MSSM – A PARTNER FOR MAINE STEM SUCCESS

MAINE SCHOOL OF SCIENCE AND MATHEMATICS

Maine School of Science and Mathematics

Strategic Plan

May 2019

MSSM – A PARTNER FOR MAINE STEM SUCCESS

The Maine School of Science and Mathematics is an academic leader in Maine secondary STEM education by providing a superlative education for motivated students by an exceptional faculty and staff. MSSM will impact more Maine students by also developing teacher and student resources and becoming a valued, accessible resource for students and educators across Maine.

Setting the Stage

In 2018, the Maine School of Science and Mathematics undertook a dual-prong strategic planning process. Faculty and staff used the operational design model to examine MSSM from the inside out, while the Board of Trustees formed a Strategic Plan Steering Committee to examine STEM education nationally, and MSSM's role within the State of Maine educational landscape. This plan is the combination of those efforts.

MSSM's History

MSSM was established in 1993 as a public residential magnet school for the purpose of providing certain high-achieving high school students with a challenging educational experience. Since the first entering class in 1995, MSSM's students have been achieving remarkable academic results. MSSM has developed and grown a very popular middle school focused summer camp which excites and engages students in STEM subjects. MSSM has been at the forefront of efforts to break down gender barriers in STEM education. MSSM summer camp has an equal number of weeks for girls and boys. MSSM's student enrollment has been roughly gender equal for a number of years with current residential enrollment capped due to the capacity of its one dorm.

MSSM's Mission

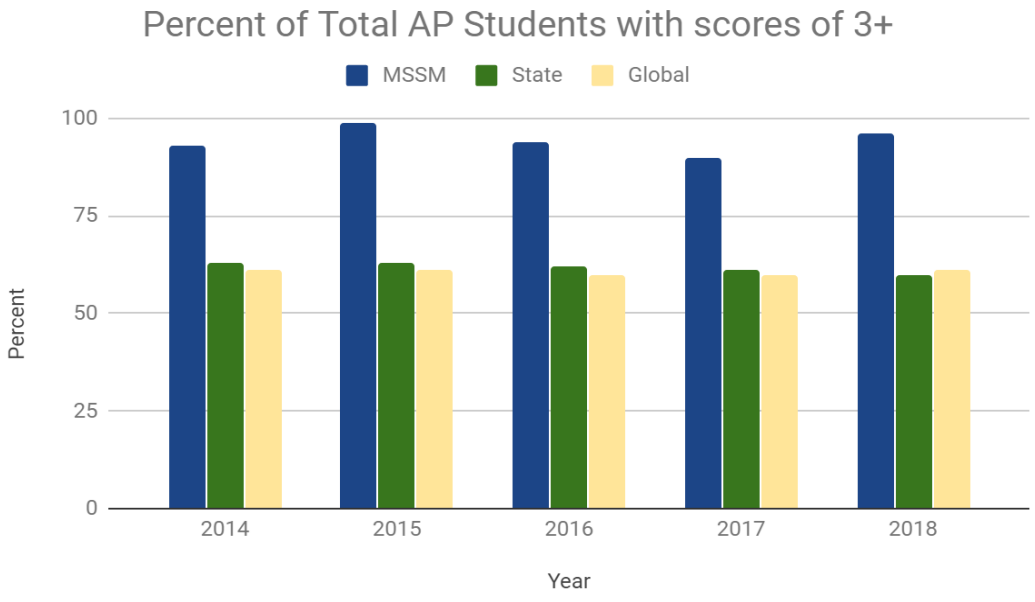
MSSM brings together and helps a group of Maine's most academically motivated high school students to become innovative, well-rounded scholars with the ability to develop, investigate, and communicate critical ideas that improve the human condition and benefit the people of Maine. We understand that highly motivated and prepared students are found in a diverse selection of communities across the state, and they benefit from programs delivered in a variety of ways. MSSM is a trusted partner to those communities and a vital part of the educational landscape for the delivery of secondary STEM education in Maine.

