

# Models to Inform Capstone Program Development

**Nicole A. Buzzetto-More**

**University Maryland Eastern Shore, Princess Anne, MD, USA**

[Nabuzzetto-More@umes.edu](mailto:Nabuzzetto-More@umes.edu)

## Abstract

A capstone course is a transformative educational experience predicated on student-centered pedagogy. In a capstone experience learners are required to apply higher-order thinking, authentic learning, and multilayered decision-making while engaged in an experiential learning activity.

Allowing students to make autonomous decisions regarding the direction of learning, capstones are offered near the conclusion of a program of study and are organized around a comprehensive, intensive and integrative project. The methodology employed in the completion of these projects is purposeful so as to satisfy multiple targets (e.g. educational objectives that a student is expected to have mastered). The outcome of which is an opportunity for students to showcase knowledge, skills, and abilities in a unique and individualized manner.

The following paper reviews the literature on capstone-based instruction assessment in the United States, and introduces models designed to inform capstone program development. Finally, a State-wide capstone course developed for high school students in Maryland is discussed.

**Keywords:** capstone, capstone assessment, capstone model, senior project, summative assessment, project based learning, experiential learning, student centered teaching, career and technology education, vocational education, K-12 assessment, project based learning, flexible learning, learning outcomes

## Literature Review

Capstones are a superior venue for assessing learning (Wagenaar 1993), while involving students in experiences that transcend the restrictive boundaries associated with traditional curricula (Lopez, 2005). During capstone experiences, students go through an extended process of inquiry in response to a complex question, problem, or challenge. Students evaluate these complexities from a variety of angles in a manner that respects individual learning styles (Moursund, 1999). Learners demonstrate the ability to plan, select, and locate information; engage in critical analysis; apply multilayered decision making; and generate new meaning (Page, 2006). As a result, students are able to assimilate, assess, and apply knowledge, in a way that demonstrates mastery while building deeper levels of understanding (Berheide, 2012, O'Grady, 1999).

---

Material published as part of this publication, either on-line or in print, is copyrighted by the Informing Science Institute. Permission to make digital or paper copy of part or all of these works for personal or classroom use is granted without fee provided that the copies are not made or distributed for profit or commercial advantage AND that copies 1) bear this notice in full and 2) give the full citation on the first page. It is permissible to abstract these works so long as credit is given. To copy in all other cases or to republish or to post on a server or to redistribute to lists requires specific permission and payment of a fee. Contact [Publisher@InformingScience.org](mailto:Publisher@InformingScience.org) to request redistribution permission.

Capstone courses can be offered fully online, through face-to-face classroom-based learning, or hybrid where physical classes and technology enhanced learning are combined. Whether technology is used to facilitate, enhance, or totally deliver a capstone experience, the number of technological tools available is numerous. Examples include: simulations; spreadsheets; research databases;

multi-media publishing tools; blogs and wikis; e-portfolio systems; brainstorming and modeling software; computer aided design systems; cloud computing; remote sensing and tele-robotics; learning management systems; open-source instructional tools; presentation software; Web conferencing systems; virtual worlds; digital storytelling tools; voice threads; mobile technologies; social bookmarking services; communication and collaboration systems; podcasts; avatars and etcetera.

Regardless of the delivery method, capstone experiences can be designed to help learners:

- Understand the connection between curriculum and learning objectives,
- Reflect on what they have learned as a result of completing a program of study,
- Visualize the application of learned knowledge and skills to the workplace,
- Engage in interdisciplinary understanding,
- Reflect on the issues involved in the transition into their next phase of education and/or their professional career,
- Build life-long learning skills,
- Connect general education to discipline specific curriculum,
- Develop the capabilities desired by future employers (Gardner et. al., 1998, pp.301-302).

Results from the National Survey of Student Engagement Report (2007), report that capstone experiences increase overall student performance. Additionally, data indicates that capstone experiences may serve as an equalizer that offers all students, from low to high achievers, an opportunity to succeed. Further, they have been found to be particularly effective with socially disadvantaged and at-risk students (Buzzetto-More & Mitchell, 2009).

Capstone experiences are linked to a number of positive pedagogical concepts. These include: guided inquiry, self-directed learning, information literacy, technological fluency, constructivism, higher order thinking, individualized instruction, metacognition and reflective thinking, e-learning, flexible learning, project-based learning, interdisciplinary thinking, core knowledge, and authentic assessment, (Kulthau & Todd, 2007; Page, 2006; Kannapel, 2012; Buzzetto-More, 2012). Holdsworth, Watty, and Davis (2009) explain that while most capstone activities are well established practices, they are treated with new approaches and greater significance when incorporated in a capstone experience.

Capstone experiences are fairly common in higher education. An evaluation of 707 regionally accredited colleges and universities found that almost ½ use capstones as part of institutional assessment programs (Henscheid, 2000). Additionally, a national study of community colleges (Clark, Engel, Napolitano, Richardson, Rodriquez, Sterling-Deer, & Kasprzak, 2008) concluded that capstones represent the most comprehensive educational experience possible supporting the assessment of both core competencies and discipline specific objectives.

Weiss (2002) examined the perceptions of sociology department chairs finding that work done in a capstone course rates as one of the most valuable assessment tools available. Also, Moriarty (2006) reported that 51% of programs rated capstones highest in effectiveness. Finally, Black and Hundley (2003) explained that capstone-based assessments provide valuable information to faculty and administrators regarding the overall quality and effectiveness of instruction (Black & Hundley, 2003).

