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AG/ENVIRONMENTAL

Community Science

PD 2: Competitive Landscape Analysis

Developed in partnership with:
Discovery Education and Ignited

In this Lesson Plan:

Print the **Teacher Section** → 🖨

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This document is separated into two sections, For Teachers [T] *and* Student Resources [S], *which can be printed independently.*

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Single Pages (use a comma): T3, T6

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An illustration concept for innovation, crowdfunding, and entrepreneurship.
—

Cover Image
Bacteria in a water sample is a potential source of environmental DNA (eDNA).

AG/ENVIRONMENTAL / COMMUNITY SCIENCE

Proposal Development (PD) Lesson 2: Competitive Landscape Analysis

DRIVING QUESTION

What characteristics of a new product or service makes it unique from existing ones?

ACTIVITY DURATION

Three class sessions
(45 minutes each)

ESSENTIAL QUESTIONS

How can an understanding of your competition result in improvements in the development and marketing of a new product?

OVERVIEW

Competitive landscape analysis is a tool used to investigate a market landscape and collect information about competing businesses, products, and services to guide decision making. The results of a competitive landscape analysis can be used to guide the launch of a new product or service, to track the effectiveness of a marketing campaign, or to gauge whether to pivot away from an existing product. Students will be using this tool to help them clarify areas where their idea stands out from the competition and to give them a better understanding of what DNA identification products exist on the market.

In this lesson, students will learn about the industry tool of competitive landscape analysis and will take on the role of a market analyst preparing a competitive landscape analysis for their topic area. Students will begin by identifying keywords related to their topic proposals. They will locate potential competitors from industry, academia, and community science initiatives, and will prepare a summary report outlining ways their proposal is unique from existing competitors. Groups will share their findings in short presentations and will receive feedback from their peers. The results of this analysis will inform their decisions about how to pitch their ideas in their final artifact for the unit.

OBJECTIVES

Students will be able to:

Define "competitive landscape analysis" and explain why it is used.

Identify appropriate keywords to guide Internet research.

Analyze competitors for strengths and weaknesses.

Explain how their proposal fills a gap or fits a need within their topic area.

Materials
Social Media Capture Sheet
Who's the Competition? Capture Sheet
Analyzing the Competition Capture Sheet
Competitive Landscape Analysis Summary Report Capture Sheet
Competitive Landscape Analysis Feedback Form Capture Sheet
Devices with Internet access

Pedagogical Framing

Instructional materials are designed to meet national education and industry standards to focus on in-demand skills needed across the full product development life cycle—from molecule to medicine—which will also expose students and educators to the breadth of education and career pathways across biotechnology.

Through this collection, educators are equipped with strategies to engage students from diverse racial, ethnic, and cultural groups, providing them with quality, equitable, and liberating educational experiences that validate and affirm student identity.

Units are designed to be problem-based and focus on workforce skill development to empower students with the knowledge and tools to be the change in reducing health disparities in communities.

SOCIAL-EMOTIONAL LEARNING

Students must use self-discipline and self-motivation to stay on task. Students need to communicate clearly with their groups. This lesson also asks students to listen actively, cooperate, and seek or offer help when needed. Students will learn how to make a reasoned judgment after analyzing information, data, and facts.

CULTURALLY AND LINGUISTICALLY RESPONSIVE INSTRUCTION

Students will continue to focus on the real-world community issue they selected in Proposal Development (PD) Lesson 1. Using examples of competitive landscape analysis as models, students will know and meet the high expectations for the ones they develop. Students will be required to reflect on their own cultural lens to ensure their proposal is in fact unique compared to others already on the market.

ADVANCING INCLUSIVE RESEARCH

In this lesson, students will examine the current landscape of DNA identification technology offerings. They will identify products that were initially designed to solve challenges, and will identify how those products have impacted the needs or reflected the values of the communities to which they are marketed. Students will reflect on how diverse populations should be engaged in all phases of research, and how including their perspectives from the beginning can make for better-designed solutions. Students will identify potential areas for how they can engage underrepresented communities in the development of their DNA identification technology.

COMPUTATIONAL THINKING PRACTICES

Students will collect data about market competitors and represent that data in various ways to facilitate problem-solving and decision making in their competitive landscape analysis. Students will then extract key information from that analysis and use it to inform development of their funding proposal.

