



September 27, 2012

Brenda L. Decker
Chief Information Officer
State of Nebraska

Re: Request for a NITC review of ESUCC's BlendEd eLearning System I.T. project proposal

Dear Brenda,

The ESUCC continues to plan and structure existing projects in collaboration with a variety of partners. At the September 6, 2012 meeting of the ESUCC the Council directed me to submit an I.T. project proposal describing key elements of our BlendEd initiative that is launching to coordinate ESUCC projects in distance learning, media, and learning management. Among the key efforts has been to locate servers and develop services directly on Network Nebraska. Additionally, these efforts align with key elements of the Statewide Technology Plan. We are pleased to be moving these efforts forward and encouraged that this process will help further establish necessary partnerships, engage stakeholders, and organize time, talent and resources.

Included with this letter is an I.T project proposal addressing many of the recent efforts to "blend" ESUCC projects and education/network partner contributions. The proposal outlines a set of educational services that supplement and enhance learning environments for K-12 schools across the state. Although necessarily "high level" perspectives, I hope that the details are sufficient for NITC review and I certainly encourage feedback and suggestions. Ultimately we are committed to making such services ubiquitous and believe this review is a big step toward an effective digital education services layer on Network Nebraska.

The ESUCC is committed to collaborating with appropriate partners from the P-16 community to bring together strategic investments in these services.

Thank you for including this proposal in the next possible NITC review.

Sincerely,

Matthew L. Blomstedt,
Executive Director

Nebraska Information Technology Commission

Project Proposal Form

Funding Requests for Information Technology Projects

FY2013-2015 Biennial Budget

IMPORTANT NOTE: Project proposals should only be submitted by entering the information into the Nebraska Budget Request and Reporting System (NBRRS). The information requested in this Microsoft Word version of the form should be entered in the NBRRS in the "IT Project Proposal" section. The tabs in the "IT Project Proposal" section coincide with sections contained in this Microsoft Word version of the form. Information may be cut-and-pasted from this form or directly entered into the NBRRS. **ALSO NOTE** that for each IT Project Proposal created in the NBRRS, the submitting agency must prepare an "IT Issue" in the NBRRS to request funding for the project.

Project Title	Nebraska's BlendEd eLearning System
Agency/Entity	Educational Service Unit Coordinating Council (ESUCC) in coordination/collaboration with: Key stakeholders from Nebraska's P-16 educational community

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Notes about this form:

1. **USE.** The Nebraska Information Technology Commission (“NITC”) is required by statute to “make recommendations on technology investments to the Governor and the Legislature, including a prioritized list of projects, reviewed by the technical panel...” Neb. Rev. Stat. §86-516(8). “Governmental entities, state agencies, and non-education political subdivisions shall submit all projects which use any combination of general funds, federal funds, or cash funds for information technology purposes to the process established by sections 86-512 to 86-524. The commission may adopt policies that establish the format and minimum requirements for project submissions.” Neb. Rev. Stat. §86-516(5). In order to perform this review, the NITC and DAS Budget Division require agencies/entities to complete this form when requesting funding for technology projects.
2. **WHICH TECHNOLOGY BUDGET REQUESTS REQUIRE A PROJECT PROPOSAL FORM?** See the document entitled [NITC 1-202](http://nitc.ne.gov/standards/) “Project Review Process” available at <http://nitc.ne.gov/standards/>. Attachment A to that document establishes the minimum requirements for project submission.
3. **COMPLETING THE FORM IN THE NEBRASKA BUDGET REQUEST AND REPORTING SYSTEM (NBRRS).** Project proposals should only be submitted by entering the information into the NBRRS. The information requested in this Microsoft Word version of the form should be entered in the NBRRS in the “IT Project Proposal” section. The tabs in the “IT Project Proposal” section coincide with sections contained in this Microsoft Word version of the form. Information may be cut-and-pasted from this form or directly entered into the NBRRS. **ALSO NOTE** that for each “IT Project Proposal” created in the NBRRS, the submitting agency must prepare an “IT Issue” in the NBRRS to request funding for the project.
4. **QUESTIONS.** Contact the Office of the CIO/NITC at (402) 471-7984 or ocio.nitc@nebraska.gov

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Section 1: General Information

Project Title	Nebraska’s BlendEd eLearning System
Agency (or entity)	Educational Service Unit Coordinating Council (ESUCC) in coordination/collaboration with Key stakeholders from Nebraska’s P-16 educational community

Contact Information for this Project:

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Section 2: Executive Summary

Provide a one or two paragraph summary of the proposed project. This summary will be used in other externally distributed documents and should therefore clearly and succinctly describe the project and the information technology required.

The goal of **Nebraska’s BlendEd eLearning System** is to implement instructional and content technologies to enhance teaching and learning to support all modes of blended instruction. *blended education* has been promoted by educational researchers as a one of the most promising recent innovations in education because it calls for making strategic choices about when face-to-face (synchronous) instruction is needed and when and how online (asynchronous) instruction can be best used to provide elements of student control over time, place, path and pace and provide more equity, efficiency and flexibility. [Heather Staker](#) and [Michael B. Horn](#) of the Innosight Institute offer this definition of Blended Learning-

“Blended learning is any time a student learns at least in part at a supervised brick-and-mortar location away from home and at least in part through online delivery with some element of student control over time, place, path, and/or pace.”- <http://www.innosightinstitute.org>

The primary components of the project include:

- 1) **Learning Object Repository (LOR) Content Repository System** - to support a statewide digital instructional content repository for existing and future collections of multimedia learning objects and course materials of all types (e.g. audio, video, graphical, textual) that are standards-aligned and meta-tagged (i.e. appropriately catalogued and classified);

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- 2) **Learning management system (LMS)** - to support a statewide learning management system that allows teachers to organize instructional content, support collaborative learning activities, and deliver instruction to students both in and out of the classroom;
- 3) **Federated Directory Services system (LDAP)** - to support a statewide directory service that facilitates single sign-on access for every teacher and learner;
- 4) **Statewide Professional Development (PD) System**: A comprehensive system of professional development for the implementation of **BlendEd** incorporating LOR, LMS, & LDAP for a singular PD system to provide technology-assisted instructional design training, embedded professional development and PD content shared between and among the NDE, ESUCC and higher education; and
- 5) **Evaluative System**: A persistent system of assessment, analytics, and interventions that allows the State to diagnose and remedy areas of specific curriculum or teacher shortages (e.g. science, technology, engineering, mathematics, English language learners, advanced placement, etc..).

(**Note: see **Appendix A** for more detail concerning each of these components*).

The **Nebraska BlendEd eLearning System** has the potential to revolutionize daily teaching and learning in Nebraska schools and will build upon Nebraska's strong history and experience of offering video-based distance learning to K-12 students.

It will establish a new paradigm of blended, technology-assisted/enhanced instruction for the traditional face-to-face classroom, allow teachers to better reach and serve their students within the video distance learning classrooms, and also allow the development of fully online courses and modules that can be utilized in the classroom or delivered synchronously or asynchronously to remote learners.

Implementation of these technologies will enable teachers to utilize and share learning objects and other educational content and reference materials that would significantly enrich and deepen the learning experiences offered to Nebraska students, particularly those in the K-12 sector. This project will extend learning opportunities currently unavailable to many students in Nebraska's smaller schools due to a lack of certified teachers in certain areas, including the STEM subjects (i.e. science, technology, engineering, and math) and the languages.

This project will also encourage and facilitate greater collaboration between K-12 and higher education educators, the building of extended educational communities of learning, and support ongoing professional development and lifelong learning opportunities for the students and citizens of the State of Nebraska.

The deployment and implementation of these technologies will utilize:

- the existing high-bandwidth, statewide network called Network Nebraska;
- a redundant array of application, content, database, and web servers;
- a centralized directory services structure that allows authentication and access authorization utilizing a unique identifier for every student, teacher, and staff member;

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- a system to assign and enforce appropriate levels of copyright and digital property rights to licensed and teacher-produced learning objects for use and re-use.

The project is intended to encourage and incent many separate educational entities to come together to collaborate and establish a plan of action to promote the appropriate adoption of these instructional tools, technologies, and associated instructional techniques.

The implementation of this project will include strategic phases of capacity building over the next four years to reach the greatest number of teachers and students in the shortest period of time in the most cost effective manner possible.