High school capstone experiences were discussed in a number of publications and reports dating as far back as the 1990's (Regional Educational Laboratory Northeast & Islands, 2009). In 2002, the U.S. Partnership for 21st Century Skills (2013) identified the need for schools to incorporate problem solving; information and technical literacy; communications; and critical thinking into high school curricula. Further, the recent Common Core State Standards Initiative has emphasized the need to enhance the career and college readiness of high school graduates (National

Governors Association, 2010). In order to be in compliance with 21st Century Skills and Common Core requirements, Burke (2011) opined that capstone experiences should be embedded in all career and technical education (CTE) programs.

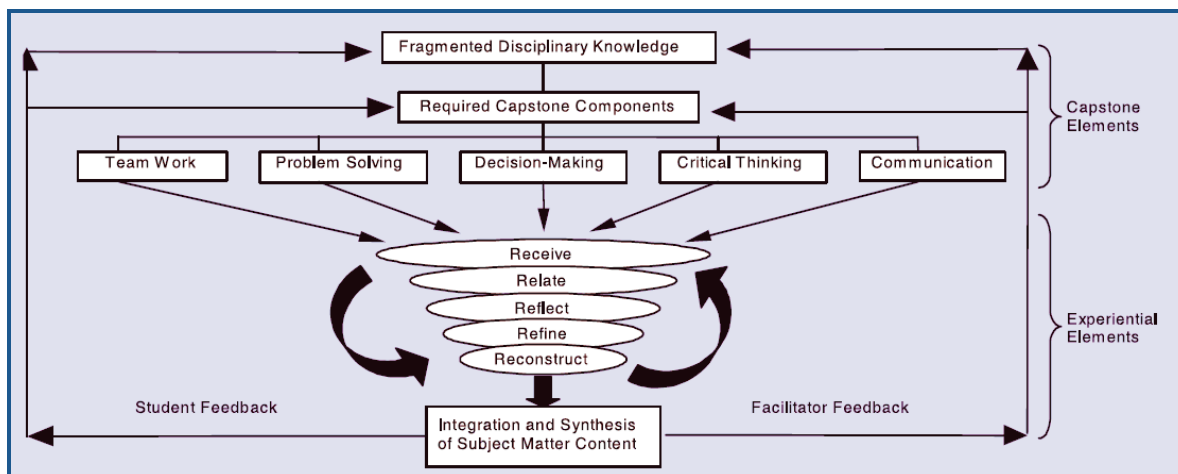
Capstone courses are rare in American K-12 education; however, adoption of capstone experiences has been growing steadily, albeit slowly, during the past decade. While limited research exists, a survey of 422 graduates who had completed a capstone experience, found that most (>75%) of participants reported developing skills in public speaking, research, writing, interviewing, planning, time management, and interpersonal communications (Egelson, Harmon, & Bond, 2002). Additionally, a recent survey found that capstones enhance the college and career readiness of learners (North Carolina General Assembly: Program Evaluation Division, 2010).

The pioneer of public K-12 capstone experiences is the State of Rhode Island. Under the Rhode Island Diploma System, students demonstrate proficiency through multiple sources of evidence gathered over time. State assessment results count for no more than 10 percent of this evidence. Other factors considered include: portfolios, capstone projects, public exhibitions, and the State's Certificate of Initial Mastery. As the culminating achievement of a student's K-12 studies, the Rhode Island Capstone Project requires students to focus in-depth on a core question, the product of which plays an essential part in demonstrating that a student meets graduation standards (Rhode Island Skills Commission, 2012).

Tennessee also has a capstone option. Introduced in 2009, a capstone project is recommended, but not required, for seniors. Requirements are determined locally and may include, but are not limited to, senior projects, virtual enterprises, internships, externships, work-based learning, service learning, and/or community service. Capstone projects must have five core components: (1) an approved proposal containing the research question; (2) documented research and contact hours with a mentor; (3) a short written paper; (4) an oral presentation that demonstrates the research and knowledge learned; and (5) a review panel to evaluate the project (Tennessee Department of Education, 2008).

