How to use...

Khan Academy

In your classroom

By Ask a Tech Teacher

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2014

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Khan Academy

Vocabulary	Problem Solving
• *Backchannel* • *Coach* • *Dashboard* • *Digital device* • *Energy points* • *Focus* • *Goals* • *Grid* • *Mathematically-proficient* • *Knowledge map* • *Scaffold* • *Spiral* • *Strategically* • *Structure*	• *I didn't do well on pre-test (there's no 'did well' or 'did poorly'. This is a baseline)* • *Can't move ahead (all that's required to succeed is that you keep trying)* • *I need more help (use videos, examples, classmates)* • *How do I create a teacher account (KA calls it a 'coach')* • *Can I talk to my neighbor (about KA—of course)* • *Can I use a calculator (ask your teacher)* • *Can I explore ahead (of course)*
Time Required *30 min., repeated*	**NETS-S Standards** *2d, 3c, 4b*

Materials

- Backchannel device
- Links for online resources
- Working digital device to access Khan Academy
- YouTube access
- Paper, pencil, note-taking materials
- Calculator—if appropriate

Essential Question

How do I teach myself?

Overview

Summary

This is an ongoing lesson to help students learn how to solve their own problems and teach themselves math.

Big Idea

Learning doesn't require a teacher. Learning requires curiosity and a passion for thinking.

Teacher Prep

- Have links on class internet start page (or where you collect links).
- This lesson can be done in the classroom or tech lab. Consider co-teaching.
- Something happen you weren't prepared for? No worries. Common Core is about critical thinking and problem solving. Show students how you fix the emergency without a meltdown.

Steps

_____**Required skill level: Enthusiasm and passion for thinking.**

_____Before beginning, put backchannel device onto Smartscreen (Today's Meet, Socrative, class Twitter account, GAFE form page) to track student comments throughout class.

_____Khan Academy reaches 6 million students a month, in virtually every major language. It can be used as enrichment, integrated with class inquiry, provide pre-test math review, homework, or as part of the pursuit of student interest (i.e., Genius Hour).

_____Khan Academy doesn't judge. Wherever student is, is fine. KA reaches student where s/he is, not where teacher is. Each student can be at a different point in learning, working at their own pace, and that is good. It is an organic differentiation tool.

_____Be sure you have buy-in from all stakeholders—school admin, grade-level math teachers. Take time to inform and educate them on this approach to teaching math, then answer all of their questions. Both groups may be overwhelmed by the massive changes in teaching and the use of technology to accomplish math goals. Be sensitive to this. Accommodate their concerns.

_____The same will be true of parents. Take time to educate them on what Khan Academy means to their child's math. Get them involved in supporting the change.

_____Using Khan Academy, teachers can:

- *Flip classroom—have students learn material independently while teacher acts as coach*
- *Personalize what's available to each student*
- *Track student progress toward their individual goals*

Common Core

CCSS.ELA-Literacy.CCRA.L.7-8,10
CCSS.ELA-Literacy.CCRA.W.1,5-9
CCSS.ELA-Literacy.SL.6.1a-d
CCSS.ELA-Literacy.SL.6.4-6
CCSS.ELA-Literacy.L.6.4,6
CCSS.Math.Practice.MP1-8
CCSS.ELA-Literacy.RL.6.4,7
CCSS.ELA-Literacy.RST.6-8.1,3,4

_____It is an inquiry-based tool especially suited to math instruction, but also science, history, economics, more.

_____Khan Academy is self-paced so students take ownership of their knowledge. They move on when ready, and in the safety of the lesson. For example, there is pressure to learn variables by Friday's test. Test day is when student's done.

_____ Share link, log-in, guidelines with parents so they are fully aware of Khan Academy.

_____This lesson uses KA to backfill holes in student mathematics knowledge:

- *Student starts with a pre-test where each question is based on how s/he did on prior ones. When done, KA knows where to begin his/her math learning.*
- *Student works through topics by watching videos, practicing, collaborating with classmates. S/he must get ten questions in a row correct before moving to next topic. Each answer is explained so student understands logic and procedure—There's no guess-and-get-lucky.*
- *With teacher dashboard, s/he can see what student understands and where they need help. It's easy to identify students who excel at a particular concept and get them to help classmates before teacher intervenes.*

_____Once prepared, you can use it for backfill (as this lesson does), enrichment, or your entire math curriculum (yes, it is aligned with Common Core).

