

INFUSING SERVICE-LEARNING
INTO
LEARNER-CENTERED EDUCATION
IN MAINE



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Introduction

As Maine schools strive to improve performance and adopt learning strategies that engage their students, many are implementing related, but different, education models. Some of these models highlight a learner-focused approach that provides real-world content. Others intend to connect the learner and school with the surrounding community. Each is intended to improve students' learning results.

Service-learning, a pedagogy that integrates curriculum with service by focusing on community needs that are targeted by students for action, has been proven to do that and more. Numerous studies¹ conducted over the past two decades overwhelmingly conclude high-quality service-learning is directly linked to improved academic achievement, improved academic engagement, positive civic attitudes and behaviors, and enhanced social and personal skills. The quality of service-learning is an important predictor of its impact on academic outcomes, including students' school engagement and motivation to learn.

In 2011, Maine's Department of Education (MDOE) developed a strategic plan, *Education Evolving—Maine's Plan for Putting Learners First*², that seeks to transition schools to learner-centered models offering flexibility and choice in a proficiency-based framework. The plan is shaped around five core priorities that address the various elements of building this new education system:

- Effective, learner-centered instruction
- Great teachers and leaders
- Multiple pathways for learner achievement
- Comprehensive school and community supports
- Coordinated and effective state support

Service-learning fits well with the goals of the MDOE, and facilitates the attainment of all five core priorities.

This paper briefly summarizes various education models and highlights how service-learning can be integrated in each model. It also considers how service-learning aligns with the five core priorities of the MDOE's strategic plan, including the framework for proficiency-based education, which requires Maine's public schools transition to a proficiency-based diploma beginning with students graduating in 2017 per LD 1422 enacted May 16, 2012.



What is service-learning?

Service-learning – Service-learning³ is an instructional method that develops critical thinking, problem-solving, communications, teamwork, creativity, information literacy, and action-planning—all of the same skills the learner-centered education models seek to develop. More than just community service⁴, it is intentionally integrated into the students’ academic curriculum, and is aligned with the state’s education content standards. Service-learning lets students learn and develop by actively participating in meeting community needs via school-community collaboration. It uses regular assessment to engage in data-based decision-making and continuous growth and development.

The quality of service-learning is an important predictor of its impact on academic outcomes, including school engagement and motivation to learn. There are eight nationally-recognized standards for quality service-learning practice⁵ in K-12. Service-learning—

- Has **sufficient duration and intensity** to address community needs and meet specified outcomes.
- Is **intentionally used as an instructional strategy** to meet learning goals and content standards.
- Actively engages participants in **meaningful and personally relevant service activities**.
- **Provides youth with a strong voice** in planning, implementing, and evaluating service-learning experiences with guidance from adults.
- **Promotes understanding of diversity** and mutual respect among all participants.
- Partnerships are **collaborative, mutually beneficial, and address community needs**.
- **Incorporates multiple, challenging reflection activities** that are ongoing and that prompt analysis about oneself and one’s relationship to society.
- **Engages participants in continuous improvement** through an ongoing process to assess the quality of implementation and progress toward meeting specified goals, and uses results for improvement and sustainability.

There are several schools and districts around Maine currently incorporating service-learning into their curriculum. They include MSAD 17 (Oxford Hills), RSU 34⁶ (Alton, Bradley, Old Town), RSU 67⁷ (Chester, Lincoln, Mattawamkeag), Falmouth Public Schools⁸, and the Sanford School Department⁹.



How can education models favored in Maine schools incorporate service-learning?

While service-learning is a complex process that takes time to learn to use effectively, this pedagogy yields tremendous results. This section looks at effective instructional practices and how high-quality service-learning integrates with these strategies to produce actively engaged citizens and strengthen academic achievement across all subjects.

Place-based education – Place-based education (PBE)¹⁰ focuses on using the local community as an integrating context for learning at all levels. By fostering partnerships between schools and communities, PBE simultaneously works to boost student achievement and improve a community’s environmental quality and social and economic vitality. With learning situated directly in the community and focused on local issues and opportunities, PBE programs bring the resources of the community into the learning

process. They also bring the energy and skills of the students to bear on local environmental and social issues to create relevant learning opportunities.