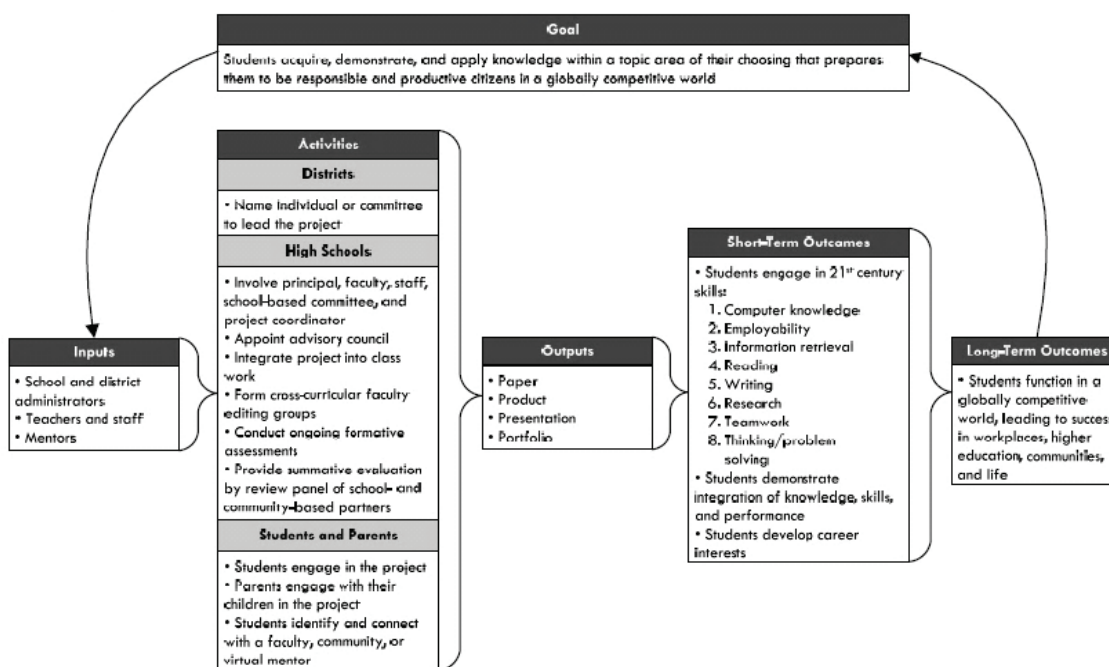
Virginia is currently piloting senior year capstone courses in English language arts and mathematics that are designed to help students master the State's college and career readiness expectations. Also, in the pilot stage is the Connecticut's Capstone Experience, which will be required of all students effective with the class of 2020 (Kannapel, 2012). Finally, North Carolina provides guidance and assistance to local districts that would like to introduce a capstone project. As such, 69% of North Carolina high schools require students to complete a capstone project (North Carolina General Assembly: Program Evaluation Division, 2010). According to State guidelines, projects must include a research paper, product, portfolio, and an oral presentation (Kannapel, 2012).

Development of capstone courses is a complex process and yet a lack of practical models exist to help steer the conceptualization, fabrication, and maturation of capstone programs. The scarce models that are available tend to focus on the student processes involved. For example, the model introduced Andraesen (2004) depicted in Figure 1 focuses on the intersection of experiential elements into the capstone experience.



**Figure 1: Model for the Integration of Experiential Learning into Capstone Courses (Andreasen, 2004).**

The North Carolina Graduation Project Model (2010) depicted in Figure 2 is designed to inform the K-12 community. The model considers the inputs, activities, stakeholder involvement, output, and short and long term outcomes that should be involved in a capstone program



**Figure 2: North Carolina Graduation Project Model**

Holdsworth, Watty, and Davies (2009) introduced a series of guided questions designed to serve as a model for capstone program planning. Known as the Melbourne Model, these questions are included in Figure 3

**WHAT IS A CAPSTONE EXPERIENCE**

Dependent on whether it will be disciplinary or interdisciplinary, the desired outcomes, and the supported activities.

**REASONS FOR DEVELOPMENT**

In relation to the overall course or program.

**AIMS OF THIS CAPSTONE EXPERIENCE**

In terms of student learning outcomes?

**TEACHING APPROACHES**

What teaching approaches will be employed, will it be course based, what activities will be included (*projects, internship, examinations, simulations, projects, field work, service, immersion, etcetera*)

**STUDENT LEARNING OUTCOMES**

Learning Outcomes to be built and assessed.

**RESOURCES NEEDED**

Important to identify gaps and deficiencies.

**CAPSTONE ASSESSMENT**

What will be assessed and how will it be assessed?

**STUDENT AND STAKEHOLDER EVALUATION**

What will be the most meaningful way to gather student and other stakeholder feedback and how will it be used to make curriculum improvements?

**Figure 3: Melbourne Model (Holdsworth, Watty, & Davies, 2009).**

Capstone programs are almost always introduced in order to engage students in a deeper level of learning, not normally found in a traditional classroom (Lopez, 2005). Yet, many capstone programs fall short of their intended goals. After having to temporarily suspend their State-wide capstone, North Carolina identified the key elements requisite for program success. They included:

