answer.

1. If scores in a distribution are converted to z-scores, the mean of the z-distribution will be
   a. 1
   b. the same as the original population's meanZ
   c. 100

2. The measure of central tendency that reports the value of the score in a distribution that occurs most frequently is known as the
   a. median
   b. mean
   c. mode
   d. root mean square

3. Rejecting a null hypothesis that is true is known as
   a. the power of a test
   b. a type I error
   c. a type II error
   d. beta

4. A theoretical distribution of possible values of a sample statistic is called
   a. the standard bell curve
   b. the standard error of the mean
   c. a sampling distribution
   d. a sample

5. The number of students in any class is an example of a
   a. continuous quantitative variable
   b. a discrete quantitative variable
   c. an ordered qualitative variable
   d. an unordered qualitative variable

6. The best measure for describing the variability of a skewed quantitative variable is the
   a. range
   b. variance
   c. standard deviation
   d. interquartile range

7. The r^2 value of two perfectly correlated variables will be
   a. -1
   b. 1
   c. 0
   d. none of the above

8. The percent of scores in a distribution that have values equal to or less than the value of a given score is known as the
   → a. percentile rank
   b. z-score
   c. percentile point
   d. none of the above

9. A suitable graphical technique for displaying the distribution of heights of students in a class is
   → a. a bar graph
   b. a pie chart
   → c. a histogram
   d. a Venn diagram

10. In a two factor analysis of variance, the effect of one factor on the dependent variable, disregarding the effect of the other factor on the dependent variable, is know as
    a. the null effect
    b. a simple effect
    c. an interaction
    → d. a main effect

11. In the conclusion of a hypothesis test, the expression, $p < .05$ indicates
    a. the probability of the conclusion being correct is less than 5%.
    b. the probability of having made any error is less than 5%
    c. the probability of having made a type 2 error is less than 5%
    → d. the probability of having made a type 1 error is less than 5%

12. A chi square test of independence is used to determine if
    a. a single mean differs from a known value
    b. two normally distributed populations have different means
    c. two normally distributed populations have different variances
    → d. two nominally-scaled variables are related

13. An appropriate statistical test to determine if the means of three independent, normally distributed populations are not all identical is
    → a. the analysis of variance
    b. a t-test for independent samples
    c. a t-test for paired (correlated) samples
    d. a Mann-Whitney U test

14. Which of the following statistics expresses the proportion of variance in one variable that we can explain or remove using knowledge of another variable?
    a. t
    b. z
    c. F
    → d. r^2

15. The power of a statistical test is affected by
    a. the sample size
    b. whether a test is directional or non-directional
    c. the size of alpha
→ d. all of the above

16. In the following table:

Class Interval	Midpoint	Frequency	Relative Frequency
33-35	34	1	.10
30-32	31	3	.30
27-29	28	4	.40
24-26	25	2	.20
		N=10	

the size of each class interval is
    a. 2
    b. 2.5
→ c. 3
    d. 3.5

17. An example of a nominal measurement scale is
    a. running speed as measured by order of finishing a race
    b. temperature as measured in degrees Fahrenheit
→ c. a person's gender as measured by the values male and female
    d. speed of a car as measured in miles per hour

18. Students' blood pressure is measured both before and after they exercise. The best test to perform to determine if exercise affects blood pressure is a
    a. single sample z-test
    b. two-factor ANOVA
    c. t-test for independent samples
→ d. t-test for paired (correlated) samples

Appendix B

Methods Competency Based Assessment Pilot Exam
College of Social and Behavioral Sciences: EWU
May 2005

Part 1: Matching (5 points)

Instructions: Matching the following questions with the conceptual terms

1. ____ Do we need others to be ourselves?
2. ____ Do you have to be one to know one?
3. ____ Do people in different cultures live in different worlds?
4. ____ Does our culture or society make us what we are?
5. ____ Must we assume others are rationale?

A. Rationalism

B. Objectivism

C. Perspectivism

D. Holism

E. Atomism

F. Solipsism

G. Multiculturalism

Part 2 Definitions (10 points)

Write a short definition for the term below.