Section 3: Goals, Objectives, and Projected Outcomes (15 Points)

1. Describe the project, including:
 - Specific goals and objectives;

This project is broad in both scope and anticipated impact. It is proposed based on the premise that the state of Nebraska is obligated to: **1)** provide the best possible public education for all K-12 level students and; **2)** provide post-secondary educational opportunities to its citizens to insure a well-educated workforce, a necessity if our students and citizens are to remain competitive and the state of Nebraska is to remain economically viable in the future.

The primary goal of **Nebraska's BlendEd eLearning System** is to implement instructional and content technologies to enhance teaching and learning. This project will further extend educational opportunities and improve outcomes for learners of all ages throughout the state of Nebraska.

These eLearning technologies are already utilized extensively by Nebraska's higher educational community, but are not consistently available among Nebraska's K-12 schools. This project would leverage the expertise and experience of educators already involved with eLearning initiatives around the state to help develop and implement the **Nebraska BlendEd eLearning System** within Nebraska's K-12 community.

It is important to note, these technologies are not intended to replace the classroom teacher or traditional classroom-based instruction. Rather, they would supplement the traditional classroom learning experience by providing teachers and students new instructional, organizational, communication, and support capabilities.

Additionally, these technologies also provide the means to deliver instruction to students outside the confines of the traditional classroom and school schedule. These technologies support "any time, any place, any path, any pace" learning for all students ranging from those seeking credit recovery and remedial instruction to those seeking advanced placement/dual credit learning opportunities.

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Implementation of these technologies would also allow access to a vast array of rich multi-media instructional materials and other instructional tools to support enhanced collaboration, assessment, and diagnostic and intervention tools.

Nebraska's BlendEd eLearning System can be accomplished by achieving the following **eight objectives**:

1. **Implement a statewide Content or Learning Object Repository (LOR)** to collect, store, organize, classify, categorize, control access to, share, and retrieve digital learning objects (i.e. a digital content repository may also consist of multiple repositories with federated search capabilities including multiple existing digital collections from Nebraska's P-16 community).
 - a. Implement a system for the appropriate meta-tagging of content which involves the assignment of attributes to facilitate cataloging, classification, searching, securing, and the retrieval of learning objects.
 - b. Develop work flow processes for the vetting, approval, and standards alignment of submitted learning objects and collections.
 - c. Support the assignment and enforcement of digital property rights thereby addressing the issues of copyright and intellectual property rights.
 - d. Harvest and consolidate as many existing digital content collections as possible (e.g. NROC, existing ESU digital video, NET/PBS resources NeBooks, etc).
 - e. Provide the ability to search and access other relevant instructional reference materials from out-of-state digital content repositories (e.g. Smithsonian Museum, Florida Orange Grove, K-12 Instructional Software, Khan Academy, MIT's Open Courseware, etc..).
2. **Implement a statewide Learning Management System** (i.e. a web-based LMS) to support the development and delivery of a statewide professional development system, instructional content, assessment and grading, lesson planning, collaboration and communication, and other instructional support capabilities.
 - a. Implement a system to programmatically create a course site for every course that a teacher is assigned to teach and link every student to every class they are enrolled in every semester.
 - b. Provide parental access to curriculum, attendance, daily learning activities, progress, and assessment information.
 - c. Establish collaborative communities of learners who will have access to a wide variety of social networking, video, audio, and group work capabilities.
 - d. Utilize the Learning Management System to provide teachers and students access to instructional materials and learning opportunities on a 24 x 7 x 365 basis.
3. **Implement a federated lightweight directory access protocol system (LDAP)** to facilitate the development of a system authentication for every K-12 teacher and learner through a single unique identifier and password that will be utilized to access the **BlendEd Learning System** and content repository resources.
 - a. Implement and configure a statewide centralized directory service model that will be capable of interfacing with existing school district and/or ESU directory services through federated authentication.

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- b. Coordinate with the Nebraska Department of Education to utilize their statewide unique identifier for all K-12 students and staff.
 - c. Develop automated processes to build and maintain a directory of IDs and passwords for every K-12 student and teacher
4. **Develop and implement interfaces** to allow existing teacher and student systems to automate the upload of all teaching assignments, course/section offerings, and student enrollments at the start of every term from every participating school district into the learning management system (LMS).
5. **Deploy collaborative support services** to minimize implementation and ongoing administrative, professional development and other training, operational, and support costs.
6. **Provide professional development and instructional design training.**
- a. How to develop and submit learning objects.
 - b. How to teach effectively using learning and content and learning management technologies.
 - c. Create a network of curriculum and multimedia developers.
 - d. Create collaborative professional learning networks
7. **Extend and broaden educational opportunities** to areas and to learners where they would not otherwise be available. This is critical for our sparsely populated areas, at-risk student populations and differing student learning abilities. Those schools who currently lack qualified teachers in some subject areas and access to other educational resources to meet the needs of all students will have the opportunity to broaden opportunities for all learners.
- a. Incentivize districts and partners (through the leadership of the ESUCC, ESUs and NDE) to develop and share learning objects and complete courses in language, STEM, and other curriculum areas where teacher shortages exist.
 - b. Build on the incredible success of Nebraska's online initiatives such as the ESUCC's ANGEL/eLearning project, ESU 13's NEVA (Nebraska Virtual Academy) and the GNENC (Greater Nebraska Education Network Consortium) on line classroom, and Omaha Public Schools' Credit Recovery system.
 - c. Provide equitable access to all learners, regardless of location, socio-economic status, or size of school.
 - d. Use **Nebraska's BlendEd eLearning System** as a "launch platform" for interventions that address specific subject area shortages and individual student academic performance issues
8. Use **Nebraska's BlendEd eLearning System** to develop specific interventions to achieve each of the Governor's and P-16 Steering Committee's eight education goals:
- a. Adopt a college and career preparation core curriculum that requires four years of English and three years each of math, science and social studies in Nebraska school districts by the 2014-2015 school year.
 - b. Eliminate the academic achievement gap between Nebraska's K-12 Caucasian students and its African American, Hispanic, and Native American students.
 - c. Develop an effective longitudinal data system that provides information on the Nebraska education system from preschool through post-graduate degree attainment and entry into the workforce to help align resources with strategic goals.

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- d. Attain a high school graduation rate of 90% or higher in each Nebraska high school.
- e. Improve Nebraska's college-going rate to the top-10 tier nationally.
- f. Provide affordable access for Nebraska students to attend Nebraska's postsecondary institutions.
- g. Improve time to degree completion and increase graduation rates of Nebraska's postsecondary institutions.
- h. Provide all students with the science, technology, and math skills needed to succeed in postsecondary education or the 21st-century workforce; and increase the number and diversity of individuals who pursue careers as educators and professionals in the areas of science, technology, engineering, and math.

- **Expected beneficiaries of the project;**

The main beneficiaries of **Nebraska's BlendEd eLearning System** will be:

- 1) Nebraska K-12 students, teachers and parents.
 - a. Students and teachers will benefit from access to additional rich instructional materials and technologies that would otherwise be inaccessible.
 - b. Teachers will be able to access statewide professional development and educational resources to assist them in learning how to most effectively utilize the proposed instructional technologies to include instructional design training and through collaboration with other teachers in their subject areas via communities of practice.
 - c. Nebraska K-12 schools will benefit by direct cost avoidance of not having to separately purchase expensive credit recovery and online learning systems, subscribe to commercial instructional materials and services, and provide the technical resources necessary to implement and support the required technology components.
 - d. Teachers will be better able to concentrate preparation and instruction in their areas of expertise and endorsement.
 - e. Students will be able to access information about assignments, test schedules, class notes, links to relevant reference resources, utilize digital drop-boxes to submit homework, and participate in online chat and discussion groups as appropriate.
 - f. Administrators will be able to "keep their money at home" by accessing or purchasing course opportunities from in-state offerings or statewide content subscriptions.
 - g. Parents will have an enhanced opportunity to access data and monitor progress, communicate with teachers, and generally become more active participants in their children's education.
- 2) Nebraska's higher education institutions will also benefit through:
 - a. Direct participation in the **BlendEd eLearning System** and collaboration with the K-12 community concerning research on the effectiveness of various educational technologies and instructional techniques on educational outcomes for different ages, areas of study, instructional modalities, learner styles, etc;
 - b. Participate with ESUs and the NDE in pre-service and in-service teacher professional development;

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- c. Utilizing the resultant research to improve teacher education programs to produce teachers that are more literate and effective in the use of instructional technologies;
 - d. Better prepared, more literate high school graduates with experience in the use of online educational technologies; and
 - e. Improvement of the college-going rate.
- 3) The overall vitality of the Nebraska economy will benefit from a more skilled and knowledgeable work force and the reduction of the out migration of Nebraska talent. The integrated system will also more closely resemble technologies critical for the economic development opportunities by connecting existing work force development efforts, career and technical education, and entrepreneurship/business development efforts of the community college system, Department of Education, Department of Labor, and Department of Economic Development. The same system will help link K-12 as a legitimate resource for expanding specific capacities needed for Nebraska's business community.