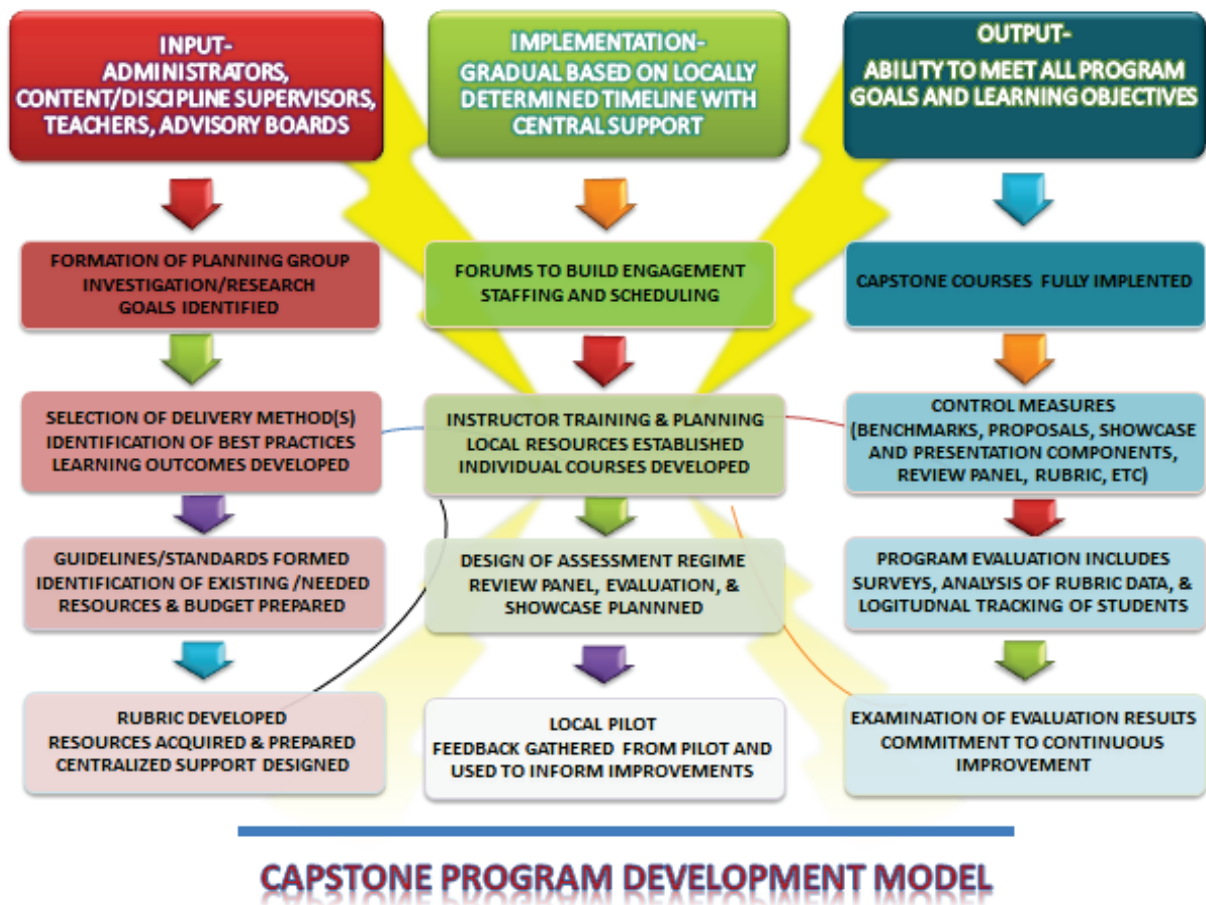
- ✓ A model for quality assurance and consistency,
- ✓ Training and information resources,
- ✓ Pilot sites,
- ✓ Stakeholder engagement,
- ✓ Centralized support for training, leadership, and information dissemination , and
- ✓ A means to evaluate the success of the program.

(North Carolina General Assembly: Program Evaluation Division, 2010).

The dearth of implementable models has led to poor planning, which has resulted in the early demise of many capstone initiatives. A model is introduced in the next section that seeks to inform those individuals and/or institutions interested in introducing and implementing a comprehensive capstone program.

## Discussion

In 2009 it was decided by the Maryland State Department of Education (MSDE), under the advisement of the State Advisory Committee, that a capstone experience would be added to the Business, Management, and Finance (BMF) high school completer programs in Maryland. A model, represented in Figure 4 has been developed that represents all process both completed as well as planned.

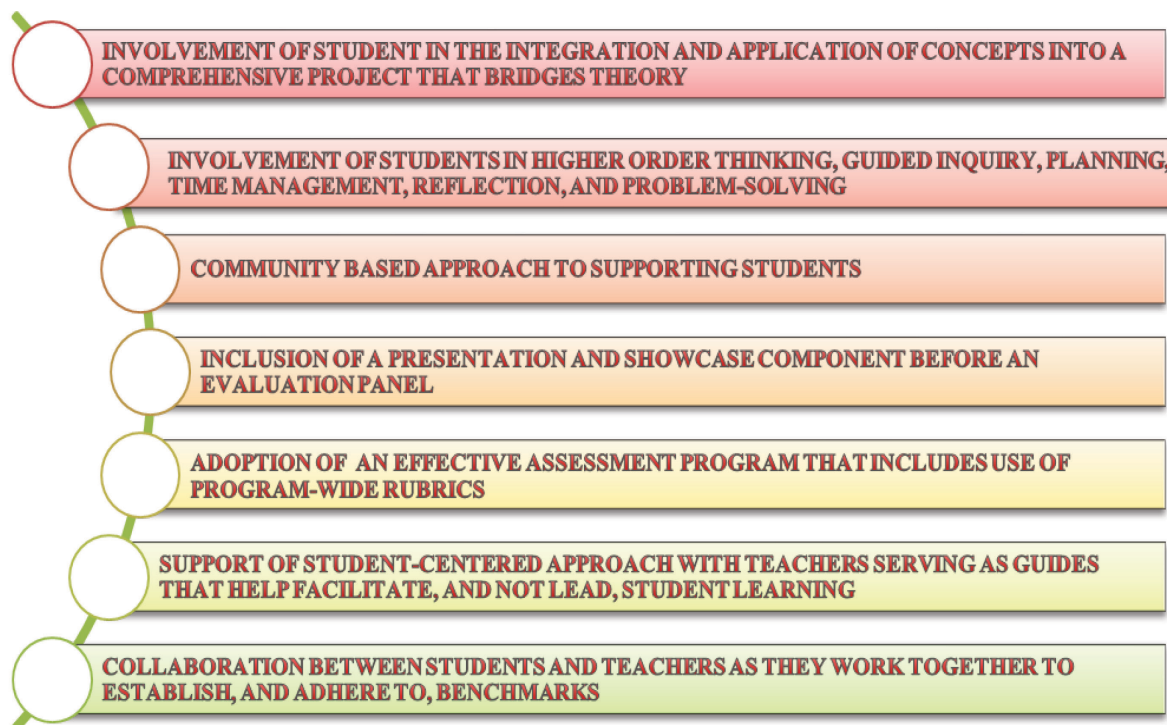


**Figure 4: Capstone Development Model**

According to the model, capstone program development begins with input from all stakeholders, which includes the establishment of a planning and development group with representatives from applicable stakeholder groups. Processes include identification of: desired program goals; student learning outcomes; learning delivery options; existing and required resources; support services; desired practices; model with guidelines and standards; and assessment instrumentation.

