Amplify

What have we learned?

Considerations when piloting and evaluating a program:

- Implementation timeline needs to comply to parameters such as budget
- Selection of unit may or may not be representative of the whole program
- Teachers may have limited background knowledge in the content and program design
- Results may vary from grade-to-grade
- Limitations in assessing student performance

So, how does a pilot help us to make a long term decision?

- Ability to engage with materials and program design
- Ability to develop knowledge and understanding of standards alignment and assessment design
- Ability to see and hear students' interactions during learning
- Ability to evaluate the link between the designed learning and assessment design
- Ability to assess opportunities for differentiation
- Ability to examine interdisciplinary opportunities

Program Assessment

Action Plan K-5
Program: Amplify Science Units of Study Grades K-5
Goal: To provide high-quality science instruction that meets the NYSSLS.

Year	Approach	Implementation	Results
2018-2019	● Select NYSSLS aligned program for Grades K-5	● Introduce and pilot Amplify earth science units of study grades K-5 ● Purchase Amplify units/materials ● Train classroom teachers in use of Amplify	Feedback from teachers Feedback from students where appropriate Student assessment data
2019-2020	● Assess the current curriculum, including PLTW to ensure alignment with NYSSLS ● Define curriculum needs for each grade level ● Select a phase in process to ensure all standards are being met ● Train teachers in additional units		

Action Plan 6-8
Program: Integration of a 1:1 Content Based Curriculum
Goal: To implement instruction that is engaging, transformative, data-rich, and inquiry/evidence-based through the use of 1:1 device/student ratio.

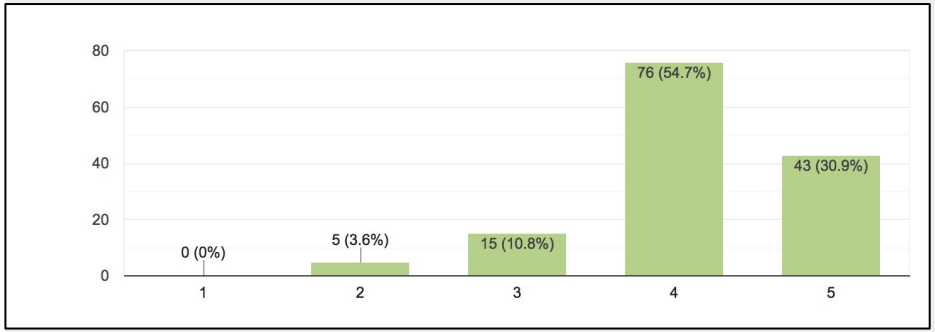
Year	Approach	Implementation	Results
2018-2019	● Introduce and pilot Amplify units of science ● Purchase devices to support 1:1 in classrooms implementing Amplify Science units ● Purchase Amplify units/materials ● Train Science teachers in use of Amplify	● **Engaging** - Teachers will use a NYSSLS aligned curriculum and approach (3D instructional design), through a 1:1 model. ● **Transformative** - Learning activities will require the use of technology for successful implementation ● **Data-rich** - Teachers will use online assessment tools to collect data to measure student knowledge, skill and thinking ● **Inquiry and Evidence Based** - Instruction will be designed to promote the exploration of phenomena with the purpose of solving authentic problems. Students will develop written scientific explanations and arguments	● Data collection of student perceptions of learning science through a 1:1 model ● Computer-based learning experiences that redefine traditional, paper-based tasks ● Assessment data that provide evidence of student learning ● Student-produced work that reflects the use of scientific evidence to develop argument and explanation
2019-2020	● Use results from 2018-2019 pilot to inform decision making on broader implementation of 1:1 for 2019-2020		

6th Grade
Post Implementation Data
Populations and Resources

6th Grade Students' Post Assessment Data

- How would you rate the Amplify learning experience?
- In this Amplify unit, did you feel like you were memorizing information or did you feel like you were using what you were learning in order to solve problems and figure something out?
- Overall, while working in this Amplify unit, I felt confident...
- Part of your work with the Amplify unit included making and using models. How confident are you now with making and using models?
- Part of your work with the Amplify unit included making and defending claims (arguments). How confident are you now with making and defending claims (arguments)?
- Would you want to do another Amplify unit in science? (Please explain your answer.)
- What do you think is the relationship between reading and science?
- What do you think is the relationship between writing and science?

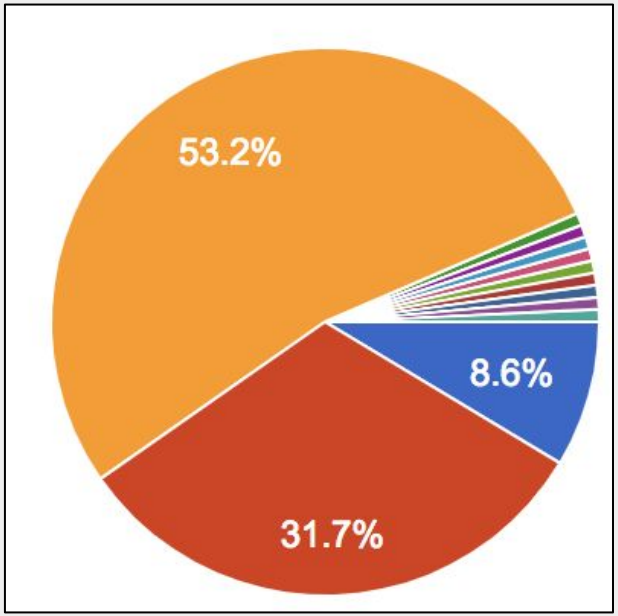
How would you rate the Amplify learning experience?



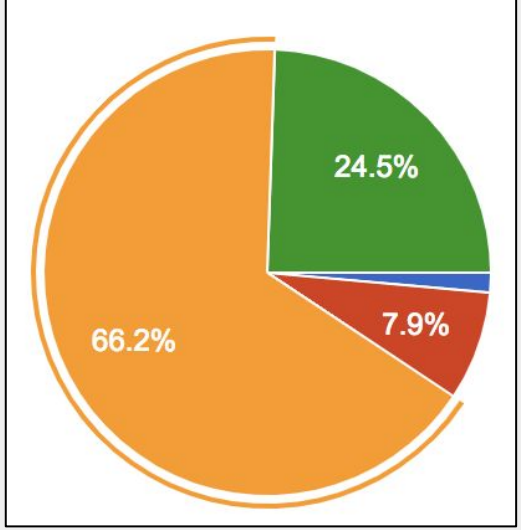
Strongly Dislike

Strongly Like

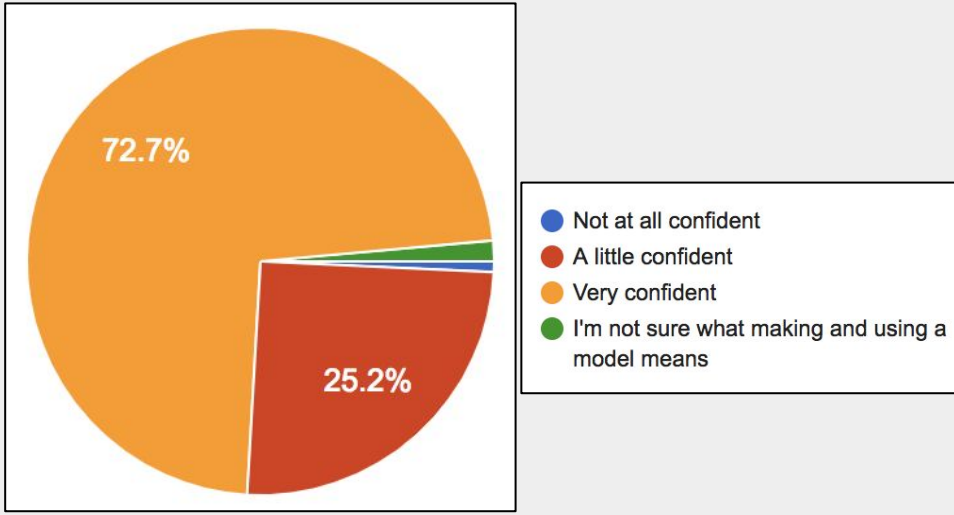
In this Amplify unit, did you feel like you were memorizing information or did you feel like you were using what you were learning in order to solve problems and figure something out?



