Building a K12 Mathematics Flipgrid Community

K12 Flipgrid integration guide

How can Flipgrid enhance Mathematics classes?

One of the major goals of a mathematics class is to help students communicate effectively. Educators often report wanting to help students develop voice in order to communicate verbally what they have learned. Unfortunately, many educators have trouble finding ways to incorporate this type of instruction into their lessons. [1] Flipgrid is designed to do just that -- give students a fun and creative avenue to develop voice and provide educators with a simple way to integrate it in their classroom. With each video creation, students consider how they are perceived, the content of what they have shared, and are given opportunities to make changes in response to feedback. Through this process, Flipgrid helps students become stronger communicators and involved digital citizens.

Introducing Students to the Social Aspect of Flipgrid

Grades K-5

Young students typically have little experience communicating ideas to a larger audience. Flipgrid gives them both the opportunity to develop voice and to learn how to present themselves online. Repeated experience using Flipgrid increases their feelings of social connectedness and improves academic performance. [2] Even the youngest students have the opportunity to participate as digital citizens, and Flipgrid provides a safe environment to begin learning how to interact online. When encountering Flipgrid for the first time, young students need to know that this is a safe space where creativity is encouraged so that they can develop confidence with continued use of Flipgrid.

Grades 6-8

Many students in middle school feel especially sensitive to the evaluations of their peers (we all remember this), but those who feel supported by educators and their peers perform better academically. [3] Even though students may have experience with posting videos, the idea of their videos being viewed by other students may make them uncomfortable; therefore, several uses of Flipgrid may be needed before students feel more confident in their use of voice. It may be especially important to remind students that they can do as many takes as they want before posting their video. Gaining confidence in self-expression and the respect of others is important for this age group.

Grades 9-12

Students in high school may already be regular users of social media like Snapchat, Instagram, Facebook, or Twitter. The first few times students use Flipgrid, they may feel uncomfortable because the topics that are discussed on Flipgrid are likely different from the topics students voluntarily post on social media. For this reason, Flipgrid is a valuable tool to help students learn to share their thoughts on important topics. Additionally, educators may open their grids to students in other locations around the world. Open grids help students learn to respect community voice, gain a deeper understanding of citizenship, and experience a wider diversity of perspectives.

Regardless of the age of your students, one of the best ways to help students feel at ease with Flipgrid is to model it yourself by creating a video to introduce the topic and record the first video in your topic to share your thoughts.

When are you starting to use Flipgrid?

Beginning

If you want to use Flipgrid from the very beginning of the class, you can actually start using Flipgrid before your first meeting. Invite the students to introduce themselves on Flipgrid or use Flipgrid to gauge students' knowledge and experience on the general course content.

Middle

Adding Flipgrid in the middle of a class is a great way to add variety and energy to material. You may want to use Flipgrid as a way to gauge how students are feeling about the class and to gather suggestions for where they would like things to go in the future. Flipgrid can help students practice describing what they learned, explain how what they learned relates to their own experiences, and indicate areas where they need clarification or additional resources. This is a great time for students to use their voice to connect ideas to their own experiences.

End

Even if you are at the end of a class, Flipgrid can be a powerful tool to invite students to share what they learned over throughout the class and to make suggestions for improvements. Encourage students to be creative in their responses and collaborate with others both inside and outside the classroom.

Timely Uses of Flipgrid

Course Introductions

As previously mentioned, for those of you who are planning to use Flipgrid in a class that hasn't started, videos are a great way to have students introduce themselves in advance of the class. Flipgrid is also a positive avenue to gauge interest and knowledge in a unit or lesson that you are about to introduce. Sometimes Flipgrid is more about finding out what students don't know and what they would like to know, rather than it is a report on what they have already learned.

One time Uses of Flipgrid

1. Check in on how students are doing, what they are learning, how they are feeling, or how they want to improve and move forward.
2. Evaluate the end of a unit or project.