During this project, a wide net was cast, the literature was reviewed, and a number of models were examined. In particular, the Memphis City Schools, Rhode Island, University of Maryland Eastern Shore, University of Hawaii at Manoa, Skidmore College, and the Tennessee Public Schools capstone experiences were examined. Following the review, it was determined that a credit bearing capstone course offered greater pedagogical advantages to both teachers and students than a stand-alone capstone experience or project could avail. The curriculum development team comprised of MSDE BMF Cluster Staffers and the MSDE BMF Program Affiliate Director, with feedback from the State Advisory Council, identified the best practices in capstone instruction. These best practices informed the development of the capstone course. They are represented in Figure 5.





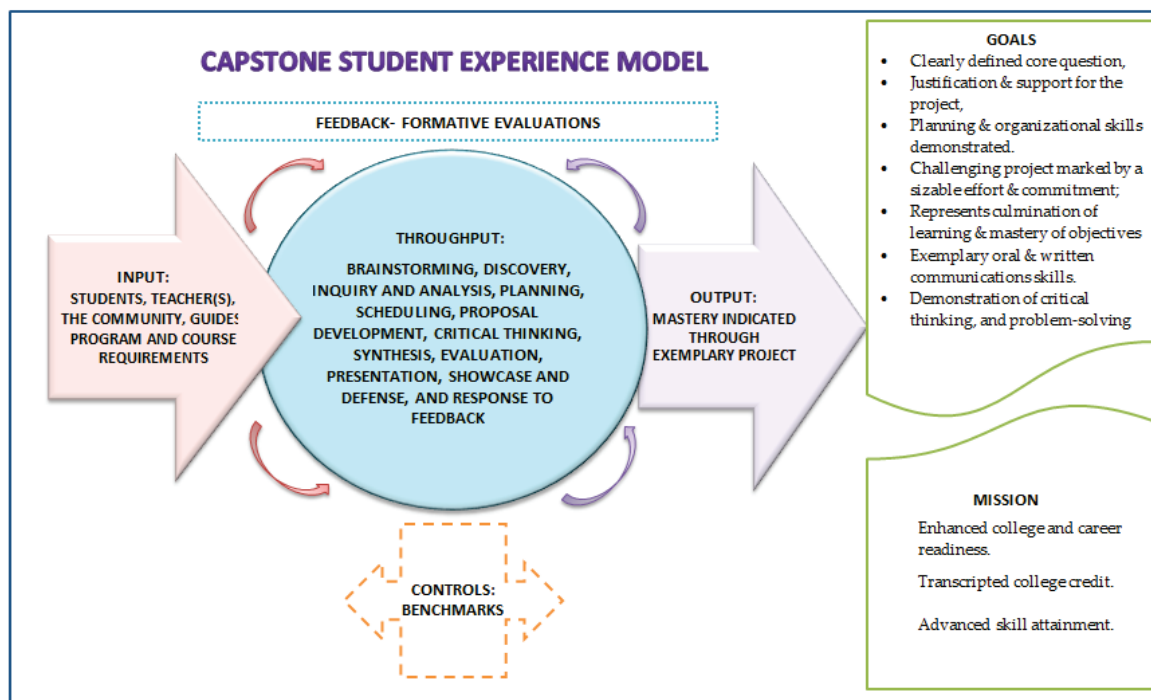
**Figure 5: Best Practice in Capstone-Based Instruction (Buzzetto-More, 2013)**

There are seven identified best practices:

1. Involvement of students in the integration, and application of key concepts into a comprehensive project that bridges theory with practice
  - a. Identification of the application of program learning objectives must be done before a student commences work on his/her capstone project.
2. Involvement of students in higher-order thinking, guided inquiry, planning, time management, reflection, and problem-solving
  - a. Students locate, compare, classify, sequence, analyze, plan, schedule, reflect, hypothesize, synthesize, evaluate, associate, modify, and defend.
3. Community-based approach to supporting students
  - a. Students should be supported by discipline teachers as well as by professional practitioners. Additionally, guidance from university, college, and/or community college faculty with content expertise is also a recommended practice.
4. Inclusion of a presentation and showcase component before an evaluation panel
  - a. Students should be required to present their project in front of their classmates as well as in front of a review panel. While capstone projects can be displayed within the confines of a classroom, a best practice is the establishment of a formal event that celebrates student achievement by showcasing all completed projects simultaneously.
5. Adoption of an effective assessment program that includes program-wide rubrics
  - a. Rubrics communicate expectations and standards of performance. They establish criteria for consistent grading with the use of descriptive performance levels along a meaningful spectrum (Buzzetto-More, 2007). During this project, a number of capstone rubrics were examined, including the one from Rhode Island (Rhode Island Skills Commission, 2012). As a result, a holistic rubric was developed, presented in the Appendix.

6. Support a of student-centered approach with teachers serving as guides that help facilitate, and not lead, learning
  - a. The capstone teacher supports, without leading, as he/she establishes the necessary structure to guide, inspire, and monitor students (University of Hawai‘at Mānoa, 2010).
7. Collaboration between students and teachers as they work together towards benchmarks
  - a. Students are required to be an active participant in the learning process by selecting their topic, developing a project proposal, scheduling activities, selecting resources, and identifying tasks. At the same time, students should not be forced to work in isolation.