_____To prepare students, you (as coach—that's what KA calls teachers):

- *Set up a teacher account*

- *Register your 6th grade class*
- *Invite students via email (use student Gmail) and/or code, i.e., 8RVFSA*

_____Before beginning, get Parent Permission Slip. This serves dual purpose of letting them know children will be accessing internet for instruction, but also provide them with means of doing so from home. Khan Academy website has this sample permission slip—pg. 26 (*Figure 67*) http://s3.amazonaws.com/KA-share/Toolkit-photos/Quick-start-guide-for-teachers.pdf:

Figure 1

GETTING STARTED: Sample permission slip

[Date]
[School Name]

Dear parent or guardian,

This year, we'll be using Khan Academy in class to personalize learning for all students! Khan Academy is a free online resource that allows students to learn anytime, anywhere, with material that is uniquely appropriate for them. Students can explore new topics and practice their math skills by using interactive practice and tutorials. As students learn, their activity feeds into reports that show important information such as strengths and weaknesses in a particular concept. By using Khan Academy, I'll be able to provide a more personalized learning experience for your child. **If you approve of your child participating in this program, please provide the information below.**

Student name: _____

Does your student already have a Khan Academy account? ☐ YES ☐ NO

Student username: _____
(Letters only, no spaces, ex. JSmith; if your child already has a Khan Academy account, please provide the child's existing username above)

Student password: _____
(Minimum 5 characters, different from username; if your child already has a Khan Academy account, do NOT provide the password as long as your child knows it.)

Student birthdate: _____

Parent/guardian email: _____
(An email will be sent asking you to verify your child's account, but you will not receive any other emails without your permission.)

To see how your child is learning on Khan Academy, I encourage you to create your own account as well. You'll be able to see what your child is working on, and there's plenty of material on the site for you to learn anything you want, too. Simply go to www.khanacademy.org and click Sign Up to get your own account.

Please sign below to give your child permission to use Khan Academy in my class.

Parent Signature: _____ **Date:** _____

Warmly,
[Teacher Name]

_____Before beginning—as you do every time students enter the internet, review how students safely use the internet (see Lesson on *Digital Rights and Responsibilities*).

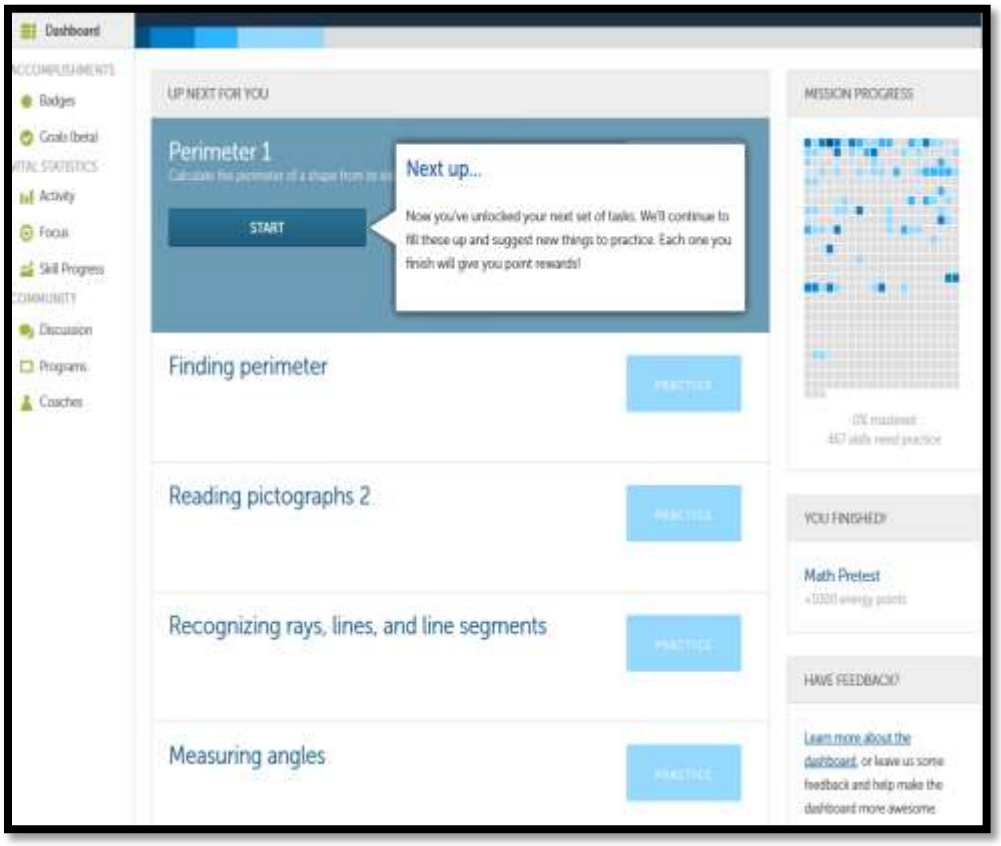
_____Once students are signed up, joined in the class, the first thing they do is take a pre-test. This is quick. Based on results, KA recommends what learning is required to progress. You as teacher can leave it at that—let them move forward as they're able—or you can recommend lessons to enhance learning, goals to achieve.