3. Gather opinions on a major event or specific holiday.
4. Encourage student voice by asking students to make connections to personal experiences.

Ongoing Uses of Flipgrid

Flipgrid can be used every day or multiple times a day if students have frequent access to technology. Educators who use it every day are likely to use it as a part of regular assignments. They may use it to find out what students know at the beginning of a unit, to help students dive deeper into explaining and applying the content in a myriad of creative ways, or to evaluate the content at the end of the unit. Frequent users may also use Flipgrid as a way to start the day by involving every student in a discussion. Educators could feature a different student's response every day. In order to take advantage of the active social nature of Flipgrid, frequent users can allocate time for students to respond to each other's Flipgrid responses, either face-to-face or on the grid. Educators might also encourage students to post their own questions and topics to Flipgrid to start new conversations. Now is the time to think more critically about how you can connect Flipgrid to the content and purposes of your classroom.

Example Topics, Questions, and Themes Mapped to specific Learning Techniques

1. Make it Personal [4]

- Use students' favorite foods or friends in setting up problems rather than having students add multiply, or model the performance of random objects.
- Recommend that students measure the size or volume of objects that they regularly buy or want to buy.

2. Invite Comparison [5]

- Ask students to compare mathematical concepts that have both similarities and differences, like adding and subtracting, laws of sine and cosine, or the qualities of different geometric objects.

3. Find Meaning [6]

- Help students develop story problems that are related to something that matters to them.

4. Be Current [7]

- Encourage students to find ways to use current events and holidays as stimuli to prompt a mathematical problem.

5. Use Visuals [8]

- Encourage students to use objects, graphs, written out equations, and spreadsheets to display results and to help students visualize the mathematical process being described.

6. Collaborate [9]

- Invite students to work together on projects that require several steps like collecting data or in situations where students are doing something new.

Grades K-5 Topics, Questions, and Themes [10]

1. Make it Personal

- Use students' favorite foods or friends in setting up problems rather than having students add multiply, or model the performance of random objects. (I didn't mean to increase the indent.)
- Recommend that students add or subtract things that they regularly buy or want to buy.
- Encourage students to describe how they use math to solve problems that they face.
- Ask students to build three-dimensional versions of their favorite things and describe the building process and geometric properties of the object.

2. Invite Comparison

- Instruct students to compare differences between two and three-dimensional objects.
- Invite comparisons between multiplication and division.
- Ask students to compare fractions and describe how ½ of a small object may be larger than ¼ of a large object.

3. Find Meaning

- Instruct students to write story problems to explain how to make their favorite recipe.
- Encourage students to write story problems to help solve a problem that is currently facing the class.

4. Be Current

- Suggest students use objects that are related to an upcoming holiday or current event, rather than counting, adding, or subtracting random objects.

5. Use Visuals

- Encourage students to build and decompose geometric objects and narrate the process.
- Invite students to hold up cards with the mathematical problem written out and devote the narration of the video to describing the process by which the problem was solved.
- Recommend that students display different ways of measuring objects' length, weight, volume, and area.

6. Collaborate

- Have students collaborate in developing proofs, examples, or decoding, and then putting the pieces of an object together.
- Collaboration may be especially helpful if students are starting a new topic that they don't feel entirely comfortable with yet.

Grades 6-8 Topics, Questions, and Themes

1. Make it Personal

- Invite students to use their own personal purchases in calculating interest, taxes, and tips, rather than just using abstract numbers.
- Encourage students to use personal examples in discussing the central tendency and variability of a population.

2. Invite Comparison

- Ask students to compare how ratios and rates relate to multiplication and division.
- Encourage students to compare differences between two populations in central tendency and variability.
- Invite students to compare two and three-dimensional objects using cross-sections.

3. Find Meaning

- Invite students to choose problems that are meaningful to them and find fractions and decimals that are related to describing the problem.