Program goals, procedures, and the desired student experience were identified. This information is depicted in the model represented in Figure 6 where participating students are informed by, and receive input from, peers, teacher(s), guides, requirements, and the larger community. During the throughput process, students engage in brainstorming, discovery, analysis, planning, scheduling, proposal development, critical thinking, synthesis of ideas, showcase and defense, and reflection. Quality controls include the use of benchmarks and formative evaluation. The output is student mastery of learning objectives as indicated through an exemplary project.



**Figure 6: Student Capstone Experience Model**

During program implementation, processes include course scheduling and staffing, instructor training and planning supported by resources, and forums held to build stakeholder engagement. Also, crucial to program implementation is testing with a pilot group, followed by program modifications/enhancements. The Maryland State-Wide BMF Capstone Project is currently in the implementation stage. Teachers and students are supported through a host of resources, among which are custom developed guidebooks. Presentations are being made to teachers and administrators across the State in conjunction with meetings, training workshops, and professional conferences. Additionally, a course is currently under-development to be offered in fully online and hybrid learning formats. The course will be made available exclusively to teachers in Maryland and will result in the earning of professional development credits. Topics to be covered include:



flexible education, project-based learning, technology tools, best practices in capstone course delivery, and student learning outcomes assessment.

The output of a capstone program is fully implemented capstone courses that meet all program goals and objectives. Quality control processes support program success and continuous evaluation supports an assurance of learning commitment. The Maryland State-Wide Capstone Project has not reached the output stage; however, student performance data including college acceptance, freshmen retention, and college graduation rates will be examined. Additionally, student and teacher surveys will be developed designed to measure satisfaction with the capstone experience as well as perceptions of value added.

## Concluding Thoughts

Teaching a capstone course is an exciting and ever changing experience. It requires an ongoing and meaningful dialogue to occur between tutor and tutee, the unique nature of which stimulates learning in a way that is without parallel. Teachers express concern that increased student autonomy will result in difficulties in learning management; however, the literature confirms that increased student control over learning results in greater motivation and self-determination (McCombs, 2007).

Well developed and successfully implemented capstone experiences have enumerable benefits as they promote active learning. With careful planning, a student-centered approach, and adherence to the best practices in capstone assessment, capstone courses can serve as highly effective and easily implementable assessment regime that bridge theory with practice.

The success or failure of this project will be examined and reported. The information to be collected will be reported in a future paper. It is the goal that sharing the experiences involved with the design and implementation of this project, as well as the resulting outcomes, will provide useful information to schools interested in exploring a capstone experience as an authentic student-centered assessment option.

## References

- Andreasen, R.J. (2004). Integrating experiential learning into college of agriculture capstone courses: Implications for practitioners. *NACTA Journal*, 48(1), 52-57
- Andreasen, R., & Trede, L. (2000). Perceived benefits of an agricultural capstone course At Iowa State. *NACTA Journal*, 44(1), 51-56
- Bauer, K. W., & Bennett, J. S. (2003). Alumni perceptions used to assess undergraduate research experience. *Journal of Higher Education*, 74, 210-230.
- Berheide, C. W. (2012). *Using the capstone course for assessment of learning in the sociology major*. Skidmore College. Retrieved 9/1/2012 from: <http://cms.skidmore.edu/assessment/Handbook/capstone-course-for-assessment.cfm>
- Black, K. E., & Hundley, S. P. (2004). Capping off the curriculum. *Assessment Update*, 16(1), 3.
- Burke, S. (2011, October). A 21<sup>st</sup> century how to model for CTE programs. *Techniques*, 87(7), 31-34.
- Buzzetto-More, N. (2007, April). Using rubrics to enhance assessment. *Proceedings of the 2007 MBEA Conference*. Ocean City, MD
- Buzzetto-More, N. (2009). Using project based learning to build information and technological literacy. In M. Leaning (Ed), *Issues in information and media literacy* (pp. 51-74). Santa Rosa: CA, Informing Science Press.

