

Computer Educator's License (CEL) Program

Program Description

The Computer Educator's License (CEL) Program is a 21 credit hour curriculum at both the undergraduate and graduate levels resulting in a Computer Educator's License. This license may be combined with other subject area licenses as an add-on within the Teacher Education Program. The curriculum for this certification follows the current Computer Endorsement Program with the addition of a new course in Technology Leadership. It involves a student teaching practicum as its capstone experience at the undergraduate level, and an on-line mentored development project at the graduate level.

Building on a base-line of technology integration skills and strategies gleaned from the required technology education courses (W200 or W201 – W401 series), the Computer Educator's Licensure Program prepares students to meet all of the National Education Technology Standards for Teachers, but it will also meet the ISTE/NCATE Technology Facilitator and beginning Technology Leadership standards. Additionally, it will prepare pre-service and in-service teachers with the methodology to teach technology to all learners in all grade contexts. This program will accomplish this through similar techniques mentioned in the Required Technology Education Program, but with much more depth and learner specialization. Because of the broader student population, including both undergraduates and graduates, the curriculum will be more project-based and utilize teams of students to solve targeted learning objectives. The goal is to develop a skilled educator who can meet all of the content standards through student-centered teaching with the most appropriate technology solutions. The figure below identifies the course sequence and the technology standards that pre-service teachers must meet in each.

Figure 1

	NETS-T Standards
Required by Teacher Ed.	
W201	IA,
W301	IIA, IIC, IID,
W401	IA, IB, IIA, IE, IIIA, IIIB, IIIC, IIID, VA,VD, VIA, VIB, VIE
TTL	IB, VB, VIC, VID, VIE
CEL Preparation	
W210 *	IA, IB, IIA, IIB, VD
W220 *	IA, IB, IID
W310 *	IIB, IIC, IID, IE, IIIA, IIIB, IIIC, IIID, VA, VC, VD, VIA, VIA, VIB,
W435**	IVA, IVB, VIA, VIB, VIC, VID, VIE, (Plus beginning.TL standards)
W410 *	IA, IB, IIA, IIB, IIC, IID, IIE, IIIA, IIIB, IIIC, IIID, IVC, VA, VA, VB,VC,VD, VIA, VID, VIE

* Co-listed with graduate level courses for in-service teachers

** New Course

Course Descriptions

W210 - W210 Survey of Computer-Based Education (3 cr.)

The first course for the endorsement in educational computing. Proficiency in the use of application programs. Study of social, moral, and technological issues of educational computing.

W220 - Technical Issues in Computer-Based Education (3 cr)

An examination of computer hardware and peripheral devices in classroom settings (e.g. networking, communications, and hypermedia) Understanding of educational applications of a programming or authoring language.

W310 - Computer-Based Teaching Methods (3 cr)

Integration of educational technology into the school curriculum; methods of teaching computer literacy, computing skills, and programming at K-12 levels, principles of educational software design and evaluation; staff development techniques.

W435 – Technology Leadership in K-12 (3 cr)

Course focusing on issues typically encountered by technology leadership personnel at schools. Topics discussed will include planning for, implementing, and integrating technology into classroom activities, staff development and training, Internet acceptable use, acquiring funding for technology initiatives, building stakeholder collaboration, and managing technology systems in school settings.

W410 – Practicum in Computer-Based Education (6 cr)

W410 consists of "student teaching" for 6 weeks of full-time work, 12 weeks of half-time work, or 15 weeks of 14 hours/week, in an educational setting that incorporates instructional computing.

Rationale

Children from pre-school to adults doing post-doctoral work are wrestling with the demand to use technology in teaching and learning contexts as well as for every day living. Ironically, the persons with the least apprehension and excitement to use technology are the younger students who have grown up with the internet being a matter-of-fact tool that they wish to use. The internet and all the technologies surrounding it, from wireless cell phone telephony to game stations that produce dynamic realistic 3D environments, are becoming part of their everyday life; except, that is, in most K-12 contexts. The pace of the technology development in schools moves at the speed of the fastest moving administrator that approves curriculum and equipment purchases, coupled with a teacher community that is willing to incorporate it in their instruction. The students are ready to embrace these new technologies and harness them to maximize their learning and communication, but most often can not find classes to develop adequate skills with the ever increasing breadth of technology alternatives. Teachers trained in technology integration could assist in curriculum development, teach critical classes, and also foster a climate of professional development among a teaching community that could

begin the process of recovery. Pre-service teachers certified with a Computer Educator's License could meet this challenge.

Over the last decade, the School of Education has offered a Computer Endorsement that provides advanced technology training for pre-service teachers. This preparation involved 18 credit hours of coursework and the development of an on-line professional portfolio. The Endorsement culminated with a 6 credit hour, 6 week full-time, student teaching practicum with a Cooperating Teacher in a K-12 context within the state of Indiana. The Indiana Professional Standards Board will no longer grant this Endorsement beyond 2005.