Primarily applied to STEM (science, technology, engineering, mathematics) education in Maine, PBE is a core concept of the Community for Rural Education, Stewardship and Technology project¹¹ implemented by Island Institute. The project creates a partnership between 16 island and coastal high schools and middle schools¹², local science/technology businesses and organizations, and a number of academic institutions. Students and teachers create place-based learning experiences that use technology to answer community resource stewardship questions.

PBE has one critical element the other education models do not: at its core is the fostering of partnerships between schools and communities, also a critical element of service-learning.

Service-learning enhances this partnership when the students are at the center of the process, identifying a community issue and actively collaborating with the community members and organizations to develop a solution, while the teacher ensures learning opportunities are directly connected to the curriculum and content requirements. Incorporating multiple, challenging reflection activities and engaging the students in continuous improvement are also key elements of high-quality service-learning that can easily be integrated into the PBE model.

Inquiry-based instruction – Inquiry-based instruction¹³, also called **project-based inquiry science**, is a pedagogical approach that invites students to explore academic content by posing, investigating, and answering questions. Also known as just “inquiry”, this approach puts students’ questions at the center of the curriculum, and places equal value on the component skills of research, knowledge, and understanding of content. Inquiry is most often applied to science and math education here in Maine, yet the approach can also be used to teach the humanities.

Teachers help students generate their own content-related questions and guide the investigation that follows. There are three successive levels¹⁴ of inquiry: structured, guided, and open. Each level offers students increasing ownership and control of the inquiry process. Teachers become facilitators, learning and participating with their students. Inquiry develops and validates ‘habits of mind’ that characterize a life-long learner. It teaches students to pose difficult questions and fosters the desire and skills to acquire knowledge about the world. Students take ownership of their learning and draw connections between academic content and their own lives.

In 2012, teachers from central Aroostook County schools, including Fort Fairfield Middle-High School, Central Aroostook Junior-Senior High School in Mars Hill, and Washburn District High School, were trained in inquiry¹⁵. The Maine Physical Sciences Partnership¹⁶ program, led by University of Maine and composed of 13 high schools and 39 middle schools, also facilitated training in inquiry for teachers at Searsport District High School.

Inquiry-based instruction is well positioned to integrate service-learning as an instruction methodology. While both are tied to the curriculum, and both value youth voice as an integral element, inquiry could be conducted entirely within the classroom, while service-learning involves the students in the community by addressing a locally-relevant issue. High-quality service-learning also emphasizes the elements of reflection and continuous improvement. When students engage with local authorities, community residents, and organizations to apply the knowledge and skills they are obtaining through inquiry, they are truly able to draw connections between academic content and their own lives. Furthermore, they are more likely to understand the diversity of their community, develop confidence in themselves, and become more civic-minded.

Problem-based learning – Problem-based learning¹⁷, also known in Maine as **problem-based science and math** (PBSM), was originally an education model for medical students. Often used interchangeably with **project-based learning**, the curriculum consists of carefully selected and designed problems that demand the learner acquire critical knowledge, problem-solving proficiency, self-directed learning strategies, and team participation skills. The process replicates the commonly used systemic approach to resolving problems or meeting challenges that are encountered in life and career.

In PBSM, the students assume increasing responsibility for their learning, giving them more motivation and more feelings of accomplishment. The teachers become resources, tutors, and evaluators, guiding the students in their problem-solving efforts. Students involved in problem-based learning acquire knowledge and become proficient in problem-solving, self-directed learning, and team participation. Studies show that PBSM prepares students as well as traditional methods. PBSM is unique in that it fosters collaboration among students, stresses the development of problem-solving skills within the context of professional practice, promotes effective reasoning and self-directed learning, and is aimed at increasing motivation for life-long learning.

During the 2007-08 school year, the Praxis project, a No Child Left Behind Title II-B partnership composed of Waldo County Technical Center and Tri-County Technical Center, Mt. View High School and Nokomis Regional High School, Unity College, the University of Maine, and Acadia Partners for Science and Learning, promoted the use of problem-centered learning in math and science.