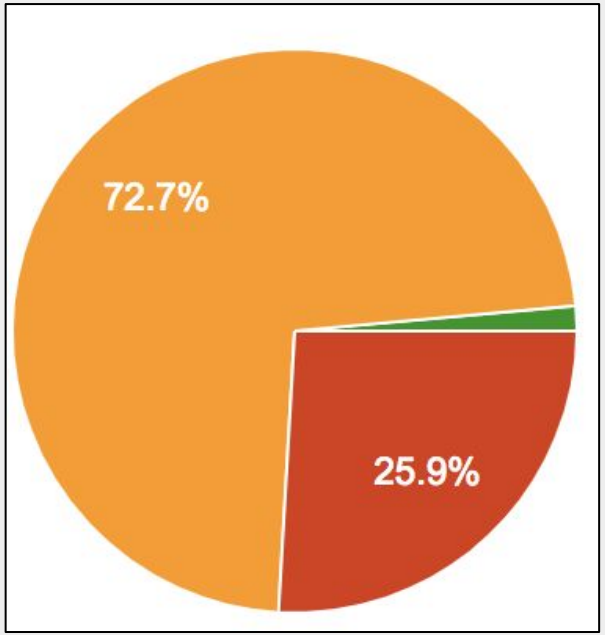
Overall, while working in this Amplify unit, I felt confident...



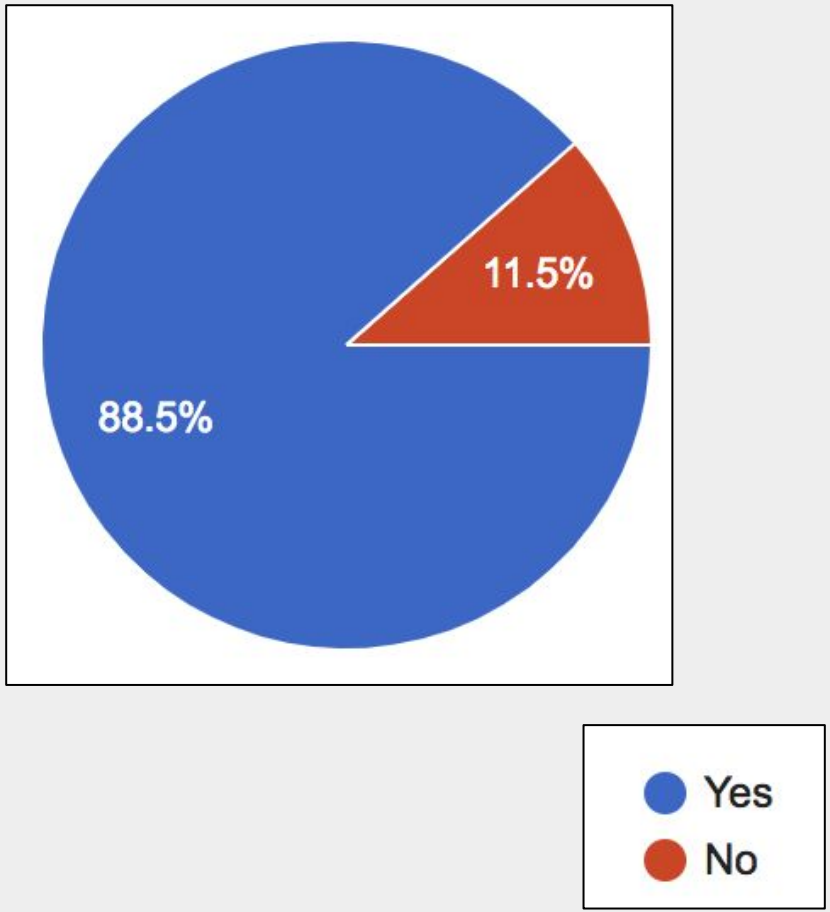
Part of your work with the Amplify unit included making and using models. How confident are you now with making and using models?



Part of your work with the Amplify unit included making and defending claims (arguments). How confident are you now with making and defending claims (arguments)?



Would you want to do another Amplify unit in science? (Please explain your answer.)



YES

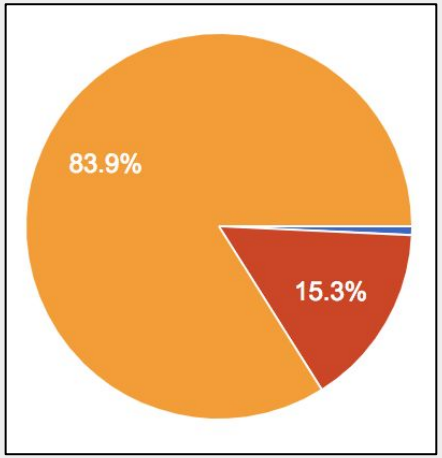
- It was cool to have realistic situations to learn about. I learned very quickly while doing this unit and I feel like this lesson will stick to me.
- I liked the unit a lot because
  - Of the simulator - it was a fun way to learn
  - Of how we pretended we were real ecologists
  - Of the Seminar - I liked how we could argue about our claims
- It was very interesting and hands on
- It was really fun & interactive, & I loved experimenting with the Sim.
- I think it was very fun but at the very same time it was educational. I learned lots of new things from the unit. It was very helpful for the test we were going to have, especially socratic circle.
- I really liked amplify because it helped me learn and understand more about science and populations, resources and ect. It helped me understand how populations works I discovered new animals and how ecosystems work too.

- My learning experience was exciting. This is because we learned new things everyday and everything we learned was very interesting
- The learning experience during the Amplify unit made me think. It was hard work but also fun. There were a lot of models and most of the things on Amplify made you think.
- It was awesome because you got to use computers. Computers are fast and easier than paper, that's what I like about Amplify
- My learning experience during the Amplify was super cool for many things. I liked how there were assignments there so you didn't have to take a paper copy. I also liked the Sim where you could direct the living organisms to decrease or increase.
- When using Amplify, I enjoyed it. I like using technology better and I liked the digital tests. I also liked that you didn't need to do EVERY SINGLE LESSON to move on, because that's a lot of work and we don't have enough time to do all of that. For example, if we didn't want to do lesson 3.2, but we wanted to do 3.3, we didn't need to do lesson 2 to move on to lesson 3.

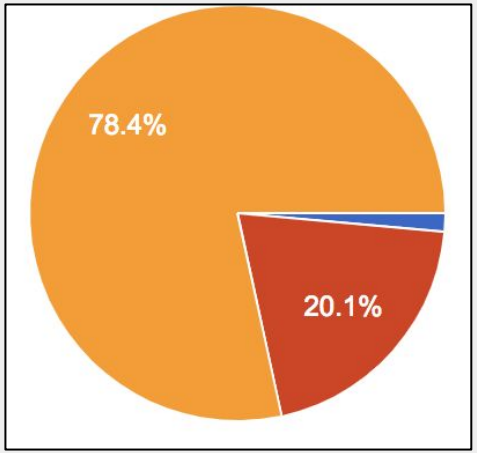
NO

- I think that the amplify unit was bad and don't want to do it again,this is because i am not the kind of person that likes to use computers all the time
- I thought the Amplify unit was fun but I want to start something new and try out other things. It was awesome it was also very hands on learning which helped learn So I personally liked it

What do you think is the relationship between reading and science?



What do you think is the relationship between writing and science?



Feedback from 6th Grade Teachers

- Teachers like having kids “figure out” science with Amplify units
- Amplify gives kids a storyline that they can go back to
- Amplify demands higher level thinking
- Kids are talking differently at the end of the unit than they were at the beginning--using vocab, making connections
- The Science Seminar at the end demonstrated kids' deep thinking about ecology and their ability to create an evidence-based argument (and question other people's arguments)
- Amplify goes to all the modalities
- Is it better to provide resources/activities online or on paper? Or both? Or depends on student?
- Need to have better articulation from PLTW in elementary school to 6th grade science (ex: kids have been modeling and are familiar with the concept, but do they call it something different?)
- Need a common language to use with kids