- **Expected outcomes.**

- 1) Development and implementation of the five primary components of the system (LOR, LMS, LDAP, professional development and instructional design training, and an interventions system - see Executive Summary section).
- 2) Expand the existing Nebraska Virtual Instruction Source (NVIS) website to list all traditional, blended, online and video distance learning opportunities for Nebraska students
- 3) Improved coordination between the four entities of the Nebraska Virtual Partnership (i.e. ESUCC, NDE, NET, University of Nebraska)
- 4) Creation and continued growth of a digital content repository (a.k.a. the Nebraska Knowledge Repository) that enables the uploading, searching and retrieval of learning objects that originate either as licensed content, existing collections, open educational resources, or teacher-produced content
- 5) Better coordination and collaboration of educational entities across the entire P-16+ spectrum
- 6) Improved student engagement and motivation
- 7) Improved evaluation/assessment capability
- 8) Improved student data management capability
- 9) Statewide system for storing and classifying instructional content and standards-aligned, digital curriculum
- 10) Growing LMS/LOR access from the current level of approximately 40,000 K-12 students across the state to 160,000 students and 11,000 teachers by 2016 to full deployment to all K-12 students and teachers by 2018
- 11) Cost savings resulting from economies of scale realized through consolidation of: licensing agreements; hardware and software purchases; and operational, training, and support services
- 12) Enhanced parental participation capabilities
- 13) Additional learning opportunities for students, including rural, urban, and different ability K-12 students (e.g. more subjects, AP courses, remedial and advanced credits, etc...)

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- 14) Ability to better monitor student performance and outcomes through longitudinal data and learning analytics
- 15) Ability to implement more timely and responsive interventions to address student achievement and performance issues
- 16) Development of communities of learners and collaborative learning opportunities
- 17) Development of communities of practice in education
- 18) High school graduates that are better prepared for college and are familiar with the eLearning technologies they will encounter at the higher education institutions they attend after graduation from high school

2. Describe the measurement and assessment methods that will verify that the project outcomes have been achieved.

- 1) Detailed metrics and evaluation instruments will be constructed to measure each of the outcomes '1 -18' listed in the Goals and Objectives-Expected Outcomes section above with specificity that exceeds the scope of this document;
- 2) In general, student performance, achievement and longitudinal tracking will be measured through the Department of Education's NSSRS system;
- 3) The primary project component success will be measured through actual deployment and implementation and participation levels;
- 4) Teacher collaboration and communities of practice will be measured by teacher surveys and growth rate of teacher adoption;
- 5) Actual growth rate of student and teacher use will be measured each year to meet the 2016 goal of 160,000 students and 11,000 teachers, which constitutes 50% of the Nebraska public K-12 populations.

3. Describe the project's relationship to your agency comprehensive information technology plan.

The Educational Service Unit Coordinating Council (ESUCC) is not a State Agency and therefore is not required to submit a comprehensive information technology plan. However, the proposed **BlendEd eLearning System** is aligned with the NITC Statewide Technology Plan's Digital Educational Initiative. The ESUCC does not qualify for federal E-rate so therefore does not have to submit a technology plan to the Nebraska Dept of Education under that provision. However, the ESUCC is the organization that provides coordination for statewide initiatives for the 17 ESUs, each of which files a Technology Plan to the Nebraska Dept of Education, and works with 253 school districts, each of which must also file their own technology plan.

Section 4: Project Justification / Business Case (25 Points)

- 4. Provide the project justification in terms of tangible benefits (i.e. economic return on investment) and/or intangible benefits (e.g. additional services for customers).**

**Project Proposal Form
FY2013-2015 Biennial Budget Requests****Tangible Benefits.****1) Provide teachers and students access to instructional tools, technologies, and resources**

Currently a minority of Nebraska K-12 districts currently utilize a variety of learning management systems (e.g. ANGEL, Blackboard, Moodle) while some districts do not access any learning management systems at all. This initiative will allow all K-12 teachers throughout the state access to instructional technologies and resources and offer their students enhanced educational opportunities.

2) Provide students equitable educational opportunities

The Nebraska **BlendEd eLearning System** would “level the playing field” for Nebraska’s rural and disenfranchised students by offering students in schools educational opportunities that would otherwise not be available to them.

3) Improve instruction and educational outcomes

Nebraska’s BlendEd eLearning System has the potential to create a system of specialization where more teachers are teaching fewer numbers of course preparations which would equate to a more effective, energetic, enthusiastic, and better prepared teacher workforce. This initiative also has the potential to increase the frequency of teachers teaching wholly within their endorsed area, a discrete capacity building initiative.

4) Expand educational opportunities

As Nebraska experiences significant budget and economic pressures, a continuing population shift from rural to urban areas, and a shortage of instructional resources for some subjects in some areas of the state we must look to new ways to provide the best educational opportunities possible to Nebraska’s students and citizens. The **BlendEd eLearning System** would provide teachers and students throughout the state access to educational content, instructional tools, and online courses to address these problems.

5) Address teacher shortages

This initiative will help to address a major problem for our rural teachers in our smaller schools who for decades have taught five, six (sometimes seven) different courses per day, sometimes outside of their endorsed area. Each course requires a unique preparation of one to two hours for each hour of class delivery, each and every day, five days per week. In some schools, a single teacher is an entire department (e.g. science) for grades 7-12. There is literally not enough physical time in the day to adequately prepare for the next day’s instruction so teachers are forced to skimp on one course or activity to prepare for another.

6) Establish a statewide instructional content system

This **BlendEd eLearning System** initiative will provide all teachers and students throughout the state of Nebraska access to the instructional materials and course offerings in the state’s instructional content repository system (aka the Nebraska Knowledge Repository). This statewide digital content repository will be established to house teacher-created content or other existing content collections aligned to state standards in one easy-to-access location.

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7) **Access to an integrated instructional environment**

Nebraska's BlendEd eLearning System has the potential to address these programmatic shortcomings by placing all of these services within one seamless and well-integrated system, easily accessible to every teacher and student over Network Nebraska. Currently Nebraska high school students who desire course opportunities not offered by their own school must either navigate the maze of online or video distance learning offerings from multiple independent entities or sign up for expensive out-of-state course offerings or independent study courses.

**Note: Access Alabama is an example of a statewide system that has been successful with integration of existing online and video distance learning systems:*

<http://accessdl.state.al.us/aboutaccess/>

8) **Use of a single unique identifier for all students and teachers**

The unique identifier number that has been created for every Nebraska K-12 student and teacher (i.e. the NSSRS/Nebraska Student and Staff Records System id referred to as the NDEid), will be leveraged as the key identifier for statewide directory services and authentication via single sign-on for accessing the statewide BlendEd applications, resources, and services.

9) **Cost effectiveness**

The **Nebraska BlendEd eLearning System** would provide all K-12 teachers access to a variety of instructional tools and technologies and dramatically increase the availability of high quality digital instructional content. This initiative will offer the state's K-12 students enhanced educational opportunities on the most cost effective basis possible by leveraging economies of scale to reduce per teacher/pupil: licensing costs; operational expenses; and support requirements. This initiative will also promote the development of online courses for subject areas of need, for credit recovery (e.g. replace usage/need isolated credit recovery coursework developed in isolation by districts or vendors), advanced placement courses, that could be utilized statewide and the adoption of ebooks/etexts to replace expensive and outdated hardcopy textbooks.

Intangible Benefits.

1) **Better prepare our students and citizens to compete and succeed**

As the world continues to "shrink" due to the influence and impact of technology and we face increasing international competition with the globalization of the world's economy there is a need for an ever greater breath of knowledge in increasingly complex, dynamic, and rapidly evolving subject areas. This is particularly important in the STEM (i.e. science, technology, engineering, and mathematics) and world language areas as well as career education where many Nebraska school districts lack highly qualified teachers or access to sufficient opportunities for such specialized curriculum.

