21st Century Learning—
A Roadmap for Iowa's PK–12 Future: Recommendations From the Iowa Technology Task Force

June 2010

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Background

In the fall of 2009, the State Board of Education and the Iowa Department of Education convened a group of Iowa educators to explore the future of online learning and technological advances to support 21st century learning in Iowa's PK–12 districts and schools. Fifteen Iowans (members may be found in Appendix A) were invited to participate in the ad hoc Iowa Technology Task Force. The group held two face-to-face meetings in Des Moines and held online discussions between and after the meetings. Both the online and the face-to-face discussions were rich and thoughtful, and members tapped into the most current resources and expertise from across the nation and the world.

Although not all task force members agree with each and every recommendation in this report, the overall direction put forth reflects the group's collective perspective. Members are committed to a common State Board of Education goal: To ensure that all Iowa students are engaged in 21st century learning experiences and graduate technologically literate.

There are limitations to these recommendations. First, the task force members recognize that access to robust student information systems and use of data to inform educational decision making are important factors. Second, the task force members emphasize that affordable broadband connections must be available statewide if students are to have equitable access to online resources. Members believe that broadband access needs to go beyond the four walls of the school building into the entire community (including rural areas) so that the promise of anytime/anywhere/at any pace learning can be a reality. Although these two components are linked to the recommendations in this report, other state-level groups have been assigned the tasks of more fully addressing data systems, district-level productivity tools, and the future of networking infrastructure. This group did not examine the existing capabilities or shortcomings in these two areas in any depth. The task force members are in agreement that the State Board of Education should acknowledge these two important resources, however.

Rather than provide lengthy justification of the need to change Iowa's education system to meet the opportunities of 21st century learning, this report cites a number of resources in Appendix B. The websites and blogs cited in Appendix B provide living sources of dialogue to the State Board of Education and Department of Education as they move forward on next steps.

One reference of special note is the timely release of "The National Education Technology Plan 2010" (http://www.ed.gov/technology/netp-2010). The research, promising practices from other states, and recommendations provide both extensive resources and opportunities for ongoing dialogue about how technological advancements and new research into learning can and must transform our education system. This task force report does not include in-depth descriptions of ongoing work in other states because resources are provided in documents such as the National Education Technology Plan 2010.

Iowa Technology Task Force Belief Statements

Task force members engaged in lively dialogue about the need for changes to our educational system in order to ensure that Iowa's students receive the very best learning experiences

possible. Through eight months of discussions, four themes or beliefs emerged that reflect the collective thinking of the group. Embedded in discussion of the beliefs are some examples of Iowa efforts to transform education. The Iowa initiatives cited are at various stages of implementation, and task force members recommend that the State Board of Education and Department of Education track their progress and provide needed support. More details about each belief may be found immediately after the recommendations of the task force (beginning on page 7).

Belief 1: The ambitious learning goals of the Iowa Core, including development of 21st century skills, can be achieved only by engaging learners and only with learning powered by technology.

Belief 2: Iowa educators need support and access to 21st century resources, including professional development, in order to transform the learning process.

Belief 3: Existing state and local policies and practices need to be revisited and revised if Iowa's educational system is to prepare 21st century learners who meet the goals of the Iowa Core Curriculum.

Belief 4: The biggest barrier to transforming the learning process is not the lack of funding for technology but our own mental models of what learning should look like.

State Board of Education Roles in the Recommendations

The Iowa Technology Task Force believes that the Iowa State Board of Education should focus on two critical and unique roles to support the following recommendations. Members believe that the State Board of Education has an *advocacy* role, to highlight and champion promising practices and to articulate the need for change. Further, members believe that the State Board of Education's authority in *policymaking* can increase expectations for change while at the same time providing needed support.

Recognizing that schools have different levels of performance and readiness for change, the Iowa Technology Task Force recommends a collaborative implementation effort to include, but not be limited to, the following partners: Iowa State Board of Education, Iowa Department of Education, the area education agencies (AEAs), school districts, nonpublic schools, teacher and administrator preparation programs, the community colleges, and Iowa Public Television.

Task force members recognize that the following recommendations are extremely ambitious at a time when budget cuts and Department of Education retirements impose difficult choices. Further, members acknowledge that not all recommendations may be undertaken simultaneously, that a phased-in approach will be necessary. Although policymaking recommendations are listed under advocacy, it is possible that key policy actions may leverage significant change in the advocacy recommendations.

