What Lies Beyond Talent?

Mindset and Neuroplasticity

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Grade Level	7th – Undergraduate Grade	**Time Frame**	180 minutes
Subject	English/Language Arts, Science, Social Studies	**Duration**	2-4 class periods
Course	Psychology		

Essential Question

What is mindset? What is your mindset and how does it affect your life?

Summary

In this lesson, students will learn about the concepts of growth mindset and neuroplasticity, how to identify their own mindsets, and methods to change them. Students will play through Advance U: The TALENT Machine, a digital game-based learning (DGBL) module, to explore these concepts in an interactive environment. Students will see examples of different types of mindsets, understand how mindset affects people's lives, and identify methods for changing and improving mindset.

Snapshot

Engage

Students take a mindset quiz in Desmos and are introduced to the concept of fixed and growth mindsets.

Explore

Students play through the first act of *Advance U: The TALENT Machine*.

Explain

Students play through the second act of the game and reflect on the mindsets of the game characters.

Extend

Students reflect on their mindset quiz results and compose growth mindset statements.

Evaluate

Students play through the third and final act of *Advance U: The TALENT Machine*.

Standards

Next Generation Science Standards (Grades 9, 10, 11, 12)

HS-ETS1-4: Use a computer simulation to model the impact of proposed solutions to a complex real-world problem with numerous criteria and constraints on interactions within and between systems relevant to the problem.

Oklahoma Academic Standards (Social Studies: Psychology (9th through 12th grade))

PS.3: The student will investigate the structure, biochemistry and circuitry of the brain and the nervous system to understand their roles in affecting behavior.
PS.3.3: Identify the parts of a neuron and explain neurotransmission including the role and impact of various neurotransmitters.

Oklahoma Academic Standards for English Language Arts (Grade 9)

10.3.W.3: Students will elaborate on ideas by using logical reasoning and illustrative examples to connect evidences to claim(s).

Oklahoma Academic Standards for English Language Arts (Grade 9)

11.3.W.3: Students will elaborate on ideas by using logical reasoning and illustrative examples to connect evidences to claim(s).

Oklahoma Academic Standards for English Language Arts (Grade 9)

12.3.W.3: Students will elaborate on ideas by using logical reasoning and illustrative examples to connect evidences to claim(s).

Oklahoma Academic Standards for English Language Arts (Grade 9)

9.3.W.3: Students will elaborate on ideas by using logical reasoning and illustrative examples to connect evidences to claim(s).
9.3.W.5: Students will show relationships among the claim, reasons, and evidence and include a conclusion that follows logically from the information presented and supports the argument.

Oklahoma Academic Standards for Mathematics (Process Standards)

M.5: Develop a Productive Mathematical Disposition: Hold the belief that mathematics is sensible, useful and worthwhile. Students will develop the habit of looking for and making use of patterns and mathematical structures. They will persevere and become resilient, effective problem solvers.

Attachments

- Advance U Game Overview—What Lies Beyond Talent.docx
- Advance U Game Overview—What Lies Beyond Talent.pdf
- Advance U The TALENT Machine Research Brief.pdf
- Advance U The TALENT Machine Teacher's Guide.pdf
- Game Portal Guide_v1.2.pdf
- Mindset—What Lies Beyond Talent - Spanish.docx
- Mindset—What Lies Beyond Talent - Spanish.pdf
- Mindset—What Lies Beyond Talent.docx
- Mindset—What Lies Beyond Talent.pdf

Materials

- *Advance U: The TALENT Machine* Teacher's Guide (attached)
- *Advance U: The TALENT Machine* Research Brief (attached)
- *Advance U* Game Overview (attached)
- Game Portal Guide (attached)
- Mindset handout (attached; one per student)
- Computers with internet access for each student

- K20 Game Portal accounts for each student
- Writing materials: pens, pencils, paper, etc.

10 minutes

Engage

Teacher's Note: Lesson Preparation

Before you begin this lesson, it is highly recommended that you play through the featured game, *Advance U: The TALENT Machine*, at least once so you have a general understanding of the story and the characters that students will encounter as they play.

Teacher's Note: Desmos Quiz Preparation

To use this Desmos Classroom activity, select the following link: Mindset Test. Create an account or sign in under the "Activity" Sessions heading. After you log in, the green "Assign" dropdown button will be active. Click the arrow next to the word "Assign," then select "Single Session Code." After making some setting selections, select "Create Invitation Code" and give the session code to students.

Students do not have to sign in unless they intend to pause and resume the activity at a later time.

To begin the lesson, provide students with your session code. Then, have students go to student.desmos.com and enter the session code. Inform students they are going to take a mindset quiz developed by Carol Dweck to determine their own mindsets.

While students complete the quiz in Desmos Classroom, pass out the attached **Mindset handout**. Have each student write their quiz score on the handout as well as the category that corresponds to their score. Have students keep their handouts for use during an I Notice, I Wonder activity later in the lesson.

Possible Student Score and Category Example

A student who scores 18 on the quiz is in the category of "Fixed mindset with some growth ideas."