K-12 graduates will also be better prepared to utilize the instructional technologies that they will encounter as they pursue higher education.

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2) **Leverage our educational resources and experience**

Implementation of the **BlendEd** project will leverage the talents, knowledge, expertise, and experience of our many dedicated and capable educators and utilize instructional technologies to enhance the educational experience for our students and extend learning beyond the classroom and the normal school day.

3) **Improve student engagement**

For many of today's K-12 students, the school day represents the least stimulating and interesting seven hours of their day. We must find more effective ways to engage students.

Today's student is accustomed to operating in a dynamic world of technology. The use of computers, the Internet, smart phones, PDAs, MP3 players, and gaming systems have all provided a mindset that expects technology assistance and involvement in performing virtually any task.

The attention, much less the passion, of many of today's students is no longer captured by the lecture-based teaching techniques utilized in many K-12 classrooms. This is an unfortunate by-product of today's society, but one that must be acknowledged and addressed by today's schools.

As Peter Drucker noted in 1999 – “fifty years hence we may well conclude that there was no ‘crisis of American education’ in the closing years of the twentieth-century – there was only a growing incongruence between the way twentieth-century schools taught and the way late twentieth-century children learned”.

This project would help address this important issue.

4) **Effectively utilize technology to enhance learning and knowledge building**

The availability and pervasive nature of technology today can have either positive or negative implications on the learning process. Properly applied and utilized technology can enhance learning. However, if students simply utilize technology to assist them in performing menial tasks (e.g. finding reference materials, answers to a specific question, or locating a template to complete an assignment), actual learning is not experienced.

This is the threat that technology presents educators and imposes on the students of today. If we do not change the way we utilize technology in education to productively facilitate and enhance real learning, students may become experts in how to “surf the net” but not develop requisite analytical skills and experience the intellectual curiosity and critical thinking necessary for true knowledge building and intellectual growth. The **BlendEd** initiative will help insure that the available instructional technologies are properly utilized to advance learning and academic achievement in our state.

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5. Describe other solutions that were evaluated, including their strengths and weaknesses, and why they were rejected. Explain the implications of doing nothing and why this option is not acceptable.

The other primary options considered were:

- 1) continue the current model of implementing multiple different learning management systems on a fragmented and piecemeal basis
- 2) implement instructional technologies on a mandated, highly centralized basis

• **Option #1- continue the current deployment model**

Nebraska could continue to proceed with a model of organically grown learning management adoption with no statewide coordination or leadership. This approach is not cost effective and would leave those smaller schools that represent the teachers and students with the least resources and the greatest need for instructional support, the least able to access these technologies. With this approach, it could take decades to achieve the University of Nebraska model of ‘every student, every instructor/teacher, every course section, every term’ of learning and content system implementation.

As long as Nebraska school districts continue to support isolated deployments of different types of in-congruent learning and content systems, there will never be continuity or consistency in the quality of educational opportunity and the transition for our K-12 students to higher education online learning environments will continue to be challenging.

To maintain the status quo is to say there is no need for change and the result will be “if you always do what you’ve always done you will always get what you’ve always got”. Current instructional methods are not entirely successful with all students. The classroom lecture model is not always the most efficient or appropriate instructional method. Technology can be employed to enhance instruction and to extend more equitable learning opportunities to many students in areas of the state currently lacking instructional resources.

• **Option #2 – implement a highly centralized model**

The highly centralized mandated model would imply the establishment of a single statewide instructional technology administration and support structure requiring a substantial upfront investment, a highly unlikely option given today’s financial expectations and economic challenges. This model would also require significant changes to existing educational and funding policies which would also be very challenging. This model could produce some cost savings through economies of scale and the aggregation of support services. However, this approach is also contrary to the local control model and underlying system of local funding that has been a cornerstone of Nebraska K-12 education for many years.

Options analysis conclusion

In contrast to the other options, the proposed **BlendEd eLearning System** would provide a flexible, focused, coordinated, collaborative approach to efficiently and effectively implement eLearning technologies to benefit the entire Nebraska educational community. The **BlendEd**

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proposal advocates an evolutionary approach that would utilize and leverage available existing instructional, technical, infrastructure, and support resources.

This **BlendEd eLearning System** proposal provides the framework to put in place a fully integrated, comprehensive eLearning environment, but promotes a phased adoption model. It provides a path for existing learning management deployments to migrate to or coordinate with the statewide learning management system as school districts feel it is appropriate. It would establish a single statewide learning object repository (i.e. the proposed Nebraska Knowledge Repository), which would consolidate all available instructional resources and allow Nebraska teachers and students to quickly realize the power and advantages of a federated, statewide learning object repository (LOR) and federated user authentication system.

Thirty-two other states already have significant technology-assisted and online education initiatives and are beginning to show significant gains in student achievement and benefits from their investments. Nebraska must act now to leverage and integrate its instructional technology projects that have shown early success and move toward a single, statewide system of learning and content management over a directory services structure.

Nebraska must move forward aggressively in utilizing all available instructional technologies and resources to improve educational outcomes. Hiring more teachers is not an option given today's economic circumstances; school districts must do more with fewer resources and increasing budget constraints. There is also a need to serve a growing population of special needs and non-English speaking students. Students are demanding access to extended instruction outside of the traditional classroom and traditional school schedule. The **BlendEd eLearning System** will help address all of these issues.

6. If the project is the result of a state or federal mandate, please specify the mandate being addressed.

The ESUCC is not responding to a particular federal mandate, however, it should be noted this project would assist in meeting local eLearning efforts, state digital/virtual learning goals, and national STEM initiative goals as well as assist provide school accountability and professional development necessary for school improvement goals. The State of Nebraska Department of Education has increased the mandatory graduation requirements for 2014-15 and the ESUCC is proposing **Nebraska's BlendEd eLearning System** as an effective method to assist Nebraska school districts in their quest to meet these heightened requirements. The ESUCC also seeks to fulfill its statutory responsibilities as follows:

Neb. Rev. Stat. Section 79-1246 (excerpt)

Educational Service Unit Coordinating Council; duties; Open Meetings Act applicable.

(1) The Educational Service Unit Coordinating Council shall work toward statewide coordination to provide the most cost-effective services for the students, teachers, and

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school districts in each educational service unit. The council's duties include, but are not limited to:

- (a) Preparation of strategic plans to assure the cost-efficient and equitable delivery of services across the state;
- (b) Administration of statewide initiatives and provision of statewide services; and
- (c) Coordination of distance education.

Neb. Rev. Stat. Section 79-1248 (excerpt)

Educational Service Unit Coordinating Council; powers and duties.

The powers and duties of the Educational Service Unit Coordinating Council include, but are not limited to:

- (3) Facilitation of scheduling for qualified distance education courses;
- (4) Brokering of qualified distance education courses to be purchased by educational entities;
- (5) Assessment of distance education needs and evaluation of distance education services;
- (6) Compliance with technical standards as set forth by the Nebraska Information Technology Commission and academic standards as set forth by the State Department of Education related to distance education;
- (8) Scheduling and prioritization for access to Network Nebraska by educational entities in cooperation with the Chief Information Officer and using scheduling software or scheduling services which meet any applicable standards established by the commission;
- (9) Administration of learning management systems that are in compliance with any applicable standards of the commission either through the staff of the council or by delegation to an appropriate educational entity with the funding for such systems provided by participating educational entities; and
- (10) Coordination with educational service units and postsecondary educational institutions to provide assistance for instructional design for both two-way interactive video distance education courses and the offering of graduate credit courses in distance education.

Section 5: Technical Impact (20 Points)

- 7. Describe how the project enhances, changes or replaces present technology systems, or implements a new technology system. Describe the technical elements of the project, including hardware, software, and communications requirements. Describe the strengths and weaknesses of the proposed solution.**

Nebraska's BlendEd eLearning System promises to enhance and replace the current installations of learning and content repository/management systems across Nebraska K-12 school districts by offering a statewide, integrated, single sign-on eLearning environment that supports every K-12 teacher and learner in the NSSRS system.

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The **BlendEd eLearning System** will be designed to provide and maintain an extremely high level of reliability and availability. This will become ever more important as blended learning becomes an integral part of everyday instruction. The design must also be scalable since during the multi-year phased implementation period and beyond there will a significant increase in usage levels. The design must also be extensible since there will undoubtedly be innovations in hardware, software, and services that we will want to adopt and utilize in the future.