Advocacy Role

- Support the innovative work already underway at the Department of Education and across the state in districts, schools, AEAs, community colleges, and educator-preparation programs. The tasks that follow are examples of resources under development or work yet to be initiated, and they will require additional funding sources in order to progress. Explore possible sources of funding for these initiatives such as E-rate, federal Title IID, state appropriations, and grants.

  i. Encourage the creation of a "one-stop shop" (website) that will act as both a repository for PK–12 online resources and an interactive space for teachers. Such a website could provide access to resources such as current Iowa Learning Online resources, AEA online professional development for teachers and administrators, and model technology-infused programs and could act as an online interactive community resource for educators and students. This site should be more than a simple repository of resources. In addition, it should provide an online community space where "birds of a feather" educators (e.g., chemistry teachers, primary-grade reading teachers) can share resources and interact. Such a site can also provide a safe wiki space for educators to work with their students. The Texas Epsilen site is an example: http://tea.epsilen.com/Public/Home.aspx.

  ii. Expand the collaborative work of Iowa Learning Online to include online courses for Iowa's high school students (including college-credit courses) from all Iowa education sectors.

    a. Increase the offerings of Iowa Learning Online to include more courses, including advanced placement courses (in cooperation with the Belin-Blank Center) and replacement units for high school students. Expand offerings to include units of instruction and possibly even online courses for middle school and elementary students. This effort will require an increase in staffing and an ongoing funding source.

    b. Facilitate efforts to adopt a common online learning management system to be used by Iowa's PK–12 districts, community colleges, regent universities, and independent colleges and universities. Where feasible, consider using an open source learning management system.

    c. Recognizing that local educators, parents, and students do not have the time and resources to examine individual online courses to see whether they are high-quality courses and aligned to the Iowa Core, provide a rating system for quality and the degree to which courses align to the Iowa Core. Post information on the one-stop-shop website. Review and build upon work already done by iNACOL (see http://www.inacol.org/research/nationalstandards/index.php).
    The magnitude of this work may necessitate enlisting assistance from an entity outside the Department of Education.

  iii. Support the collaborative work of Iowa districts that are launching innovative ways of using technology, especially ensuring opportunities for high-quality professional development that provides teachers with the skills to transform the learning process through use of technology. Consider highlighting these districts and ensuring that they

have the necessary professional development experiences to serve as model sites for the Iowa Core, Authentic Intellectual Work, and embedded formative assessments.

iv. As districts and schools move forward in obtaining technology for students and teachers, work of the Department of Education and AEAs should ensure that professional development opportunities align the Iowa Core with technology-transformative learning experiences, such as development of Iowa Core unit plans and lessons that capitalize on the power of technology to provide students with higher order thinking skills.

v. Provide more professional development support to teachers so that they may successfully utilize the educational power of game-based learning and virtual reality with their students.

vi. In order to sustain the work of the AEA Online Council, the State Board of Education and Department of Education should advocate that the new online professional development resources provided be considered core, basic AEA services.

vii. Consider how the Research and Development School at the University of Northern Iowa can be a model and play a critical role in online learning opportunities.

- The Department of Education, whenever possible and to the extent feasible, should integrate and model best practices through technology.

  i. Create unit plans aligned to the Iowa Core that effectively engage students through the use of technology. Post them on the one-stop-shop website. Encourage Iowa educators to contribute their unit plans to the site (in the collaborative workspace). In the collaborative workspace, encourage teachers to comment on and improve each other's unit plans.

  ii. Establish model formative assessments that allow students and teachers to utilize technology. Encourage Iowa educators to contribute their formative assessments to the site (in the collaborative workspace).

  iii. Increase capacity for Authentic Intellectual Work through the use of technology.

  iv. Ensure that Iowa Department of Education consultants have access to high-quality professional development so they may model best practice in use of technology.

  v. Emphasize that every Department of Education initiative utilizes online tools and resources.

  vi. Utilize technologies for effective coaching and mentoring of educators, rather than relying solely on face-to-face coaching and mentoring strategies. Use technology to remove isolation of teachers (what the National Educational Technology Plan calls "connected teaching").

  vii. Advocate at the federal and state levels for the expansion of broadband access statewide. Although students may have access to broadband at school, advocate for affordable broadband access away from the school building (e.g., at home).

  viii. Champion efforts to provide each PK–12 educator with a personal or portable computer, recognizing that without such a tool, teachers will be limited in their capacity to transform education in their classrooms.