PBSM resonates with service-learning on three fronts: it develops problem-solving skills, it promotes collaboration among students, and it supports self-directed learning. Unlike **inquiry**, the instructor is solely responsible for selecting and designing the problem or issue to be addressed. By contrast, numerous studies have shown when students have a voice in their learning they become more engaged and perform better in school. Other components of high-quality service-learning also enhance PBSM outcomes and shift the role of the teacher to a facilitator of learning. While the teacher ensures that the problem or issue is linked to the curriculum and provides overarching guidance, the students lead the planning, implementation, and evaluation. Importantly, when the students select a locally-relevant issue, they increase their community awareness and involvement, and the community's ties with the school are fortified.

Challenge-based learning – Challenge-based learning (CBL)¹⁸ has its roots in **problem-based learning** and John Dewey's educational theories. It was developed from a larger project initiated in 2008 called Apple Classrooms of Tomorrow Today (ACOT2) to identify the essential design principles of the 21st century learning environment with a focus on high school education.

At the center of CBL in Maine is the creative use of technology by students to solve real-world problems. It is collaborative and hands-on, asking students to work with peers, teachers, and experts in their communities and around the world to ask questions, deepen subject-area knowledge, accept and solve challenges, take action, and share their experience. CBL attempts to increase student engagement, and is promoted as a strategy for students most at risk of dropping out. The approach asks students to reflect on their learning and the impact of their actions, and publish their solutions to a worldwide audience.

The Maine Learning Technology Initiative's 2012 Summer Institute¹⁹ focuses its cohorts around CBL.

Service-learning augments the CBL instructional methodology by drawing students' attention to real-world problems in their surrounding community. When students work with experts in their own community and engage in meaningful and personally relevant service activities, both the students and their community benefit. The service-learning approach helps strengthen the integration of school and community through increased mutual awareness and appreciation.

Project-based learning and expeditionary learning – Project-based learning (PBL)²⁰ organizes learning around projects. According to definitions found in PBL handbooks for teachers, projects are complex tasks based on challenging questions or problems that involve students in design, problem-solving, decision making, or investigative activities; give students the opportunity to work relatively autonomously over extended periods of time; and culminate in realistic products or presentations. Other features include authentic content, authentic assessment, teacher facilitation (not direction), explicit educational goals, and the use of cognitive (technology-based) tools. **Expeditionary learning** adds features of comprehensive school improvement, community service, and multidisciplinary themes.

Expeditionary learning (EL)²¹ grew out of Outward Bound. Learning expeditions are defined as "intellectual investigations built around significant projects and performances." These expeditions combine intellectual inquiry, character development, and community building.

Although expeditions resemble **project-based learning** activities, EL classrooms differ from PBL classrooms conceptually and structurally. Conceptually, expeditions involve fieldwork, service, teamwork, character building, reflection, and building a connection to the world outside the classroom. Students keep a portfolio of their work, and schools develop a "culture of revision" and craftsmanship. Structurally, EL is a framework for whole-school improvement. This model is intended to transform curriculum, instruction, assessment, and school organization. Thus, EL classrooms have unique structural features, including logistical arrangements like flexible or block scheduling and heterogeneous grouping, changes in school organization and culture, and increased involvement of parents and community partners. The most unique feature is that EL alters teaching assignments so teachers work with the same group of students for two years or longer (known as looping).

King Middle School²² and Casco Bay High School²³ are two expeditionary learning schools in Maine that follow the Outward Bound model. A number of alternative schools in Maine also practice PBL, including Liberty School²⁴ in Blue Hill, Baxter Academy for Technology and Science²⁵ (a proposed charter school in Portland), and Maine Academy of Natural Sciences²⁶ in Hinckley.

With many overlapping salient features, PBL and EL are well suited for the integration of service-learning. EL, and to a lesser degree PBL, highlight building a connection to the world outside the classroom, transforming connections into service-learning partnerships that are collaborative, mutually beneficial, and address community needs brings students' learning and connectivity with the community to a higher level that promotes civic engagement and mutual awareness. Ongoing reflection and continuous improvement are other elements of high-quality service-learning that can be incorporated to assess the quality of implementation and progress toward meeting specified goals. The results would then be used for improvement and sustainability.