4. Be Current

- Have students explain current contexts in which negative numbers occur (such as temperatures below zero or amount owed).

5. Use Visuals

- Ask students to graph proportional relationships and describe those graphs verbally.
- Encourage students to use graphs displaying linear relationships.
- Invite students to analyze two-dimensional objects in regard to distance, angles, rotations, and dilations.

6. Collaborate

- Have students work together to practice random sampling to collect data and then compare the results.
- Collaboration may be especially helpful if students are starting a new topic that they don't feel entirely comfortable with yet.

Grades 9-12 Topics, Questions, and Themes

1. Make it Personal

- Challenge students to find ways to quantify the success of someone they admire (batting averages, number of downloads, income, etc.), rather than using abstract numbers.
- Instruct students to use geometry to estimate the quantity of materials required to renovate their bedroom.

2. Invite Comparison

- Ask students to compare rational and irrational numbers, linear and exponential models, and laws of sines and cosines.
- Invite students to discuss the relationship between algebraic equations and geometric curves.

3. Find Meaning

- Ask students to choose an issue that matters to them. Then randomly sample people affected by the issue to collect data, analyze that data, and present the results in terms of correlation coefficients and regressions, rather than learning statistics using abstract problems.

4. Be Current

- Ask students to model solutions to current problems such as predicting how many emergency supplies are needed after a flood in their community, analyzing the risk of terrorism, or predicting the outcomes of an upcoming election.

5. Use Visuals

- Have students display graphical solutions to equations and describe the process by which the graph was generated, rather than just talking about results.
- Encourage students to use diagrams and spreadsheets to display mathematical models.
- Ask students to describe the geometric curves that result from the solution to an algebraic equation.

6. Collaborate

- Recommend that students collaborate in collecting and statistically analyzing data.
- Collaboration may be especially helpful if students are starting a new topic that they don't feel entirely comfortable with yet.

Example Social Feedback (Assessment) [13]

1. Building feedback -- provide feedback that helps move students toward the next level of critical thinking on a topic.
2. Highlight student videos in class -- every day or after every use of Flipgrid, be sure to show a few example videos in class and have students discuss the videos and provide feedback.
3. Encourage students to provide feedback on Flipgrid in response to other students' videos on the grid. Students can then respond to those responses, creating response chains that continue growing on interesting topics. Encourage students to keep those conversations going!
4. Students can also evaluate their own work in a Flipgrid video by discussing what they would do differently if given the opportunity to repeat the project.
5. Celebrate excellent videos by embedding them on your classroom website or sharing them with the broader community through other social networking sites, school organizations, or parent organizations.

Common Core Standards Alignment

We are giving you just a few of many standards that could be met using Flipgrid. Once you start using Flipgrid, you will find many ways the platform can help meet standards in your classroom.

1. Standards that align well with "Make it Personal"

- **CCSS.MATH.CONTENT.K.CC.B.4.A**
  Understand the relationship between numbers and quantities; connect counting to cardinality.
- **CCSS.MATH.CONTENT.3.MD.A.1**
  Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram.

2. Standards that align well with "Invite Comparison"

- **CCSS.MATH.CONTENT.K.CC**
  Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group, e.g., by using matching and counting strategies.
- **CCSS.MATH.CONTENT.1.OA.C.5**
  Relate counting to addition and subtraction (e.g., by counting on 2 to add 2).
- **CCSS.MATH.CONTENT.2.NBT.A.4**
  Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using >, =, and < symbols to record the results of comparisons.
- **CCSS.MATH.CONTENT.3.NF.A.3.D**
  Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model.
- **CCSS.MATH.CONTENT.K.MD.A.2**
  Directly compare two objects with a measurable attribute in common, to see which object has "more of"/" less of" the attribute, and describe the difference. For example, directly compare the heights of two children and describe one child as taller/shorter.