7th Grade
Pre-Assessment Data
Traits & Reproduction

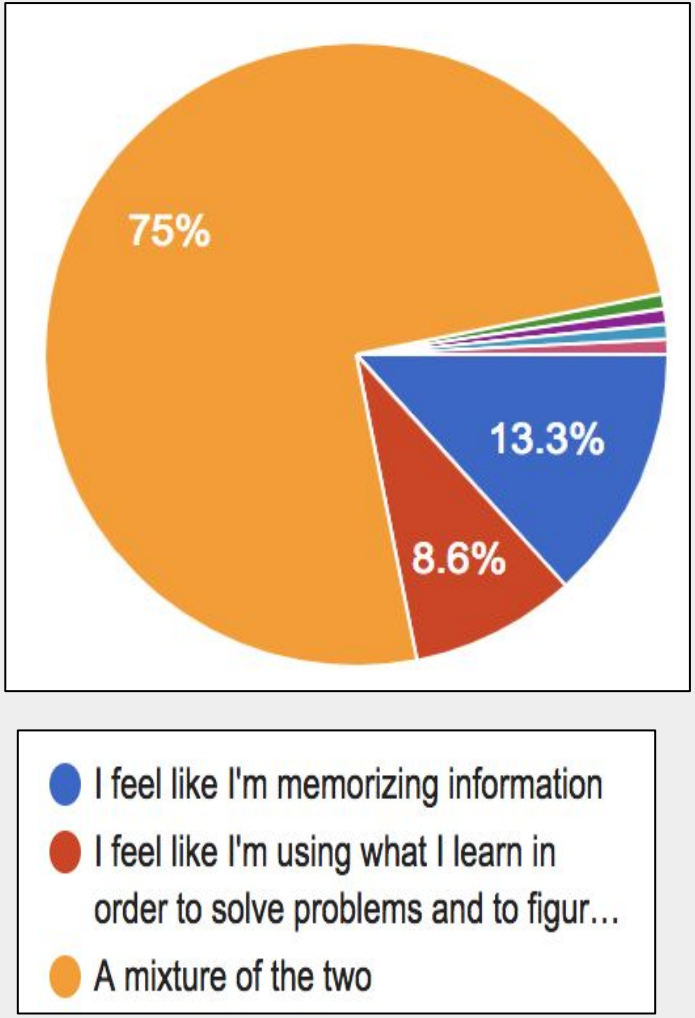
7th Grade Students' Pre-Assessment Data

- In science classes in middle school, do you feel like you are memorizing information or do you feel like you are using what you learn in order to solve problems and to figure something out?
- Part of your work with the Amplify unit will include making and using models. How confident are you with making and using models?
- How confident are you with making and defending a claim in science class?
- What do you think about the relationship between reading and science?
- What do you think about the relationship between writing and science?
- What does being a scientist mean to you?

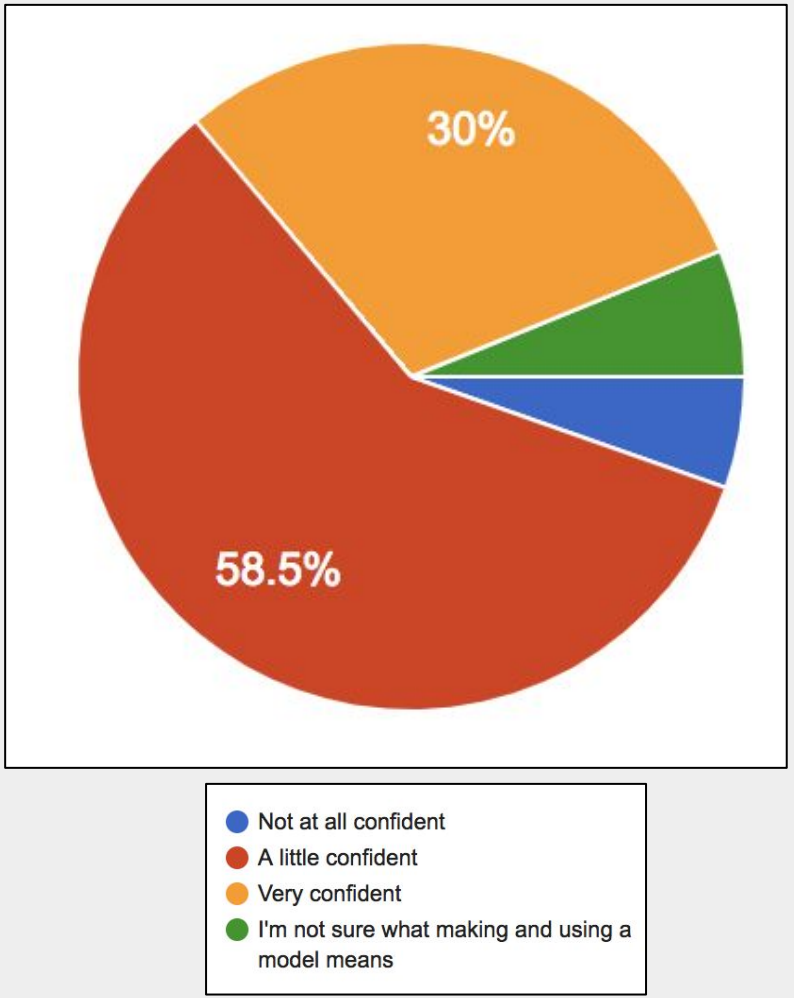
7th Grade Students' Pre-Assessment Data

- In the following unit, you will be using the Amplify science curriculum. Something that may feel different to you is that the Amplify curriculum includes a lot of online activities: digital simulations, the opportunity to read and annotate online, and the ability to submit work online. Do you think you will like the opportunity to do a lot of your work using a Chromebook?
- Do you think your learning would be improved if you had access to your own Chromebook throughout the Amplify unit?
- Agree or disagree with the following statement: Technology improves my learning.
- When working with Chromebooks, what setup is ideal for your personal learning?

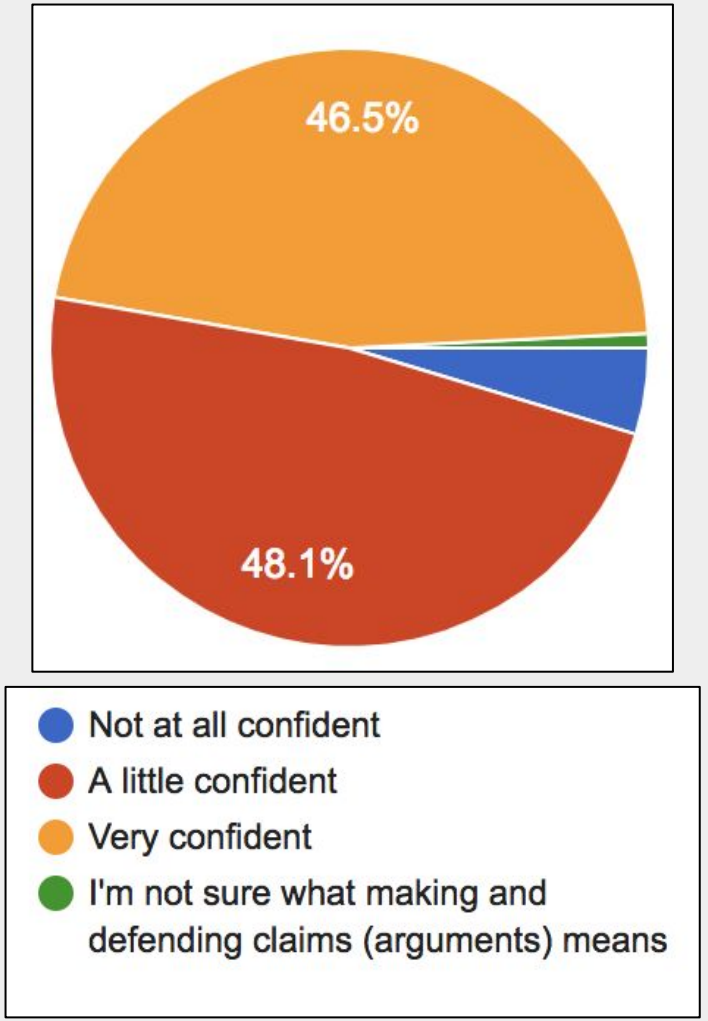
In science classes in middle school, do you feel like you are memorizing information or do you feel like you are using what you learn in order to solve problems and to figure something out?



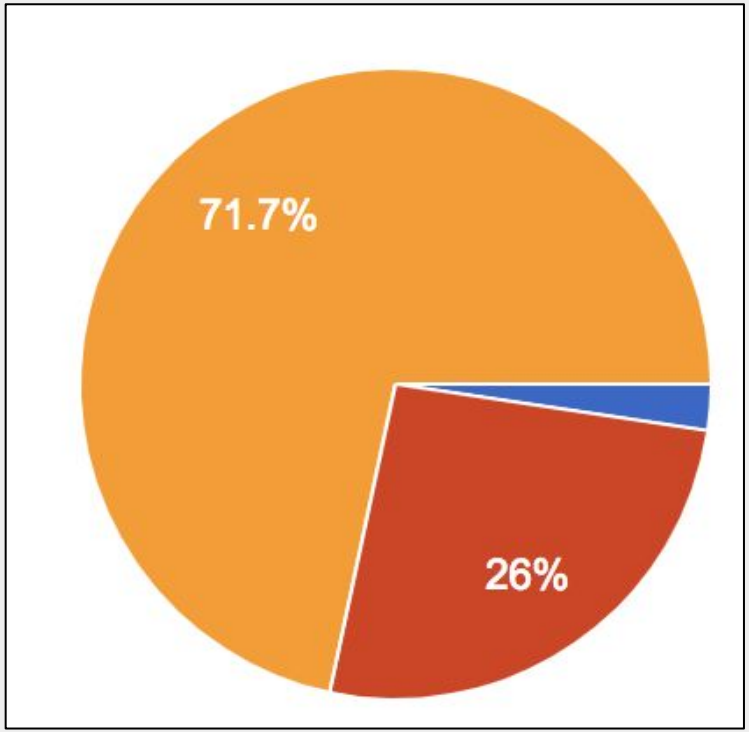
Part of your work with the Amplify unit will include making and using models. How confident are you with making and using models?