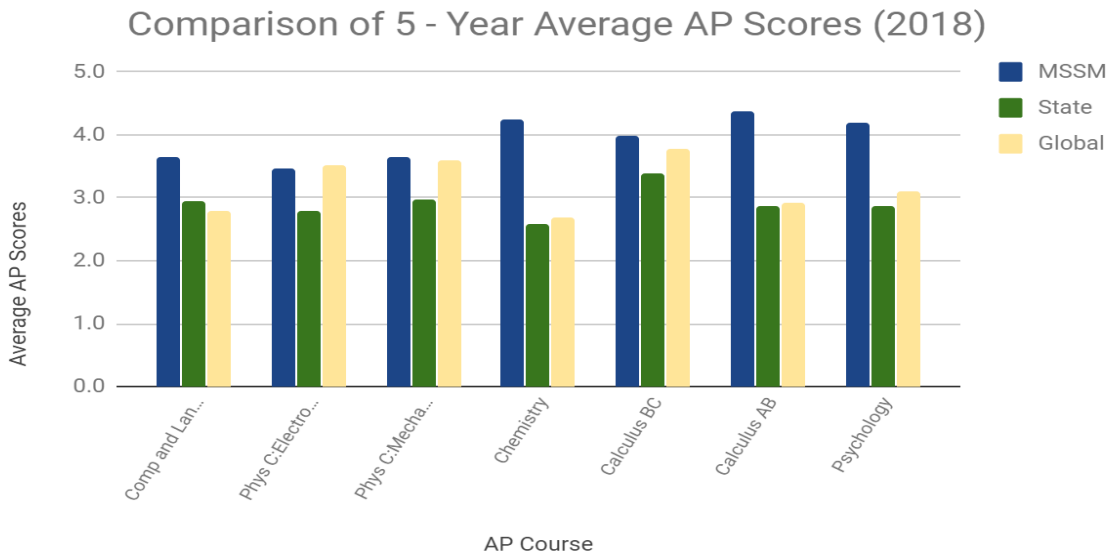
MSSM's Future

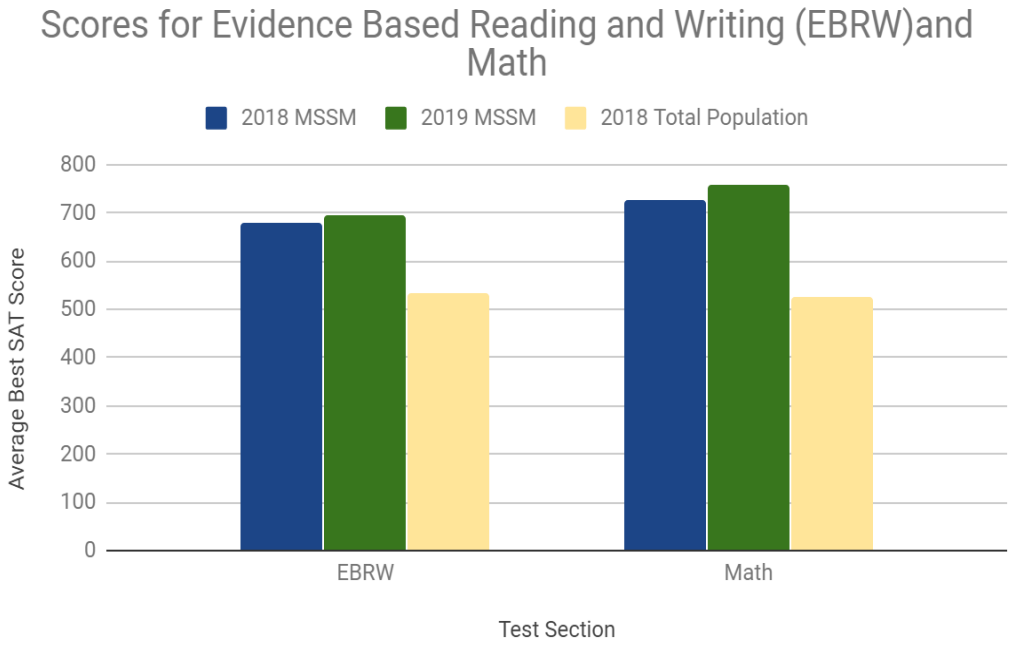
As MSSM celebrates its 25th anniversary, it will build on its core competency of outstanding student outcomes to become a partner for STEM education across the State. MSSM will expand its impact by training teachers, providing STEM teaching resources and filling gaps in local education offerings by providing high-level STEM classes to students who otherwise would not have access to such classes.

MSSM students are motivated, talented, and hard-working and most courses at MSSM are taught at the college level using college textbooks and curricular materials. We have led the state in many initiatives from the inclusion of AP courses, internships, computer programming and most recently, dual college enrollment. Our graduates, many of whom pursue advanced degrees, are making an impact locally, nationally, and internationally.

Advanced Placement courses are offered at MSSM in English Language & Composition, European History, Psychology, Calculus AB and BC, Statistics, Chemistry, and Physics C: Mechanics and Electricity & Magnetism. In the past five years, MSSM students have taken a total of 748 Advanced Placement tests and demonstrated their mastery of college level material by achieving a mean score of 3.9 on the tests. Statistics provided by College Board show a striking disparity between MSSM students and their peers throughout Maine and overall. In the past five years, 95% of MSSM AP students have scored a 3 or better on at least one AP test taken. This is in stark contrast to an average 60% for Maine and test takers overall. Differences are also notable in SAT scores. MSSM students consistently outperform their peers around the state and the total SAT test taking population by at least 100 points in both Critical Reading and Math. MSSM has an agreement with the University of Maine at Presque Isle allowing students to receive college credit for many MSSM courses, some of which are beyond the AP level.