CONNECTIONS TO THE PRODUCT LIFE CYCLE

In this lesson, students will complete a competitive landscape analysis, where they compare their potential product to competitors in the market. This connects to the **discover** phase of the product life cycle, because students are researching competitors in the market that are solving similar challenges, and to the **develop** phase as they figure out how to design a product with a more targeted audience than existing competitors.

Have you ever wondered…

How do businesses and individuals with innovative ideas learn about their competition?

DNA identification technologies are increasingly employed in a number of settings. As these offerings increase, it is important that individuals and existing businesses with new ideas about DNA identification understand what similar technologies are available and how to make their new applications stand out in a competitive field.

MAKE CONNECTIONS!

How does this connect to the larger unit storyline?

Students are researching information that will inform the development of their final proposal. At the end of the lesson, students will have identified unique features of their proposal that could be used to promote their ideas in the final product.

How does this connect to careers?

Market analysts employ a variety of strategies to collect the data used to guide decision making at all stages of the product cycle. Market analysts may evaluate the overall market for a product, collect information on the success of a marketing campaign, analyze the success of competitors, and identify potential areas for expansion.

How does this connect to our world?

Student results will be used to make choices about how to design and market their final proposal to their communities.

Day 1

Procedure

Define "competitive landscape analysis" and explain why it is used.

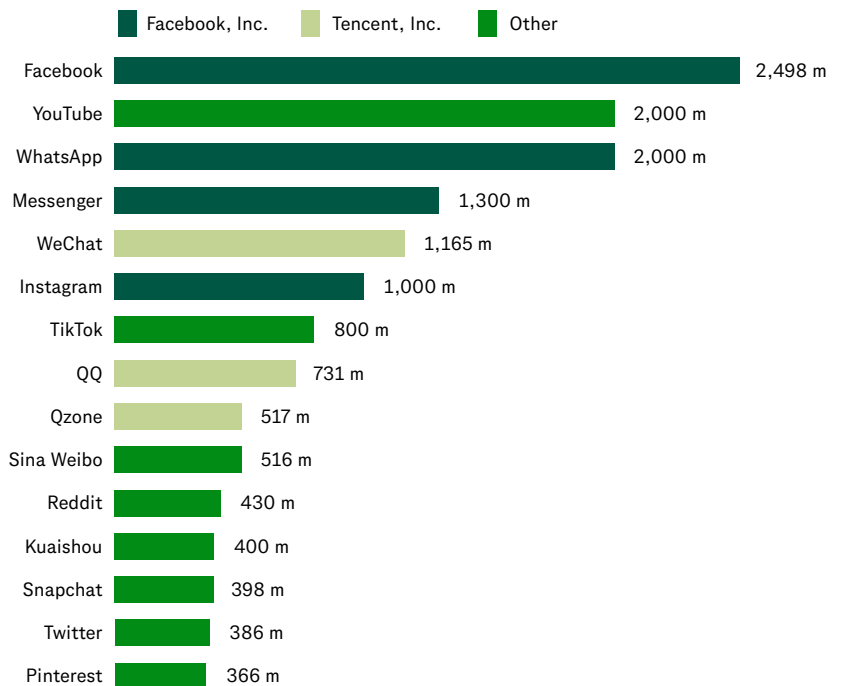**Identify** appropriate keywords to guide Internet research.

Whole Group (20 minutes)

Teacher Note > *This introductory example uses social media. However another example could be used if it is more relevant to your students. You may also want to show students an example TikTok video if you choose to use the social media example.*

1   Ask students what types of social media they use or do not use and why. Make a list on the board of student responses.

2   Show students the two graphs about major competitors in the social media landscape. Pose the question of how a company like TikTok could increase the number of users within this industry. Make a list of student responses.

Facebook Dominates the Social Media Landscape
Monthly active users

Legend: Facebook, Inc. | Tencent, Inc. | Other

Platform	Monthly active users
Facebook	2,498 m
YouTube	2,000 m
WhatsApp	2,000 m
Messenger	1,300 m
WeChat	1,165 m
Instagram	1,000 m
TikTok	800 m
QQ	731 m
Qzone	517 m
Sina Weibo	516 m
Reddit	430 m
Kuaishou	400 m
Snapchat	398 m
Twitter	386 m
Pinterest	366 m