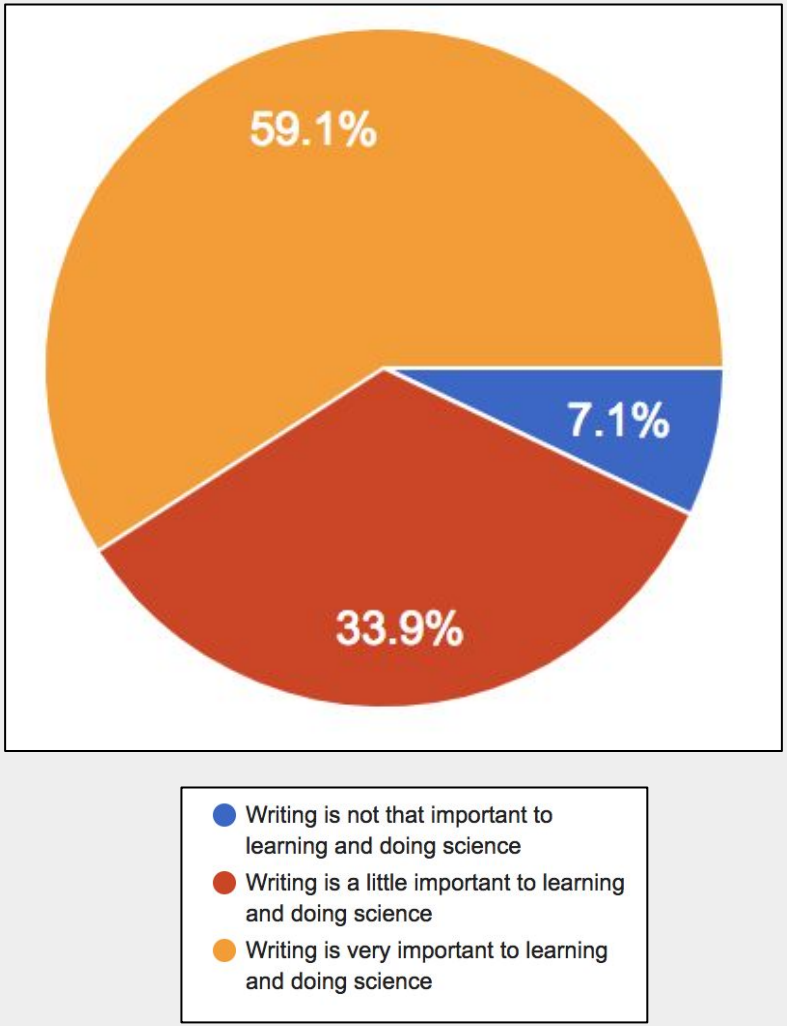
How confident are you with making and defending a claim in science class?



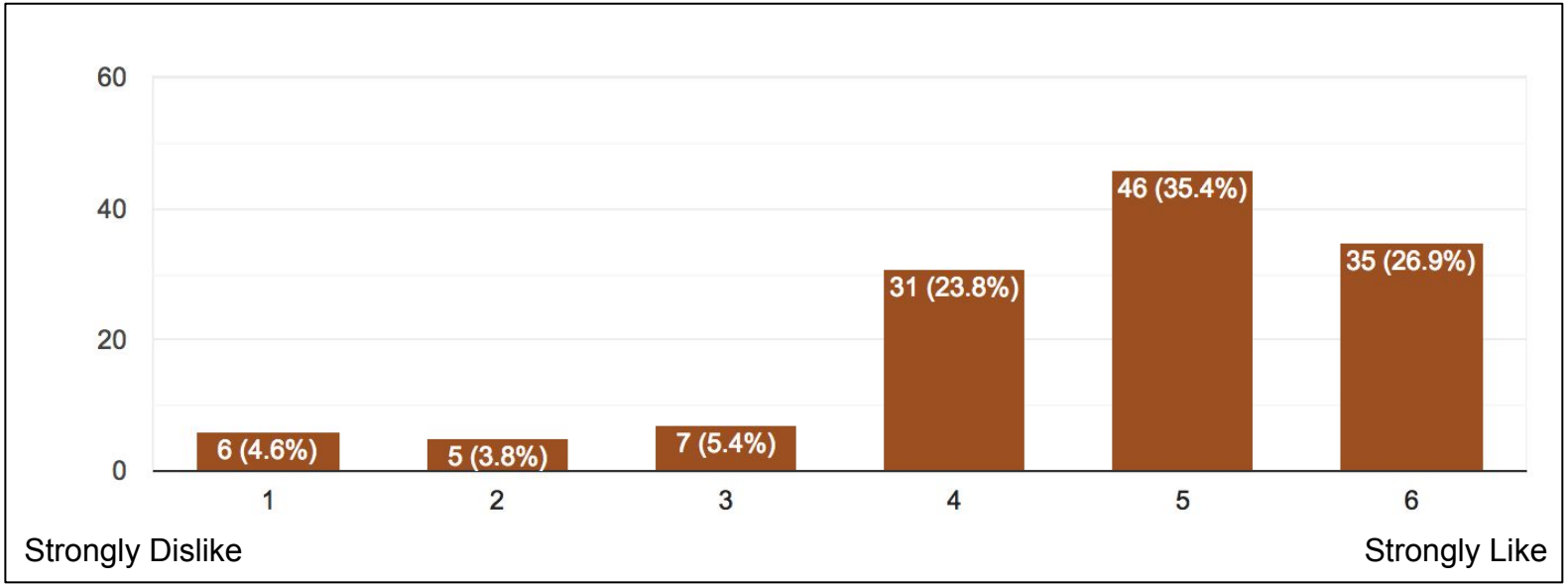
What do you think about the relationship between reading and science?



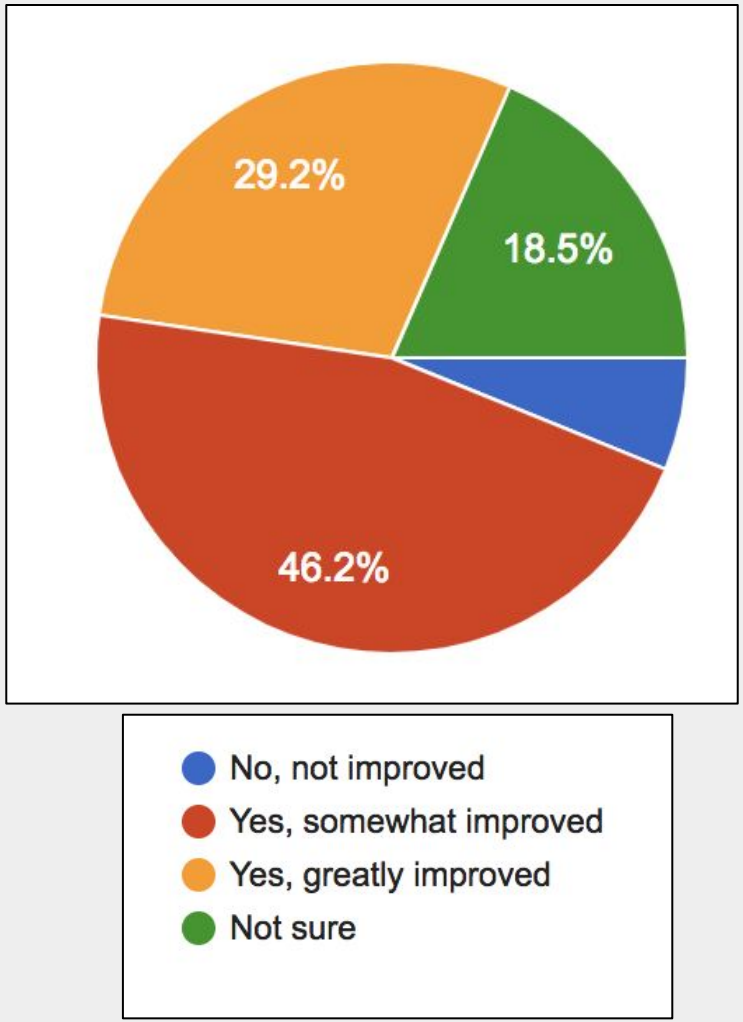
What do you think about the relationship between writing and science?