It is anticipated that virtualization will be employed whenever and wherever practical to make the most efficient use of all available hardware and software. **BlendEd** will also continue and build upon the existing successful partnerships and programs that are already in place (e.g. Network Nebraska).

The initial focus of deployment will be to establish a production environment coupled with a disaster recovery plan to provide for the highest levels of reliability and availability possible. The next phase of implementation will be to integrate existing eLearning resources into the **BlendEd** framework and accommodate growth in adoption. The final phase of implementation will be to establish an enterprise level statewide eLearning environment to support all Nebraska K-12 teachers and students.

It is important to note that the phased multi-year approach to implementation will allow for adjustments in the overall architecture, hardware, and software to take advantage of future technical and instructional innovations as they emerge.

Server architecture includes:

[***Note:** details of the architecture and actual required hardware, etc will be dependent upon the selected LMS, CMS/LOR, portal, and other components and the level of adoption over the course of the full implementation period]

- LMS application and database servers
- LOR application and database servers
- Web servers
- LDAP servers
- Presentation HW and SW at the school, classroom, and student levels
- Miscellaneous network equipment to include routers, switches, DNS servers, security devices/firewalls, etc.

Software system deployment includes:

[***Note:** details of the actual required software, etc will be dependent upon the selected LMS, CMS, portal, and other components and the level of adoption over the course of the full implementation period]

- Learning management system (e.g. Blackboard, Moodle, Angel, Canvas, etc)
- Learning Object Repository (e.g. Equella, xpLOR, dSpace, etc.)
- Media Delivery Systems (e.g. MediaCast, Kaltura, Safari etc.)

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- Content (Safari Montage, Learn360, DiscoveryEd, NROC, Intel Teach Elements, etc.)
- LDAP software
- Portal, Virtual Desktop, and/or SSP software (e.g. Stoneware, Life Ray, etc.)

Communications requirements to include:

Implementation of the **BlendEd eLearning System** will require a very high level of communication, coordination, and collaboration among the many partners and participants to include the Nebraska Department of Education, ESUs, ESUCC, DEAC, PSCC, Network Nebraska, University of Nebraska, NET, etc. The success of this initiative will be contingent upon how effectively these entities are able to work together.

The ESUCC has structured a **BlendEd** advisory group to guide ESUCC project and ESU involvement, identified key liaisons from P-16, and proposes expanding the Nebraska Virtual Partnership to help guide **BlendEd** implementation and deployment efforts. Currently, Network Nebraska includes a Network Advisory Group (NETNAG) and it is recommended that a similar group be formed to provide a Network Nebraska Services layer advisory group, or that an appropriate expansion of an existing group come together to guide the high-level partnerships necessary for the success of the **BlendEd eLearning System** and associated services statewide.

Strengths of the proposed architecture include:

Existing implementations of learning management software will migrate as appropriate and feasible or on the expiration date of existing contracts. Current deployments will continue to operate through the transition/migration period which will result in extracting as much value out of the associated hardware, software, and currently offered services possible.

The statewide learning object/content repository system will be a new initiative that will facilitate the consolidation, organization, classification, and alignment to statewide standards of all existing instructional digital artifacts and collections and serve as the repository for current and future learning objects.

Co-locating the application, database, load balancing, and web streaming servers with the Network Nebraska core nodes will enable learning and content management applications to be run over the transport layer during the day to Network Nebraska IP addressed locations (i.e. the Network Nebraska intranet) and accessed via standard Internet connections during non-school hours and for students not located within the schools themselves.

The proposed **BlendEd eLearning System** would provide a single well-designed, integrated, distributed architecture featuring consistent hardware, operating, and software components which would also provide the following advantages (i.e. strengths):

- **Reliability** – redundancy, backup, and recovery capabilities to provide the maximum protection against downtime and service outages will be included in the design.
- **Extensibility** – would provide an excellent basis for implementing additional services and accommodating necessary upgrades and enhancements in the future.

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- **Integration** – would simplify all aspects of HW/SW/ application/services deployment, operation, and support.
- **Efficient use of resources** – would allow the most effective use of resources possible.
- **Economies of scale** for purchase, implementation, operation, maintenance, and support of hardware and software.
- Consolidation will **reduce complexity and provide ease of access** and use for teachers and students.
- Would provide all K-12 teachers and students **equal access to the same array of services and resources** which would greatly enhance the ability of teachers throughout the state to collaborate and share content and provide students a single, consistent LMS look and feel.
- Provide the **most efficient utilization possible** of available Network Nebraska bandwidth and resources and will reduce overall required hardware, software, support, operational, and training costs.

Weaknesses of the proposed architecture include:

The implementation of the proposed integrated **BlendEd Learning System** would reduce the complexity and the number of associated points of failure of a statewide eLearning environment but would potentially increase the scope of any hardware, software, network/communications, or operational outages. Minimizing the likelihood and duration of outages of all types will be a major design challenge for the overall **BlendEd** architecture.

8. Address the following issues with respect to the proposed technology:

- **Describe the reliability, security and scalability (future needs for growth or adaptation) of the technology.**

Reliability. Redundant server installations at three core Network Nebraska locations should push the up time to +99% based on hardware and software, notwithstanding the possibility of infrastructure outages. Redundant core backbone transport pathways would also be a desirable option for the future.

Security. These technologies will utilize personally identifiable and confidential student and teacher data. Strategies of encryption, user id/password authentication, and automated LDAP support services will be employed.

Scalability (& extensibility). A key criteria and consideration of the proposed architecture is to provide for growth and the addition of new services and components in the future.

The implementation and adoption of eLearning technologies will be “phased”. There are existing learning management system deployments that will be able to migrate quickly and easily. Other school districts/ESUs/entities may not adopt or implement for years. The proposed deployment will begin with high school, then middle school, with eventual implementation for the elementary grades. The proposed **BlendEd Learning System** content repository will develop and grow over time. The Identity Management component of this

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initiative will also be implemented over time in accordance with adoption of learning management and the development of the content repository.

This phased adoption model will allow the deployment of the overall **BlendEd** environment over time and provide the opportunity to take advantage of new technologies and instructional innovations as they emerge.

- **Address conformity with applicable NITC technical standards and guidelines (available at <http://nitc.ne.gov/standards/>) and generally accepted industry standards.**

This initiative will comply with all applicable NITC technical standards and guidelines. It will also endorse and enforce relevant instructional and content standards as appropriate.

Alignment with generally recognized industry standards for content management to include:

IEEE LOM (Learning Object Metadata) and variants including NETS, Common Core, CanCore, VETADATA and TLF (The Le@rning Federation).

- SCORM 1.3/2004, IMS, IMS DRI and METS – for import and export of items;
- Z39.50 – for federated searching including the ability to transform and import records;
- ECL, SRW, DSM, LORN, Google – for federated searching;
- OAI-PMH and LORAX – for harvesting;
- LDAP, CAS and External Authentication (Shibboleth and Microsoft ISA) – for authentication;
- SOAP and WSDL – for web services;
- RSS and Atom – for publishing;
- ODRL – for storage of Digital Rights; and
- MADS, MARC 21, MARCXML and MODS – for library system interfaces.
- Section 508 of the Rehabilitation Act issued from the United States federal government
- Web Accessibility Initiative (WAI) issued by the World Wide Web Consortium (W3C).