3. Standards that align well with "Find Meaning"

- **CCSS.MATH.CONTENT.4.OA.A.3**
  Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.
- **CCSS.MATH.CONTENT.4.NF.B.3.D**
  Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem.

4. Standards that align well with "Be Current"

- **CCSS.MATH.CONTENT.5.NF.B.6**
  Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.
- **CCSS.MATH.CONTENT.5.NF.B.7.C**
  Solve real world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, e.g., by using visual fraction models and equations to represent the problem. For example, how much chocolate will each person get if 3 people share 1/2 lb. of chocolate equally? How many 1/3-cup servings are in 2 cups of raisins?
- **CCSS.MATH.CONTENT.3.MD.D.8**
  Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.
- **CCSS.MATH.CONTENT.5.MD.C.5**
  Recognize volume as additive. Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real world problems.

5. Standards that align well with "Use Visuals"

- **CCSS.MATH.CONTENT.K.OA.A.1**
  Represent addition and subtraction with objects, fingers, mental images, drawings, sounds (e.g., claps), acting out situations, verbal explanations, expressions, or equations.
- **CCSS.MATH.CONTENT.2.MD.B.6**
  Represent whole numbers as lengths from 0 on a number line diagram with equally

spaced points corresponding to the numbers 0, 1, 2, …, and represent whole-number sums and differences within 100 on a number line diagram.

- **CCSS.MATH.CONTENT.2.MD.D.10**
  Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph.

6. Standards that align well with "Collaborate"

- **CCSS.MATH.PRACTICE.MP3**
  Construct viable arguments and critique the reasoning of others.
- **CCSS.MATH.PRACTICE.MP6**
  Attend to precision. Mathematically proficient students try to communicate precisely to others.

References

[1] Rudduck, J., & Fielding, M. (2006). Student voice and the perils of popularity. *Educational Review*, *58*(2), 219-231.

[2] Royer, N., Provost, M. A., Tarabulsy, G., & Coutu, S. (2008). Kindergarten children's relatedness to teachers and peers as a factor in classroom engagement and early learning behaviours. *Journal of Applied Research on Learning*, *2*(1), 1-20.

[3] McNeely, C., & Falci, C. (2004). School connectedness and the transition into and out of health-risk behavior among adolescents: A comparison of social belonging and teacher support. *Journal of School Health*, *74*(7), 284-292.

[4] Klein, S. B., & Loftus, J. (1988). The nature of self-referent encoding: The contributions of elaborative and organizational processes. *Journal of Personality and Social Psychology*, *55*(1), 5.

[5] Gentner, D., Loewenstein, J., & Thompson, L. (2003). Learning and transfer: A general role for analogical encoding. *Journal of Educational Psychology*, *95*(2), 393.

[6] Petty, R. E., & Cacioppo, J. T. (1984). Source factors and the elaboration likelihood model of persuasion. *NA-Advances in Consumer Research*, *11*, 668-672.

[7] Dunn, D. S., Gurung, R. A., Naufel, K. Z., & Wilson, J. H. (Eds.). (2013). Controversy in the psychology classroom: Using hot topics to foster critical thinking. Washington, DC: American Psychological Association.

[8] Clark, R. C., & Lyons, C. (2010). *Graphics for learning: Proven guidelines for planning, designing, and evaluating visuals in training materials*. Hoboken, NJ: Wiley.

[9] Bond, C. F., & Titus, L. J. (1983). Social facilitation: A meta-analysis of 241 studies. *Psychological bulletin*, *94*(2), 265-292.

[10] Mayer, R. E. (2008). Learning mathematics. In R. E. Mayer, *Learning and instruction* (2nd ed) (pp. 152-205). Upper Saddle River, NJ: Pearson.

[11] Hattie, J.A.C., & Gan. M. (2011). Instruction based on feedback. In R. Mayer & P. Alexander (Eds.), *Handbook of Research on Learning and Instruction*. (pp. 249-271). New York, NY: Routledge.