Inform students that mindset is "a set of assumptions, methods, or notions held by a person that defines how they will react to various situations, challenges, or choices." For example, someone with a fixed mindset believes that intelligence is fixed and that a person cannot improve beyond their own natural talents. Someone with a growth mindset believes that intelligence is not fixed, but malleable, and that it can be improved through hard work and study.

Ask students to pair up and talk to their partners about the concept of fixed and growth mindsets. Have a few students share their thoughts with the class. Then, let students know they are going to play a game called *Advance U: The TALENT Machine* that explores the idea of growth mindset.

20 minutes

Explore

Teacher's Note: Accessing the Game

For your students to play Advance U: The TALENT Machine, you'll need to set up a class in the K20 Center Game Portal ahead of time. Go to games.k20center.ou.edu and create an account. After you log in, you'll be able to create a class and invite students. For more information, refer to the Game Portal Guide in the Attachments section. If you experience any issues, go to games.k20center.ou.edu/support to contact user support.

Teacher's Note: Playing the Game

Advance U: The TALENT Machine has three acts. Act 1 reviews the game's mechanics and introduces the characters, Act 2 invites students to further explore the content with more in-depth explanations, and Act 3 serves as the evaluation. This structure enables the game to be broken up into class-period-sized modules for this lesson. To be exposed to all learning content, students should complete the entire game.

See the attached ***Advance U* Game Overview** handout for more information on each act and time estimates. To read the research behind the game, see the attached ***Advance U: The TALENT Machine* Research Brief**. For more detailed instructions on playing the game, see the attached ***Advance U: The TALENT Machine* Teacher's Guide**.

Alternative for Technology Limitations

If it is not possible to supply each student with access to the game, you may have students play the game in small groups. It is recommended that these groups have no more than four students apiece.

Help students prepare their computers to play the game. Have students complete the first act, which should take about 10–15 minutes. Students are introduced to the game mechanics, story, and characters at the beginning of the game.

While students play, circulate the room to observe students' progress and assist students who become stuck or confused. The first act ends when the character Miguel runs off screen. At that point, have students pause the game.

110 minutes

Explain

Introduce students to the I Notice, I Wonder strategy. Using the Mindset handout passed out during the Engage portion, have students recall each of the characters they have met in the game so far. Ask students to work in pairs to write something they have noticed and something they wonder about each character's mindset.

After giving students time to work on the handout, ask for volunteers to share their thoughts. Hold a class discussion about the mindset of each character in the game.

Ensure that computers are ready for students to continue playing the game. Have students play through the second act, which is estimated to take 45–120 minutes (about 100 minutes on average). Be aware that play times can vary widely among players, so some students might need extra time while others complete each act quickly.

In Act 2, students gain a greater understanding of each character's mindset and discover ways to improve or change those mindsets. While getting to know the characters, students learn about the concepts of neuroplasticity, fixed mindset, and growth mindset. Students work to change the characters' outlooks by using the information they learn in the game.

While students play, circulate the room to observe students' progress and assist where needed. Make sure to keep students focused on the concept of fixed and growth mindsets and how mindset can be changed. Act 2 is complete once all characters have returned to the TALENT Machine in the quad. At that point, have students pause the game.

Once all students have finished Act 2, have them return to the Mindset handout and add what they have noticed and what they wonder about the remaining characters introduced in Act 2.

20 minutes

Extend

Ask students to think about the score they received on the mindset quiz at the beginning of the lesson. As they reflect, have students look at the list of characters on the Mindset handout and think about which of the characters they relate to and why—their reasoning should focus on what they've learned about mindset and how the brain learns. On the back of the handout, have students write two to three statements about how they might change their own mindsets based on what they have learned.

20 minutes

Evaluate

Ensure that computers are ready for students to continue playing the game. Have students play through the final act, which should take about 10–15 minutes.

While students play, circulate the room to observe students' progress and assist where needed.

Teacher's Note: In-Game Assessment

The third act of *Advance U: The TALENT Machine* serves as a final evaluation of all the concepts presented over the course of the game. Students cannot complete the game without passing this final assessment within it. If using computers to run the game, check the Game Portal Teacher Dashboard to ensure all students have completed the third act.

Resources

- Examined Existence. (n.d.). Carol Dweck on fixed mindset vs. growth mindset. https://examinedexistence.com/carol-dweck-on-fixed-mindset-vs-growth-mindset/
- Halstied, L. (n.d.). Mindset Test. Desmos. https://teacher.desmos.com/activitybuilder/custom/61dd995b31667908deeecfa1
- K20 Center. (2015). Advance U: The TALENT machine [Video game]. University of Oklahoma. https://learn.k20center.ou.edu/game/1003
- K20 Center. (n.d.). I Notice, I Wonder. Strategies. https://learn.k20center.ou.edu/strategy/180
- K20 Center. (n.d.). Desmos Classroom. Tech tools. https://learn.k20center.ou.edu/tech-tool/1081