6. Causation

7. Confounding factor

8. Focus Group

9. Operational Definition

10. Validity

Part 3: Multiple Choice (5 points)

Instructions: Choose the best answer

11. Which is an advantage of ethnographic research?

A. You can each large numbers of people
B. You can see the big picture
C. You can develop a relationship with the participant
D. You can control subject matter

12. Triangulation is the use of more than one method in a study. We do this for many reasons. The most important is:

A. It helps us to quantify the data through the law of triangles.
B. It helps us to be more efficient in our research.
C. It helps us to verify the findings from one method to another
D. It helps us to get the research published
E. It helps us to add data to the study.

13. Which is the better size for a focus group?
A. 2-4 participants
B. 5-6 participants
C. 7-12 participants
D. 10–15 participants

14. For causation to occur two things must happen. The first is that you have a correlation of some sort between the variables. The second is:

A. The two things are related in some way
B. You have a theoretical reason to believe that there is a causal order
C. The population you are studying has been correlated
D. The sample you are studying is small
E. You have evidence that shows the condition of confounding variables.

15. Which step is the most important of the 6 steps of planning?

A. Develop and Refine Your Questions
B. State Your Purpose
C. Think about and plan the Logistics
D. Anticipate Problems
E. Develop Major Agenda Items
F. Structure the Questions in a Logical Order

Part 4: Essay (10 Points)

Question 1. Part 1. You have been asked by the Director of the Alumni Association at EWU to help to conduct a series of Focus Groups of alumni. But everyone in the Alumni Association does not understand what a focus group is.

You are going to go to a meeting where you will define what focus group research is and give an example of how to use it.

The Director of the Alumni Association has asked you to prepare a handout describing the process in some detail.

Question 1. Part 2. In the same meeting you will be asked to tell the group the best way to get a sample of participants for the study. You should assume that the Focus Groups are to be conducted in Spokane, the Tri Cities and Seattle. Assume that the Alumni Association is only interested in people who have graduated in 1990 to the present day.

Make some suggestions about how many groups in the different locations, their make-up and what some of the problems might be. Also lay out what questions you would ask them to help you to answer the question.

Appendix B2

Final Report: Elementary Education

General Summary:

The Elementary Education core group (consisting of faculty and deans) met together for the first time on Monday, November 8, 2004. Our first main goal was identified: Competencies of Education 201 should match competencies of its counterpart course at EWU (meeting minutes 11/8/04 and 11/18/04). We thus agreed to develop shared competencies for the Introduction to Education course taught at both SFCC/SCC and at EWU. The selection of this particular course also made sense from the legislative point of view. A summary of the legislative intent of this project includes:

1. Establishing shared competencies in appropriate courses leads to consistency of general core courses and eases transfer among institutions;
2. Pinpointing competencies allows institutions to offer credit to those who *demonstrate competencies* by nontraditional means, and this may eliminate duplicative costs to the state for work already completed by students;
3. To be provided with answers to the following questions from the standpoint of elementary education degree preparation: "What do students need to know or learn at the lower division to properly prepare for entry into a major/program at the upper division?" "How will the competencies be assessed?"

Selection of the Introduction to Elementary Education course for this project also made sense from the perspective of what the students need. Students at the community college level are often in the process of exploring career choices while earning their Associate of Arts degree. This exploration is often true of incoming freshman at EWU as well. In addition to laying a solid foundation for our future educators, the Introduction to Education course allows students to explore teaching careers in an in-depth and thought provoking way. For many students, this leads to a firm commitment to teaching. Many students also learn from the basic survey course that the education courses to follow at the upper division level are relevant, and that these future courses include competencies that students should master in order to become successful educators. For a smaller group of students enrolled in Introduction to Education, the course affords enough depth for students to realize ***early on*** that a teaching career is **not** for them. The legislative goal of efficiency is better achieved when our collective students embark on the right career path early in their educational experience.

During the November 2004 meeting the team also decided on two long-term goals that could result from our collaborative effort. The additional goals included:

1) Learning communities: EWU will explore using learning communities for education majors. Math and science would be a part of this, along with a new biology course targeting education majors. An education survey course could be linked to biology and study skills in preparation for the West E. Work has already between faculty in the

Science and Math areas to develop courses target and improve K-12 teacher preparation programs in these subject areas. *SFCC has already offered learning communities that link study skills to academic areas. In addition, SCC successfully offered a team taught combination of Environmental Biology coupled with Math for Liberal Arts, Spring Quarter 2005, and will continue to do so on an annual basis.*

2) A commitment to work together and seek flexible transfer opportunities that have a competency — based emphasis.

