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The Digital Academy:

A School Within a School

Digital Academy

Submitted for the Education Fund

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Digital Academy:
A School Run By Students for Students

DIGITAL ACADEMY PREFACE

Mathematics standardized tests require passing scores from students who are struggling with major gaps in their knowledge base. This creates a problem faced at almost every school in the United States. How can schools reach those students at little or no additional cost? The answer is to draw on the embedded resource of students helping students: and thus was born the "Ammons Digital Academy", a school within a school run by students who are helping other students learn math the way that will help them best; from other students who have only recently experienced the same content. This iBook describes the Digital Academy concept, how to teach students, how mentors should deal with their peers, and how you can start a Digital Academy at your school.

While many suggestions are offered, by no means are all situations addressed. Hopefully, though, the ideas will inspire you to create your own model to help students help each other.

-J. Earle, Mathematics Teacher

Chapter 1

Learning

The Mathematical practices encourage students to persevere in solving problems, and to speak mathematically, to name but two. Giving students the opportunity to learn and teach themselves mathematics along with providing much needed help is the goal of the Digital Academy. Getting students to learn more requires the application of more resources. Students themselves can be that resource. The digital organizes an environment where learning is encouraged, supported, and adapted to meet the needs of other students.

In the chapters that follow, the steps to harnessing this resource to apply the mathematical practices will be presented starting with the organization in chapter 2.

Chapter 2

Digital Academy 101

As with anything, there is a "first things first". A place must be found for the Digital Academy to take place. This can be the media center, a teacher with a planning period, an unused classroom, or even the cafeteria depending on the time of day.

Once a place is chosen, in this case a classroom that had 12 computers and no student during the 85-minute reading period, the mentors were faced with the task of getting 'customers' for their school.

But attendance, discipline, and above all, safety must addressed so that the academy can achieve success. To that end Section 1 deals with the process by which a student applies, is released to attend, is accounted for participating in the digital academy. The forms in this section were created to clarify the process so that experience flowed smoothly.

The individual mentors contributed to this section both in terms of their position within the academy, as well as to offer their insights into mathematics. As middle school students, these mentors were typically taking High School level Geometry, and offered unique tips from an adolescent perspective.

The following pages include some sample procedures to allow students to come to the academy during the school day.

Ammons Digital Academy

For Teachers

- Highest priority goes to Students who need help or are level 2 or lower.
- Students who fail chapter/unit tests should be given an application ASAP.
- Put "Application for Invitation" in Mr. Earle's mailbox or send to 1301A.
- The Academy Mentors will process the Application for Invitation.
- An NJHS Academy Mentor will be assigned to no more than 2 students.
- Invitations will be placed in the homeroom teacher's mailbox.
- At around 10:13 Invitees will be released to the computer lab
- If by 10:17 the students have not signed in, an Academy Mentor will call the homeroom teacher to check if the student(s) have left.
- At 10:44 student will complete the lesson and skill assessment and return to HR.
- The students cannot attend more than once per week.
- If a student does not attend or does not treat this opportunity seriously, there will be consequences, including but are not limited to, lunch duty and banishment from the Digital Academy.

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For Students

"Education is not received, it is achieved"

How to get to the Digital Academy:

1. You realize you don't understand a concept or topic in your math class.
2. You apply for an Ammons Digital Academy Invitation.