These and other metrics which account for MSSM's high rankings in *U.S. News and World Reports* only tell part of the story. Equally impressive are MSSM's performances at various competitions. Nearly every year since its inception, the MSSM Ivory Math Team has been second to none in the state in both regular and state meets. This year two different types of robotics teams, VEX and SeaPerch, have advanced to international competitions. The Science Bowl team represented Maine for the fourth time at the nationals in Washington, DC. The accolades are not restricted to math and science. For the second time in three years, an MSSM student has been one of two students selected to represent Maine in the

United States Youth Senate Program. For the third year in a row, an MSSM Key Club member has been elected to serve as lieutenant governor for the New England District of Key Clubs. The Jazz Band received a second place award at the State Jazz Festival and our athletes have advanced to play-offs and even brought home an Aroostook League Championship.

As the college admissions process grows ever more competitive, MSSM students continue to gain admission to prestigious liberal arts colleges, technical colleges, and state and private universities. Even more important than the matriculation summary is the news that we receive about the opportunities they find at college as freshmen who walk through the doors prepared to work both independently and collaboratively in a new environment. While we lack data on the extent to which MSSM students ultimately enrich the lives of others in Maine, some stand out due to the extent to which they have dedicated their time and expertise to the great State of Maine.

Matriculation Summary, Classes of 2017 and 2018		
Allegheny College	Maine Maritime Academy	U of Maryland, College Park
Boston College	Massachusetts Institute of Technology	U of Massachusetts, Amherst
Boston University	McGill University	U of New England
Bowdoin College	Mercer University	U of New Hampshire, Manchester
Carnegie Mellon University	Mount Holyoke College	U of Maine
Champlain College	New College of Florida	U of Maine, Farmington
Clark University	Northpoint Bible College	U of Maine, Presque Isle
Clarkson University	Rensselaer Polytechnic Institute	U of Pittsburgh
Colby College	Rochester Institute of Technology	U of Southern Maine
Cornell University	Smith College	U of Utah
Eckerd College	Stevens Institute of Technology	U of Wisconsin, Madison
Embry-Riddle Aeronautical University	Suffolk University	Virginia Tech
Emory University	SUNY Korea	Williams College
Harvey Mudd College	Swarthmore College	Wittenberg University
Kenyon College	Syracuse University	Worcester Polytechnic Institute
Lehigh University	Tufts University	

MSSM – Successes

Nicole Grohoski, Maine House Representative District #132, GIS Specialist and Cartographer

In 1999, her junior year of high school, Nicole's adventurous spirit took her from her hometown of Ellsworth to Limestone where her academic success continued. Her MSSM math and science classes included Chemistry, Physics, Geology, Calculus, Differential Equations, and Multivariable Calculus. She went on to Middlebury College to study mathematics, however, this would eventually take a back seat to her major of Environmental Studies and Chemistry. She holds the distinction of being the first woman to thru-paddle the Northern Forest Canoe Trail which stretches 740 miles from New York to Fort Kent. Having now returned to Ellsworth, she earns a living as a Geographic Information Systems (GIS) Specialist and Cartographer.

Although politics was not on Nicole's radar until just recently, she has long been a force for change. At MSSM, she started students on the path of recycling; transporting cardboard boxes in her backpack to the municipal bins. This student initiative persists today in the MSSM dormitory. Nicole's foray into public service began with an interest in the mathematics of rank choice voting. She soon found others in Maine who were working on this election reform and was empowered to find that regular citizens could make a difference. She is now serving her first term in the Maine House of Representatives where she sits on the Energy, Utilities and Technology Committee, representing District #132, Ellsworth and Trenton.

John T. Giblin, Jr, Ph.D (Tom), Associate Professor of Physics, Kenyon College

Tom enrolled in MSSM in the fall of 1997 as a junior from Brunswick, Maine. At MSSM, he took science classes in Chemistry and AP Physics and he studied Before Calculus, Calculus, and Abstract and Linear Algebra. He left MSSM to study chemistry at the College of the Holy Cross; but, instead earned an AB in Physics and Mathematics. At Holy Cross, he was selected for its highest academic honor, the Fenwick Scholar Program which allowed him to design his own senior research project. Tom's interest in Cosmology took him from Holy Cross to Brown and then to Yale where despite research and teaching commitments, he found time to convince his advisors to donate physics equipment and time to MSSM. He returned to teach and later coordinate the academic program at MSSM Summer Camps.

Tom has worked as a visiting assistant professor at Bates College and as a postdoctoral fellow at Perimeter Institute for Theoretical Physics in Ontario. He is currently the Chair of the Physics Department at Kenyon College and an Adjunct Assistant Professor of Physics at Case Western Reserve University. As a researcher, he has secured nearly a dozen competitive research and innovation grants; three from the National Science Foundation totaling $315,000. He has over forty peer-reviewed publications and give numerous Cosmology talks each year to scientist at top tier research institutions. Still he chooses to devote time to MSSM. Two years ago, when we had been unable to recruit a second physics instructor,

Tom graciously agreed to take on a small group of students who had already completed AP Physics C. Enabled by technology, Tom met with students virtually, delivering a sophomore level college class he was simultaneously teaching separately at Kenyon. Students were highly appreciative of his passion and expertise in particle physics. Tom's commitment to inspiring the scientists of tomorrow is unwavering.