ix. Actively solicit strong partnerships with Iowa Public Television (IPTV) to take full advantage of the Public Broadcasting System and local IPTV resources.

x. Obtain or create sample local policies and practices that demonstrate to districts how students can be safe while utilizing the Web and other connected technologies.

xi. Continue to champion the value of the state's fiber-optic network, the Iowa Communications Network (ICN), to Iowa schools and districts and to state-level policymakers. Emphasize that the fiber connections that the ICN provides have the necessary enormous bandwidth and capacity for educators and students to access online resources.

xii. Encourage collaboration with the engineers at the ICN, AEA personnel, and district-level technology specialists to provide internal networking, especially wireless networks, and storage expertise to PK–12 districts and schools. With the advent of cloud computing, districts may no longer need to expend funds and resources for local storage of data and access to it but will need assistance with choices and options in this area. Also encourage the work initiated in some of the AEAs to contract with districts for technology support.

xiii. Advocate for the continuation of funding for the Enhancing Education Through Technology/Federal Title IID program in order to fund educational technology at the Department of Education, AEA, and LEA levels. (Currently the sole source of funding for the Iowa Department of Education technology consultant is provided through Title IID.)

- Utilize various State Board of Education communication strategies, including frequent Board of Education meetings, to highlight the importance of technology in reaching the ambitious goals of the Iowa Core. Provide examples that demonstrate how learning can truly be personalized with the transformative impact of technology.

- Continue to utilize the Technology Task Force as an advisory group to assist the Department of Education and the State Board of Education with issues related to effective technology-infused educational practices. The duties may include, but may not be limited to, the following:

  i. Examine the National Educational Technology Plan continually and recommend to the State Board of Education and Department of Education needed changes to policy and practice.

  ii. Share with the State Board of Education and Department of Education the successes and challenges of Iowa districts that are implementing innovations through technology at all levels, including middle school and elementary schools.

  iii. Provide examples of successful technology-focused capacity-building work in other states. For example, the integration specialists in Virginia and the eMINTS professional development experiences in Missouri are two efforts that have been shown to have significant impact on teachers' ability to meet the needs of all their students by transforming the learning process.

  iv. Identify examples of schools and districts where existing resources, such as print-based materials, were redirected to technology in order to more effectively support learning. For

example, identify schools that have elected to use more free online resources and to downsize their purchase of textbooks, thereby freeing up funds for lease or purchase of technology for students and educators to use.

Policymaking Role

- Reexamine state-level policies that allow districts and high schools to act as gatekeepers in determining whether their high school students may take online classes to meet graduation requirements. Consider posting a consumers' guide for students, parents, districts, and schools to use. The posting should occur after the development of a rating system (rating criteria could be adapted from sources such as iNACOL) and determination of course alignment to the Iowa Core. (Currently, if a student wishes to take an online class from any source, the district has the right to refuse to accept the course for credit.)
- Consider implementing policies that can extend Iowa Learning Online courses to students in middle and possibly elementary school.
- Examine state-level policies that rely on seat time and move toward policies and practices that rely on evidence of performance.
- Strengthen teacher and administrator preparation program standards. In its role as approver of teacher and administrator preparation programs, the State Board of Education and Department of Education should ensure that programs are focusing on the transformative effect that technology must have on PK–12 education.
    i. Ensure that preservice teacher-preparation programs incorporate skills in how to use technology and incorporate discipline-specific and age-specific technology experiences in methods courses (e.g., methods courses that model exemplary practice). Require more than a single one-size-fits-all how-to-techie course in the program. Review new INTASC draft standards and consider utilizing these standards in updating Iowa preparation program standards. (See also the NETS-T standards.)
    ii. Ensure that administrator preparation programs focus on the role of school leaders in creating learning environments where technology can transform learning. (See also the NETS-A standards for school leaders.)
- Examine AEA, district, and nonpublic school accreditation policies to ensure that students have the necessary technology-enhanced tools and resources to prepare them for their future work and education. Ensure that the accreditation process focuses on 21st century skills through the transformative potential of educational technology.

Iowa Technology Task Force Beliefs

Belief 1: The ambitious learning goals of the Iowa Core, including development of 21st century skills, can be achieved only by engaging learners and only with learning powered by technology.