The next meeting occurred on February 4, 2005. Although the meeting was poorly attended, the attendees began to discuss the commonalities embedded in our respective Introduction to Education courses. The team quickly realized that for all three institutions the course is a survey course that explores the philosophy and history of public education, as well as the legal, ethical, and moral issues faced by educators. The course also allows college students to explore the field of contemporary teaching, including state and national standards for curricula, the need for continuous professional development of teachers and teaching strategies, and the challenges of teaching to a diverse student population on a variety of levels. We agreed to set another meeting time and to "collaborate around the development of a common competency-based course, EDUC 201 Introduction to Education, for our three institutions."

The third meeting occurred at EWU on Wednesday, March 16, 2005. The team mapped out broad and general competency statements and also discussed how state and national teaching standards should be integrated into the shared course competencies. There were not enough EWU faculty in attendance to reach a clear consensus on this issue.

At this point, the team relied largely on e-mail correspondence to agree upon shared competencies.

Barriers and Recommendations:

Three barriers were obvious. First, meeting attendance proved to be a barrier for this project. The team attempted to rely on "traditional" course syllabi from EWU faculty (in the absence of meeting attendees from EWU) and in lieu of specified competencies. This made completion of the task nearly impossible.

In the end, the community college faculty modified the short list of broad competencies by including brief recommendations for common assessments. The final list of competencies also relies upon the competencies set by the State of Washington and OSPI, as well as the standards set by INTASC (The Interstate New Teacher Assessment and Support Consortium). Additional refinement and elaboration may continue to occur for the EDUC 201 course. The second barrier relates to the use of common terms—namely, a discrepancy between terms selected by the Washington State Legislature for this project and the terms used by educators surrounding the semantic equivalent to what "competency" means. In brief, the nationwide trend toward standards and performance based programs in teacher education has begun to replace terminology used in competency-based models. While these frameworks share many overlapping themes and concepts it will be worthwhile to acknowledge the differences and agree on basic

foundational terms. Such consensus will be necessary as we explore the "benchmark" approach for the Introductory Education class and then define portfolio contents to verify meeting that benchmark.

The third barrier relates to the fact that the project did not include a budget for meeting preparation and meeting time. This lack of funding limited the project scope as it was simply added on to the regular duties of participants with full workloads. We recommend that resources be allocated for planning at the state level. Funding would ideally allow a series of sessions, perhaps even a two day working retreat that would afford time to carefully integrate standards and performance based benchmarks. Such time could also allow a good dialogue on vitally important general education questions.

Locally, we recommend additional meeting sessions on our shared education courses. Invitees should include the entire EWU faculty who teach the "shared" course and meeting attendees should confirm and honor their commitment. In addition, when competencies are brought to a specific level and performance indicators delineated at the university level, then community college faculty can respond as appropriate. As for the Introduction to Education course specifically, we further recommend that state and national standards be seriously considered at all levels of teacher preparation, as these standards are the current "drivers" of what K-12 teachers need to know in order to succeed.

Finally, we recommend further collaboration between the CCS district and our partners in higher education at EWU, especially as changes occur in our respective teacher education programs. There is great value in working together and learning about the nature of transfer and the effects of transfer policies and practices upon the student-citizens we seek to share and serve.

Shared Competencies for the Basic Introductory Education Course:

Upon completion of this course (at SFCC the course is ED 202-Survey of Education, at SCC it is ED 201-Introduction to Education), students will:

1. Articulate a personal philosophy of education based on knowledge of historical, philosophical and social foundations of education;

Assessment: Philosophy of education

2. Explain school organizational structure and the importance of partnerships among educators, parents, students, and community agencies and potential employers.

Assessment: Reading quiz and class discussion

3. Articulate the roles and responsibilities of educators as well as the personal and professional qualities of successful teachers.

Assessment: Reading quiz, class discussion, and reflection on portfolio artifacts

3. Describe the legal, ethical and moral issues related to the education of all children;

Assessment: Pre-practicum requirements, current issues and school law assignments

5. Demonstrate an understanding of learning and human development, and respect for the linguistic, gender, cultural and ethnic diversity represented among children, families and colleagues

Assessment: Lesson plan activities

6. Practice reflective thinking on beliefs, attitudes and actions, as well as in documenting and demonstrating continuous professional growth;

Assessment: Development of professional portfolio

7. Observe, identify, demonstrate and evaluate teaching strategies, methods and assessments that accommodate the needs of all learners in a typical classroom; and relate to the Grade Level Expectations and Essential Academic Learning requirements of the state of Washington.