The success of Nicole and Tom certainly isn't wholly dependent on their time at MSSM, but both credit MSSM as providing them with a foundational education they would not have otherwise received.

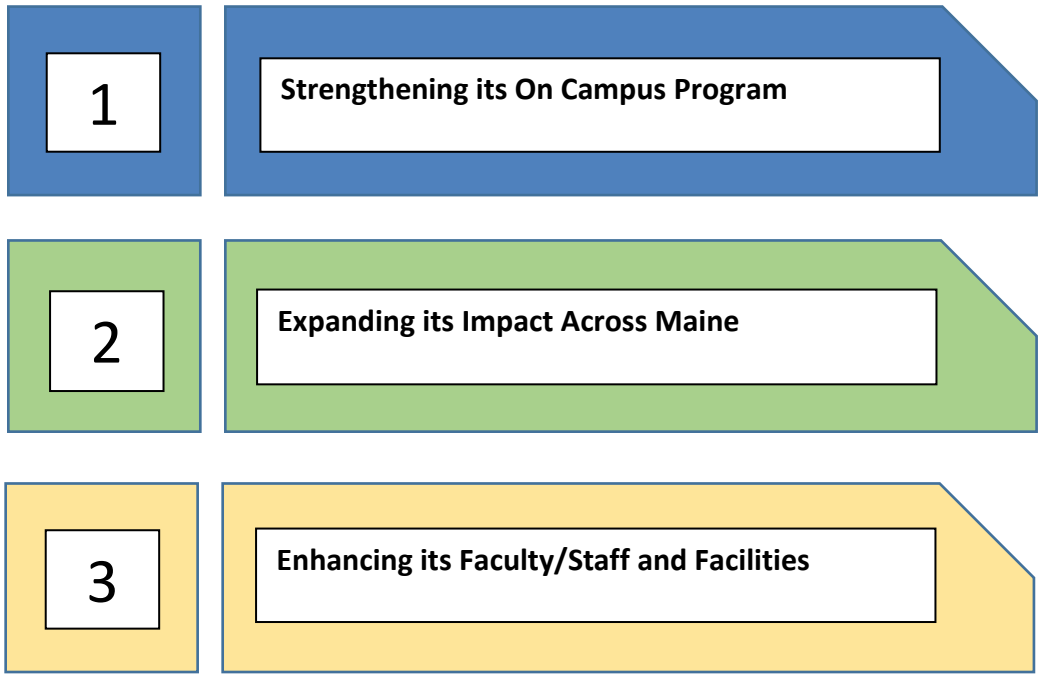
MSSM – WHAT IS NEXT?

With MSSM's 25th anniversary rapidly approaching, MSSM desires to build upon its successes. To do this, it must address critical infrastructure needs and ensure its place as Maine's premier secondary STEM institution.

The Plan

MSSM shall be a recognized leader in the delivery of secondary STEM education, a vital partner to Maine public schools, and a valued, accessible resource for students and instructors across the state.

To ensure MSSM is a foundational partner in secondary STEM education in Maine, MSSM commits itself to achieving its plan by:



1

Strengthening its On Campus Program

STRONG ON CAMPUS PROGRAM

MSSM's on-campus program has been a foundational piece of its exceptional student outcomes since its inception. Every qualified, exceptionally motivated Maine student, no matter their socio-economic circumstances or geographic location, should have the opportunity to experience the MSSM on-campus program.

To maintain exceptional outcomes, the MSSM facilities need to be expanded and fully maintained. MSSM students, faculty and staff need first-rate facilities.

KEY INITIATIVES

- **Increased access** – Qualified students from all parts of Maine, in grades 9-12, regardless of their socio-economic status or geographic location, will have full access to MSSM's on-campus program by reducing the room and board fee.
- **MSSM control all of its critical facilities** – To adapt quickly and meet student, faculty and staff safety and educational needs, MSSM must control the day-to-day operation of all of its critical facilities.
- **Modern lab spaces –** Flexible, adaptable spaces that encourage collaboration and hands-on learning must be created.
- **High quality residential life program** – To support strong social and emotional growth parallel with academic growth MSSM needs a residential life program on par with its academic program.
- **Updated graduation requirements** – Students who demonstrate solid foundations in math, science, and the humanities will have increased opportunities to move more quickly into advanced courses, research opportunities and transferable university credits earned through the University of Maine system.
- **Engineering spaces** – MSSM needs accessible spaces that encourage hands-on learning and long-term projects that support both faculty led programming and student projects.
- **Flexible classroom, meeting and office spaces** – Learning environments must be safe and support discussion and discovery.
- **Technology** – MSSM must provide the tools needed to support computer science programming and expanded virtual/online programming.