Iowa Technology Task Force members believe that but for the transformative power of technology, the goals of the Iowa Core are beyond reach of the current educational system. The Iowa Core Curriculum (http://www.corecurriculum.iowa.gov/) articulates the critical concepts and skills that Iowa students should learn in order to be prepared for success in postsecondary education and in the emerging global economy. Inherent in the Iowa Core is the recognition that students will progress at different rates and that the method or approach to student learning will require differentiation and even personalization of instruction.

The Iowa Core website acknowledges the lofty challenge ahead: The Iowa Core "takes learning to a deeper level by moving students beyond superficial knowledge to deep conceptual and procedural knowledge. It also enhances student engagement by emphasizing interesting, robust, and relevant learning experiences" (http://www.corecurriculum.iowa.gov/). Implied in the Iowa Core is the assumption that students and educators should have options for engaging in learning, that one size of learning does not fit all. And educators have long expressed the wish to personalize learning in response to the interests and learning needs of each student. In the opinion of task force members, without transforming the learning process through technological innovations, this lofty goal is impossible to attain, no matter how dedicated or talented the teacher.

Iowa Technology Task Force members agree that no longer is the classroom teacher the sole source of adult guidance and feedback for students in regard to the Iowa Core. They believe that technology-enabled personalization of learning will allow an Iowa student to access real-world experts and an endless wealth of online resources without leaving the classroom. Students can use real online tools that professionals in the field use, increasing the likelihood of incorporating 21st century skills into learning. And because the new tools evolve so quickly, our students and educators must always be learners, ready to analyze new resources for their utility in the learning process.

Task force members celebrate the explosion of rich online resources and Web 2.0 collaborative learning and assessment tools (most of which are available free of charge), all the while recognizing that Web 3.0 tools and future generations of Web technologies will offer even more potential to transform learning. The complex 21st century skills inherent in the Iowa Core require support from powerful online tools and collaborative workspaces where PK–20 Iowa educators may share strategies and reflections on practice. Members emphasize that what is needed for educators and students is not just the ability to take information from the Web but also the ability to create resources. Recommendations reflect the need for an Iowa version of what Texas initiated with the Epsilen site, which provides educators and students with more than a one-stop access to resources but where they may contribute, create, and share. (http://tea.epsilen.com/Public/Home.aspx.)

Further, members point out that technology is also critical for providing the student and teacher with assessment of student progress. Technology will be critically important for assessing student work in the Iowa Core. The importance of assessment is not just measuring student learning at the end of a unit/semester/course, but in small steps as the student progresses through the learning. And educators can create assessments that move beyond an external test that is a surprise to students. Current efforts are underway to ensure that formative assessments align to the Iowa Core. Task force members urge that more attention be devoted to technology-based assessments that can also diagnose and modify the instructional practices for an individual student and simultaneously provide feedback to the teacher and to the student (and the student's parents) about what the student has learned.

As part of the discussion about the ambitious goals of the Iowa Core, considerable discussion was devoted to online learning, especially courses that high school students might take from sources both within our state and outside it. Across the country, there are various models of online courses and virtual schools.

Some states, such as Florida, have elected to establish a virtual middle and high school (and now elementary classes are being offered). In the Florida Virtual School (FLVS) model, Florida students have the choice to take courses at no cost to the student through FLVS with the state per-pupil funding following the student. In fact, all Florida public and nonpublic schools are now required to offer the FLVS online option to K–12 students. (Originally, when FLVS started, the Florida legislature paid all costs for students to take courses through FLVS. Several years ago, the funding model changed and now has the per-pupil funding follow the student. Currently, per-pupil funding is paid to FLVS only after the student successfully completes a course. No funding is disbursed if the student does not successfully complete the course). In the Florida model, per-pupil funding follows the student only with courses offered by FLVS, not with courses from outside the FLVS system.

Some states, such as New Mexico, have elected to pursue distance education in a different manner. The New Mexico IDEAL portal provides a statewide e-learning system that encompasses all aspects of learning from traditional public and higher education environments to teacher professional development, continuing education, and workforce education. New Mexico IDEAL's PK–12 e-learning opportunities are offered to students primarily through the students' home school districts. Districts electing to offer courses to their students pay $200 per course per student to defray some of the costs. Home-schooled students may take the courses, but they are required to work through the local school district. Cost to home schoolers is $250 per student per course. ($200 defrays costs for the course while $50 is retained by the district to cover administrative costs.) All courses are provided by highly qualified New Mexico teachers.