Conclusion – In many ways, academic service-learning parallels the lessons school administrators, educators, and parents have learned about what effective instruction looks like. School reform efforts should always demonstrate best practices in education. Many of these best practices are exemplified in the use of high-quality service-learning and produce meaningful results. The pathway to academic service-learning begins with the premise that effective service-learning is an outgrowth of the curriculum.



How does service-learning complement the frameworks?

Beginning January 1, 2017, students must demonstrate proficiency in meeting state standards in all content areas to earn a high school diploma. This section explains how service-learning can be a successful pedagogy within the frameworks that support this requirement.

Proficiency-based learning – Proficiency-based learning²⁷, also known as **competency-based learning**, is endorsed by Maine’s Department of Education (MDOE). It is a system in which learning driven by standards is the constant and time becomes the variable. That is, students learn differently and at different speeds.

Accordingly, proficiency-based learning allows students flexibility to learn in ways that engage them and gives them choice in how they demonstrate what they’ve learned. Schools grant credit if the student demonstrates defined levels of proficiency or mastery of recognized standards (e.g., state academic content standards and essential skills/career-related learning standards, industry-based or other national or international standards). Students may gain proficiency through multiple pathways, and they may demonstrate proficiency in a variety of ways, including teacher-designed or student-designed assessments, portfolios, performance, exhibitions and projects.

Mass customized learning – Mass customized learning (MCL)²⁸, a strategy that characterizes the **proficiency-based education** model, is inspired by the modern manufacturing and services industries. As the label suggests, it is the capacity to routinely customize education modules and learning resources to meet specific learning standards. It eliminates traditional grade levels and grading systems, in favor of self-guided, self-paced learning facilitated by a teacher. In Maine, the student’s progress is evaluated periodically to four ranks—exceeds, meets, partially meets, or does not meet the standard.

MCL can yield substantial benefits and enable teachers and learners to succeed by expanding teaching methods to accommodate a range of learning styles, utilizing technological resources, and personalizing learning programs to meet the individual needs of each student. When educators show students there are different ways to learn, students find new and creative ways to solve problems, achieve success, and become lifelong learners. Technology is a core element of MCL as a tool for delivering instruction that engages students in authentic learning, addresses multiple intelligences, and adapts to student’s learning styles.

There are currently 22 Maine schools and districts using some form of the proficiency-based education model promoted by the MDOE²⁹. The list includes RSU 2 (Dresden, Farmingdale, Hallowell, Monmouth, Richmond), RSU/MSAD 3 (Brooks, Freedom, Jackson, Knox, Liberty, Monroe, Montville, Thorndike, Troy, Unity, Waldo), RSU 4 (Oak Hill), MSAD 6 (Buxton, Limington, Hollis, Standish, Steep Falls), MSAD 15 (Gray-New Gloucester), RSU 18 (Belgrade, China, Oakland, Rome, Sidney), RSU 20 (Belfast, Searsport), RSU 25 (Bucksport), RSU/MSAD 57 (Alfred, Lyman, Newfield, Shapleigh, Waterboro), RSU/MSAD 82 (Forest Hills, Jackman), AOS 91 (Bar Harbor, Bass Harbor, Frenchboro, Isleford, Northeast Harbor, Southwest Harbor, Swan’s Island, Trenton), Auburn School Department, Gorham Schools, Milford School Department, Portland Public Schools, Sanford School Department, Deer Isle-Stonington High School, Foxcroft Academy, Oxford Hills Comprehensive High School, Poland Regional High School, South Portland High School, and Sumner Memorial High School. Some use standards-based grading systems; others allow students multiple ways to demonstrate they have mastered content. Many of the schools are members of the Maine Cohort for Customized Learning³⁰.