3. Your HOMEROOM Teacher will have your invitation.
4. Watch a video or interactive lesson on the concept.

5. Work with other students.

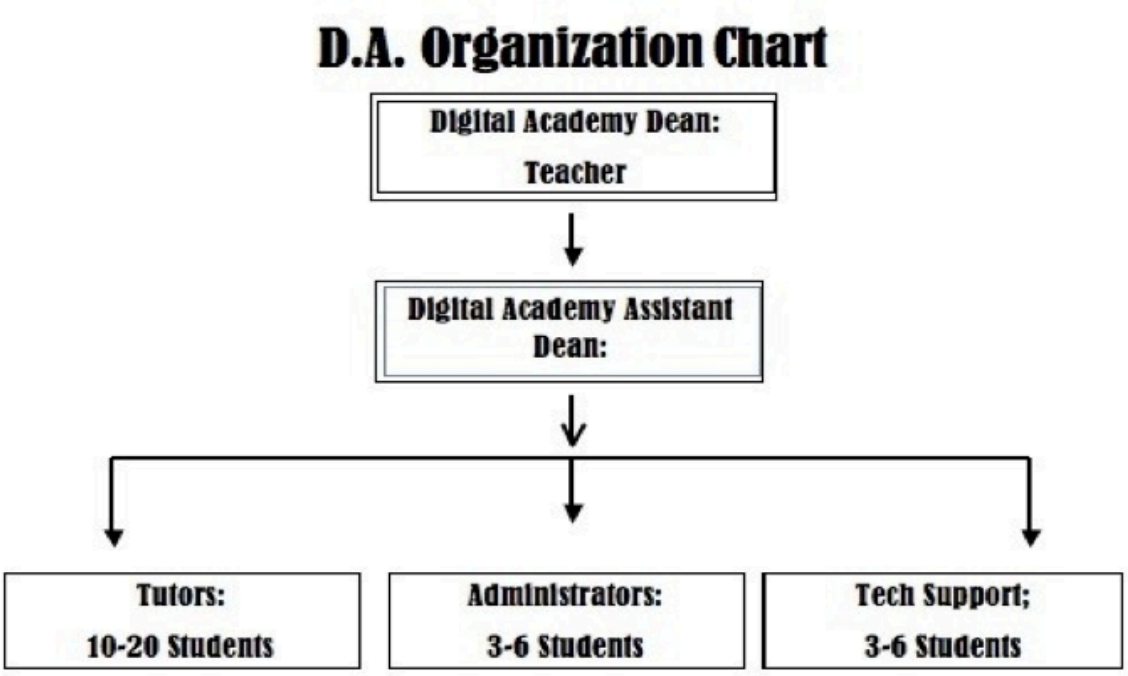
6. Do some practice problems.
7. Return to your homeroom (take your practice problems to your math teacher).
8. Take receipt to homeroom and math teacher.

We currently accept a minimum of 10 students per day for the ½ hour time slots. You'll be directed by NJHS monitors to an appropriate interactive lesson on the topic you wish to explore. You'll also receive some practice problems to try out your new skills. Take them to your math teacher to show that you've been to the Ammons Digital Academy!

For Mentors

- The mentors introduce themselves, and set up the lesson
- Each student watches their respective videos
- The mentor will answer any questions
- Each mentor can work on the board, table, or computer
- Each mentor must complete a brief skill assessment
- Skill assessment with attendance receipt is returned to HR.
- Each mentor must be at or near AR Goal for 9 Weeks
- Each mentor must be an exemplary homeroom student
- Each mentor must be caught up on library fines.
- Arrive at the Academy (room 301A) no later than 10:05 am

The process of being a mentor is a delicate one. Students can be very sensitive to needing help, or they can be shy about askng for help. Several techniques can be used to address these issues, starting with a simple introduction: "Hi my name is……., what's yours?" Another phrase that will serve well in later life is: "What's your name again? I've forgotten, I'm sorry."



Organization is key so that the program can run efficiently.

The Assistant Dean is the student or students who are most responsible, most punctual, and fit the profile of 'leader'. They will delegate tasks, ensure that materials are in place, and most importantly, direct the mentors to do their jobs rather than stand around conversing with themselves. The conversation phenomenon is most commonly reported in high school labs, and many students who are looking for help report that they feel 'excluded' and even more shy about asking for help.

Administrators log in students who attend, record usage and mentor hours, and also create promotional announcements and materials to raise awareness for the Academy.

Mentor/Tutors work directly with students, typically in a one on one basis: remembering to sit on the side other than the dominant hand, so they can see what the student in writing.

Tech support people help with log-in issues, computer issues, but in general also provide mentoring help to the attendees.

Chapter 3

What Students Want

As mentioned earlier, the process of asking for help can be daunting for many students. So the question is: What do students really want. Here are some answers to that question in students' own words.

"My tutor helps me a lot in math with fractions. I am really good at doing fractions now. I think that my tutor helped me in fractions because he said to divide to get your answer. Math is easier to me because my tutor taught me how to do it."