Alignment with generally recognized industry standards for learning management to include:

- IMS, SCORM, IEEE, LOM, Common Core, etc

Alignment with generally recognized industry standards for Directory Services to include:

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- LDAP Protocols - Lightweight Directory Access Protocol (LDAP) shall be used to provide access to directory and application services.
 - LDAP is the lightweight version of Directory Access Protocol (DAP), which is part of X.500, a standard for directory services in a network.
 - As a widely accepted industry standard for access to directory information, LDAP supports multi-vendor interoperability by providing an open, extensible, vendor-independent, platform-independent, protocol standard.
 - LDAP directories provide repositories for security-related data (e.g., userIDs, passwords, URLs, pointers, binary data, Public Key Certificates, etc.).
 - The LDAP protocol directly supports various forms of strong security technology used to perform authentication, privacy, and data integrity services.
 - The LDAP Version 3 proposal for Transport Layer Security (TLS) includes data encryption methods.
 - LDAP supports the use of Directory Services Markup Language (DSML)v2 and Simple Object Access Protocol (SOAP) to allow LDAP directory information to be expressed in a common format and transmitted beyond the traditional firewall and into Internet-based applications.
 - LDAP supports the use of the open, industry standard Java Naming and Directory Interface (JNDI) for directory access and support.
 - LDAP supports the use of the Security Assertion Markup Language (SAML) standard as an authentication protocol that may be used between Web servers for federated affiliation.
 - The Directory Enabled Networking (DEN) and Common Information Model (CIM) XML-based, industry-standard initiatives are being mapped into the LDAP directory structure. CIM is more comprehensive than the Desktop Management Interface (DMI) model and can be used in conjunction with the Simple Network Management Protocol (SNMP).
 - Future meta-directory services should be established with individual LDAP directory repositories and be accessible via standard LDAP protocols. Meta-directory service design should include obtaining an Object Identifier (OID) tree from the Internet Assigned Numbers Authority (IANA) that can be used to uniquely identify attributes and object classes to facilitate the matching and coordination of information among individual LDAP implementations.
- **Address the compatibility with existing institutional and/or statewide infrastructure.**

Nebraska's BlendEd eLearning System will embrace and interface with existing SIS, LMS, CMS, and IDM solutions already in place and will utilize Network Nebraska as the core transport backbone and for Internet access.

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Section 6: Preliminary Plan for Implementation (10 Points)

9. Describe the preliminary plans for implementing the project. Identify project sponsor(s) and examine stakeholder acceptance. Describe the project team, including their roles, responsibilities, and experience.

Project Sponsor: ESU Coordinating Council

Stakeholder Acceptance and roles/responsibilities: Note:

- a) ESUCC – would provide overall coordination, administration, support, and direction for the statewide K-12 eLearning implementation as appropriate in partnership with NDE, NET, higher education and other P-16 partners. The following represent some of the ESU contributing sub-entities.
 - ESUCC Projects including myeLearning/ANGEL, Instructional Materials and Distance Education, Cooperative Purchasing, and
 - ESUCC/ESU Professional Development Organization affiliate groups. (Network Operations Committee, Staff Development Affiliate, Instructional Materials Affiliate, Technology Assistance Group,
 - All ESUs directly and as represented by ESU network and DL consortia
- b) Nebraska Department of Education – Policy direction linking school improvement goals with systems development and direction on digital education. Development of technology integration leadership, coordination of state data systems, leadership in linking school accountability requirements with professional development, leadership in linking content to standards, leadership in subject areas including language arts, math, science, social sciences, and career education, and general support to lead partnership efforts.
- c) K-12 school districts – Districts would retain local control concerning the adoption and use of eLearning resources and use of instructional offerings but would be key contributors to systems to evaluate, develop and review BlendEd systems.
- d) University of Nebraska System – Scalable support for network operations, systems administration, leadership in linking P-16 resources and goals, provide guidance and direction to enhance transitions between K-12 and higher education
- e) Community Colleges – Request to provide access to dual-credit courses, instructional design, career academy and provide leadership to transition between high school and community college and career
- f) State Colleges – Request to provide leadership in teacher/administrator professional development and transition between high school and college.
- g) NET – Nebraska Virtual Partnership plans include scalable content repository and local and national content facilitation. Content repository architecture and systems.
- h) Coordinating Commission for Postsecondary Education – Request to assist in data systems to track evaluation and efforts.
- i) UNL-Independent Study High School – Nebraska Virtual Partnership plans include but are not limited Course management and delivery, Instructional Design and

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- development of courses, facilitated processes for distributed courses, and recommendations for e-course quality management
- j) Nebraska Dept. of Labor – Request to link work force and labor training efforts to career and technical education to create link between K-12 career education and job training.
 - k) Partnerships for Innovation – Request to provide ongoing leadership and collaboration between community colleges, businesses, ESUs, state agencies, and projects such as Nebraska Career Connections and such professional development related to career education.

Project Team:

The scope and complexity of this project will require the involvement of many separate entities and many different people. The ESUCC will provide overall project management to coordinate project activities. There will be project teams established for each major component area with appropriate representation from the entities listed in this section above. As previously noted, the effort will be first guided by the ESUCC **BlendEd** advisory committee, an expanded Nebraska Virtual Partnership team and staff from each partner. Network related efforts will include the ESU-NOC leadership for LDAP and hardware, ESUCC staff from Distance Education, e-Learning, & instructional materials. Additionally, ESU staff from a variety of affiliate groups and support from Network Nebraska, and partners is anticipated.

The establishment of a detailed project plan and the necessary teams to support implementation of that plan will be the first order of business if this proposal is approved and funded.

10. List the major milestones and/or deliverables and provide a timeline for completing each.

- Statewide directory services:
 - Options analysis (open source) April 2013 –August 2013
 - IDM HW/SW installed and available – October 2013
 - Develop federated authentication strategies and processes – July 2013 – December 2013
 - Develop NSSRS interfaces – July 2013 – December 2013
 - Develop LOR, SIS, LMS interfaces – July 2013 – June 2014
 - Begin deployment – January 2014
- Statewide learning object/content repository system:
 - Begin options analysis April 2013
 - LOR selection August 2013
 - LOR HW/SW installed and available – October 2013
 - Load existing digital instructional content – October 2013 – May 2014

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- Enhancement of digital content collection: October 2013 - June 2016 and beyond
- Initiate instructional design training: October 2013
- LOR pilots – October 2013 – June 2014
- Grades 9 – 12 - LOR “go-live” February 2014
- Grades 6 – 8 – LOR “go-live: July 2014
- Statewide learning management system:
 - Begin options analysis April 2013
 - LMS selection August 2013
 - LMS HW/SW installed and available – October 2013
 - LMS pilots – December 2013 – December 2014
 - Develop required interfaces to LOR, IDM, SIS systems – October 2013 – June 2014
 - Develop and implement portal strategy – October 2013 – June 2014
 - Grades 9 – 12 - LMS “go-live” begin in February 2014 for early adopters converting from existing LMS deployments
 - Grades 6 – 8 – LMS “go-live: begin in July 2014
- Professional Development/Instructional Design:
 - Areas of need analysis April 2013 – June 2014
 - Develop instructional design guidelines/standards July 2013 – December 2013
 - Develop instructional design training October 2013 – April 2014
 - Begin early adopter instructional design training April 2014
 - Collaboration with Higher Ed regarding ed tech curriculum development June 2014 and beyond
- Assessment and interventions:
 - Define assessment and intervention goals and objectives July 2013 – December 2013
 - Develop assessment methods and metrics beginning October 2013
 - Develop intervention strategies beginning January 2014
 - Deploy for grades 9 – 12 beginning July 2014
 - Deploy for grades 6 – 8 beginning January 2015
- Content and curriculum development
 - Identify curriculum subject areas of need April 2013 – July 2013
 - Develop strategy for development of needed curriculum April 2013 – June 2013
 - Secure required curriculum development resources by August 2013
 - Development of curriculum and content August 2013 and beyond

11. Describe the training and staff development requirements.

- a) Instructional design – training for staff that will develop the actual instructional design training
- b) Instructional design training for teachers

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- c) Federated LDAP authentication– technical training for implementing federated IDM
- d) LMS specific training – both technical for implementation and support; and operational training for teachers
- e) Learning object repository/LOR meta-tagging/taxonomy – existing resources or consulting to establish required meta-tagging and classification system for content
- f) Content workflow for learning object review, approval, and uploading
- g) Assignment of digital rights management and copyright
- h) Systems administration training for newly implemented and hosted systems

12. Describe the ongoing support requirements.

There will be ongoing support required for many components and services associated with the implementation of the **Nebraska BlendEd eLearning System**.

This proposal assumes that most of the required support will be provided by existing technical and instructional resources (e.g. ESUCC, NDE, NET, the University of Nebraska, and others). The proposed coordinated, collaborative implementation and support model stresses leveraging our limited resources through careful deployment and the centralization of services as appropriate (e.g. the concept of “value-added” services over Network Nebraska). However, it is acknowledged that there will necessarily be some new, additional support resources required. The type and amount of support resources will be dependent on the actual implementation timeline that develops to support the phased multi-year implementation and the associated adoption levels.

Major areas of support include (but are not necessarily limited to): infrastructure and operations, networking, instructional design, LMS, LOR, helpdesk, content approval/vetting workflow, etc.

Section 7: Risk Assessment (10 Points)

The greatest risk for Nebraska education is to do nothing.