_____Review how to watch a video and learn from it. Sound easy? It is, but not always intuitive. What's the best way to read non-fiction material, understand what it says, follow its evidence, get the central idea—read closely and learn deeply? Encourage note-taking using digital tools like Evernote and/or GAFE.

_____If necessary, have videos available (see More Information at end of Lesson) for students to introduce Khan Academy and the basics.

_____Here's what KA student dashboard looks like right after finishing pretest (*Figure 66):*

Figure 2



_____Students are expected to teach themselves collaboratively with other students learning same material—somewhere in the world. Students are encouraged to:

- Ask questions of each other
- Answer with thoughtful responses
- Explain 'how' when answering a question, not simply give an answer. It's about process, not product. When asking and answering questions, use domain-specific language. Be ready to define vocabulary if necessary for partner
- Don't echo what others say. Come up with new material or bump answer up
- Spiral up or down as needed for deeper understanding of a mathematical topic
- Don't focus on grade-specific content. This is a great opportunity for students to follow their cerebral pathway, go as far and as fast as they can
- Set and achieve goals, earn badges, participate in KA community via student dashboard

- Set specific goals per Common Core guidelines, i.e.:
    - *connect ratio and rate to whole number multiplication and division and use concepts of ratio and rate to solve problems*
    - *complete understanding of division of fractions; extend understanding to rational numbers*
    - *write, interpret, and use expressions and equations*
    - *develop understanding of statistical thinking*
- Use Common Core Standards for Mathematical Practice to problem solve:
    - *Make sense of problems and persevere in solving them.*
    - *Reason abstractly and quantitatively.*
    - *Construct viable arguments and critique the reasoning of others.*
    - *Model with mathematics.*
    - *Use appropriate tools strategically.*
    - *Attend to precision.*
    - *Look for and make use of structure.*
    - *Look for and express regularity in repeated reasoning.*
- Be capable of following multi-step procedures for learning particular math concepts
- Be prepared to compare and contrast information gained from Khan Academy simulations, video, multimedia sources with that gained from math class materials

Khan Academy Steps:

Teachers

1. *Get buy-in of school administration*
2. *Get buy-in from grade-level math teachers AND those vertically-aligned with these 6th graders*
3. *Get buy-in from 6th grade parents*
4. *Have organic and pedagogic conversations where required*
5. *Have exemplars as needed (i.e., lessons, sample classes)*
6. *Have Parent Permission Form*
7. *Set up KA class accounts*
8. *Facilitate student enrollment*
9. *Facilitate students in setting their goals*
10. *Show stakeholders how to track student progress*
11. *Encourage teachers, admin to be risk takers*
12. *Every day, track student progress on Dashboard. Notice who needs help, who can offer help*

_____Prepare to be a coach, not lecturer. All students will be at different points in their learning. You facilitate, not dispense knowledge. That's done by website lessons. This is peer-to-peer learning.

_____Especially important in Khan Academy learning environment is backchannel device. Here, students share what they have problems on and help struggling classmates. Display it on Smartscreen and encourage students to share their expertise and knowledge with each other.

_____Regularly check with students on their progress (which you are aware of through teacher Dashboard). Help students focus on skills gaps. Motivate them where necessary. Know who's excelling and might help others who are struggling. Notice if there a topic a group would benefit from your help on.