- **Strategic marketing plan** – MSSM needs to implement a comprehensive marketing plan for all facets of the school.
- **Research and inquiry opportunities** – Students must be supported in conducting long-term research and solving real-world challenges, including competitions.
- **Safe, clean, and comfortable residential dorms** – To grow and support the residential program, student housing must be at a comparable standard to other residential magnet schools.
- **Proper residential staff housing** – Residential staff is a key component to a great student experience and must have proper accommodations.
- **Sufficient faculty housing** – Availability and quality of faculty housing is critical to faculty hiring and retention.
- **Optimized school size** – Students should have a vibrant, diverse educational community. To support this goal, the school needs to grow demand and enrollment to 200-230 students. The entire educational program needs to expand to meet the needs of those students.

2

Expanding its Impact Across Maine

VITAL PARTNER

MSSM must expand its outreach to become a vital partner to Maine public schools, and a valued, accessible resource for students and educators across the state.

MSSM remains a well-kept secret across the state. Through active partnerships and broader recognition of MSSM's ability to meet the needs of Maine's high-achieving students, MSSM will be seen as a key partner in the Maine STEM landscape.

KEY INITIATIVES

- **Advancement Team** – MSSM will strengthen its working relationship with the MSSM Foundation and others, ensuring a productive partnership for fundraising, support, growth and outreach.
- **Train-the-Teacher** – MSSM will leverage its core STEM competencies to provide training for middle school and high school STEM teachers.
- **Summer camp** – MSSM will maintain and strengthen its middle school focused summer camp.
- **External accreditation and assessment** – Accreditation will support the expanding ability of MSSM students to participate in dual enrollment classes and will provide external recognition of its excellence.
- **Resource for teachers** – MSSM will leverage its core STEM competencies to develop, organize and distribute online STEM lesson plans and enrichment materials.
- **Accelerated college pathways** – Students will have the advantage to begin college already having earned an Associate's Degree or transferable university credits while at MSSM**.**
- **Expanded partnerships** – Students will have expanded J-Term options, internships and access to other industry partnerships and research opportunities.
- **Outreach and distance learning** – MSSM will develop online content, learning modules and other student learning modalities to support students whose school could benefit from MSSM partnership.

3

Enhancing its Faculty/Staff and Facilities

EXCEPTIONAL FACULTY AND FACILITIES

Exceptional faculty, staff and facilities will enable MSSM to provide world class student outcomes.

KEY INITIATIVES

- **Hiring and retention** – MSSM will develop hiring, retention and human resource policies that ensure the demonstrated quality of faculty and staff
- **Partner opportunities** – Opportunities for MSSM faculty and staff partners and families have an impact on hiring and retention and should receive special focus, including access to daycare and early childhood learning.
- **Involvement in residential life** – Students benefit from a strong connection between faculty/staff and their residential life experiences.
- **Facilities** – MSSM recognizes that faculty and staff need facilities that will help them achieve exceptional student outcomes. Section 1 of this plan addresses some of these facilities upgrades.

IMPLEMENTATION FRAMEWORK

The following goals and strategies form the framework for the school's growth and improvement work for the next five years.

1 Strengthening its On Campus Program

MSSM's on-campus program has been a foundational piece of its exceptional student outcomes since inception. All qualified, exceptionally motivated Maine students, no matter their socio-economic circumstances, or geographic location, should have the opportunity to benefit from the MSSM experience.

To maintain exceptional outcomes, MSSM facilities need to be expanded and improved. MSSM students, faculty and staff need first-rate facilities.

GOAL: Provide an exceptional on-campus education experience to more Maine students.

OBJECTIVES:

1. MSSM should reduce the room and board fee, to a nominal amount, to remove finances as a hurdle for enrollment of MSSM appropriate students.
2. To adapt quickly and provide for student, faculty and staff needs, MSSM must control and manage the day-to-day operation of all of its critical facilities.
3. Modern lab spaces, which are safe, flexible, adaptable spaces that encourage collaboration and hands-on learning, must be created.
4. A high-quality residential life program is required to support strong social, and emotional growth parallel with academic growth of MSSM students.
5. Updated, more flexible graduation requirements will help students pursue their areas of greatest interest and earn transferable university credits through the University of Maine System.
6. Revising the daily schedule and graduation pathways will support student-driven long-term research and solving of real-world challenges.
7. MSSM must provide the tools needed to support the delivery of computer science, engineering and expanded virtual/online programming
8. Flexible classroom, meeting and office spaces are needed to create learning environments that support discussion and discovery.
9. MSSM must implement a comprehensive marketing plan for all facets of the school.
10. MSSM must have a campus plan that supports an inclusive community.
11. To grow and support the residential program, student housing must be at a comparable standard to other residential magnet schools.

12. Residential staff is a key component to a great student experience and must have proper accommodations.
13. Sufficient faculty housing is needed as availability and quality of faculty and staff housing are critical to faculty and staff hiring and retention.
14. In order to have a vibrant, diverse educational community, and to serve more students, the onsite educational programming should grow to between 200-230 students.