*April 2020 or latest available
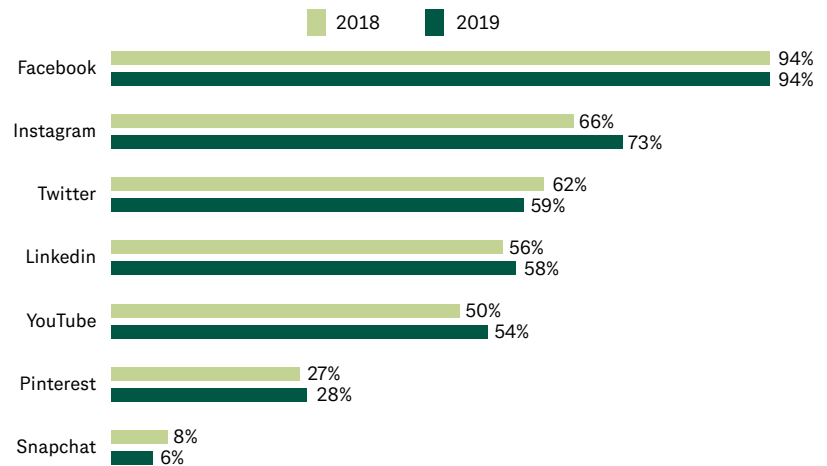Source: Company data via DataReportal Global Digital Statshot

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Day 1
Continued

Procedure

Marketers Warm Up to Instagram
Percentage of social media marketers working with
the following platforms

2018 **2019**

Platform	2018	2019
Facebook	94%	94%
Instagram	66%	73%
Twitter	62%	59%
Linkedin	56%	58%
YouTube	50%	54%
Pinterest	27%	28%
Snapchat	8%	6%

4,800 marketers were surveyed for this study. Published May 2019
Source: Social Media Examiner

INDUSTRY AND CAREER CONNECTION

In this activity, students are playing the role of a market analyst, who collects data used to guide decision-making at all stages of the product cycle. Market analysts may evaluate the overall market for a product, collect information on the success of a marketing campaign, analyze the success of competitors, and identify potential areas for expansion.

3   Give pairs or groups of students a copy of the *Social Media Capture Sheet* with the question *How can TikTok increase its number of users?* Pairs or groups should choose one competitor from the options in the graph or the class-generated list of social media options, and then complete the chart looking at strengths and weaknesses of that company compared to TikTok.

4   Do a quick wrap-around for pairs or groups to share their ideas.

5   Introduce the idea of competitive landscape analysis as a method of looking at what your competitors are doing and what unique aspects your product offers to the field. Competitor weaknesses offer opportunities for new products to enter the market or to expand their share of users.

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Day 1
Continued

Procedure

Small Group (25 minutes)

1   Place students in small groups. Give each group a copy of the *Who's the Competition? Capture Sheet*. Groups should begin their research by generating a list of potential search terms to use in identifying competitors.

2   Tell groups to follow the steps on the capture sheet to identify potential competitors in industry, academic research, or community science initiatives. Groups should record a list of potential competitors on the capture sheet.

Teacher Note > *Some student proposal areas may be very specialized or your area may not have many DNA identification products offered. It may be helpful to have a discussion with students about the different types of competitors in a market. Direct competitors are those offering similar products or services in the same business sector. Indirect competitors offer different products or services but are targeting the same audience. The products or services of indirect competitors could be substituted for your products, because they satisfy the same consumer needs or demands. A Google search for eDNA or aDNA services will also yield competitors.*

Day 2

Procedure

Students will be able to:

Analyze competitors for strengths and weaknesses.

Small Group (45 minutes)

1   Have each student or pairs of students select one of the competitors they identified yesterday to analyze. Students will research details about the competitor and the products or services they offer and complete the *Analyzing the Competition Capture Sheet*.

2   Student groups may need support in selecting which competitors to use in the analysis. Assist students in selecting competitors with the following prompts:

- *Which competitors offer the most similar product or service to your proposal?*
- *Do any competitors offer their products or services in our community or nearby communities?*

Day 3

Procedure

Students will be able to:

**Explain** how their proposal fills a gap or fits a need within their topic area.

Teacher Note > *Students are acting as market analysts to refine their design and product idea to better meet a community need. This could be considered as an iterative pitch of their idea, which is often used in product design.*

Small Group (25 minutes)

Have groups meet and share their findings about potential competitors. Group members should compare and contrast their proposal with what is offered by competitors. Tell groups to record their discussion in the *Competitive Landscape Analysis Summary Report Capture Sheet*. This will be added to the Portfolio of Supporting Evidence in the Final Artifact (Lesson 11).