Assessment: Development of professional portfolio

8. Make tentative decisions on education as a career choice.

Assessment: Development of professional portfolio

Appendix B3

Final Report: Computer Science

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SUBJECT: Computer Science Competency Based Transfer Draft

DATE: Wednesday, January 18, 2006

The following document summarizes the progress made in exploring Competency Based Transfer (CBT) in Computer Science (CS) between Spokane Community College (SCC), Spokane Falls Community College (SFCC), and Eastern Washington University (EWU).

Update of Progress

Transferring to an accredited computer science program at a four year institution at the junior level is ambitious. A bachelor of science in computer science (BSCS) typically requires one year of calculus and a one year science sequence (usually physics or chemistry) before many junior level computer science courses can be taken. At EWU, the BSCS requires at least 84 credits at the freshman and sophomore levels (Appendix A), many of which are not in the computer science department. Furthermore, these credits do not include many of the necessary general education core requirement (GECR) courses. These add 20 more lower division credits. Thus, the number of credits required to achieve junior status is at least 104.

The focus of CBT is not on the number of courses and credits, but an acceptable body of knowledge that demonstrates required proficiency. In the interests of simplicity, time, and productivity, it was decided at the October CBT meeting to focus on just computer science courses and/or the body of knowledge required in this area to transfer in at the junior level. While there are many outside requirements, a good number of these are somewhat standard between community colleges and four year institutions (Calculus I, II, and III, Calculus based Physics, etc.), so the possibility of giving credit for these courses for the purposes of CBT may not be difficult.

The CS department at EWU recently underwent accreditation renewal and decided to update its curriculum to conform more closely to national standards in computer science education. The model followed was the Association of Computing Machinery (ACM) Computing Curriculum for 2001 (CC2001). CC2001 is the de-facto standard for the courses and topics that should be

taught in a computer science degree. More information about CC2001 can be found at http://www.sigcse.org/cc2001/. It should be noted that there is a draft for CC2005, but its contents are very similar to CC2001. More information about CC2005 can be found at http://www.acm.org/education/curricula.html#CC2005.

As a result of program revision, EWU feels very strongly that the body of knowledge required in their program is representative of CC2001 specifications. EWU is writing syllabi for all courses in the revised program. Draft syllabi for freshman, sophomore, and the entry junior level course are being made available to SCC and SFCC. With this information, it is possible for the community colleges to prepare their students for transfer without regard to the number of courses.

A key component to validating a student's knowledge is assessment. At EWU, students are currently required to pass an advancement exam before taking senior level courses. With the new curriculum, students will not be allowed to take junior level courses until they have satisfied the exam requirements.

Any incoming student to EWU that demonstrates the required body of knowledge (via course work at the community college level), and passes the advancement exam, is positioned to request junior status in the department. SCC and SFCC are examining assessment measures as well to verify student preparedness. EWU will make the material on its advancement exam available to SCC and SFCC so they might better prepare their students for the exam.

SCC, SFCC, and EWU are hopeful that the above measures will facilitate CBT in CS. EWU's updated curriculum, based on national standards, can be used as a model for other four year institutions for purposes of CBT should those institutions desire. Assessment is an important component to CBT and should be implemented at both levels.

Concerns

On an institution by institution basis, program content can vary widely. Decisions of what to include and exclude in courses are made by individual faculty, course committees, or department consensus. The body of knowledge required is necessarily different because of this.

Even if a fundamental body of knowledge is demonstrated, the possibility remains that a CBT student won't be prepared because the programming language used at the four year institution for core work differs. It could require a remedial course or time for self-study in the language used at the four year school.

Computer Science departments nationwide are experiencing drops in enrollment. As the count of Full Time Equivalent Students (FTES) becomes more of a concern, there could be friction between institutions over who gets to teach the courses. The higher costs in offering upper division courses cannot be sustained by four year institutions without enrollment in cost-efficient lower courses.

Some four year institutions may have standards beyond what community college students can normally attain. These four year institutions may be unwilling to accommodate CBT.

Conclusions

CBT can work for computer science provided:

- there is a standard body of knowledge that is accepted by the four year institution
- required courses outside computer science are validated for the purposes of CBT
- assessment exists to validate student preparedness and sufficient body of knowledge

Further exploration is necessary. As a next step, it would be productive to include additional institutions in the process.