STRATEGY I

Work with Maine Government to change MSSM's statute and annual appropriation to reduce the room and board fee charged to families making it affordable to all Maine students.

Required Resources:

- Support from the Department of Education, Governor, and Legislature.
- Additional funding from the State to reduce room and board costs for Maine students.

Earliest Timing:

Rationale:

- As the full cost of room and board has climbed, a number of potential applicants are not applying to MSSM due to the perceived cost.
- Financial aid is available, but many current families struggle to fund their portion of the cost, even after financial aid.
- As a public residential magnet school, MSSM should welcome every qualified Maine student.
- MSSM should be a top option for qualified students from all areas of Maine.

Additional Expected Benefits:

- Diversity makes a school community more vibrant
- Reduced room/board fees will help the State provide an appropriate education for all students.

STRATEGY II

Control critical facilities.

Required Resources:

- The existing lease agreement with Limestone will need to be reviewed.

- A long-term decision regarding the feasibility and location of new facilities will be needed.

Earliest Timing:

Rationale:

- The last 10 years of leasing the academic space from the local RSU has resulted in a backlog of deferred maintenance and safety issues, with little to show for the rent that was paid.
- Faculty and staff are frustrated at the inability to control their day-to-day work spaces.

STRATEGY III

Build or renovate educational spaces, including lab spaces, classrooms and meeting spaces to accommodate flexible, collaborative student experiences.

Required Resources:

Earliest Timing:

Rationale:

- STEM education is moving to collaborative, active and integrated learning.
- Flexible classroom and lab spaces let the spaces adapt as the learning changes.
- Existing facilities need major investment, which must bring maximum return on student outcomes.

Additional Expected Benefits:

- Better facilities will help with faculty, staff and student recruitment.
- Better facilities will support exceptional student outcomes.

STRATEGY IV

Develop and maintain a high-quality residential life program that supports students' social and emotional growth parallel with their academic growth.

Required Resources:

- The Residential Life Team needs to develop a comprehensive residential life program.

Earliest Timing:

- Revised policies and procedures should be presented to the Governance Committee by January, 2020.

Rationale:

- As a public residential boarding school, MSSM should have a comprehensive program for developing the whole student.
- A comprehensive residential life program allows MSSM to instill consistent community expectations and values.

Additional Expected Benefits:

- A comprehensive residential life program is a tool to address issues of student retention.

STRATEGY V

Increase the flexibility of MSSM graduation requirements so students can create programs of study that meet their interests and aspirations.

Required Resources:

- Program Team to review and propose revised requirements.

Earliest Timing:

- Graduation requirements phased in for Class of 2021 students.

Rationale:

- Flexible graduation requirements will support students in the pursuit of their areas of interests and aspirations.
- Flexible graduation requirements will allow students and faculty time for long-term projects or real-world problem solving

Additional Expected Benefits:

- Student projects, science fair participation, and real-world experiences help MSSM achieve higher visibility around Maine and the country.
- Students who are pursuing their areas of interests and aspirations are more likely to remain enrolled at MSSM and stay in Maine after college.

STRATEGY VI

Guide 70% of MSSM graduates to completing a long-term research project or having participated in a real-world problem-solving team.

Required Resources:

- Flexible graduation requirements
- Faculty and staff time for mentoring projects
- Access to lab space and makerspace outside of regular class hours

Earliest Timing:

Rationale:

- Students who want to pursue additional schooling will be more successful coming from a background of research and real-world problem solving.

Additional Expected Benefits:

- Programs customized to student interests will increase interest among prospective families and reduce attrition.

STRATEGY VII Ensure stable, affordable internet service, which is vital to expand MSSM's role in Maine STEM education.

Required Resources:

- Fiber optic internet connection
- Internal network capable of supporting all faculty, staff and student needs

Earliest Timing:

Rationale:

- Delivery of distance education is reliant on a high-speed, stable, internet connection.

Additional Expected Benefits:

- Increased internet bandwidth and stability will enhance the student experience.

STRATEGY VIII

Develop and implement a strategic marketing plan that supports all facets of the school

Required Resources:

- Additional staffing dedicated to marketing.
- Marketing budget for appropriate advertising and outreach.

Earliest Timing:

- School year 2019-2020 budget should support increased efforts in this area.

Rationale:

- MSSM is a hidden gem that needs increased visibility.
- MSSM is not reaching all Maine students who could benefit from the MSSM experience.

Additional Expected Benefits:

- Broadcasting MSSM's success to the broader world will showcase the quality of Maine's education system.

STRATEGY IX

Undertake campus planning in support of an inclusive community. Before any new construction is undertaken by MSSM, a master plan should be developed with input from all stakeholders.

Required Resources:

- Funding for a master planner to work with MSSM to develop a master campus plan.