Academic service-learning as a teaching methodology is well suited for proficiency-based education frameworks and differentiated learning models. A salient characteristic of high-quality service-learning is youth voice: Students play a critical role in determining the community need, working directly with community partners to research, plan, and implement solutions, evaluate their progress, and reflect on their personal and interpersonal growth. With facilitation from the teacher, learning is directly tied to the curriculum and students are empowered to demonstrate their knowledge in multiple ways.

Extended learning opportunities – Extended learning opportunities (ELOs)³¹ include a broad range of programs that provide children with academic enrichment and/or supervised activities beyond the traditional school day. In some cases, ELOs go beyond the traditional school year. Programs that provide ELOs can be categorized by the targeted age group: school-age (typically children up to the age of 12) or adolescent (children 12 and older). They also can be grouped according to their purposes, such as child care (before and after the school day), youth development, or extra time for learning.

Well planned and coordinated ELOs can support learning while providing safe, positive activities for children and young people to explore their interests and develop their talents. ELOs for school-age children include before- and after-school programs, Saturday academies, summer school, extended school year, and other innovative programs that enhance student learning. These programs may be sponsored by a variety of providers such as child care centers, community organizations, and churches, as well as by schools. Many schools offer extended learning programs as a strategy for improving or enhancing student achievement. ELOs for adolescents also vary in purpose and providers, although these programs typically promote academic achievement, engage students in the community, and develop leadership skills, as well as prevent them from engaging in risky behaviors.

MSAD 54 (Skowhegan) and RSU 20 (Belfast, Searsport) are examples of district-based ELO programs.

Service-learning programs benefit teachers, as well as students. One study³² concluded that service-learning within after-school programming offered professional collaboration and development for possibilities for preservice teachers. They better understood their students' diverse needs and improved their ability to connect with students informally. Teachers observed better behavior in students within the less formal structure. According to a National Education Association policy brief,³³ regular participation in academic and social aspects of ELO programs contributes positively to children's development. Participants in ELO (after-school, summer, or year-round) programs show academic improvements, particularly for children from impoverished families. The programs for adolescents that are most effective focus on service-learning and personal development; they have been found to boost academic achievement, build leadership, and strengthen ties to the community.



How does service-learning align with the MDOE’s strategic plan?

Core Priority	Service-Learning
<p><i>Effective, Learner-Centered Instruction</i></p> <ol style="list-style-type: none"> 1. Rigorous standards and aligned curricula 2. Learner-centered instructional practices 3. Assessment systems that provide timely, accurate data on achievement and growth 4. Information systems that track learner growth over time 	<p>→</p> <p>High-quality service-learning is intentionally used as an instructional strategy to meet learning goals and content standards; it provides youth with a strong voice in planning, implementing, and evaluating experiences with guidance from adults; it incorporates multiple, challenging reflection activities; and it engages participants in continuous improvement to assess the quality of implementation and progress in meeting specific goals, and uses results for improvement and sustainability.</p> <p>Service-learning is compatible or highly compatible with at least eight school reform models that rigorous scientific studies demonstrate have promising or strongly positive effects on student achievement.³⁴</p>
<p><i>Great Teachers and Leaders</i></p> <ol style="list-style-type: none"> 1. Common standards for teacher and leader effectiveness 2. Initial preparation and professional development programs that are rigorous, relevant, and data-driven 3. Next-generation evaluation systems for teachers and leaders 4. Communities of practice designed to foster continuous improvement 	<p>→</p> <p>Results from a study of Indiana’s Learn and Serve grantees³⁵ show service-learning to be an effective pedagogical approach that empowers and revitalizes the teachers who use it.</p> <p>Studies indicate that service-learning is associated with gains for preservice teachers in the development of professional attitudes and values needed for successful teaching. Research shows that service-learning can be a means for empowering student teachers by providing them with authority and affirmation.³⁶</p>
<p><i>Multiple Pathways for Learner Achievement</i></p> <ol style="list-style-type: none"> 1. Advancement based on demonstration of mastery 2. Student voice and choice in the demonstration of learning 3. Expanded learning options 4. “Anytime, anywhere” learning 	<p>→</p> <p>A California comparison study³⁷ showed high school students who participated in service-learning programs scored higher on all academic measures, including mastery of course content, problem-solving skills, and attitudes toward learning.</p> <p>A large-scale Michigan study³⁸ found service-learning students in grades 7-12 reported more cognitive engagement in English/language arts than nonparticipants. For students in grades 2-5, service-learning students reported greater behavioral, affective, and cognitive engagement in school, and significant differences in effort. Fifth grade service-learning students demonstrated significantly higher state test scores in writing and social studies.</p>