Whole Group (20 minutes)

Invite each group to share their summary report findings with the class in a short informal presentation. Individual students or student groups should provide feedback on the presentations using the *Competitive Landscape Analysis Feedback Form Capture Sheet*.
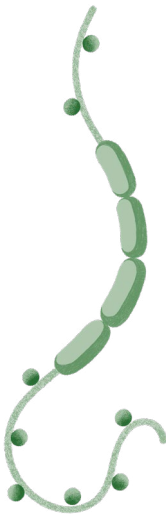
National Standards

Next Generation Science Standards

HS-ETS1-2 Engineering Design
Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.

Science and Engineering Practices
Develop and use models
Develop and/or use multiple types of models to provide mechanistic accounts and/or predict phenomena, and move flexibly between model types based on merits and limitations.

Career and Technical Education (CTE)

A1.1
Use data to explain how biotechnology fields such as pharmaceuticals, agriculture, diagnostics, industrial products, instrumentation, and research and development are impacting human life.

A1.6
Explore and outline the various science and non-science fields and careers associated with biotechnology.

A5.2
Use a variety of methods, including literature searches in libraries, computer databases, and online for gathering background information, making observations, and collecting and organizing data.

2.5
Communicate information and ideas effectively to multiple audiences using a variety of media and formats.

3.6
Recognize the role and function of professional organizations, industry associations, and organized labor in a productive society.

Social Media Capture Sheet

Directions
Choose one TikTok competitor and complete this chart, analyzing the strengths and weaknesses of that company compared to TicTok.

Below is an example of a student answer.

TikTok Competitor:	Instagram
Strengths What do they do well? What services do they offer? Why do people choose to use this product instead of TikTok?	— Longer videos called IGTV allow video length of up to one hour. — Able to tag accounts and locations directly to photos and videos — Instagram stories move left to right automatically. — Instagram stories provide different stickers with all sorts of features such as donations, countdown, questions, quizzes, polls, etc. — More photo-oriented than video-oriented — Used more to catch up with friends and family rather than entertainment or content — Offers direct messaging with more features than TikTok — The number of likes can be hidden to the public. — Offers a shop feature where users can directly buy products from the app — Able to save posts in categories, making it more organized and easier to find
Weaknesses What does TikTok offer that this competitor does not? What are some factors that make people not choose to use this product?	— TikTok offers in-app virtual purchase where users can give various virtual gifts to creators to support them. — Instagram has too many ads. — No ability to share posts outside of the app — Trendy challenges through hashtags, whether it is dance, food, etc., are more prevalent on TikTok. — TikTok moves up and down and stays on loop rather than going through content automatically. — TikTok videos reach up to 60 seconds which is longer than Instagram Stories' 15-second limit and Instagram Reels' 30-second limit. — TikTok offers more video editing tools. — TikTok has a Sound library where users can use other people's sounds in video. — TikTok offers a duet or stitch function to react to other users' content. — TikTok has an algorithm that customizes content to users' specific interests on the "For You" page.
Recommendations What could TikTok do to address the competitor's weaknesses? In which areas could TikTok gain users?	Most of Instagram's weaknesses have already been addressed by TikTok. Now it is only a matter of continually improving TikTok in order to catch up in areas where Instagram is more successful, such as direct messaging, saving posts, and creating longer videos. I think if TikTok focused on a couple of the areas that I mentioned, they would be able to gain even more users than the millions that they already have.

Who's the Competition? Capture Sheet

Directions
*As a group, use the following to identify some competitors
to your proposed product.*

Below is an example of a student answer.

1   Proposed Topic

Are the coyote attacks in the community caused by a single
individual or multiple animals?

2   Key Words

*Based on your proposed topic, brainstorm several
keywords to use in researching competitors in your
industry area.*

Coyote

Wildlife DNA Testing

Wildlife Forensics

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Who's the Competition? Capture Sheet

Continued

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3 Key Competitors

For this competitive landscape analysis, you will be searching for potential industry competitors, as well as possible competition from university researchers or community science initiatives.