Earliest Timing:

Rationale:

- MSSM grew organically from the assets made available with the closing of Loring Air Force Base. Now, almost 25 years later, it is time for a comprehensive plan for a campus to support MSSM's mission of delivering exceptional student outcomes.

STRATEGY X

Bring student residential housing up to a standard comparable to similar residential magnet schools.

- Students should be housed in rooms no larger than doubles.
- Gender and age appropriate housing should be ensured by investing in flexible clustered dorm spaces.
- The residential life staff housing in the dorm spaces should be appropriate as to number of units and their layout.

Required Resources:

- Renovated dorm space and/or additional dorm space needs to be pursued.
- For example, Thornton Academy built a new dorm, which accommodates 52 students (26 double rooms, arranged as suites with a shared bathroom, shared living room and two separate bedrooms) and 4 residential life apartments, at a cost of $4.2 million. The dorm is 22,700 square feet (per square foot cost $185

Earliest Timing:

Rationale:

- Other residential magnet STEM schools all have multiple dorms and a strong preference to rooms no larger than doubles.
- Competition for Maine and international students is increasing. Dorm space is an integral part of a residential program.
- Appropriate apartments are essential to recruit and retain qualified staff.

STRATEGY XI
Add additional faculty/staff housing

Required Resources:

- Purchase additional faculty/staff housing or incorporate faculty/staff apartments in new dorm construction projects.

Earliest Timing:

Rationale:

- Faculty/staff recruitment is enhanced by the availability of faculty/staff housing.
- Faculty/staff housing should be safe and comfortable to enhance faculty/staff retention.
- Faculty/staff housing should be similar in quality to support team cohesion.

STRATEGY XII
Grow the on-site education program to between 200 – 230 students.

Required Resources:

- Additional dorm space
- Admittance of day students
- Retention of enrolled students
- Grade 9 as entry point for qualified students

Earliest Timing:

- Day students can be enrolled by Fall 2019.

Rationale:

- Small schools, with enrollment below 300-400 students have been shown to deliver better results in academics, safety and connectedness compared to larger schools.
- A high-performance organizational environment is not likely to be bigger than 230, and a connected learning community not much bigger than 350.
- All highly-motivated Maine students should have access to MSSM.

Additional Expected Benefits:

- As enrollment and demand grows, enrollment focus may want to shift back to upper classmen, in order to serve more Maine students during any two year period.

2 Expanding its Impact Across Maine

MSSM must expand its outreach to become a vital partner to Maine schools and a valued, accessible resource for students and educators across the State.

MSSM remains a well-kept secret across the state. Through active partnerships and broader recognition of MSSM's ability to meet the needs of Maine's high-achieving students, MSSM will be seen as a key partner in the Maine STEM landscape.

GOALS: Increase MSSM's visibility around the state by increasing its partnerships and highlighting MSSM student achievements and college readiness. Become a powerful STEM resource for students and instructors across the state.

OBJECTIVES:

1. MSSM will create, staff and fund an Advancement Team. The Advancement Team will strengthen MSSM's working relationship with the MSSM Foundation and others, ensuring productive partnerships for fundraising, support, growth, and outreach.
2. MSSM will work collaboratively to develop and deliver free or very inexpensive teacher training to over 50 middle school and high school STEM teachers each year.
3. MSSM will maintain and strengthen its middle school focused summer camp, especially its emphasis in supporting gender equity in STEM education.
4. External accreditation will expand the ability of MSSM students to participate in dual-enrollment classes and will underscore MSSM's continuing capacity to achieve its outcome objectives.
5. MSSM will develop, organize and distribute online STEM lesson plans and enrichment materials for educators around the state to use.
6. Expanded Accelerated College pathways will give students the opportunity to begin college already having earned an Associate's Degree while at MSSM, to earn transferable university credits and/or to have an expedited pathway to an advanced degree, particularly in STEM fields.
7. Students should have expanded J-Term options, internships and access to other industry, university and research partnerships.
8. MSSM-developed online content, learning modules and other student learning modalities will enrich the educational experiences of students in a variety of schools across the state.

STRATEGY I

Develop and support a high-functioning Advancement Team to support the MSSM Foundation and others. Strengthen MSSM's partnerships with all stakeholders to enable and support the school's state-wide impact.

Required Resources:

- Full-time advancement office – This position will require an increase in MSSM's annual budget of $_____.

Earliest Timing:

- Fiscal year 2019-2020 budget may support a part time position. Increased funding will be required to fully support this initiative.

Rationale:

- Stable, consistent funding from the State of Maine and a wide variety of stakeholders is necessary for MSSM to impact STEM education across the state.
- Alumni, alumni parents, and parents of current students will be the strongest supporters of MSSM and a key focus in how MSSM tells its success stories, but they all need consistent contact and outreach.

STRATEGY II

Develop and deliver STEM teacher training to middle and high school teachers.

Required Resources:

Earliest Timing:

- Train the Teacher program, Summer 2019

Rationale:

- The Plimpton research showed a strong need for STEM-focused teacher training.
- MSSM is statutorily required to support STEM education around the state.