_____Assessment here is based on student progress in KA lessons. Students spend the time, earn badges, and that's all that's asked. Class is self-paced, self-directed. No deadlines. No synopsis. Since KA doesn't allow students to move on until they get a certain number of questions correct, accuracy as assessment measure is built into program.

_____Have students share thoughts via a blog post, journaling (with Penzu or MyJournal), or class Twitter feed. Thoughts should be objective, on-point, with precise and domain-specific language appropriate to the task, audience, and purpose.

_____Emphasize that using Khan Academy is less about technology in education than making students responsible for their own learning. If this doesn't make sense to students, discuss it. Reinforce as you use KA. Help students own this concept rather than see it as computer time.

Khan Academy Steps:

Students

1. *Turn in Permission Form*
2. *Sign into KA class*
3. *Explore*
4. *Take pre-test*
5. *Set goals*
6. *Begin*
7. *Work on required units, and then student passion*
8. *Get help from neighbors, videos, resources*
9. *Give help to neighbors*
10. *Use and respond to backchannel device*
11. *Reflect routinely via blogs, Twitter, other*
12. *Earn badges; add to blog*
13. *Track progress*
14. *Be risk-takers*

_____Throughout class, check for understanding.

_____Remind students to transfer knowledge to classroom or home.

_____Expect students to solve problems as independently as possible. Problems at beginning of lesson are the most common students face during lesson.

_____Expect students to make decisions that follow class rules.

_____As you teach, incorporate domain-specific vocabulary and expect students to do the same.

_____After every class, tuck chairs under desk, headphones over tower; leave station as it was.

NOTE: All Khan Academy content is available for free at www.khanacademy.org". This lesson plan is intended as guidance for using those free materials on Khan Academy's website.

Extension:

- *Incorporate this with Maker Movement—where it is often seen as one of the most important keys to improving STEM education in this country. Why?? Because it works outside the realm of standardized testing.*
- *Have students use Khan Academy blackboard approach to teach classmates how to solve a math concept they are learning in math class. Use an online whiteboard program like (Google names for websites):*
    - *Dabbleboard*
    - *Scriblink*
    - *White Board—no sign in, no registration*

- *Use Khan Academy to keep students who are out of school for extended periods get up to date. Make Recommendations to their KA account of what lessons they need.*
- *Students select another academic topic to research—available in KA's Learn tab.*
- *Assign a student to update class calendar with dates for quizzes, presentations, events.*

More Information:

- *For KA alignment with CCSS: https://www.khanacademy.org/commoncore/map*
- *KA coach 'how tos': https://www.khanacademy.org/coach-res/reference-for-coaches*
- *For a good overview of what KA does in a classroom, watch this TED talk https://www.khanacademy.org/talks-and-interviews/key-media-pieces/v/salman-khan-talk-at-ted-2011—from-ted-com*
- *Technology set-up and maintenance issues for KA are here https://www.khanacademy.org/coach-res/become-a-coach/coach-set-up/a/technology-set-up-and-maintenance-for-classroom-use*
- *See case studies for ideas using KA https://www.khanacademy.org/coach-res/case-studies/k12-classrooms/a/overview-khan-academy-in-my-classroom*
- *Can't access YouTube at your school? Try: iTunes U or Curriki*
- *See full list of assessment items at end of unit*
- *Lesson questions? Go to Ask a Tech Teacher*

****This lesson from the 6th grade curriculum text (5th ed.)*

Notes

Assessment

_____Did student use backchannel device when necessary?

_____Was student engaged in learning, making a best effort?

_____Was student able to respond to teacher/peer suggestions positively?

_____Did student safely and effectively use the internet?

_____Did student successfully decode unknown words and phrases?

_____Did student understand the juxtaposition of 'technology' and 'education'?

_____Did student complete pre-test?

_____Did student use an online whiteboard program to help classmates?

_____Did student transfer knowledge from other math lessons?

_____Was student able to transfer knowledge learned in other locations, other projects, to this project (if possible)?

_____Did student follow directions in videos, written guides? Complete required questions? Track progress via badges and other methods?