In the late 1990s, the Iowa Department of Education opted to take a path similar to the New Mexico IDEAL portal for its high school online courses. Iowa elected to create Iowa Learning Online with the articulated goal of helping "local Iowa school districts expand learning opportunities for their high school students through courses delivered 'at a distance'" (http://www.iowalearningonline.org/). Sources of Iowa online high school credit classes listed in Iowa Learning Online come from Iowa Learning Online, Iowa Online AP Academy, and Kirkwood Community College High School Distance Learning program. The mission of Iowa

Learning Online and a virtual high school like FLVS differ somewhat, although both provide online courses in subject areas with an articulated need or shortage. Some task force members favor having Iowa transition to offering a virtual high school, but all members agree that it is time to reexamine existing state policies about online learning for middle and high school students. (See more details under Belief 3.)

The task force recognizes that Iowa high school students may take college-credit classes through on-line learning opportunities. Iowa's community colleges, Regent universities, and independent colleges and universities make online college-credit classes available to qualified Iowa high school students. The existing policies for 28e-type agreements between high schools and postsecondary institutions and policies for postsecondary enrollment options apply to online courses. Task force members recommend that current policies for postsecondary and college course credit for high school students via online courses should be examined as well to see whether Iowa students have as many options as possible to prepare for their postsecondary careers.

Task force members spent considerable time discussing whether to establish some sort of consumers' guide to online courses or even a process to designate approved online high school courses. Some task force members opined that the days of limiting choices of online courses for high school students should end. Others felt that course choice should be expanded for high school students, but that the choices should be either limited to approved courses or that some sort of detailed information about online high school courses should be made public. Although consensus was not reached, the task force recognizes that educators, students and parents do not have the time (and sometimes not the access) to review all available online courses and resources to ensure alignment to the Iowa Core. But the task force also recognizes that the current policy of allowing high schools to act as sole gatekeeper to limit access to online courses is outdated and needs to be revised. (See more details about policy issues related to this under Belief 3.)

Members also discussed whether more online course choices should be made available to students without requiring their attendance at school. Members discussed whether extensive brick-and-mortar school buildings will be necessary in the future, especially for high school students. But they also recognized that many questions remain to be addressed and answered if education moves beyond the traditional school-centered focus of education. Questions such as hands-on laboratory experiences and cocurricular activities such as athletics and the arts program will arise if students are allowed to do more of their school work, if not the majority of it, away from their usual attendance center.

As some members pointed out, schools currently serve both an educational and a safe-place custodial function for Iowa's youth. These same members emphasized the reality that having students as young as 15 or 16 spend the school day away from an adult-supervised environment is not likely to be viewed favorably by all parents or community members. Other members believe the consideration of providing safe learning locations is secondary to the need for providing more educational options for Iowa students.

Belief 2: Iowa educators need support and access to 21st century resources, including professional development, in order to transform the learning process.

The Iowa Core website acknowledges that the person closest to a student in school—the classroom teacher—is in the best position to determine the pace and rigor of learning for the student. Task force members spent considerable time talking about the professional development and administrator support that will be vital for teachers, not just PK–12 teachers but also faculty in teacher-preparation programs at Iowa's colleges and universities.

Members all agreed that transforming the educational process entails more than a mere sprinkling of technology on top of the current classroom instructional practice. Simply substituting a whiteboard for an overhead projector will not make any difference in student engagement and achievement. And handing a laptop to each student and teacher will not necessarily translate into meeting the ambitious goals of the Iowa Core, although having access to technology is critical.

Technology Task Force members also agree: A basic or minimal level of student and educator technology is necessary (but not sufficient) to transform Iowa classrooms into 21st century learning environments. Although we cannot expect to see 21st century skills exemplified in Iowa classrooms without 21st century tools available for educators and students, we also cannot expect to see teachers magically create powerful learning experiences for their students without support. Research in professional development has shown that teachers need theory, demonstration, practice, coaching, and feedback to change practice (Joyce & Showers, 2002). Dropping a teacher into a colleague's classroom via Skype (as a demonstration) may assist in creating a vision for change, but it is not sufficient for any teacher to be able to create change (just as performing virtual surgery at http://www.edheads.org/does not qualify anyone to be a surgeon).