The adoption and use of learning and content management technologies in K-12 education is already occurring throughout Nebraska (and the rest of the country) and this trend will continue. However, the trends also suggest that infrastructure, training, content and support systems must be adaptable to emerging technologies including mobile devices, cloud based systems, and multiple platform accessibility.

Nebraska’s various implementations to date (e.g. District 66, Omaha Public Schools, mylearning.org, NVIS, the Nebraska Virtual Academy, and the GNENC pilot) have all been separate and unique. This approach necessitated separate, different: licensing/purchase agreements; hardware, software, and support resources; user ids and passwords; the development of instructional design and training materials unique to each deployment; and does not encourage or facilitate the sharing or exchange of instructional and course materials. A system needs to be developed to provide the foundation for effective implementation of a wide variety of resources from a wide variety of potential partners.

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By putting in place the proposed statewide **BlendEd eLearning** framework, these implementations can be accommodated immediately and eventually integrated into a single statewide eLearning system. This approach will avoid interruption of existing implementations and additional unnecessary expense, and provide access to these important and valuable instructional tools and resources for Nebraska's K-12 teachers and students as quickly as possible.

13. Describe possible barriers and risks related to the project and the relative importance of each.

- a) Requires a great deal of cooperation and collaboration across many levels and many entities. Although considerable ground work has been laid, much of the effort is dependent on multiple partners effectively implementing a complex set of plans.
- b) No single existing P-16 level control/coordination point for initiative.
- c) Budgetary constraints and limitations.
- d) Status of the availability of Education Innovation Fund beyond 2015-16 or other funds that can support strategic investments in this effort.
- e) Resistance to adoption of the proposed technologies at all levels of stakeholders.
- f) Some existing policies may need to be updated and revised to maximize implementation of **BlendEd** technologies proposed.
- g) Capacity of project implementation team is limited and disbursed among many entities.

14. Identify strategies which have been developed to minimize risks.

The Nebraska Virtual Academy at ESU 13 and supported through consortia efforts at GNENC (ESU13), myeLearning.org (ESUCC & previously at ESU 10), District 66/Westside, and Omaha Public Schools are all innovators in the area of K-12 eLearning. Communicating the success of these initiatives and entities will be important. Building on the trust and collaborative relationships that already exist between Nebraska school districts, and ESUCC and NDE leadership and involvement will also be critical.

It is also recommended the ESUCC establish a statewide **BlendEd eLearning System** consortium with representation from all partnering entities to provide oversight for this initiative to ensure implementation of a robust, integrated eLearning system that will be inclusive of all Nebraska school districts. This effort will include stakeholders from the array of P-16 partners and interests.

Partners will have to identify staff available and prioritize time and resources necessary to meet deadlines. A project management tool will have to be used to guarantee targets and deadlines are met.

Section 8: Financial Analysis and Budget (20 Points)

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It is imperative a statewide eLearning strategy is established and implemented as quickly as possible. A variety of eLearning technologies are already being utilized extensively and successfully in our higher education institutions and in some K-12 schools throughout the state. The implementation of these technologies throughout Nebraska's K-12 community will continue. Without a statewide strategy implementations will continue to occur on a fragmented, disjointed, extremely inefficient, less effective, and much more expensive basis.

The need for statewide support and funding to provide extended learning opportunities to our K-12 students was recognized sometime ago. LB1208 earmarked the use of Nebraska Lottery money for that purpose. It put in place incentives for schools to provide connectivity to Network Nebraska and to develop and share instructional content, primarily video based instruction. Eighty percent of Nebraska's schools are now connected to Network Nebraska and over 250 video-based courses (including over 50 STEM subject related courses) are being exchanged on a daily basis.

This initiative proposes extending that model to provide every K-12 student and teacher in our state access to a comprehensive statewide eLearning environment that would significantly enhance instructional opportunities and capabilities. In addition to the many organizational and support advantages these eLearning technologies provide classroom teachers and students, they would also greatly enhance the ability to support both synchronous and asynchronous distance delivered instruction throughout the state.

Implementing a statewide eLearning strategy/environment will result in not only much more efficient and effective utilization of these technologies and a single consistent eLearning framework for Nebraska's K-12 teachers and students, but also will result in significant overall savings/cost avoidance.

The **BlendEd** initiative anticipates the following in financial support and cost savings:

- a) A single coordinated and collaborative approach to implementing the recommended **BlendEd eLearning System** will be much more cost effective than continuation of the current disjointed, piecemeal implementation model.
- b) Request Legislative support to recommit, repurpose, and expand current incentives for distance education that would invest in expanded use of **BlendEd** efforts available over Network Nebraska
- c) Utilize/leverage existing expertise and resources from a broad set of partners.
- d) Explore other funding opportunities – e.g. Federal and private foundation grants
- e) Anticipate lower per teacher/per student “subscription/use fees” for LOR/LMS access/usage through statewide contracts and licensing agreements.
- f) Replacement of expensive hardcopy textbooks with ebooks/etexts will transform and redirect traditional curricular costs
- g) User fees for services provided by ESU Coordinating Council, Network Nebraska or other partners engaged in the **BlendEd eLearning System**.
- h) Increased specific appropriations for the Nebraska Department of Education in support of technology related initiatives including ESU distance education

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15. Financial Information

The “Financial” information tab in the Nebraska Budget Request and Reporting System (NBRRS) is used to enter the financial information for this project (NOTE: For each IT Project Proposal created in the NBRRS, the submitting agency must prepare an “IT Issue” in the NBRRS to request funding for the project.)

The following embedded worksheet contains a summary of expected costs. Expected funding sources are difficult to estimate at this time. However, certain strategic investments in foundational hardware, staff time, and project management (via advisory groups and partner participation) improve the likelihood of project success. State level investment in shared services such as proposed here encourages participation, enhances possible user fee revenue, and ultimately encourages strategic collaboration to fund the project. However this proposal neither assumes nor recommends a singular funding source. Instead, it anticipates that multiple funding sources will be required and encouraged to fully develop services in the future.



Worksheet in Project
Proposal Form.xls

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Appendix A – additional eLearning technical component implementation/use information

The following describes the functionality the primary proposed components of the statewide BlendEd eLearning environment can provide.

It is important to note that eLearning technologies can be utilized to supplement classroom instruction (often referred to as “blended” or “hybrid” instruction) or deliver stand-alone course instruction to remote/distance learners and teachers can utilize all or none of these functional features as appropriate in their instruction.

Learning Management Systems/LMS - support the organization and presentation of instructional materials.

- The LMS serves as the virtual classroom for each course and the virtual backpack for the teacher and each student.
- A course site/”virtual classroom” is established for each course and class.
- Teachers are assigned to each class and each student is “enrolled” in every class they are registered for each semester.
- The LMS serves as the focal point for instructors for professional development and as they develop lesson plans, assignments, tests and quizzes, access to relevant reference materials, collaborative learning activities, track attendance, monitor grades and student progress, etc.
- The LMS serves as the student’s single point of entry to access all things academic (i.e. their academic portal). They can view their courses, class and test schedules, office hours for teachers, a calendar of events and activities, announcements and notifications, class notes, participate in chat and threaded discussion activities, view test results virtually immediately, submit homework assignments, etc.

Learning Object/Content Repository Systems support the storage, organization, classification, and controlled access to instructional materials.

- The LOR serves as the textbook and library for each course.
- Implemented on a statewide basis a LOR would serve as the Nebraska Knowledge Repository and utilized to organize, store, and facilitate the sharing of instructional content.
- The LOR based knowledge repository would serve as the basic platform around which instructional materials are developed and organized. Many publishers offer digital instructional materials and these materials are rapidly replacing the textbooks of today.
- Knowledge repositories can serve as a means to offer access to “certified” (i.e. current, accurate, standards aligned) content. This addresses the very real concerns about the validity of much of the content available on the internet accessed via the widely utilized search engines of today.

Federated Directory Services(LDAP) is a shared information infrastructure for locating, managing, administering, and organizing common items and network resources, which can

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include users, groups, volumes, folders, files, printers, devices, telephone numbers and other objects. Information within objects can be made secure so that only users with the available permissions are able to access them.

The unique NSSRS id and password for each K-12 student, teacher, administrator would be loaded into and maintained within a federated LDAP system that would be utilized as the single sign on authentication point of access for all eLearning resources and services.

Access control would be administered through a combination of directory services level and eLearning component level security authorities and permissions via a federated authentication approach that would allow access across multiple separate eLearning components (e.g. the statewide LOR knowledge repository, LMS, or other network services) via a single sign-on.