Appendix A

- **Bachelor of Science in Computer Science (BSCS) (139-150 credits)**
  - ABET accredited
  - Student earns minor in Physics and minor in Mathematics
  - Can be completed in four years, but should expect to take five
  - Very rigorous
  - Strong degree that is a stepping stone to both industry and advanced degrees in computer science
  - Required 100 and 200 level courses, their credits, and their pre-requisites (at least 84 credits total)
    - CSCD 205: Programming Principles 1 Lab (1 credit; concurrent enrollment in CSCD 225)
    - CSCD 225: Programming Principles I (5 credits; concurrent enrollment in MATH 105 (pre-calculus) or math proficiency, CPLA 100 or 120 (basic literacy I))
    - CSCD 226: Programming Principles II (5 credits; CSCD 225, MATH 105 or math proficiency)
    - CSCD 228: Introduction to Unix (2 credits; CPLA 100 or 120)
    - CSCD 229: C Programming Language (3 credits; CSCD 226, CSCD 228, CSCD 260 (micro-assembly), math proficiency)
    - CSCD 260: Micro-Assembly language (3 credits; ENGR 160 (digital circuits), CSCD 225, MATH 105 or math proficiency)
    - CMST 200: Intro to Speech Communications (4 credits)
    - ENGR 160: Digital Circuits (4 credits; MATH 104 or equivalent)
    - ENGR 250: Digital Hardware (2 credits; ENGR 160)
    - ENGL 201: College Composition (5 credits; ENGL 101)
    - ENGL 205: Introduction to Technical Writing (5 credits; ENGL 101 or 201)
    - MATH 161: Calculus I (5 credits; MATH 106 (pre-calculus II) and ENGL 100)
    - MATH 162: Calculus II (5 credits; MATH 161)
    - MATH 163: Calculus III (5 credits; MATH 162)
    - MATH 225: Foundations of Mathematics (5 credits; MATH 161)
    - MATH 231: Linear Algebra (5 credits; MATH 106)
    - PHYS 151: General Physics I (4 credits; concurrent enrollment in MATH 161)
    - PHYS 152: General Physics II (4 credits; PHYS 151, concurrent enrollment in MATH 162)
    - PHYS 153: General Physics III (4 credits; PHYS 152, concurrent enrollment in MATH 163)
    - PHYS 161: Mechanics Lab (1 credit; concurrent enrollment in PHYS 151 recommended)
    - PHYS 162: Heat and Optics Lab (1 credit)
    - PHYS 163: Instrumentation Lab I (1 credit)

- One course from the following:
    - BIOL 171: Biology I (4 credits) **and** BIOL 270: Biological Investigation (3 credits)
    - CHEM 151: General Chemistry (5 credits; CHEM 100 or one year in high school, MATH 104)
    - GEOL 120: Physical Geology – The solid earth (5 credits; 1 year high school chemistry, MATH 104 or equivalent)
    - GEOL 121: Physical Geology – Surficial Processes (5 credits; GEOL 120 or 100, CPLA 100, MATH 104 or equivalent)
    - PHYS 221: General Physics IV (4 credits; PHYS 153)

RESOLUTION NO. 06-03

WHEREAS, The legislature and governor enacted a statute in 2003 (RCW 28B.76.720) that directed the Higher Education Coordinating Board to recruit and select institutions of higher education to participate in a pilot project to define transfer standards in selected academic disciplines on the basis of student competencies; and

WHEREAS, The Higher Education Coordinating Board was directed to report to the higher education committees of the legislature by December 2005 regarding the progress and status of the pilot project; and

WHEREAS, The Higher Education Coordinating Board worked with Eastern Washington University, Spokane Community College, and Spokane Falls Community College as pilot project participants, and also collaborated with the State Board for Community and Technical Colleges and the Council of Presidents; and

WHEREAS, The pilot project participants and the staff of the HECB have fulfilled the terms of the legislation by conducting the pilot project as directed and by submitting a report for the board's approval and submission to the legislature;

THEREFORE, BE IT RESOLVED, that the Higher Education Coordinating Board adopts the background, findings, and recommendations of the Final Report of the Competency-based Transfer Pilot Project as presented to the board on December 15, 2005.

Adopted:

January 26, 2006

Attest:

_____

Gene Coleman, Chairman

_____

Jesus Hernandez, Secretary