Effective professional development and preparation programs recognize that it is not that the technologies (whiteboards, laptops, net-books, handhelds, cell phones, you-name-it-next devices) are at fault. The potential for technology is powerful and untapped in Iowa schools and preparation programs. But dropping any technology, no matter how state-of-the-art, into an Iowa classroom with a teacher who has not been supported with quality professional development is a waste of precious resources.

One evidence-based professional development program that utilizes technology at the core of student instruction has been developed and implemented by eMINTS, an independent nonprofit business unit of the University of Missouri (http://www.emints.org/). eMINTS focuses on intensive teacher professional development powered by technology and combines face-to-face and online instruction, incorporating demonstration, practice, coaching, and feedback. Recently, eMINTS added the Intel® Teach Thinking With Technology professional development program to provide additional evidence-based professional development for teachers.

Proven professional development, such as eMINTS, entails two integrated facets that may have direct application to Iowa teachers. To effectively implement the Iowa Core, teachers need how-to training (e.g., how to operate the hardware and how and where to navigate to locate, access,

manipulate, and create resources). Too often, though, the assistance to teachers stops with the how-to, workshop-type training. The second and more important type of professional development that effective programs like eMINTS emphasize gets to the heart of how teachers rethink and redesign instruction so that students take responsibility for learning rather than watch the teacher perform at the front of the classroom.

Recently, the Iowa AEAs partnered with the Iowa Department of Education, Iowa Association for Colleges of Teacher Education, and Iowa Public Television to form the Iowa AEA Online Council. The mission of the AEA Online Council is to endeavor to provide online professional development to PK–12 teachers through the AEA system. The council has identified resources to support the initial year of online professional development. Iowa should give consideration to making such professional development part of the core or basic service provided by all AEAs, rather than a supplementary service.

Considerable discussion among the task force members focused on the power of technology to better connect educators with each other. Teaching was once a very isolated endeavor. A fledging teacher was lucky if s/he had a mentor teacher in the same building whom s/he could call upon to receive advice. But with the advent of online resources and the ability to be part of an online collaborative community, the collective expertise of fellow teachers from across the district, state, and beyond is accessible. In what the National Education Technology Plan 2010 calls connected teaching, the technology advancements could allow the State of Iowa to provide its educators with access other Iowa teachers, college and university faculty, student assessment data, various online tools, lesson units and plans aligned to the Iowa Core, and content-area experts and keep them connected with their students and parents.

Although teachers are key to successful implementation of the Iowa Core, the task force also spent considerable time sharing evidence about the importance of school administrators in the recommended educational transformation process. School leaders are critical players in promoting and supporting educational change (e.g., by creating the culture for such change by removing barriers to change; ensuring teacher professional development opportunities are aligned to desired instructional practices; securing funding for technology-based resources; working with the local school board to implement the Iowa Core).

As task force discussion focused on the needs and skills for Iowa teachers and administrators, members highlighted the essential role of Iowa's colleges and universities. Iowa's teacher and administrator preparation programs prepare the majority of Iowa teachers and administrators for PK–12 schools. And the majority of graduates of Iowa's high schools who elect to go on to higher education choose to attend Iowa's community colleges or a Regent university or an independent college or some combination of the three. The quality of Iowa's high school graduates directly affects Iowa colleges and universities. And the quality of Iowa's teacher and administrator preparation graduates directly affects the quality of Iowa's schools. It is in the best interest of Iowa to have all parts of the education system working for the same mission of preparing graduates with 21st century learning skills.

Belief 3: Existing state and local policies and practices need to be revisited and revised if Iowa's educational system is to prepare 21st century learners who meet the goals of the Iowa Core Curriculum.

Task force members provided many examples of innovations in technology that are at odds with existing policies. Educational policies are no exception, whether from the federal, state, or local level. Policymaking tends to be reactive rather than proactive. In the discussion about the need to transform learning to meet 21st century opportunities, task force members encountered existing policies that either block or stifle educational innovation. Although the State Board of Education and Department of Education will have little influence on federal policies, influence and direct impact on state-level policies are within the purview of the State Board of Education and the Department of Education.

One of the first state-level policy issues that the task force examined was the policy that allows districts and high schools to act as gatekeepers in determining whether their high school students may take an online class to meet graduation requirements, even from an entity such as Iowa Learning Online (ILO) or the Iowa Online AP Academy (IOAPA). Despite the fact that all the teachers in ILO and IOAPA hold an appropriate Iowa teaching license and endorsement in their fields, some districts and high schools have elected not to offer these courses to students. As we noted in Belief 1, task force members all agree that the existing policy that allows local districts and high schools to act as gatekeepers should be examined. Currently some ILO and all IOAPA courses are offered at no cost to districts or to students or parents, so the issue does not appear to be solely connected to costs.