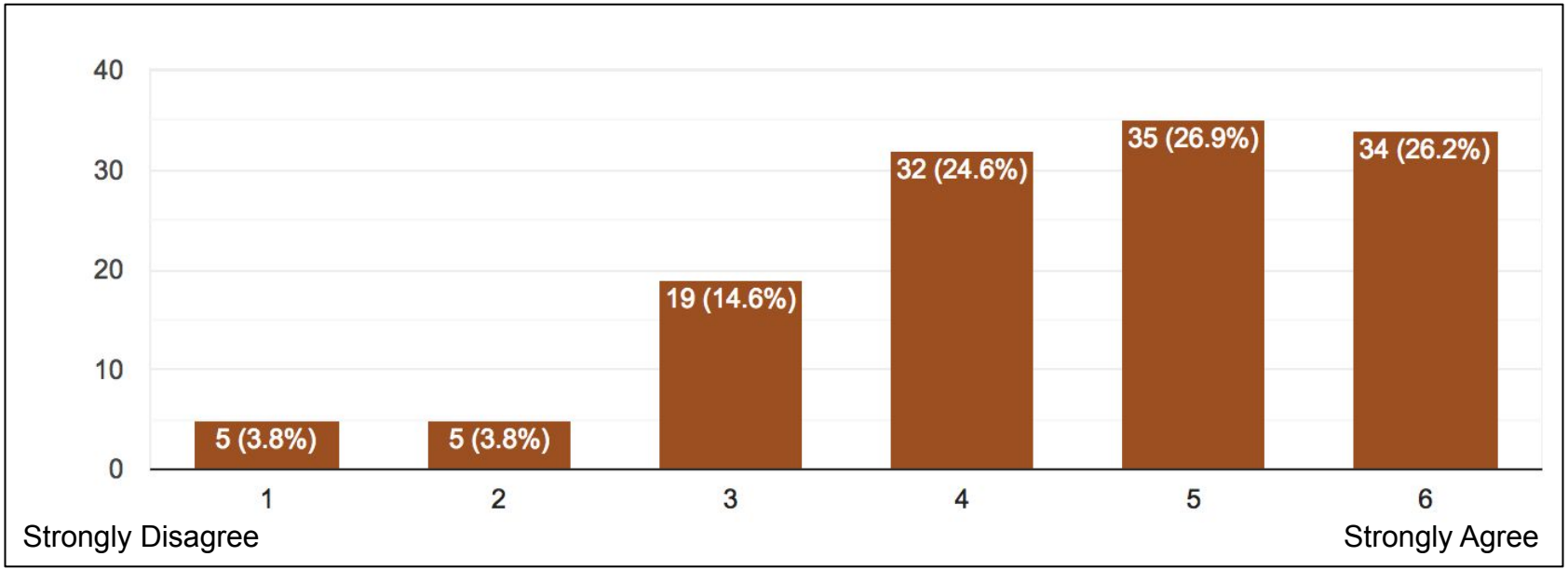
In the following unit, you will be using the Amplify science curriculum. Something that may feel different to you is that the Amplify curriculum includes a lot of online activities: digital simulations, the opportunity to read and annotate online, and the ability to submit work online. Do you think you will like the opportunity to do a lot of your work using a Chromebook?



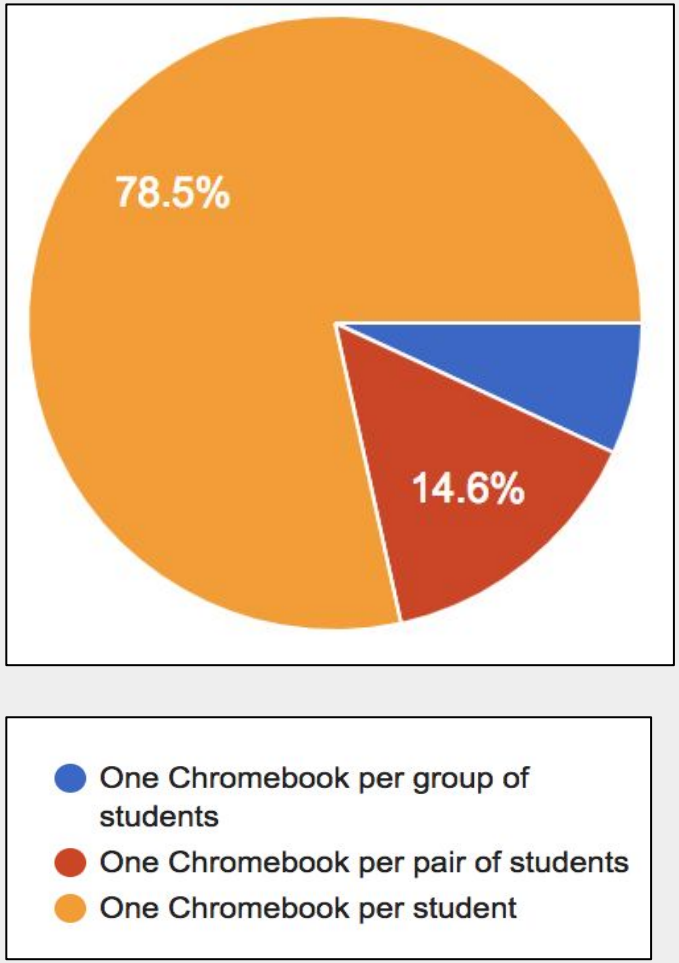
Do you think your learning would be improved if you had access to your own Chromebook throughout the Amplify unit?



Agree or disagree with the following statement: Technology improves my learning.

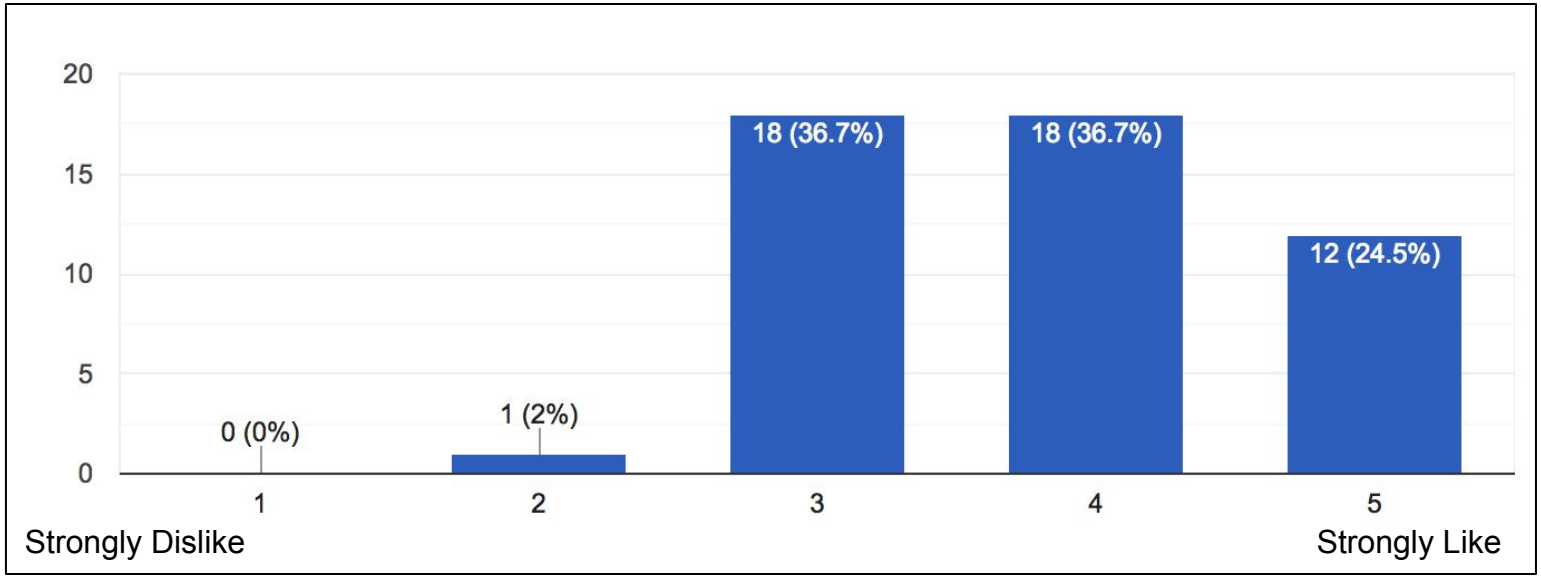


When working with Chromebooks, what setup is ideal for your personal learning?