Core Priority	Service-Learning
<p><i>Comprehensive School and Community Supports</i></p> <ol style="list-style-type: none"> 1. Effective and efficient services for learners with special needs 2. Coordinated health and wellness programs 3. A commitment to community and family engagement 4. Career and workforce partnerships 	<p>High-quality service-learning partnerships are collaborative, mutually beneficial, and address community needs, and actively engage participants in meaningful and personally relevant service activities. Service-learning also promotes understanding of diversity and mutual respect among all participants.</p> <p>→ A National Youth Leadership Council study³⁹ found service-learning experiences improved youths' relationships with adults, and service-learning students consistently scored higher on scales of responsibility, confidence, leadership skills, independence, and maturity. They had stronger social capital, patience, and sensitivity to diversity.</p>
<p><i>Coordinated and Effective State Support</i></p> <ol style="list-style-type: none"> 1. Seamless integration of educational programs from early childhood into adulthood 2. Adequate and equitable state resources for Maine schools 3. Comprehensive integration of technology 4. A robust and transparent accountability and improvement system 	<p>→ The Maine Commission for Community Service (MCCS) has as one of its strategic goals the adoption of service-learning as an educational strategy among schools and community youth development programs and develops resources for the public. MCCS also operates the Maine VISTA Project, providing service-learning capacity-building support to districts and community organizations through its members.</p>