Although all members agree that this gatekeeper policy is needlessly restrictive, members do not all agree on how far a new policy should extend. Some members suggest that Iowa high school students should be allowed to take any online course from any source for credit, with the district or high school paying the course fee (funding following the student). Others disagree with allowing students to take courses from just any source; in this view, the policy should allow students to choose online courses that can assure appropriately Iowa licensed teachers—the online teachers do not need to live in Iowa, just have an Iowa teaching license. Others mentioned that districts and high school administrators, students, and parents do not have the time (and often not the access) to review either online course content or meet the online instructor prior to selecting online courses, that some sort of consumers' guide is needed to rate courses according to an established objective criterion. Members who favor some sort of state-level rating system do not all agree whether online courses should be approved by some state-level committee or whether to create an online guide that districts, students, and parents can use to guide their selections. Clearly members feel more exploration and dialogue is warranted on this issue.

An initial policy step could change the gatekeeper restriction and allow Iowa high school students to take any high-school-credit course offered through Iowa Learning Online, assuming the course (1) has an appropriately Iowa licensed teacher and (2) is aligned with the Iowa Core. A student who successfully completes such a course would then receive course credit from his or her high school. Simultaneously, it would be highly advantageous to publicize the availability of ILO, IOAPA, and Kirkwood Community College Distance Learning High School online courses

to students and their parents, thereby helping to create a demand for change in course options for students.

Members urge that if the State Board of Education wants to move in a different direction and advocate the creation of a virtual high school, the board should thoroughly discuss what the mission of such an entity should be. Is the mission to provide districts and schools with options (like the current ILO mission)? Is it to provide choice to students and parents (remove the district as gatekeeper)? Is it to provide high school students more access to postsecondary classes while students are still in high school? It is to be a standalone credit-granting, diploma-granting school? And once the mission is defined, the question of funding is critical. Should funding follow the student? Should an appropriation (or other funding, like E-rate) be the source of funding? Should there be a combination of funding sources (E-rate funding staff to run the entity and course costs funded through a follow-the-student model)?

It is also recognized that if the State Board of Education proposes significant changes to the current online learning model, the Iowa General Assembly will need to change Iowa Code. Likely there will be champions for this change as well as opponents. This option, if pursued, likely will spark animated debate across the state.

As part of a larger transformation effort that could affect all levels of the educational system under the jurisdiction of the State Board of Education and Department of Education, task force members contend that a review is needed of the accreditation processes for PK–12 districts, nonpublic schools, AEAs, and the program approval process for teacher- and administrator-preparation programs. The administrative rules and related documents for these programs were mostly written before the Iowa Core was adopted and do not necessarily take into account the realities of learning in a 21st century environment. Revamping the accreditation and program-approval process to ensure alignment with expectations of the Iowa Core and 21st century learning will send a powerful message that the State Board of Education and Department of Education take seriously the needed shift in the learning process.

Members also concur that the current seat-time policies need to be replaced with policies that measure and reward student performance. With new online formative assessments, and through learning situations that allow each student to progress at a different pace (and through a different path), seat time is no longer appropriate. Of course, members acknowledge that the State Board of Education and Department of Education must work with other levels of education, such as colleges and universities, to ensure that student evidence of learning can replace seat time as a metric of learning.

It is recognized that progress has been made in the policy arena on flexibility of local funding for districts to lease or purchase technology-based resources. The one-cent sales tax, Microsoft Settlement grants, and PPEL funds have provided needed resources, especially in a tight economy. Funding examples are needed so that districts can see how existing resources such as funds spent on textbooks may be redirected to support 21st century learning.

Local sample policies are also needed so that districts and nonpublic schools are assisted with balancing the pressure to keep students safe in a connected social networking world and at the

same time using valuable online tools in a learning situation. Often the local policy response is to ban the use of cell phones at school or to block social networking and other Web 2.0 tools on computer networks. But as one task force member reminds us, life has its share of risks. One purpose of education is to prepare students for life by facing and effectively dealing with risks. Where better to educate students on how to deal with the risks of life than in school, the task force member asks. For example, driving a car is risky, and so we provide drivers' education opportunities so that students learn how to handle the risk in a safe manner. Participating in extracurricular activities such as sports may be risky, so we ensure that proper equipment is worn and students are trained to play safely. If students do not learn how to safely use technology-based resources, where will they learn to do so? Currently, districts do not have adequate examples of local policies and strategies to effectively deal with new technologies and tools in the classroom.