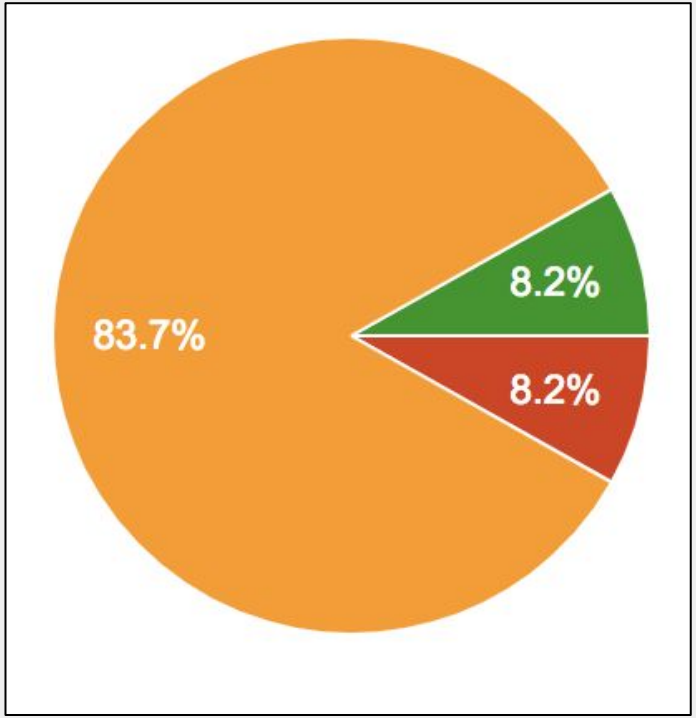


8th Grade Post Implementation Data Plate Motion Engineering Internship

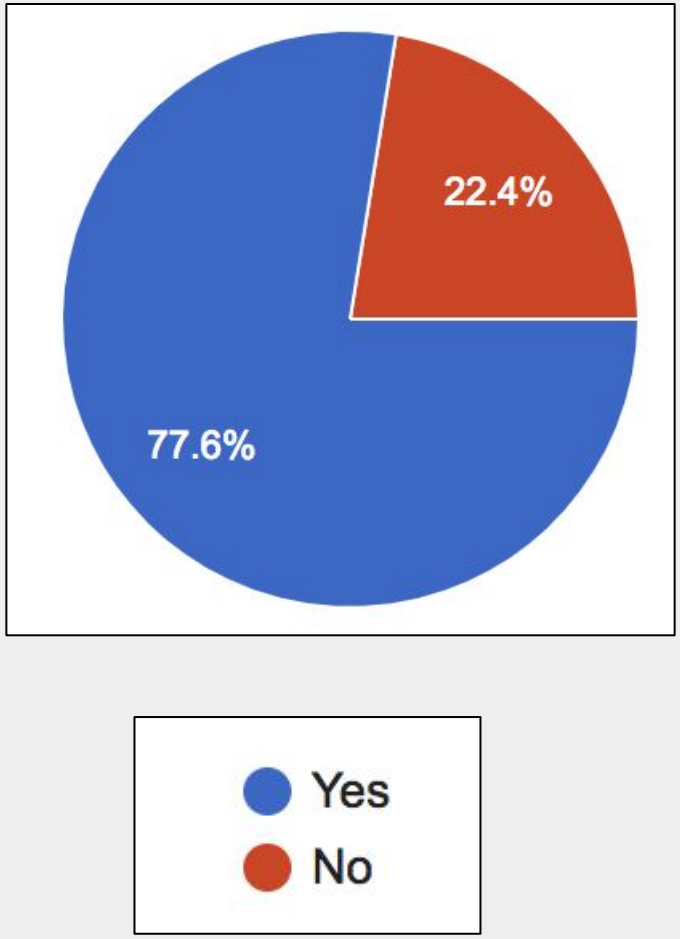
How would you rate the Amplify learning experience?



During the unit, did you feel confident...



Would you want to do another Amplify Internship unit in science?



What, if anything, felt different about the Amplify Internship experience compared to other units or projects that you have done in science?

- The use of technology every day in class felt different than our other assignments.
- I think that unlike many other units it felt real, not just sitting in a classroom learning.
- We used a program that used real-world data and we got to relate it to a real place on earth. Usually the things we do don't directly relate this strongly to current events.
- It felt different because in other units, there are quizzes and notes to be studied. The internship was more relaxing because there are no pop quizzes.
- One thing that was different about the Amplify Internship experience was that it was more digital compared to other units/projects because everything except the hand in homeworks was digital and the Amplify Internship was on a website.
- I felt like it had stuff to do with our learning but I don't think that it was really necessary for our understanding or learning
- We had one, singular objective: design an efficient hurricane alert system. Usually in Earth Science, the task changes day to day.

- The Amplify Internship brought aspects of real life into learning. We had to be aware of the cost of the sensors and whether or not they would break.
- Just about everything felt different. We were entirely digital, we had a whole path and "story" to follow, and we did a lot more "stuff."
- We got to try for ourselves before being told what we needed to do, which gave me a better feel of what worked best.
- The Amplify unit felt different from other units because I was told, along with my peers, to help "solve" the problem of tsunamis. Not only did I get to learn about the problem, but I got to explore what it is like to help come up with a solution.
- I liked how we got to use and test the simulation based on the learning we did in class beforehand.
- It felt more professional, because it felt as if I had a role in something, other than only reading a sheet of paper what to do and how to do it.
- It felt like we were real scientists and taught us a lot in a fun way.
- It felt a little slow and monotone.
- It was "very professional" and organized - every day there was an introduction letter, and the home screen was very neat, like that of a real job or internship.
- It was all on the computer and you had to use different skills during the process

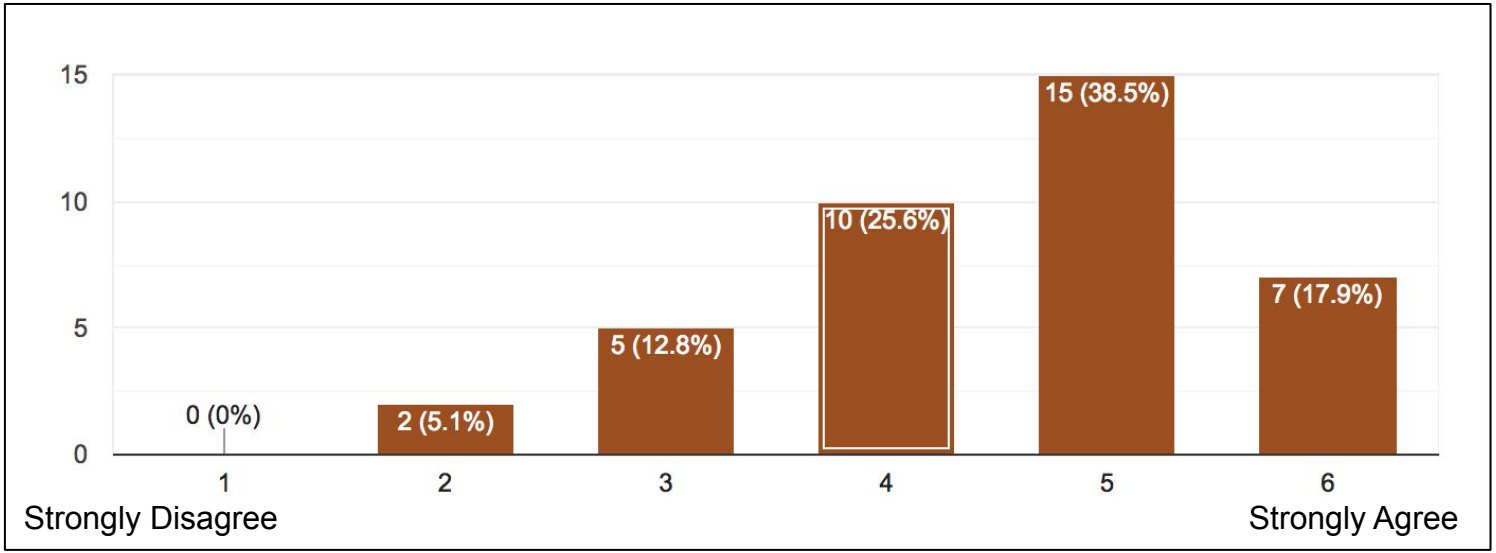
- I think the technology got in the way sometimes.
- We were in charge of what we could do and we had the freedom to put down our own sensors
- The internship was fun and gave real life examples, but I learn more from notes than I do from that, but all in all it was a fun experience. It was more fun than an average lab, but I didn't learn as much as I could.
- The Amplify experience was accessible because it was digital and easy to open up at home and school
- There was more technology involved and it was cool to feel like an intern. Also the website itself was pretty cool and the simulator was fun.
- I felt like I was doing something important and that I had a "job" instead of just learning new information as a student.
- It was very computer based when I would have rather done it hands on.
- The amplify program experience was much more hands on and visual compared to other units or projects that we have done in science.
- This project was online and it was the first all online experience for me and I thought it was a amazing

K-5 Teacher Feedback

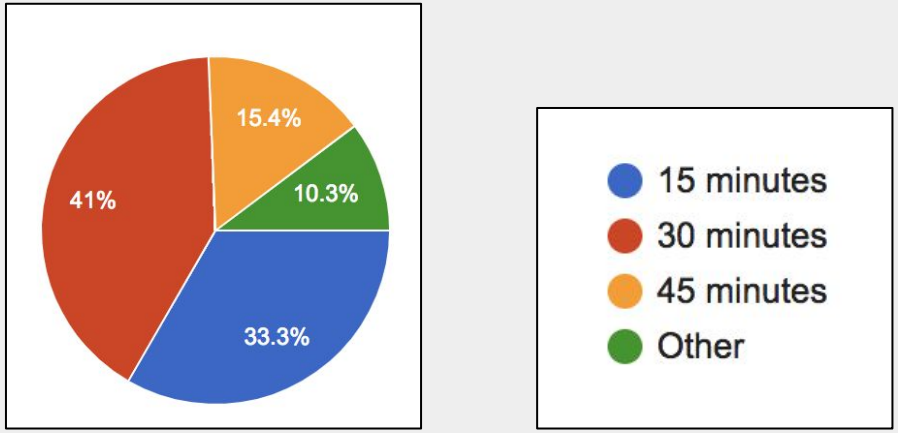
K-5 Feedback from Teachers

- Amplify is a great program for teaching science:
- On average, how long did it take to set up each lesson?
- On average, how long did it take to implement each lesson (including all activities)?
- Our unit was engaging for students:
- The level of hands on opportunities were appropriate for the unit:
- Literacy materials are well developed and supportive of the major concepts:
- Please share any thoughts, ideas, suggestions or feedback that will help us to assess the implementation of the the Amplify units:
- Did the professional development provided during the Amplify 1/2 day, follow-up 1/2 day and PLRD time meet your needs?

