

Transitioning from MS to HS in STEM Academy

The differences between middle school and high school are vast. Students often have difficulty adjusting to a new, larger environment. The new teachers demand more from them, both in quantity and quality of work, and especially in a STEM environment. Students often come unmoored in the process. While most high schools focus primarily on college and career readiness, the 9th grade is when students start to decline in grades and attendance. Successful transition into higher education begins with the transition into high school. In order to encourage success through the grades, campuses need to establish a transition system to help 8th graders become successful freshmen. This is included in Benchmark 3 of the T-STEM blueprint, which follows at the conclusion of this short paper.

Challenges

Part of the reason that transitioning into high school is so difficult is because the differences between middle school and high school are complicated as well as vast. Not only does the subject matter increase in difficulty by a significant margin, but students are also dealing only with teachers who have certifications in their specific content area, teachers who are proportionally more engaged in their content area than in general education. Up until high school, the classroom, to a degree, focuses more on nurturing the student. As the material increases in difficulty, teachers emphasize more on teaching content. The experience is a little uneven, by consequence.

Campus culture in a high school is a little more formal and bureaucratic than in a middle school as well; it can have a feeling of impersonality, which leaves students feeling lost. New high school students often report fear, anxiety, and a sense of disconnectedness resulting from their newfound anonymity. Students at this age are also extremely sensitive. They come to value friendship and social interaction keenly at this age, and a disruption of their social lives can often contribute to declining outcomes.

The academic setting of a high school requires a lot more independence in student work. In middle school, teachers often lead students to the right answers without forcing them to ask their own questions. Cultivating that independence is critical in a STEM environment.

Parental involvement declines sharply in high school, often because parents simply don't know what they need to know in order to help their rising freshmen acclimate to their new environment. Parents should be kept in the loop in terms of high school programs and procedures. They should be involved with their child's course selection in order to help their child make decisions that will help them most in the long run. STEM is intimidating. Students need a robust support network in order to succeed at higher levels.

In T-STEM academies, project-based learning (PBL) is the chosen instructional strategy. Students are required to ask questions, investigate issues, research, and to find and present their solutions. Assessment is authentic, rather than other more traditional forms of questioning. Students in PBL are also required to work together in collaborative groups. While working in groups on an assignment is fairly common in middle school, working together to solve a problem is not. Working in groups in middle school often results in individual grades for personal performance. Grades in PBLs are often a combination of individual learning and group interaction. Students who are exposed to project-based learning for the first time in 9th grade, where the grading stakes are higher, can feel lost and uncertain. Even for students who have been

academically successful in middle school sometimes flounder with the new responsibilities found in PBL. Students who struggle with organization can be lost further, while some students who have not been engaged in school can find themselves excited by the new way to learn, even during the adjustment period.

Strategies

Social interaction is particularly important to adolescents, and the move to high school can often disrupt their social lives. Feeder schools are much smaller and often include peers that students have known since Kindergarten. Feelings of isolation and social confusion, especially in these formative years, can drastically affect student achievement. Therefore a successful transition plan should include social events that allow students to get to know each other.

Allowing eighth graders to shadow high school students for a day can be an effective strategy for showing new students what the classroom environment is like in high school. This has an added benefit insofar as it gives students a sense of what the campus is like and offers a chance at facial recognition, which helps new students feel grounded in an unfamiliar environment. STEM clubs, where possible, should be scaled so that middle school students experience continuity between levels. At least once a year, 8th graders should be able to attend a high school club meeting or event. Club sponsors at both levels should work together to implement strategies for keeping students enthusiastically engaged with their new material.

Summer bridge programs can function as a useful arm of the transition project. Many T-STEM academies run weeklong events where students experience project-based learning for the first time in an informal camp atmosphere. Summer allows some freedom from strict adherence to state standards, so that students get to explore topics that interest them, such as rocketry or robotics. Certainly rocketry and robotics can be tied to state standards, but engaging topics like these are often left to after-school clubs or electives, not used to engage students in mathematics and science. The problem is that, while attendees may have a profound experience, a summer bridge program often does not reach a wide portion of the student body. Summer bridge programs should attend to family needs like transportation by running buses. It should also correlate to the average workday or be paired with other activities to keep students busy until parents arrive.

Transition is not a “one and done” event. A successful transition plan should begin during the 8th grade year and continue through the first semester of high school. Counselors at both the middle school and high school should be employed as a resource for transition. Individual Graduation Plans (IGPs) should begin in 8th grade at the latest with students choosing high school endorsements or a STEM focus. Depending on how these are structured at the high school, the high school endorsements or STEM focus can create small learning communities for students. Counselors in the high school should follow up with students at least twice a year in order to help students manage their expectations and continue planning for the rest of their high school tenure.

An advisory period at the middle school can be a useful tool to help students bridge the gap between middle and high school. The T-STEM Blueprint states that student advisories should be “regularly scheduled,...[It should] focus on personalizing the student experience, build relationships with students and parents, develop character, and foster global literacy.”¹ High school students and teachers could be guest speakers to help

¹ [T-STEM Blueprint](#)

students understand what STEM means and help them understand how high school is different from middle school. If the middle school does not have advisory, the principals can work together to create a series of advisories using a pep rally schedule. This does not only help middle school transition; it is also an opportunity to build leadership and presentation skills with high school students. The high school students can also create the curriculum for the advisory periods as they know what speaks to middle school students and know what middle school students need to know. Once the middle school students have transitioned to 9th grade, advisories should be more frequent in the fall semester to help students navigate their new environment.