The need is growing exponentially in K-12 contexts

Originally technology was viewed as a tool for the teacher to use in the process of teaching, or "delivering instruction". Preparation was focused on the teacher's professional development in order to facilitate the use of overhead projectors, movie projectors, and more recently video and Powerpoint presentations. Although there is still a significant need to support the professional development of all teachers, there is a new requirement to raise the skill and literacy level of students using technology themselves for learning. Keyboarding skills are introduced by middle school normally, and an Introduction to Computer Applications are offered at both middle and secondary levels, but advanced skills involving internet access, using tools like Web Quests, and basic programming concepts are as varied as the skills available within any given faculty. The need for a Computer Educator to teach the basic and advanced courses, and also to assist in the coordination of technology integration and professional development of all faculty is evident in all schools today. Because of the leadership component in this proposed curriculum, a teacher with a Computer Educator's License would facilitate the development and communication among Administrators, Librarians, and Technology Coordinators within a school. Such a resource within a school would greatly increase the effectiveness of not only the teacher's, but the student's use of technology for communication and learning.

Because of this increased demand for technology development and instruction, institutions of higher learning around the state of Indiana and the nation are adding options for teachers to prepare themselves with technology skill and literacy credentials. In the state of Indiana, the previous options were to offer a Computer Endorsement that appeared on a teaching license along with the area of concentration for that teacher. It was also possible to gain a Computer Educator's license which focused on business applications and training, or one could enter a vocational program with a Technology Educator's license. With the new IPSB strategy to accredit only licenses and to not recognize endorsements, the higher education community is in the process of redirecting existing resources to meet state and national standards that define the credentials for specific licenses. The Computer Educator emerging from this program would not only be prepared to serve as an especially technology literate teacher in a specific content area (just as in the Computer Endorsement), they would also be able to teach a wide variety of

technology skills to students, and know of strategies to help others integrate these skills into their teaching.

Faculty Staffing

Currently beyond the initial required technology courses of W200 & W201 is the Computer Endorsement sequence of 4 courses plus an elective. These courses (W210, W220, W310 and W410) are taught through a combination of FTEs, Associate Instructors, and occasionally Adjunct faculty. The W410 practicum is a 6 week field-based student teaching experience that is coordinated throughout the State of Indiana, and supervised by staff employed through the Office of Student Teaching, and locally by two IST FTEs. The CEL Program is to consist of these same faculty. The additional Technology Leadership course mentioned later will be added to the course load of the FTE currently teaching in the Endorsement Program.

Goals & Standard Documentation

Meeting the SoE's guiding goals & principles

The Department of IST has as its primary mission to foster the appropriate use of technologies to enhance teaching and learning experiences. This is the 4th goal of the school's strategic plan. This goal and the following principles are at the core of the CEL Program's undergraduate teaching mission as well.

1. Community

Students in the CEL Program will be developing a community at one level among themselves as they explore new technologies together. On a second level they will be integrating their knowledge with instructors and other students outside of the CEL Program, as they learn more about diffusion of technology into their normal school assignments. On a third level they will be taking this knowledge into the classroom in their field experiences and impacting that community with diffusion of technology into their practice of teaching.

2. Critical Reflection

The CEL Program is at the vortex of the critical issues concerning the integration of technology in K-12 contexts. It is the goal of this faculty to bring the issues such as the digital divide, return on investment, technology and information access, engagement, and many many more into the classroom and assignments requiring critical reflection on these issues.

3. Intellectual, Personal, and Professional Growth

The curriculum sequence for CEL is developmental across multiple aspects of the student's learning. On one hand the student will be confronted with successively more and more complex technical tasks, such that in the capstone experiences, the sophistication of the required solutions will be very high. In the same vein, the ability to meet multiple objectives at the same time requires practice in authentic

learning situations. Students will begin in simulated teaching environments and gradually move to field-based teaching situations with real students. This progression is intended to allow reflective fodder for the development of their philosophy of teaching and attitude toward technology integration. The culmination of these two thrusts will be to take on a leadership role within any school context they find themselves and supports the student's growth as being a confident, innovative, and communicative individual.

4. Meaningful Experiences

There is a temptation with technology to simply "play with the tools". However, in this program teaching and learning are foremost in everything the student will do, so every experience will be calculated to feed understanding of the potential for learning with any of the technology tools.

5. Knowledge & Multiple Forms of Understanding

A primary argument for the use of technology in teaching is that it can often provide an alternative path to content, often resulting in new aspects of knowledge acquisition and retention. Students will be challenged in frequent immersion in new learning environments from on-line chat sessions, distance-education environments, traditional lecture, informal collaborative workgroups that beam data back and forth through laptop and PDA connections, video, and game environments where learning is disguised as fun through play.

6. Personalized Learning

Each student will enter and leave the CEL Program with differences in competency, enthusiasm, style, and philosophy. Within the program it will be necessary to compensate for these differences through dialog, smaller homogenous groupings, and individualized learning opportunities. Since these types of teaching strategies are necessary in any learning context, the strategies we use will be made apparent to the students so that they will understand and relate to them, and hopefully, use them in their teaching strategies when they encounter the same situations.