"I don't understand multiplication. The things that help me are writing the facts over and over, multiplication flash cards, weekly tests (timed) to see how I improve over time."

"At first I didn't understand proportions, and I thought it was very hard and I didn't understand it. After, I asked my sister and math teacher for help and i started to understand it a lit- tle bit. Then, I started to practice it the I understood how to do it."

"I personally think that the one on one is the best because when there's something I don't understand I just ask the mentor and they help me step by step. The mentor helped

me on my weakness which was percent of change and I also feel comfortable with the mentors."

"In math I had a lot of trouble with fractions at the beginning of the year, but now I'm actually pretty good with fractions. I learned best with things that are hands-on, and most people learn best with things they can touch and visually see."

"At first I didn't understand ratios. My math teacher would teach the class and everyone would get it. I liked the sessions with one on and then they showed us ratios and I understand more. They showed me to cross multiply to get the answer."

"I need help with word problems, but I've learned more about it. It helps me when I break the problem into two parts. It also helps me when I have one on one tutoring."

"I think what helped me the most was the one-on-one tutoring. The reason being is that everything these days is done on the by computer. I prefer one on one tutoring, and an open book."

Chapter 4

How Mentors Tutor

One of most important elements in being able to be a great mentor would be the connection. There has to be a connection with the student and the mentor in order for it to work out. They must listen to each other and respect one another so that they can feed off each others' information and knowledge.

Mentors have to listen to their student's questions and answer them to the best of their ability and when the mentors ask them whether or not they understand the students should answer truthfully and be comfortable enough to say they don't if that is the case. It is important that they feel very comfort- able with each other for this reason.

Digital Academy mentors make this connection very well because they go to the same school and very close in age so that is why I think are program is so successful. In a classroom even I would feel kind of odd and silly to ask a question but when it is only you and your mentor kids feel free to ask questions and that is crucial to the learning process.

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"IDK"

Suggestions for when students say "I Don't Know"

"I still don't understand how to do mean, range, median, and mode. My teacher helped me understand by presenting what mean, range, median, and mode was. Now that my teacher helped me I'm starting to know how to do it step by step."

"I don't know how to do conversions, and I sometimes lose count or miss one. When I do conversions I can read the measurements, but I'm still confused. Another thing that I was taught that I was taught in 3 different ways; my science teacher taught me one way, my math teacher taught me an- other way and my intensive math teacher taught me another way. So I don't know which way to do it."

"I don't understand fractions, I used calculators, and turned them into decimals. When I simplified it, I began to understand."

"I still don't understand how to do mean, median, mode, range. My teacher showed me how to do it by resenting on the board and also I don't know how to convert Celsius and Fahrenheit. My teacher showed me on the board."

"I have a little bit of trouble with doing conversations and how to set it up. When I was in math class, my teacher explained it but I never got it. I eventually got it a little bit because one of the mentors explained it to me."

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How To Help

How to help from the Mentor point of view

"I find the most effective way to tutor a peer is one-on-one tutoring. There is maximum attention to each student that is being tutored and the tutors are completely focused on one specific student. Being able to understand your peer is the most important thing you need for tutoring someone and you have to make sure they fully understand it."

"My method for teaching a student is by breaking down the problem for them. Thus helping the students and myself to evaluate the problem and to create an equation if needed."

"I feel the most effective way of teaching students is by working one-on-one with them because I know when they get it or don't get it. I also believe the more personal the process, the more the student can learn."

"The best way to guide the students is to ask them open ended questions. This forces them to think about the question and what they are doing."

"One of the most important things in the learning process is to ask questions. It is very important to make the student feel comfortable enough so that they can ask questions on anything that they don't understand or need some clarification on."
"I think that it is great that it is like a student to student to student relationship instead of a teacher to student relationship because the students feel more relaxed. In addition, these students are obviously not doing well in a classroom setting so they have a chance to change it up and be in a completely different environment like the Ammons Digital Academy were they always have someone to ask questions to."