_____Did student always keep trying, even if behind other students in class?

_____Did student understand 'teaching themselves' with available materials?

_____Did student understand that Khan Academy is an alternative to paper-and-pencil used other times?

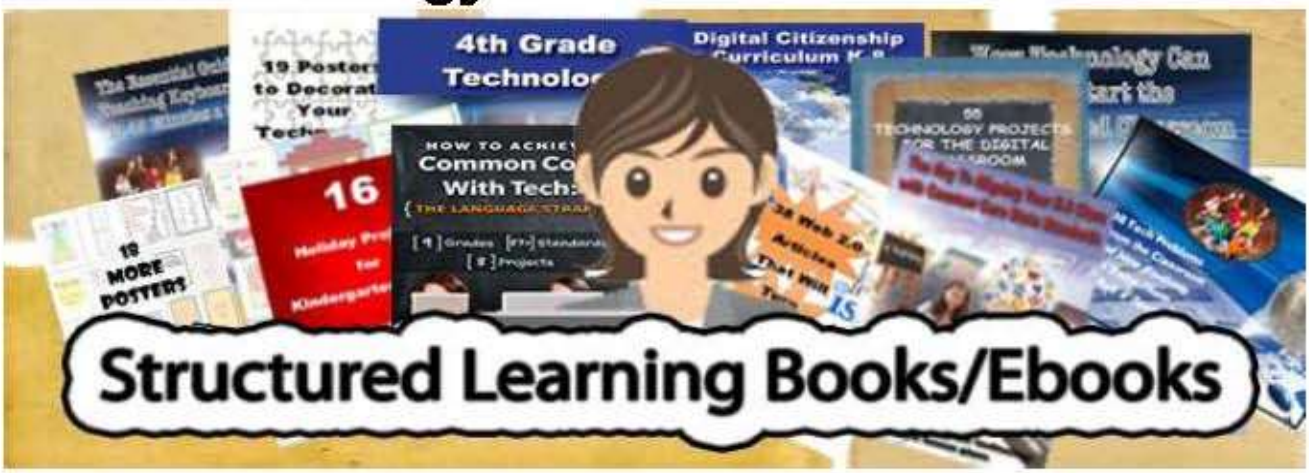
_____Was student a risk-taker, curious about new technology? Did student enjoy the experience?

_____Could student solve age-appropriate tech problems when needed?

Other Singles from Structured Learning

- Bridge Building
- Debate
- Gamification
- Genius Hour
- Google Apps
- Service Learning
- Write an Ebook

SL Technology Books for Your Classroom



Which book	Price (print/digital/ Combo)	How Many
K-8th Tech Textbook (each)	*$29.99-32.99/23.99-26.99/48.58-53.99+p&h*	
K-6 Combo (all 7 textbooks)	*$190.74/$153.84/$344.57 + p&h*	
K-8 Combo (all 7 textbooks)	*$246.52/$200.62/$447.14+ p&h*	
35 More Projects for K-6	*$31.99/25.99/52.18 + p&h*	
55 Tech Projects—Vol I, II, Combo	*$32.99 /$59.38–digital only (free shipping)*	
K-8 Keyboard Curriculum	*$29.95/25.95/50.31 + p&h*	
K-8 Digital Citizenship Curriculum	*$29.95/25.99/50.38 + p&h*	
Common Core—Math, Lang., Read.	*$26.99 ea/72.87 for 3–digi only (free ship'g)*	
K-5 Common Core Projects	*$29.95/23.99/48.55 + p&h*	
16 Holiday Projects	*$14.99 (digital only) + p&h*	
19 Posters for the Tech Lab	*$6.99 (digital only)*	
18 More Posters for the Tech Lab	*$12.99 (digital only)*	
98 Tech Tips From Classroom	*$9.99 (digital only) + p&h*	
760+ Tech Ed Websites	*$14.99 (digital only) + p&h*	
Tech Ed Scope and Sequences	*$14.99 (digital only) + p&h*	
New Teacher Survival Kit (K-5)	*$338.21/$287.85/$567.08+ p&h*	
New Teacher Survival Kit (K-6)	*$370.20/$314.84/$620.16 + p&h*	
New Teacher Survival Kit (6-8)	*$280.83/$261.83/$415.74 + p&h*	
Bundles of lesson plans	*$7.99 and up—digital only (free shipping)*	
Mentoring (1 hr. at a time)	*$50/hr*	
Year-long tech curriculum help	*$100 per year (online)*	
Consulting/seminars/webinars	*Call or email for prices*	
	Total	

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