Alignment with P-12 student standards

The content regarding technology has traditionally not been seen as a content subject area. However, it is fast becoming an area of intense study and research. Programs such as Informatics and the School of Library and Information Science are joining the older curricula of IST and Computer Science in this quest for understanding and development. The School of Education recognizes this trend and anticipates its migration to the K-12 environment as well. Content standards for this area are not yet established, but the ISTE technology standards that this license would accredit are designed to support all content standards from pre-school through the baccalaureate degree.

Content meets NETS-S, NETS-T, and ISTE/NCATE TF & TL Standards

All National Education Technology Standards for Students, Teachers, and Technology Leaders would be met by students being accredited through this licensure program (see appendix A, B, C and D for these standards).

NETS-S (Student Standards)

The technology foundation standards for students are divided into six broad categories. Standards within each category are to be introduced, reinforced, and mastered by students. These categories provide a framework for linking performance indicators within the Profiles for Technology Literate Students to the standards. Teachers can use these standards and profiles as guidelines for planning technology-based activities in which students achieve success in learning, communication, and life skills.

NETS-T (Teacher Standards)

Through the ongoing use of technology in the schooling process, students are empowered to achieve important technology capabilities. The key individual in helping students develop those capabilities is the classroom teacher. The teacher is responsible for establishing the classroom environment and preparing the learning opportunities that facilitate students' use of technology to learn, communicate, and develop knowledge products. Consequently, it is critical that all classroom teachers are prepared to provide their students with these opportunities. Both professional development programs for teachers currently in the classroom and preparation programs for future teachers must provide technology-rich experiences throughout all aspects of the training programs. Standards and resources within this document provide guidelines for all teachers but specifically for planning teacher education programs that will prepare teachers to play an essential role in producing technology-capable students.

ISTE/NCATE-TF (Facilitator Standards)

This licensure program will prepare candidates to serve as building/campus-level technology facilitators. Candidates completing this program will exhibit knowledge, skills, and dispositions equipping them to teach technology applications; demonstrate effective use of technology to support student learning of content; and provide professional development, mentoring, and basic technical assistance for other teachers who require support in their efforts to apply technology to support student learning. The International Society for Technology in Education recognizes that educational computing and technology foundations are essential for all teachers. ISTE also acknowledges educational computing and technology specialty areas beyond these foundations and has established program standards for initial and advanced programs. These program standards will assist teacher education units, and professional organizations and agencies in understanding and evaluating the educational preparation needed for specialization within the field.

ISTE/NCATE-TL (Leadership Standards)

This licensure program will prepare candidates to serve as technology specialists, which are defined at the beginning levels of the Leadership Standards. Special preparation in computing systems, facilities planning, instructional program development, and other advanced applications of technology to support student learning and assessment will prepare candidates to serve in technology-related leadership positions at school and possibly district levels. The International Society for Technology in Education recognizes that educational computing and technology foundations are essential for all teachers. ISTE also acknowledges educational computing and technology specialty areas beyond these foundations and has established program standards for initial and advanced programs. These program standards will assist teacher education units in understanding and evaluating the educational preparation needed for specialization within the field.

Integration with Existing Programs

The undergraduate program within the IST Department is only about 3 years old officially, but the curriculum has been in the School of Education for over 12 years, managed through Instructional Computing. Even during those years the program was largely taught by IST AIs and faculty, so this new CEL Program will integrate fully with the current thrust of the IST Program. The Computer Endorsement has been one of the most popular “add-on” endorsements, as measured by the certification office, and the Computer Educator’s License is anticipated to be even more popular. The demand for technology integration is a P-16 need, so the integration and collaboration with other program within the School of Education is also seen as a necessary initiative.

Implementation Plan

Upon approval from the Committee on Teacher Education, the CEL Program will be sent out for state-wide remonstrance. Upon receiving a green light from this process, it will go through Policy Council and approval by the Deans, and then continue on to the Indiana Professional Standards Board for approval.

Since there are already over 50 students currently in the pipeline for the Computer Endorsement Program, it is anticipated that the undergraduate CEL Program may begin immediately upon approval from the IPSB. Before the end of year 2005, students who wish to continue without taking the new Leadership course may receive just an Endorsement on their license. Those who wish the licensure may add this course to their studies and receive a Computer Educator’s License.

Assessment is Performance-Based

Faculty in this program will collect student artifacts demonstrating the candidate’s performances in addressing the program standards, and assess these performances by evaluating artifacts using the appropriate Technology Standard Rubrics and aggregate the performance data collected to provide program-level assessment of the student. The standards and rubrics should help faculty to identify the kinds of experiences they provide in their courses and whether or not those experiences generate candidate performance that approaches, meets, or exceeds the standards. Each major assignment or experience should be planned to address the performance indicators at levels appropriate to prepare candidates for the essential benchmark assessments. Candidates should be aware of the level of expectations for their performance on each assignment and that their performances will be measured against the "meets standard" performance level of the rubric. Rubrics, observation tools, self assessments, and test scores with quantifiable performance assessment ratings are often used to collect performance data that can be used to measure individual performance and be aggregated as evidence of program-level performance. When artifacts are collected in a portfolio, it is preferred to have that portfolio available for online review to substantiate the quality of work of the candidates. The performance artifacts used as evidence in the matrix will be selective, representing benchmark assessment points.