Belief 4: The biggest barrier to transforming the learning process is not the lack of funding for technology but our own mental models of what learning should look like.

It is safe to say that few, if any, Iowans reading this document have ever experienced the type of learning advocated in the recommendations of the National Education Technology Plan 2010 or of the ideas in this report. Although the three beliefs cited earlier pose challenges, members identified that the greatest barrier to transforming learning in Iowa will be the mindset of educators, parents, and community members, what mental models. The mental model that each Iowa adult has of how education should look was formed over many years of schooling.

One of the task force members mentioned that Iowans may suffer from the our-schools-are-pretty-good mindset (Lake Wobegon syndrome). The fact that Iowa education has been above average in the past may create the perception that it is still good enough. The old, well-ingrained images about what school should look like too often bear little resemblance to the learning opportunities that are needed now.

The old mindset that teachers lecture and students listen reinforces the passive role that education in Iowa may continue to rely upon. One sea change that task force members advocate is that students take responsibility for their learning, that students be provided with the responsibility to choose from legitimate learning choices. As part of this sea change, learning will look different. No longer should Iowans expect to walk into a school classroom and see all students doing the same worksheet (or even the same *electronic* worksheet!).

Educators have long recognized that if students spend time on meaningful school work outside the regular school day, the time for growth in learning is extended. The mindset that a school day is Monday through Friday from 8:15 a.m. until 3:30 p.m. or that the school year is 180 days from late August to early June can be challenged with access to technology and Iowa Core–aligned online resources.

Existing mental models may cause school boards, educators, parents, and citizens to think that something like online learning and teacher professional development are extra services, ones that are provided only if there are extra funds available after buying textbooks or that professional

development is all about training teachers to operate technology. The old theory that if "it was good enough for me, it's good enough for my kids" hurts Iowa students. Task force members believe that Iowans cannot wait until there is more money in education—which will not happen in the near future—to make a shift in educational focus. Districts need assistance in communicating with their public about how education needs to shift in order to garner community support for change.

The mental models of gaming and virtual environments were highlighted in various member discussions. Take, for example, the typical adult mindset about gaming. The majority of U.S. children play computer and video games. Despite their mistaken reputation as mind-numbing toys, digital games have been shown to help children gain content and vital 21st century skills from literacy to complex problem solving. Educational digital games offer a promising and untapped opportunity to leverage children's enthusiasm and help transform teaching and learning in America. Gaming resources provide immediate feedback so students know whether they have succeeded in a task. And some of the systems now available are smart enough to alter the type, speed, and sequence of learning so that if a student needs more or a different kind of learning situation, the system provides that (without making the student feel like being in a remedial learning situation). These valuable resources can allow teachers to tap into students' existing enthusiasm for digital games to engage, expand, and empower them as learners. And these resources are not just for older students. A recent study by the Education Development Center on the integration of public media assets like *Sesame Street* and *Between the Lions* found that preschool children who participated in a media-rich curriculum incorporating public television video and games into classroom instruction developed the early literacy skills critical for success in school.

Mental models often limit adults in appreciating the educational uses of online virtual environments. (Even the name *virtual environments* conjures up images of the movie *Avatar* for many adults.) As Iowa classroom teachers strive to create learning experiences tied to the Iowa Core, online simulated or virtual worlds can do what no real-life playacting can recreate. Again, districts need examples to help their communication with parents and other adults.

As one member pointed out, Iowa educators may wish to more closely examine the possibilities of developing and acquiring online game-based and virtual environment courses. In 2009, the Florida Virtual School developed and offered *Conspiracy Code*, an online game-based high school American history course that has extensive brain research behind its innovative design: http://www.flvs.net/areas/flvscourses/conspiracycode/pages/default.aspx.

As task force members repeatedly emphasized, pointing out the limitations of the mental models about schools and education in no way implies an indictment of educators, board members, parents, or community members. Task force members recognize that discussion of what has been the portrait of schooling in Iowa needs to move into the desired characteristics of 21st century learning. Support in developing new ways of transforming learning will be critical.

Appendix A
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Appendix B
Resources

AEAOnline: http://www.iowaaeaonline.org/

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