## Models to Inform Capstone Program Development

- Buzzetto-More, N. (2010). Use of e-portfolios for value added assessment. In N. Buzzetto-More (Ed.), *The E-Portfolio paradigm: Informing, educating, assessing, and managing effectively with e-portfolios* (pp. 256-279). Santa Rosa: CA, Informing Science Press.
- Buzzetto-More, N. (2012). *Maryland BMF Programs of Study: Capstone guide*. Baltimore, MD: Maryland State Department of Education.
- Buzzetto-More, N. (2013). Fostering flexible education through high school capstone courses. *Proceedings of the 2013 SITE Conference*. March 25-29<sup>th</sup>, New Orleans, L.A.
- Buzzetto-More, N., & Mitchell, B. (2009). Student performance and perceptions in a web-based computer simulation. *Interdisciplinary Journal of E-Learning and Learning Objects*, 5, 74-90
- Buzzetto-More, N., & Pinhey, K. (2007, August). Web-based assessments with capstone business students. *Proceedings of the 2nd UMES Office of Instructional Technology E-Learning Symposium*. Princess Anne, MD
- Clark, E., Engel, D., Napolitano, M., Richardson, J., Rodriquez, M., Sterling-Deer, C., & Kasprzak, C. (2008). *Integration reflection, closure & transition advancing capstone learning at LaGuardia: Report of the faculty research team*. Retrieved 9/11/2012 from: [http://faculty.lagcc.cuny.edu/ctl/resources/pdfs/Faculty%20Research%20Team%20Report%20on%20Capstone%20Courses\\_11.18.08.pdf](http://faculty.lagcc.cuny.edu/ctl/resources/pdfs/Faculty%20Research%20Team%20Report%20on%20Capstone%20Courses_11.18.08.pdf)
- Egelson, P., Harman, S., & Bond, S. (2002). A preliminary study of senior project programs in selected southeastern high schools. *Annual Meeting of the American Educational Research Association*. New Orleans, LA
- Gardner, H. (1999). *The disciplined mind: What all students should understand*. New York, N.Y: Simon & Shuster.
- Gardner, J. N., Van der Veer, G., & Associates. (1998). *The senior year experience: Facilitating reflection, integration, closure and transition*. San Francisco: JosseyBass.
- Henscheid, J. M. (2000). *Professing the disciplines: An analysis of senior seminars and capstone courses* (Monograph No. 30). University of South Carolina, Resource Center for the 1<sup>st</sup> Year Experience. Columbia, SC
- Holdsworth, A., Watty, K., & Davies, W.M. (2009) *Capstone experience report*. Faculty of Economics and Commerce University of Melbourne. Retrieved 2/1/13 from: [http://w1.tlu.fbe.unimelb.edu.au/papers/academic\\_resources/Capstone.pdf](http://w1.tlu.fbe.unimelb.edu.au/papers/academic_resources/Capstone.pdf)
- Kannapel, P. (2012). *High school capstone course: A Review of the literature*. Appalacia Regional Comprehensive Center. Retrieved 10/3/2012 from: [http://www.edvantia.org/publications/arcc/ARCC\\_Capstone\\_Lit\\_Review.pdf](http://www.edvantia.org/publications/arcc/ARCC_Capstone_Lit_Review.pdf)
- Kuhlthau, C., & Todd, R. (2007). *Guided inquiry*. Retrieved 9/10/07 from [http://www.cissl.scils.rutgers.edu/guided\\_inquiry/implementation.html](http://www.cissl.scils.rutgers.edu/guided_inquiry/implementation.html)
- Lopez, L. (2005). *Senior project: Effectiveness study in North Carolina. Year Two (2004-2005) Final Report*. Chapel Hill, NC
- McCombs, B. L. (2007). Balancing accountability demands with research-validated, learner-centered teaching and learning practices. In C. E. Sleeter (Ed.), *Educating for democracy and equity in an era of accountability* (pp. 41-60). New York: Teachers College Press.
- Moriarty, L. J. (2006). Investing in quality: The current state of assessment in criminal justice programs. *Justice Quarterly*, 23,409–427.
- Moursund, D. (1999). Ten powerful ideas shaping the present and future of IT in education. *Learning and Leading with Technology*, 27(1).
- National Governors Association. (2010). *Common Core State Standards*. National Governors Association Center for Best Practices, Council of Chief State School Officers, Washington D.C.

- National Survey of Student Engagement Report. (2007). *Experiences that matter: Enhancing student learning and success*. Indiana University Center for Postsecondary Research. Press Release.
- North Carolina General Assembly: Program Evaluation Division. (2010). *Final report to the joint legislative program evaluation oversight committee*. Report Number 2010-01.
- O'Grady, A. (1999). Information literacy skills and the senior project. *Educational Leadership*, 57(2), 61-62.
- Page, D. (2006). 25 tools, technologies, and best practices. *T. H. E. Journal*, 33(8). Retrieved from <http://thejournal.com/articles/18042>
- Rhode Island Skills Commission. (2005). *Capstone toolkit*. Retrieved 7/30/2012 from: [http://www.ride.ri.gov/highschoolreform/dslat/pdf/exh\\_050103.pdf](http://www.ride.ri.gov/highschoolreform/dslat/pdf/exh_050103.pdf)
- Regional Educational Laboratory Northeast & Islands (2009, March 11). *School redesign – Capstone culminating projects*. U.S. Department of Education, Institute of Education Sciences. ED-06-CO-0025. 5 pages.
- Tennessee Department of Education (2008). *The capstone project: State of Tennessee*. Nashville, TN: Author. Retrieved January 31, 2012 from: [www.tnec.org/DownloadFiles/CapstoneManual.doc](http://www.tnec.org/DownloadFiles/CapstoneManual.doc)
- University of Hawai'i at Mānoa. (2010). *Capstone experiences*. Retrieved 7/20/2012 from <http://manoa.hawaii.edu/assessment/howto/capstone.htm>
- U.S. Partnership for 21<sup>st</sup> Century Skills. (2011). *Framework for 21<sup>st</sup> century learning*. Washington D.C. Retrieved 1/14/13 from [http://p21.org/storage/documents/1\\_p21\\_framework\\_2-pager.pdf](http://p21.org/storage/documents/1_p21_framework_2-pager.pdf)
- Wagenaar, T. C. 1993. The capstone course. *Teaching Sociology*, 21,209-214.
- Weiss, G. L. 2002. The current status of assessment in sociology departments. *Teaching Sociology*, 30, 391–402.