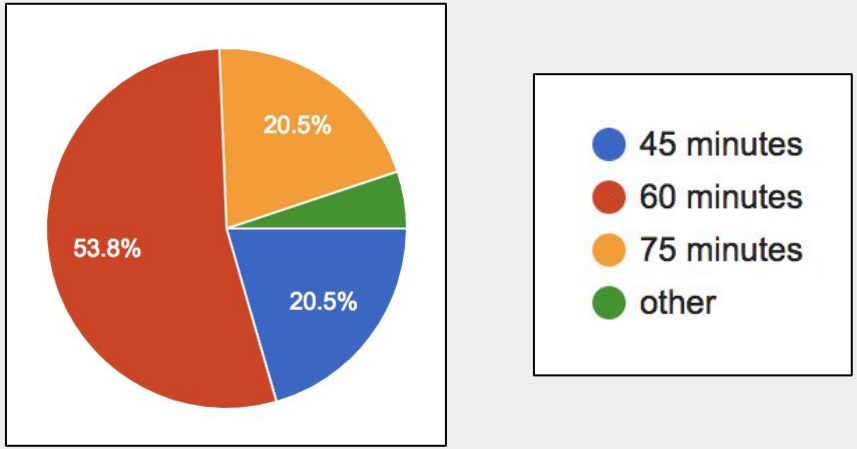
Amplify is a great program for teaching science:



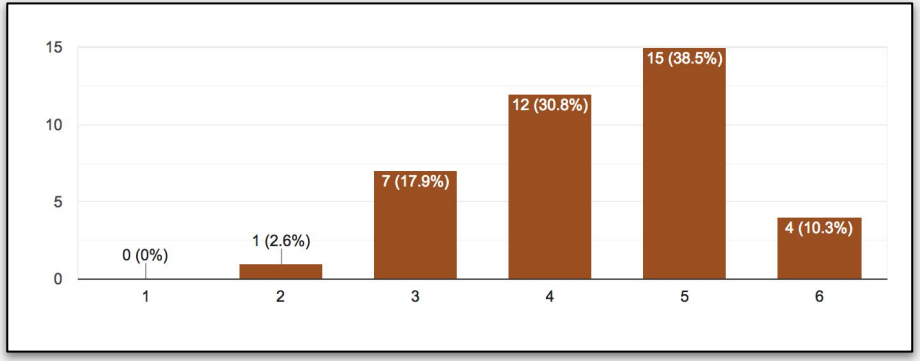
On average, how long did it take to set up each lesson?



On average, how long did it take to implement each lesson (including all activities)?

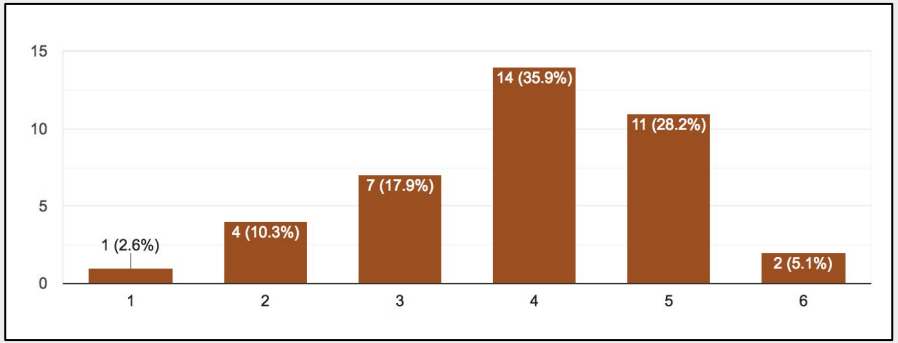


Our unit was engaging for students:



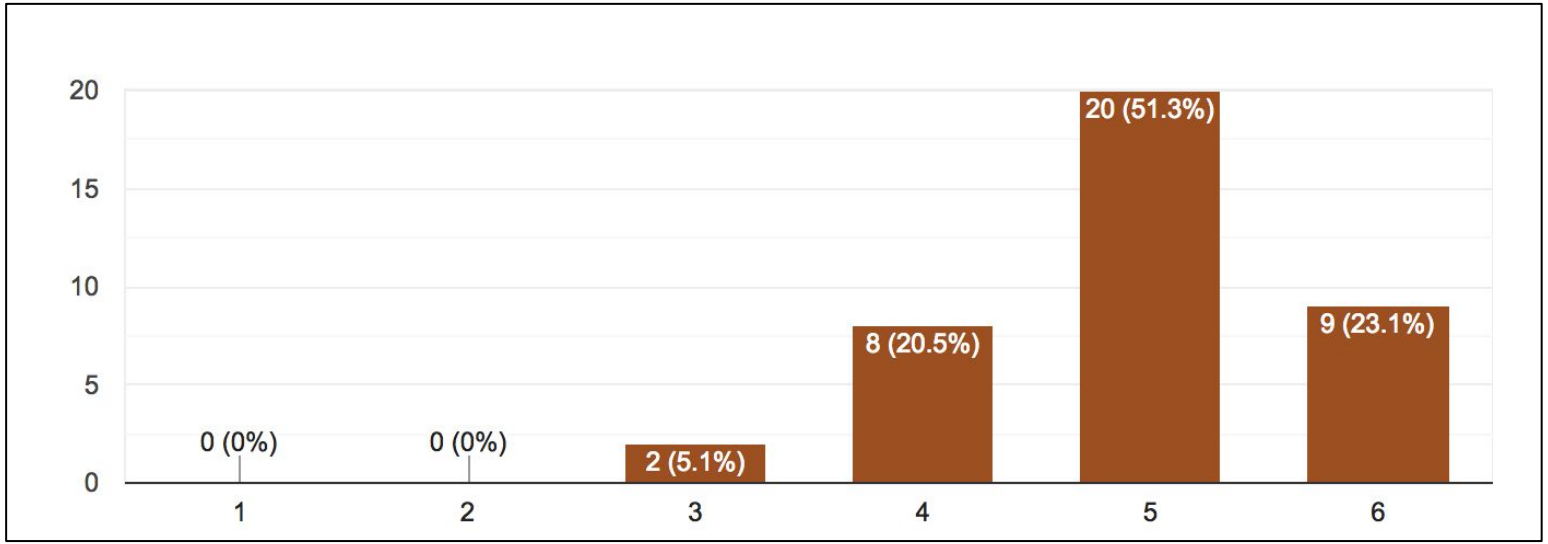
Strongly Disagree Strongly Agree

The level of hands on opportunities were appropriate for the unit:



Strongly Disagree Strongly Agree

Literacy materials are well developed and supportive of the major concepts:



Strongly Disagree

Strongly Agree

Please share any thoughts, ideas, suggestions or feedback that will help us to assess the implementation of the the Amplify units:

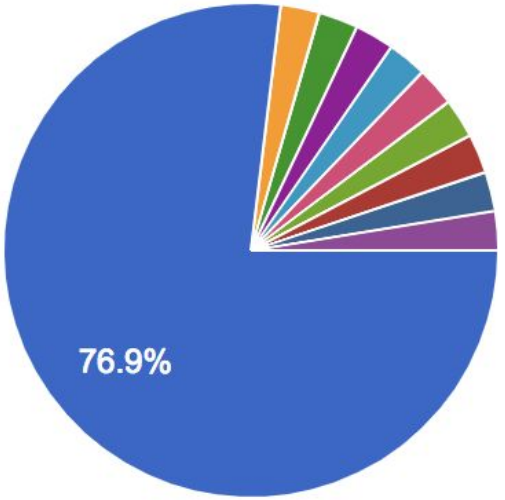
- The way Amplify breaks the lessons up into three parts really helps.
  The vocabulary, questions and cards to remember major topics helps the students as a reference but it also takes up a ton of room.
  Much of the assignments/activities are done with partners or small groups with discussions prior to writing, which helps differentiate for all.
- I think the unit we taught was a good fit for third grade, but I'd recommend moving the teaching of the unit to either fall or spring since we were taking weather data when temperatures were sometimes very cold.
- The first time through is always the most challenging. It will be easier next time.
  There are NOT enough hands-on components but the interest level is there
  To be honest, I have not completed all of the unit so some of this feedback is premature but it has to be done before I will finish the final chapter.
- After implementing the unit we now know what exactly it entails. I don't think the professional development before the unit really answered that for us because it is the type of program that needs implementation to discern that. We could use time to revisit the unit, unpack and develop lessons now that we have had this exposure.