In many high schools, students are selected to serve as mentors for students in lower grades. This type of mentoring is not often focused on MS-HS transition, but it can easily be revamped. If Juniors are used as mentors for 8th graders, then the mentoring relationship can continue once the 8th graders has moved to 9th grade and the 11th grader becomes a Senior. Once again, administrators should rely on the teen expertise of the high school students to create a mentoring program that meets the needs of middle schoolers.

Parental involvement throughout high school is critical, especially during the transition process. When parents are involved in the transition process, they are more likely to stay involved throughout high school. When parents are involved in their children's education, their children are more likely to succeed and less likely to drop out. There are a few strategies for involving parents.² The T-STEM Blueprint Indicator 3.3E states that the school should host "parent seminars to develop deep understanding and commitment to the rigor of college readiness and the high expectations of a STEM academy". They can participate in conferences with counselors and students to discuss their child's Individual Graduation Plan (IGP). This one-on-one planning can help plan for a rigorous high school program that will prepare students for graduation and post-secondary success. They can spend an afternoon or a day observing the campus and perhaps have limited access to some classrooms. Parents of current high school students can be an excellent resource as well. What is important is that parents get involved in the transition process early, and that they stay involved. When parents understand the expectations and environments their children experience, they can create a home environment that facilitates student success.

Students who are at risk of being retained in the 9th grade should be identified early. The high school should have a written policy that guides how they will intervene with these students. At a minimum, the intervention policy should include a specialized tutoring plan tailored for these students, regular and ongoing parent and student communication, attendance monitoring, and mentoring. Students should sign contracts for attendance, homework, and grades. For students who miss school regularly, the mentor may also serve as an accountability partner that they check in with daily. These students may need homework reminders in the form of texts and may need to sign contracts for homework. An important thing to keep in mind is that students who are at risk often have parents who are at risk. Parents should be involved in this support system as much as they are able or willing to participate. In the event that the parent does not participate, the school will need to serve in the parental role to monitor school work. A second point is that at-risk students are often disorganized and forget to do homework or study for tests. They often lack the necessary study skills as well. While students are the ones who are accountable for their work, the information about tests, homework,

² Mizzelle, Nancy B. "Helping Middle School Students Make the Transition into High School." Education.com. December 16, 2008. Accessed August 22, 2014.

etc. should be communicated to parents too. Finally, it is easy to become frustrated with at-risk students who often appear not to care. The goal of this intervention policy should be to build a relationship with the student forged on respect and accountability.

Most importantly, STEM culture needs to be inculcated at the middle school, and, where possible, the elementary level. The best transition strategy is eliminating the need for transition. This is obviously impossible, but significant steps can be taken by teachers and administrators to prepare students for the rigor and learning strategies that will help them in high school. Middle school teachers should focus their efforts on teaching 21st Century Skills, such as communication, collaboration, critical thinking, and creativity. Project-based learning has proven extremely effective for encouraging and developing these skills. 21st Century Skills are designed to translate student achievement upward to higher levels, both in higher education and the workforce. Teachers at both levels should be allowed to work and plan together in professional learning communities (PLCs) to align their efforts, design projects, and share strategies. PLCs should meet twice a week during school hours to plan lessons, address challenges, and develop strategies. Administrators should support teachers toward developing a vertically-aligned curriculum. This curriculum should pull from the TEKS and relevant parts of the T-STEM Blueprint.

Conclusion

While creating a program for student transition is important, systemic reform is necessary for bridging the gap for all students. All students, not just those at risk of failure, need to be supported through the transition process. Administrators, teachers, counselors, and other professionals in a school or district need to work together to create a unified policy dedicated to improving student outcomes at all levels and preparing students for success in a difficult STEM environment.

Benchmark 3 of the T-STEM Blueprint

3.1A	Develops structures and processes for marketing and recruitment to encourage participation from underrepresented students and families (transportation or plans for transportation to the school, child care for family events, and translation of all recruitment and marketing materials).
3.1B	Includes grades 6-12 or actively works with feeder middle or elementary schools to develop student interest in STEM education.
3.1C	Develops a systemic recruitment plan that includes students, parents, counselors, teachers, district, and community.
3.2A	Develops an admission policy to include an open access, lottery-based selection process that encourages applications from all students. The application will not be based on state assessment scores, discipline history, teacher recommendation, minimum GPA, or other requirements that would be used to limit selection.
3.2B	Consists of a population that is 50% or greater economically disadvantaged and underrepresented students.
3.3A	Develops and implements systemic, tiered strategies for student support and retention (outreach, early intervention strategies, mentoring, tutoring, counseling, and other supports for academic and

	socio-emotional growth).
3.3B	Hosts orientation session(s) and summer bridge program(s) in elementary and middle grades to facilitate successful student transition into rigorous college-prep curriculum and a STEM-focused classroom environment, and develops retention plans to ensure advancement through STEM middle and high school grade pathway to facilitate successful student transition into rigorous college-prep curriculum and a STEM focused classroom environment.
3.3C	Provides all students (6-12) with opportunities and the expectation to assume roles of leadership and responsibility within the classroom, Academy, and community.
3.3D	Provides all students (6-12) access and expectations to engage in purposeful school-sponsored activities.
3.3E	Hosts parent seminars to develop deep understanding and commitment to the rigor of college readiness and the high expectations of a STEM Academy.