## Biography



**Dr. Nicole A. Buzzetto-More** is an Associate Professor, Program Coordinator, and the Assurance of Learning and Assessment Chair in the Department of Business at the University of Maryland Eastern Shore. She is also Director of the Maryland State Department of Education Program Affiliate for Business, Management, and Finance. She received doctorate and masters degrees from Columbia University and earned a post doctorate from Tulane University. She also earned a masters degree from the College of New Rochelle and a bachelor's from Marist College. She is a frequent invited presenter at conferences across the globe; is on the editorial board of several journals; has authored numerous publications; and has been recognized with awards from the American Distance Education Consortium, Global Digital

Business Association, and the Informing Science Institute. Recently, she was named a Fellow of the Informing Science Institute. She published two books in 2007, *Principles of Effective Online Teaching* and *Advanced Principles of Effective ELearning*. In 2010 her third book *The E-Portfolio Paradigm: Informing, Educating, Assessing, and Managing with E-Portfolios* was published by the Informing Science Press. She can be reached at [nabuzzetto-more@umes.edu](mailto:nabuzzetto-more@umes.edu)

## Appendix

MARYLAND BMF CAPSTONE RUBRIC				
Expectations	Exceeds Expectations	Meets Expectations	Almost meet expectations	Unacceptable
<b>Capstone Proposal</b>	Clearly defines core question and all learning activities. Skillfully, demonstrates an understanding of the theoretical support for the project. Provides robust background information and compelling justification. Methodology proposed logically supports the core question. Analyzes a condition or situation of significance as the basis for exploration & reflection. Thoughtful & realistic timeline included.	Defines the core question and learning activities. Demonstrates an understanding of the theoretical support for the project. Provides background information and justification. Methodology proposed addresses the core question. Purposed to analyze a significant. Timeline included. Minor flaws with no omissions.	Attempts to define the core question and learning activities. Demonstrates an attempt to provide theoretical support for the project. Some background information and attempt at justification presented. Presents a methodology. Attempts to analyze a condition or situation of significance. Timeline attempted. Multiple flaws or minor omissions.	Components are either inadequate or missing. Serious flaws present. Proposal does not come close to meeting expectations.
<b>Perceived Difficulty/ Effort &amp; Thoroughness of Project</b>	The project is clearly challenging, requiring a sizable effort and commitment on the part of the student; is multifaceted and complex and will require the student to implement/explore multiple program concepts. The project represents a culmination of learning.	The project is challenging, and will require effort and commitment on the part of the student. The project will require the student to implement/explore program concepts. Minor improvements needed with no omissions.	The project attempts to require the student to implement/explore program concepts. The project attempts to represent a culminating experience. Flaws and omissions evident. Greater effort, level of difficulty, and or thoroughness required.	Insufficient. The difficulty, level of effort, and/or thoroughness are inadequate.
<b>Writing</b>	Skillfully uses precise and descriptive language that clarifies and supports intent and establishes an authoritative voice. Demonstrates correct use of grammar, usage, punctuation, mechanics, syntax, sentence structure, and spelling.	Uses language that clarifies and supports intent. Demonstrates control of grammar, usage, punctuation, mechanics, syntax, sentence structure, and spelling. Minor flaws.	Attempts to use language that clarifies and supports intent. Attempts to control of grammar, usage, punctuation, mechanics, syntax, sentence structure, and spelling with some errors clearly evident. Multiple corrections and/or improvements needed.	Numerous flaws. A serious rewrite is required.

<b>Quality of Presentation</b> (See separate grading criteria)	The presentation is professional in style, color, format, and overall design. Slides are neither empty or cluttered. All required slides are included. The presentation is includes citations and is free from errors. The content is clear, complete, & demonstrates an ability to critically analyze concepts. Exemplary verbal and non-verbal skills are employed (see separate criteria). The presentation is extemporaneous with any reading of content, indicating prior practice. Student wears professional attire.	Presentation is for the most part professional in style, color, format, and overall design; has citations and is not plagiarized. The presentation is mostly free from errors in spelling, grammar, word usage, and punctuation. The content is clear, and indicates an effort to analyze concepts. Mostly, appropriate verbal and non-verbal communications is employed. The presentation is extemporaneous. Student wears professional attire. Minor flaws exist in one or more areas.	Presentation attempts to be professional. The presentation attempts to employ proper mechanics; however, errors are evident. Attempt is made to have content that is clear, and indicates an effort. Attempt at appropriate verbal and non-verbal communications is employed. Multiple flaws exist in one or more areas.	Presentation ineffective due to serious flaws in either presentation design or delivery.
<b>Adherence to Proposed Deliverables &amp; Schedule</b>	Student continuously meets all project deliverables in accordance with planned timeline. Student is clearly able to organize his/her time appropriate to the project.	Student meets most project deliverables in accordance with planned timeline. Student is usually able to organize his/her time appropriate to the project. Minor difficulties evident on one or two occasions.	Student attempts to meet project deliverables. Student attempts to organize his/her time appropriate to the project. Multiple issues meeting deliverables on schedule.	Student exhibits poor planning and time management throughout project completion.
<b>Overall Quality of Project</b>	Clearly defines the core question and the learning activities. Supports the core question with an analysis of relevant and accurate evidence. Elaborates on significance of new knowledge acquired and makes insightful connections to hypothesis. Analyzes a condition or situation of significance as the basis for reflection. Makes connections between personal ideas & experiences and more abstract aspects of life, leading to new perspective or insights. Is focused on topic. Maintains focus. Provides audience with something provocative to think about.	Defines the core question and the learning activities. Supports the core question with analysis. Presents new knowledge and addresses thesis/topic. Makes connections between ideas and experiences. Provides a conclusion. Minor flaws evident.	Attempts to define a core question, analyze findings, and present a conclusion. Attempts to makes connections between ideas and experiences. Conclusion attempted but may be flawed. A number of improvements required in order to enhance the overall quality of the project. Project meets minimal requirements but falls short of expectations.	Poor project quality.