- This Amplify weather unit has many engaging hands on activities for students and the materials and teacher manual is user friendly. Once we collaborate as a grade level and revisit the lessons that we taught, we can look at each lesson along with our students' performances and investigation notebook activities. All third grade level team members are working together and extremely collaborative for the launch of this Amplify weather unit.
- Overall I think the program is good, but wish there were even more hands on activities. I wonder if there are more hands on activities in other units. It is very literacy heavy (with great visuals) but some of the reading materials are difficult for students.
- The lessons are well developed. Because of the topic, there are not many hands on learning experiences for the students. What we have done has felt heavy in reading and writing. I would be interested to see the balance of other units for 4th grade,
- The first run is always a bit more time consuming- setting up and planning takes a significant amount of time the first time around and with one teacher. It has been helpful to have Christine come support the lessons when she can.
- Students were very engaged and enjoy the unit. When something is new, there is extra time needed to set up and prepare for the lesson. This would be true with any new science program.

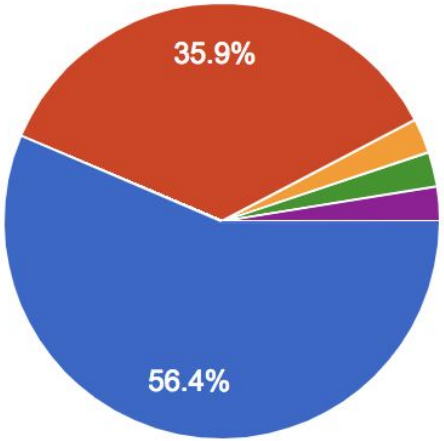
- Kindergarten- Sunlight and Weather- A strength of the program is that it went beyond the basic level of identifying and naming types of weather. Students learned about the impact of weather on their environment and how to make adjustments to be prepared for different weather.
- Something to work on and adjust- the lessons repeat the same information several times presenting different activities. The thermometers are safe for children but do not always show differences in results. The lamps used as models for the sun get very hot so adult supervision is required.

- I liked the lessons a lot, and I found them most effective when they were done on consecutive days. I felt that this really helped drive home the concept. The children really enjoyed the experiments so far. I'd say the Chalk Lesson and the Jolly Rancher Lesson have been the class favorites so far.
- It would be helpful to prepare the lessons and Google slides for future units with colleagues over the summer. It was a time consuming project to complete during the year working individually or with 1 partner.

Did the professional development provided during the Amplify 1/2 day, follow-up 1/2 day and PLRD time meet your needs?



Did you seek additional support with Christine in your classroom?



Relationship Between PLTW and Amplify

The following chart:

- Lists the engineering units that are provided through PLTW by grade that meet the NYSSLS
- Lists the Earth Science Units implemented this year in Grades K-5 that meet the NYSSLS in the 2018-2019 school

Grade	PLTW Engineering	PLTW Computer Science	Amplify
K	Structure and Function:Exploring Design	Animals and Algorithms	Sunlight and Weather (ES)
1	Light & Sound	Animated Storytelling	Spinning Earth (ES)
2	Materials Science: Properties of Matter	Grids & Games	Changing Landforms (ES)
3	Stability and Motion: Forces and Interactions	Programming Patterns	Weather and Climate (ES)
4	Energy: Collisions	Input/Output: Computer Systems	Earth's Features (ES)
5	Robotics and Automation	Robotics and Automation: Challenge	Patterns of Earth and Sky (ES)

The following chart:

- Lists the remaining units offered by Amplify
- Provides an overview of cost for each unit and for all components

Grade	Possible Units	Cost Kits	# of Classrooms	Total Kit Cost	# of Students	Notebooks	Total Cost Notebooks	# of Teachers	$25 Cost Teacher	Total Cost
K	Needs of Plants & Animals	$895	6	$5,370.00	140	$1.99	$278.60	7	$175.00	$5,823.60
	Pushes and Pulls PLTW	$925	6	$5,550.00	140	$1.99	$278.60	7	$175.00	$6,003.60
1	Animals and Plant	$750	7	$5,250.00	140	$2.50	$350.00	9	$225.00	$5,825.00
	Light and Sound PLTW	$1,195	7	$8,365.00	140	$2.50	$350.00	9	$225.00	$8,940.00
2	Plant and Animal Relationships	$835	6	$5,010.00	125	$3.99	$498.75	7	$175.00	$5,683.75
	Properties of Materials PLTW	$925	6	$5,550.00	125	$3.99	$498.75	7	$175.00	$6,223.75
3	Inheritance and Traits	$805	7	$5,635.00	150	$3.99	$598.50	9	$225.00	$6,458.50
	Environmental Survival	$1,495	7	$10,465.00	150	$3.99	$598.50	9	$225.00	$11,288.50
	Balancing Forces PLTW	$725	7	$5,075.00	150	$3.99	$598.50	9	$225.00	$5,898.50
4	Vision and Light	$1,295	6	$7,770.00	140	$3.99	$558.60	9	$225.00	$8,553.60
	Energy Conversions PLTW	$820	6	$4,920.00	140	$3.99	$558.60	9	$225.00	$5,703.60
	Waves Energy	$650	6	$3,900.00	140	$3.99	$558.60	9	$225.00	$4,683.60
5	Ecosystems Restoration	$995	7	$6,965.00	155	$3.99	$618.45	9	$225.00	$7,808.45
	Modeling Matter	$850	7	$5,950.00	155	$3.99	$618.45	9	$225.00	$6,793.45
	Earth's Systems	$795	7	$5,565.00	155	$3.99	$618.45	9	$225.00	$6,408.45

The following chart:

- Lists the units offered by Amplify that are being proposed for next year
  - These units were selected in collaboration with our science consultant informed by the complexity of the content and the need for teacher support, as well as the demands of the standards.
- Provides an overview of cost for each unit and for all components

Grade	Unit for 2019-2020	Cost Kits	# of Classrooms	Total Kit Cost	# of Students	Notebooks	Total Cost Notebooks	License Cost Per student	Total Cost Licenses	# of Teachers	$25 Cost Teacher	Total Cost
K LS	Needs of Plants & Animals	$895	6	$5,370.00	140	$1.99	$278.60			7	$175.00	$5,823.60
1 LS	Animals and Plant	$750	7	$5,250.00	140	$2.50	$350.00			9	$225.00	$5,825.00
2 LS	Plant and Animal Relationships	$835	6	$5,010.00	125	$3.99	$498.75			7	$175.00	$5,683.75
3 LS	Inheritance and Traits	$805	7	$5,635.00	150	$3.99	$598.50			9	$225.00	$6,458.50
4 PS	Waves Energy	$650	6	$3,900.00	140	$3.99	$558.60			9	$225.00	$4,683.60
5 PS	Modeling Matter	$850	7	$5,950.00	155	$3.99	$618.45			9	$225.00	$6,793.45
6	Magnetic Fields	$315	1	$315.00	134	$3.99	$534.66	$5.00	$670.00	3		$1,519.66
	Earth Moon Sun	$315	1	$315.00	134	$3.99	$534.66	$5.00	$670.00	3		$1,519.66
7	Chemical Reactions	$455	1	$455.00	147	$3.99	$586.53	$5.00	$735.00	4		$1,776.53
	Phase Change	$310	1	$310.00	147	$3.99	$586.53	$5.00	$735.00	4		$1,631.53
8	Chemical Reactions	$455	1	$455.00	151	$3.99	$602.49	$5.00	$755.00	4		$1,812.49
	Phase Change	$310	1	$310.00	151	$3.99	$602.49	$5.00	$755.00	4		$1,667.49
8/ES	Engineering Internship Forces and Motion	$255	1	$255.00	72	$3.99	$287.28	$5.00	$360.00	1		$902.28
	Total			$33,530.00			$6,637.54		$4,680.00		$1,250.00	$46,097.54

BOE Considerations

To what degree does the data provide ample information to determine next steps?

To what extent does the BOE feel confident that the IUFSD is or will be meeting the NYSSLS based on this path?