Federation is enabled through the use of open industry standards and/or openly published specifications.

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Appendix B – Glossary of Terms

Asynchronous learning

Any learning event where interaction is delayed over time. This allows learners to participate according to their schedule, and be geographically separate from the instructor. Learning could take place in the form of a correspondence course or eLearning. Interaction can take place using various technologies like threaded discussion or email.

Blended learning

An increasingly popular combination of online and in-person, classroom learning activities, blended learning courses may be typified by integrating online with traditional face-to-face class activities in a planned pedagogically valuable manner; and where a portion (institutionally defined) of face-to-face time is replaced by online activity. It is primarily focused on integrating two separate paradigms, the classroom (synchronous) and online (asynchronous).

Collaborative learning

Learning that takes place in a peer-oriented environment. The development of collaborative tools such as web conferencing, instant messaging, email, weblogs etc. allow collaborative learning to take place between individuals/ groups that are geographically dispersed.

Content Repository/Learning Object Repository (LOR)

A software application that allows for the storage, indexing, retrieval and archiving of content. In addition, it may also allow for version control of content through the use of check-in/check out. A LOR allows for the reuse of expensive content assets such as brochures, photographs, video etc. to be integrated in a variety of educational applications including a Learning Management System, digital library, or other interfaces; See also LOR; LMS; LCMS.

Courseware

Any type of instructional or educational software program.

Discussion board

A general term for any online "bulletin board" where you can leave and expect to see responses to messages you have left. On the Internet, Usenet provides thousands of discussion boards. Forums on the Internet or an intranet where users can post messages for others to read.

eLearning

Although the exact definition of the term eLearning is a hotly debated topic, it can broadly be defined as the process of sharing information and creating knowledge using an electronic medium. In other words, eLearning enables you to use the massive advances in technology such as the internet, learning management systems (LMS) and CD's to create interactive materials that increase productivity through increased knowledge retention. The benefits of eLearning include factors such as global access, lower costs, increased training speed, better performance, greater flexibility and more effective accountability. In addition, eLearning allows you greater flexibility in terms of deployment options (CD, DVD, LMS, Internet and intranet) and greater user interactivity (audio, video, interactive text, animations, and graphics). Clearly the advances in

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technology can be extremely beneficial. However, the important thing to realize is that eLearning is a specialized field that requires cross functional expertise. In other words vendor selection is a key consideration when thinking about developing an eLearning program.

Face to face (F2F)

A term used to describe the traditional classroom environment. Also see Instructor led training.

Instructional design

A systems approach to designing a learning experience. Heavily promoted by DoD investment, formal instructional design is currently under attack for fostering slow development, a printed paper mindset, and insufficient attention to informal learning.

Intellectual property

This concept is becoming more important with many companies' competitive edge residing with their employee's knowledge rather than physical assets. An example of intellectual property may be a mathematical formulae, software code or unique manufacturing process. In some cases intellectual property may be protected by law e.g. trademarks and copyrights.

Interactive multimedia

Allows two-way interaction with multimedia course material, another computer, or another user with direct response to the input, as opposed to one-way communication from TV, video, and other non-responsive media. Interactive attributes commonly include data or text entry, mouse input, touch screens, voice commands, video capture, and real-time interaction.

Interoperability

One of the requirements of the sharable content object reference model, commonly known as SCORM. In simple terms interoperability is the ability of different elements to work with each other. In the case of eLearning it translates into different software and hardware elements working in unison.

Intranet

An internal computer network owned by a company or organization and accessible only to designated staff.

LDAP – Lightweight Directory Access Protocol

See Project Proposal, Section 5 – Technical impact, sub-section 8 – Directory Services

Learning content management system (LCMS)

A LCMS is a system that is used to create, store, use and reuse eLearning content in the form of learning objects. Although the terms should denote the combination of a learning management system (LMS) and a content management system (CMS), LCMS and LMS are often interchangeable used.

Learning management system (LMS)

A web based system that allows for the addition, deployment and tracking of learning content used for training purposes. Typically an LMS includes functionality for course catalogs

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(search/browse functionality), launching courses, registering new students, tracking current/completed student progress and assessments. Most of the learning management systems are developed to be independent of any content development/authoring packages. In addition, an LMS usually does not incorporate any authoring functionalities, but rather focuses on managing learning content.

Learning object

Learning objects (LO), also sometimes referred to a reusable learning object (RLO), is the smallest building block used in any eLearning program. The main value of using the learning object approach/philosophy in training projects is the idea that LO's can stand independently of a framework such as a eLearning section/course/program and be reused in a totally different training setting. This means that LO's can be reused resulting in a much higher return on investment due to the reuse of existing assets within the organization. An important/essential factor that aids in the reuse of LO's is the labeling of metadata. If LO's are given accurate descriptors with the necessary categorization then the reuse of LO's are much more likely.

Learning portal

Any Website that offers learners or organizations consolidated access to learning and training resources from multiple sources. Operators of learning portals are also called content aggregators, distributors, or hosts.

Metadata

Information that provides macro-level details about a course object, such as author, title, subject, description, date created etc. In the eLearning industry metadata is a valuable resource to ensure the reuse of valuable content. Typically metadata is recorded in XML files and are read by LMS and LCMS systems.

Metatag

An HTML feature that describes/identifies content on a web page. Metatags are used by search engines/web crawlers to identify and categorize content.

Module

A distinct collection unit of content. Typically, one component (section) of a course or a program.

Needs assessment

An essential initial step in any eLearning development program. This step should involve discussion between the development team and the customer and all decisions should be documented.

Online learning

An umbrella term used to describe any education or training that occurs online.

Open source software

A program whose source code is available to the software development community for use and/or modification from its original design at no charge. Open source code is typically created

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as a collaborative effort in which programmers improve upon the code and share the changes within the community. Some of the most popular software programs have their origins as open source including Linux OS and Firefox.

Sharable content object reference model (SCORM)

SCORM is a suite of technical standards developed by the Advanced Distributed Learning (ADL) initiative to develop common specifications and standards for technology-based learning deployed over the internet. These standards enable web-based learning and content management systems to find, import, share, reuse, and export learning content in a consistent manner. In addition, it allows user tracking and reports to be generated based on learning objectives. Essentially, SCORM standardized the method of communication between eLearning courses and SCORM conformant learning and content management systems.

Standard

A documented and industry sanctioned eLearning specification that is controlled/enforced by a governing authority such as IEEE or ADL to ensure a particular valuable aspect of the eLearning industry such as quality, reusability and interoperability.

Streaming

A technique where media (audio, video, or both) are downloaded to the user's computer in a continuous stream. Streaming cuts down on the download time required.

Synchronous learning

A real-time, instructor-led online learning event in which all participants are logged on at the same time and communicate directly with each other. In a virtual classroom, the instructor maintains control of the class, with the ability to "call on" participants who raise their electronic hands from a distant location. Students and teachers use a whiteboard to see work in progress and share knowledge. Content can also be delivered using audio- or videoconferencing, Internet telephony, and two-way live broadcasts of lectures to students in a classroom.

Video conferencing

Using video and audio signals to link participants at different and remote locations.

Virtual classroom

A simulated classroom that allows students to interact using software such as live chat, forums, desktop sharing etc.

Virtual community

An online community where people can communicate and share ideas.

*Source - <http://www.cybermediacreations.com/elearning/glossary.html>

Collaborate with Hed on ed tech curriculum for teaching programs																					staff - NDE, ESUCC, UN&NSCS teachers college staff	X	X	X	X																															
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Assessment & Interventions																																																								
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Define intervention goals/objectives/requirements																						staff - ESU, DECC, NEVA, NDE, UN system and ISHS	X																																	
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Deploy/implement - grades 9 - 12																						staff - ESU, DECC, NEVA, NDE, UN system and ISHS		X																																
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Develop/define strategy for the delivery of curriculum																						staff - NDE and ESU level - ISHS also involved	X	X																																
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Deliver content																						staff - NDE and ESU level - ISHS also involved	X	X	X	X	X	X																												
Content/Curric Development Costs																						25,000	50,000	50,000	50,000	50,000	50,000																													
Overall Project Cost - annual																						35,000	1,370,000	1,260,000	1,310,000	1,565,000	1,850,000																													
Overall Project Cost - Cumulative																							1,405,000	2,665,000	3,975,000	5,540,000	7,390,000																													