- ¹ For a summary of studies on the impact of service-learning, see Corporation for National and Community Service, *The Impact of Service-Learning—A Review of Current Research* (Washington, DC: CNCS, 2007). National Service-Learning Clearinghouse also contains a lengthy fact sheet, *Impacts of Service-Learning on Participating K-12 Students* (http://www.servicelearning.org/instant_info/fact_sheets/k-12_facts/impacts), highlighting numerous state and national studies conducted around the academic, civic, and social/personal impacts of service-learning.
- ² Maine Department of Education, *Education Evolving—Maine’s Plan for Putting Learning First*, (retrieved from <http://www.maine.gov/doe/plan>, May 2012)
- ³ Tony Evers, PhD, *High Quality Instruction That Transforms* (Wisconsin Department of Public Instruction, 2010)
- ⁴ For a comparison of the impact of service-learning vs. community service, see Andrew Furco’s 2002 study “Is Service-Learning Really Better than Community Service” in Furco and Billig, *Service-Learning The Essence of the Pedagogy* (Information Age Publishing, 2002)
- ⁵ RMC Research Corporation, “K-12 Service-Learning Project Planning Toolkit”. (Scotts Valley, CA: National Service-Learning Clearinghouse, 2006/2009) available for download at www.servicelearning.org/library/resource/8542
- ⁶ For more information on RSU 34’s service-learning initiatives, see <http://www.otsd.org/Servicelearning/Slearn.htm>
- ⁷ For more information on RSU 67’s service-learning curriculum, see <http://www.sad67.k12.me.us/rsu67/servicelearning.asp>
- ⁸ For more information on Falmouth’s service-learning activities, see <http://servicelearninghighlights.blogspot.com/>
- ⁹ For more information on service-learning at Sanford schools, see Jed Bloom’s blog at <http://sanfordservicelearning.edublogs.org/>
- ¹⁰ Place-based Education Evaluation Cooperative, concept paper, www.peecworks.org (2003)
- ¹¹ For more information, see <http://www.islandinstitute.org/crest.php>
- ¹² Conners Emerson School (Bar Harbor), Deer Isle-Stonington Elementary and High Schools, Fort O’Brien Elementary School (Machiasport), Georges Valley High School (Thomaston), Greeley High School (Cumberland), Isle Au Haut Rural School, Islesboro Central School, Lubec Consolidated School, Mount Desert Island High School, North Haven Community School, St. George School (Tenants Harbor), Searsport District High School, Swan’s Island Elementary School, Vinalhaven School, Washington Academy (East Machias)
- ¹³ Dr. Julie Sweetland, *Inspired Issue Brief - Inquiry-Based Teaching* (Washington, DC: Center for Inspired Teaching, 2008)
- ¹⁴ Vital Venture, *Inquiry Instruction*, (retrieved from www.vitalventure.gmri.org/in-the-classroom/instructional-methods/inquiry-instruction, Apr 2012)
- ¹⁵ For more information on this training, see <http://mainedoews.net/2012/04/04/classrooms-inquiry-based/>
- ¹⁶ For more information about the Maine PSP, participating schools, and a report by the Grade Nine Task Force, see <http://umaine.edu/mainepsp/>
- ¹⁷ Maricopa Center for Learning & Instruction, *What is PBL?* (retrieved from <http://www.mcli.dist.maricopa.edu/pbl/info.html>, Apr 2012)
- ¹⁸ Apple, Inc., *Challenge-Based Learning* (Cupertino, California: Apple, Inc., 2009) available for download at http://ali.apple.com/cbl/global/files/CBL_Paper.pdf
- ¹⁹ Maine Department of Education, *MLTI 2012 Summer Institute*, (retrieved from <http://maine.gov/mlti/events/institutes/cohorts.shtml>, June 2012)
- ²⁰ John W. Thomas, PhD, *A Review of Research on Project-Based Learning* (San Rafael, CA: The Autodesk Foundation, 2000)
- ²¹ Ibid.
- ²² For more information about KMS’ expeditions, see <http://king.portlandschools.org/files/onexpedition/onexpedition.htm>
- ²³ For more information about CBHS’ expeditions, see <http://cbhs.portlandschools.org/learning-expeditions/>
- ²⁴ For more information about Liberty’s curriculum, see <http://ellsworthme.org/liberty/index.htm>
- ²⁵ For more information about BATS’ project-based curriculum, see http://baxteracademy.org/instructional_program/
- ²⁶ For more information about MeANS’ project-based curriculum, see <http://www.means-gwh.org/Academics/Curriculum.aspx>
- ²⁷ Maine Department of Education, (retrieved from <http://maine.gov/education/sbs/index.html>, Apr 2012)
- ²⁸ Chuck Schwahn and Bea McGarvey, *Inevitable Mass Customized Learning* (self-published, 2011)
- ²⁹ See the March 24-26, 2012, editions of the Kennebec Journal for Susan McMillan’s extensive reporting on proficiency-based education at <http://www.kjonline.com>.
- ³⁰ RSU 2, RSU 3, RSU 4, RSU 15, RSU 18, RSU 25, RSU 57, RSU 82, Milford School Department, and Sanford School District
- ³¹ Center for Great Public Schools, *Closing the Gap through Extended Learning Opportunities* (Washington, DC: Center for Great Public Schools, 2008)
- ³² Brenda Spencer, et al, “Assessing the Impact of Service-Learning on Preservice Teachers in an After-School Program” in *Teacher Education Quarterly* (Fall 2005)
- ³³ Center for Great Public Schools, “Closing the Cap through Extended Learning Opportunities” (Washington, DC: NEA, 2008)
- ³⁴ Pamela Gent, “Strange Bedfellows—No Child Left Behind and Service-Learning” in *Michigan Journal of Community Service Learning* (Spring 2007)
- ³⁵ William Morgan and Matthew Streb, *First Do No Harm: The Importance of Student Ownership in Service-Learning* (Metropolitan Universities, 2003)
- ³⁶ Jeffery Anderson, “Service-Learning and Teacher Education” in ERIC Digest, <http://www.ericdigests.org/1999-1/service.html>
- ³⁷ Furco, 2002
- ³⁸ Shelley Billig, “Intervening Evidence—Making the Case for Service-Learning” in *Community Works Journal* (Spring 2005)
- ³⁹ Suzanne Martin, PhD, et al, *The Impact of Service-Learning on Transitions to Adulthood* (New York: NYLC, 2006)