Additional Expected Benefits:

- The more MSSM faculty and staff interact with other Maine teachers, the stronger MSSM's partnerships with local schools can become.

STRATEGY III

Maintain and strengthen MSSM's middle school focused summer camp, especially its emphasis in supporting gender equity in STEM education.

Required Resources:

- Increased funding for advertising of the MSSM summer camp opportunities
- Increased funding for scholarships so no interested camper is turned away due to a lack of financial resources

Earliest Timing:

- Ongoing

Rationale:

- MSSM's summer camp alumni make up a majority of our enrolled students.
- Emphasizing gender equality in STEM education supports equal access to STEM fields for all Maine students.
- Emphasizing geographic diversity in STEM education supports equal access to STEM fields for all Maine students.

Additional Expected Benefits:

- MSSM summer camp exposes MSSM and the Limestone community to a broad cross-section of the State.

STRATEGY IV

Obtain external validation of outcome objectives through the accreditation process.

Required Resources:

- Administrative team proposal of which accreditation agency, time frame and cost estimate to be provided to the Board for approval.
- Faculty and staff time necessary to complete the accreditation process.

Earliest Timing:

- Accreditation proposal to the Board for a vote at the December 2019 meeting.
- Inclusion in the 2020 budget.

Rationale:

- Dual enrollment and accelerated graduation agreements are easier to achieve with partner institutions if MSSM is accredited.
- External validation of MSSM's programs will highlight the distinction of MSSM's programs.
- Increased STEM opportunities for students necessitate MSSM to distinguish its programming.

STRATEGY V

Develop, organize, and distribute online STEM lesson plans and enrichment materials for educators around the State to use. Initial steps should be focused on computer science and math content areas.

Required Resources:

- Dedicated faculty or staff to organize and coordinate the creation and dissemination of materials.

Earliest Timing:

- Ongoing with the Jack Kent Cooke Foundation Grant Program MSSM is administering

Rationale:

- The Plimpton research highlighted the need for STEM resources for many Maine teachers.
- MSSM has a statutory obligation to support STEM education across the state.
- MSSM can become a partner with local schools to provide STEM education to students.

Additional Expected Benefits:

- Increasing MSSM's partnerships with local schools will remove some of the competition between local schools and MSSM. The focus will be on the delivery of appropriate education to students.

STRATEGY VI

Enhance and deepen student achievement by expanding accelerated college pathways.

Required Resources:

- Maintain existing dual-enrollment agreement with the University of Maine System
- Develop accelerated graduation pathway with University of Maine Orono Engineering program
- Develop accelerated graduation pathway with Maine Maritime Academy and/or University of New England or other medical/dental schools.

Earliest Timing:

Rationale:

- MSSM students do university level work, not just in STEM classes, but in the humanities as well.
- Accelerated pathways demonstrate the quality of the MSSM education and provide value to the students and the State of Maine.

Additional Expected Benefits:

- Third-party validation of the quality of MSSM's education helps recruitment of additional students for MSSM's residential programming.

STRATEGY VII

Cultivate partnerships across the State with institutions of higher education, research, and industry.

Required Resources:

- Executive Director, faculty and dedicated staff time to cultivate partnerships

Earliest Timing:

- Immediate

Rationale:

- Our students and faculty are best served by strong partnerships in STEM fields.
- Students who have opportunities for experiences in research or industry are more likely to pursue higher education or employment in STEM fields.

STRATEGY VIII

Develop online content, learning modules and other student learning modalities to support students who do not attend our on-campus residential school.

Required Resources:

Earliest Timing:

- Immediate – Jack Kent Cooke Foundation Grant work, allowing MSSM to develop Algebra 1 and biology online programming.

Rationale:

- Not every student who can benefit from MSSM STEM classes can be an on-campus student at MSSM.
- MSSM should provide content that local schools cannot provide on their own.

Additional Expected Benefits:

- Additional cooperation between MSSM and local schools will provide opportunities for students who can most benefit from MSSM's on-campus programming to become familiar with MSSM.

3 Enhancing its Faculty/Staff and Facilities

Exceptional faculty, staff and facilities will enable MSSM to provide world-class student outcomes.

GOAL: Increase MSSM's ability to hire and retain exceptional faculty and staff.

OBJECTIVES:

1. MSSM will ensure it remains competitive in hiring and retaining faculty and staff by focusing on all relevant factors, including compensation, work environment, professional development opportunities, and other key factors.
2. Opportunities for MSSM faculty and staff partners and families, including access to daycare and early childhood education, will have an impact on hiring and retention and should receive special focus.
3. Students and faculty benefit greatly by enhancing the connection between faculty/staff and the residential life experiences of students.
4. MSSM recognizes facilities are a major area of focus, so all facility needs, including those focused on faculty and staff are covered in Section 1 of this plan.

STRATEGY I

Required Resources:

Earliest Timing:

Rationale:

Additional Expected Benefits: