



Khan Academy

Curriculum Applications

AT-A-GLANCE

Grades: PreK-College

Best Used as: Curricular Supplement, Homework
Support, Independent Practice

Languages: 50+ available

Access: Desktop/Browser/Mobile App

Standards Alignment: Common Core, State, NWEA
with Frequent Content Updates

“With practice exercises, instructional videos, and a personalized learning dashboard, Khan Academy empowers learners to study at their own pace, both in and out of the classroom. Khan Academy focuses on skill mastery to help learners build the strong foundations they need to succeed in higher education and in their careers”

DESIGN & STRUCTURE

- Feels like a virtual workbook
- Minimal distractions on problem pages
- Organized by grade level PreK-8, with higher level math courses organized by subject name
- Units include content/topics, and lessons detail specific skills within the unit to work on
- Students may be assigned/choose to start on a specific lesson, or can utilize a diagnostic test (“Course Challenges” of ~30 questions to assess what students already know)
- Each unit includes a mix of video and written lessons, accompanied by practice problems
- Space on the screen is provided for completing calculations, with access to special numeric keys (e.g. square root, straight fraction/division symbols, exponents)

GRADING

- Students earn “mastery points” by completing problem sets, periodic quizzes, and unit tests.
 - Each skill is worth 100 mastery points (Scores of 50 = familiar, 80 = proficient, 100 = mastery)
 - Mastery is intentionally challenging to encourage deeper engagement and understanding
- Additional gamified/awarding features include:
 - “Energy points” (achieved for watching videos, practicing problems, and completing tasks)
 - “Badges” (awarded for desirable behaviors such as earning points, or completing mastery)
 - Avatar creation (students craft an avatar to represent themselves)



RUTGERS UNIVERSITY
**Center for Effective
School Practices**

Created 05/09/2025



Khan Academy

Curriculum Insights/Considerations

INSIGHTS/TIPS

- The flexibility and program options within a grade level allows institutions and educators the ability to choose a sequence that fits their needs. This can also help educators in filling in gaps, especially if time is limited or the school has less than the standard number of days.
- Where Khan Academy courses used to consist of video lessons followed by a series of related practice problems, they have spent a lot of time adapting their problem-types to better incorporate the visual models and math manipulatives that students use in classrooms.
- Instructional support is provided throughout practice problems, not just when a student gets a problem incorrect.
- Content is updated several times a year. Should students' Mastery level within a course be impacted by new or revised content, they will receive an alert within the course that will detail further information on the impact to their Mastery score, and which additional skills they may need to complete.
- Activity overview reports provide information to educators regarding student performance. Within the provided 'breakdown of skills worked on' in which educators can see skills that were attempted, familiar, proficient, and mastered; allowing educators to follow up with further assignments.

CONSIDERATIONS

- Some of the report pages are visually busy and can be challenging for students who are doing independent coursework to navigate or understand.
- The scratchpad tool is great for students who don't have access to pencil and paper, but a student's work disappears when they move back to insert an answer on the problem screen.
- As with any platform that aims to incorporate game-like features for greater user engagement, the tracking of avatars, badges, and energy points can be distracting for some students.





CURRICULUM APPLICATIONS

At-A-Glance

Grades: PreK-12

Best Used as: Curricular Supplement,
Homework Support, Independent Practice

Languages: 90+ available

Access: Desktop/Browser (No App)

Standards Alignment: Common Core,
State, NWEA

"IXL is a personalized learning platform, built on four components that work together to provide an engaging, empowering, and effective personalized learning experience to all students: comprehensive curriculum, real-time diagnostic, personalized guidance, and actionable analytics."

Design

- Feels like a virtual workbook
- Minimal distractions on problem pages
- Organized by grade level PreK-8, with higher level math courses organized by subject
- Within grade level/subject, work is organized by topic or content. Each lesson is a skill offered to practice within this specified "learning area".
- Lessons and practice can be assigned directly by the adult overseeing the account
- Question formats include multiple choice and fill-in-the-blank, with some requiring students to answer two questions before moving on.
- Space on the screen is provided for completing calculations, with access to special numeric keys (e.g. square root, straight fraction/division symbols, exponents)

Grading

- Student progress within a topic is tracked using an onscreen marker, moving towards scores of 80 ("proficiency"), 90 ("excellence"), and then the "Challenge Zone".
 - The Challenge Zone includes 7-9 questions, which when completed indicate mastery.
- Awards that can be earned include:
 - Different color "Ribbons" earned for every 10 points until mastery
 - "Badges" also appear on a grid, and are used to progress through a grade-level/topic.
- Educators can track student progress in real-time and can input external testing information (e.g. NWEA MAP results) to target skills practice.



CURRICULUM

INSIGHTS/CONSIDERATIONS

Program Highlights

- Hovering over a skill provides a preview so that students know if it is indeed what they are looking to practice
- Educators can assign lessons directly to students or to an entire class
- Students are not required to complete the full complement of problems prior to moving on (helpful if they already have the necessary skills/knowledge)
- You may toggle between grade levels at any time which can be helpful in reinforcing previous lessons or identified skill gaps

Particularly helpful when students are reviewing for a test or quiz.

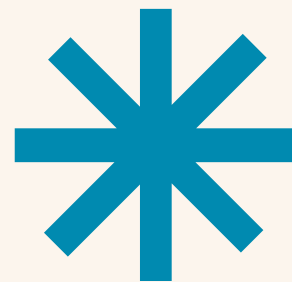
Unique Offerings

- Wyzant online tutoring services (for an additional cost)
- Games and other learning applications developed by ABCYa
- Printable worksheets
- Paper workbooks for specific topics and whole grade levels
- “Summer Learning Adventures” are sets of ~20 days of math activities for K-8 to keep up with learning over the summer
- “Summer Boost”, “Fall Power Up”, and “Weekly Boost” features are also available for K-8 and for specific higher-level math subjects to encourage ongoing practice throughout the year

Considerations

- IXL’s diagnostic feature takes approximately 45 minutes to complete. This is likely a best case scenario, and for many students the diagnostic will take 60-90 minutes to complete.
 - The diagnostic may be paused and returned to over multiple sessions, which can be emphasized by educators to prevent student burnout
- The amount of time and number of problems that it takes to complete a lesson/assignment can be daunting for many learners. The “Challenge Zone” can be especially frustrating, as incorrect answers are penalized by a reduction in score. Instructors may alter the total points required so as to mitigate this.





Resource Reference

OVERVIEW

Grades: K-8

Best Used as: Curricular Supplement

Languages: English & Spanish

Access: Desktop/Browser/Mobile App

Standards Alignment: Common Core,
State, NWEA

“Combining a motivating, game-like environment with a rigorous, standards-aligned curriculum, [DreamBox] responds to learners’ actions and decisions by continuously adapting to support student competency with math concepts and promoting strategies for fluency and application.”

DESIGN

- 10 Mathematical Domains offered: counting, comparisons and ordering, addition and subtraction, place value, measurement, multiplication, and division, geometry, ratios and proportions, expressions and equations, and functions.
- Within each domain are “learning units”, organized by standards-aligned concepts in each
- Learning units are then organized by grade level (K-2, 3-5, 6-8) specific lessons
- Each problem includes age-appropriate visual interfaces for student interaction. In most cases, the visual onscreen needs to be worked with to complete the problem.
- As a students complete problems, they are awarded stars at the bottom of the screen. Three stars indicate a lesson is complete.
- Students are initially placed within their current grade level, and the software actively monitors performance, adjusting in-unit learning.

PROGRESS TRACKING

- As students progress, the color around their listed total number of completed lessons for the week will change.
 - Five lessons completed appears as green, 10 lessons is purple, and 15 completed lessons appears as gold.
- Educators receive information on a dashboard, indicating whether lessons have been completed “with or without understanding” (proficient)

Resource Insights



ADDITIONAL FEATURES

- Educators can send personalized messages to students directly from their dashboard. Students are also able to initiate messages to instructors.
- Educators/adults can assign short (1-week) and long-term (2 months) assignments based on NWEA MAP scores, Bridges Math Units, or DreamBox's CCSS aligned sequencing.
 - Two goals can be assigned to a student at a time. These will be marked with either calendar or star icons.
- Intelligent Adaptive LearningTM tailors Dreambox activities to the individual learner's needs. Dreambox contends that as students solve problems, the software tracks the student's interactions and adjusts in real time to ensure that every student is learning at a pace and level that is right for them.
- While not standard, a new diagnostic feature "Launchpad" is available for higher subscription levels. This assessment takes 15-45 minutes to complete.

MITIGATE POTENTIAL CHALLENGES

- DreamBox encourages interaction with visuals over the use of standard paper/pencil problem-solving. This may prove challenging for students who are more traditional in their view of mathematics learning.
- Some problems include very limited information in an effort to invite students to infer/figure out the solution themselves.
- Incorrect answers do not trigger hints guidance; only correct answers provide explanations.
 - This can be frustrating for learners, particularly if they are unable to figure out how the visual model works
- When setting up classrooms, students are initially placed by grade level, even though not all may be at the same level of understanding. It is uncertain as to how the adaptive learning component works to adjust this placement, as the educator dashboard does not show these adjustments.



CURRICULUM APPLICATIONS

Grades: 1-5

Best as: Standalone Curriculum, Curricular Supplement, for Visual + Younger Learners

Languages: English

Access: Desktop/Browser

Standards Alignment:
"loosely based on standards" created by CCSS

STRUCTURE

- Applies a graphic novel, story-based format for lessons (feels like a gaming adventure)
- Learning includes a mix of reading graphic novel lessons, watching problem-solving modeling in videos, and solving practice problems.
- Each level is displayed on screen as a series of "classrooms" along a path that ends at a final test.
- There are options available on screen to access tools such as a pencil/eraser, for help completing a problem, and to re-connect the student with the graphic novel lesson.
- Diagnostic "are you ready for" assessments and the cumulative test at the end of each "chapter" are used to gather information about the learner's readiness
- Additional features such as "trophy problems" and "upstairs/downstairs" activities offer enrichment opportunities for learners who want to further challenge themselves.

PROGRESS TRACKING

- Students enter different "worlds" (classrooms), collecting stars and trophies as achievements
- Collecting enough of these will move the student closer to a final test, after which they will unlock the next level of learning.
- In each classroom, 3 stars can be earned for correctly completing the problems for that room's objective. The number of problems in each classroom vary, typically ~6-8 depending on the room.
- A problem is marked green when answered correctly, and red when answered incorrectly. With some problems, you have a second chance at answering a problem if you get it wrong on your first attempt.





CURRICULUM INSIGHTS

Diagnostic “are you ready for” assessments and the cumulative test at the end of each “chapter” are used to gather information about the learner’s readiness and tailor instruction

The “trophy problem” and the “upstairs/downstairs” features offer enrichment opportunities for learners who want further challenges. Trophy problems are unlocked at the 3-star completion of some lessons.

After answering a problem correctly, a screen pops up that explains two strategies one could use to solve the problem.

Having the educator/adult articulate this to their learner ahead of time could be helpful.

CONSIDERATIONS

Some learners may be frustrated when they get an answer wrong, because it doesn't provide new information to guide or lead you to the correct response (the strategy explanation only accompanies correct responses).

Students cannot easily “jump around” to different chapters, so accurate initial placement is important to ensure a good instructional fit.

There are no initial diagnostics, only those that occur as students begin moving through classrooms (“are you ready for” and cumulative chapter tests)

This is intentional, based on the belief that learners have the tools they need to solve the problem. They just need to rethink, strategize, and/or recalculate. They can also revisit the lesson and instructions, at any point

Grades: 3-12

Best Used as: Standalone Curriculum, Curricular Supplement

Languages: English & Spanish

Access: Desktop/Browser

Standards Alignment: State (automatically applied)

Highlights

- The flexibility and program options within a grade level allows educators the ability to choose a sequence that fits their needs.
 - This can assist educators in filling in gaps especially if time is limited or the school has less than the standard number of school days.
- ALEKS QuickTables is an included fact fluency program that helps students master their basic addition, subtraction, multiplication, and division facts (additional practice)
- Educators can create and control the course in a style that works for them through a balance of personalized learning, adaptive and non-adaptive assignments, and assessments.

Overview

- Feels like a virtual workbook
- ALEKS avoids the use of avatars and game-like features, instead prioritizing a clean interface and a workspace designed to mimic a traditional response environment.
- On-screen digital tools are available (e.g. graphing tools, a virtual pencil/ruler/compass, special notation keys for expressions, and table/proof building tools)
- Programming avoids multiple-choice questions, instead prioritizing typed answers to challenge students to rely more on their critical thinking and problem-solving skills.
- An initial “knowledge check” is conducted prior to starting of ~20-30 questions to determine students’ current knowledge level and to personalize instruction.
- The “ALEKS Pie” chart is a visual presentation of a student’s knowledge and their growth progress throughout a course. It is a user-friendly way for students and instructors to easily see current understanding and learning yet to complete.
 - Mastery is shown in color, with grey areas indicating remaining learning opportunities

Keep in mind...

- Although the system attempts to vary the types of problems offered within a topic, for students who struggle to remain engaged with a series of workbook/textbook problems, they may have similar struggles maintaining enthusiasm, motivation, or engagement with this more “traditional” question format.
- When you purchase/select a “course”, your ALEKS experience is limited to that course. i.e., the provided diagnostic picks your starting point within just that course, and you aren’t drawing from other modules.