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Chapter 5

STARTING A DIGITAL ACADEMY@ YOUR SCHOOL

1. Pull-out class
2. Intensive Classes
3. Extended Homeroom
4. Freeing Up Mentors
5. Electronic resources:
    - Khan Academy
    - Algebra Nation
    - Textbook Online Tools
6. The Intangibles: School Culture

1. Pull-Out Class

There are a number of ways to implement a Digital Academy at your schools site. One way is to pull struggling students out of an elective class on a pre-determined basis, perhaps twice a week. Students can be identified by their previous test scores, or by their math teacher. Digital Academy 101 of this book gives a process for monitoring students getting to and from this pull-out class.

2. Intensive Class

Some states/school districts allow for the scheduling of struggling students into a second mathematics class. The Digital Academy model for this situation would be to have the student mentors pulled in to the class on a pre-determined basis, again a suggested schedule could be twice per week.

3. Extended Homeroom

Extended homeroom/reading classes is a scheduling model used to address reading deficiencies. If, however, the period lasts longer than 30 minutes, attention to reading may suffer, and bringing in mentors to work on mathematics may be viewed a great way to get out of class.

4. Freeing Up Mentors

Mentors, the key ingredient to the Digital Academy program, are valuable resources but of course they are still students and therefore have their own schedules, homework and responsibilities. One way to free the mentors for one period is to assign them as 'office aides' so that they receive credit as an elective. The office aide duties would also include helping the office staff as well as providing mentoring help for students. The assignment could be rotated each 9 weeks, so as to allow different mentors to experience the academy in this model.

5. Electronic resources:

Identifying students who need help with math is relatively easy when using standardized test scores. Identifying where the students are conceptually weak is a bit more challenging. The students themselves will be more inclined to share their weaknesses with a mentor, so this line of communication should be actively encouraged. A growing list of digital resources can be used to provide valuable information on what skills a student may need help with.

A. Khan Academy

One such resource, Khanacademy.org is a free, web-based program that provides an adaptive pre-test that generates a individualized learning path for each student. The premise is a simple but powerful one: many times a student is categorized as being slow 'forever' but is in fact merely struggling to grasp a single or small set of concepts that are standing in the way of normal or even exemplary progress. Once the missing concepts are mastered

the students catch up with their peers and can proceed with new learning.

B. Algebra Nation
Another free resource in Florida is a state initiative, Algebra Nation, which provides standards based instructional videos, practice problems, workbook materials and other resources to prepare for the state Algebra I End of Course Exam. Algebra Nation does not stop there: it also provides an app for the popular smart phone platforms in a social media environment for Algebra 24 hours a day. The premise is that to bridge the so-called 'have/ have-not' technology gap, rather than look to computers as the common resource, the students can post questions about Algebra on their smart phones. The 'Algebra Wall' is monitored by Algebra Nation staff to insure on-topic discussion of mathematics. The 'Nation' also provides rewards for students who help others so that the students themselves can become online mentors.

C. Textbook Online Tools
As textbook publishers struggle to find the right pathway to the digital age, it is rare to find a series that doesn't include some digital resources such as videos, homework tutors, interactive instructions, and at the very least, online textbook access. Many publishers divide the materials into levels of instruction such as basic, intermediate and advanced. In other words, there are many resources that could be applied in the academy process. One thing that should not be overlooked is help with the homework.

6. The Intangibles: School Culture
Many times the words applied to classes meant to help do nothing to inspire. Remedial, Intensive, Recovery, Make-up, Regular, and Standard all imply that the students who are in the class are 'slow'.

The Digital Academy can contribute to a positive school culture towards mathematics in the following ways:

Using the Digital Academy approach makes participation available by invitation, implies the most advanced techniques, and brings to bear resources that will truly help students to solve that 'one' issue that is keeping them from achieving success.

Using the Digital Academy approach will help both draw out student leaders, as well as help them learn math. Many of the mentors expressed that their knowledge of math was deepened by the experience of having to adjust their point of view to understand what their 'students' needed to know.
Using the Digital Academy approach brings the most valuable resource of all: students helping students.

Much is made of technology as the magic elixir for education but each wave of technology seems to lead to more expenditures and inconclusive results. Kids helping kids is a win-win proposition for the students, teachers and the school.

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