	Description of Potential Competitors	Identified Competitors
a	**Industry Competitors** Industry competitors are commercial companies that sell DNA identification products. Use the search terms you identified above to perform an Internet search for companies offering products for sale that are related to your proposal. Add the names of these companies to the competitor identification list below.	DNA Solutions Therion International
b	**Academic Institution Competitors** Academic institution competitors are colleges and universities that offer DNA identification products or tools to communities or individuals. Make a list of several of the major universities or colleges in your community, region, or state. Go to the website for each academic institution and use the search terms you identified above to see if the institution is offering any products or services related to your proposal. Add the names of these academic institutions to the competitor identification list below.	UC Davis Veterinary Genetics Laboratory
c	**Community Science or Crowd-Funded Competitors** These competitors are informal or smaller entities that may offer DNA identification products and tools for more limited or specialized uses. These groups are harder to identify because of their smaller and more limited reach. Do a general Internet search for crowdfunding sites. Then in each site, use the search terms you identified to see if there are any related products offered by these groups. Add the names of any competitors to the competitor identification list below. You may find that there are no competitors in this sector.	None

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Analyzing the Competition Capture Sheet

Directions

Select a major competitor from your Who's the Competition? Capture Sheet to use in this activity. Use the Internet to research details about this competitor and their products and services.

Below is an example of a student answer.

Industry Competitor: Therion International

Location Where is this competitor located? Where are their products or services offered?	Saratoga Springs, NY
Products and Services What DNA identification products or services are offered by this competitor?	Genetic testing of more than 350 animal species Identifying fish species substitution Population genetic testing, sexing, subspecies identification, individual identification, etc., for a variety of birds and wild animals Breed identification and individual identification for dogs and other pets Parenting
Customers Which customers are using this product or service (Examples: scientists or researchers, commercial businesses, individual consumers, specific community or regional residents, etc.)?	Zoos Wildlife managers Research laboratories Breeders

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Analyzing the Competition Capture Sheet

Continued

Below is an example of a student answer.

Summary of Competitor	Compare this competitor with your group's project proposal.
Similarities with our proposal	Offers genetic identification of individual coyotes
Differences from our proposal	Focused largely on commercial and academic applications of DNA identification; does not focus on the direct-to-consumer market

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Social Media Capture Sheet

Directions

Choose one TikTok competitor and complete this chart, analyzing the strengths and weaknesses of that company compared to TicTok.

TikTok Competitor:

Strengths What do they do well? What services do they offer? Why do people choose to use this product instead of TikTok?	
Weaknesses What does TikTok offer that this competitor does not? What are some factors that make people not choose to use this product?	
Recommendations What could TikTok do to address the competitor's weaknesses? In which areas could TikTok gain users?	

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Who's the Competition? Capture Sheet

Directions
*As a group, use the following to identify some competitors
to your proposed product.*

1   Proposed Topic

2   Key Words

*Based on your proposed topic, brainstorm several
keywords to use in researching competitors in your
industry area.*

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Who's the Competition? Capture Sheet

Continued

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3 Key Competitors

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c	Community Science or Crowd-Funded Competitors These competitors are informal or smaller entities that may offer DNA identification products and tools for more limited or specialized uses. These groups are harder to identify because of their smaller and more limited reach. Do a general Internet search for crowdfunding sites. Then in each site, use the search terms you identified to see if there are any related products offered by these groups. Add the names of any competitors to the competitor identification list below. You may find that there are no competitors in this sector.	

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Analyzing the Competition Capture Sheet

Directions

Select a major competitor from your Who's the Competition? Capture Sheet to use in this activity. Use the Internet to research details about this competitor and their products and services.

Industry Competitor:

Location Where is this competitor located? Where are their products or services offered?	
Products and Services What DNA identification products or services are offered by this competitor?	
Customers Which customers are using this product or service (Examples: scientists or researchers, commercial businesses, individual consumers, specific community or regional residents, etc.)?	

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Analyzing the Competition Capture Sheet

Continued

Summary of Competitor

Compare this competitor with your group's project proposal.

Similarities with our proposal	
Differences from our proposal	

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Competitive Landscape Analysis Summary Report
Capture Sheet

Directions
Share your competitor research with your group. As a group, use your findings to complete the competitive analysis summary below.

1 What is your proposed topic?

2 How does your product compare to your competitor's?

Our Product	Competitor Product

Contrast	Similarities	Contrast

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Competitive Landscape Analysis Feedback Form
Capture Sheet

Directions
Provide feedback to groups on the competitive landscape
analysis they present about their proposed product.

Feedback for group:

Feedback provided by:

What is the biggest factor that makes the group's proposal unique from the competition?	
What things should the group highlight or emphasize in their proposal to make them stand out from the competition?	