Unit description

The Sports Data Analytics unit introduces students to the basics of data analytics in the sports industry, as well as concepts and techniques used in data analysis and visualization technology in the Amazon Web Services (AWS) Cloud. Students will gain experience running structured query language (SQL) queries and constructing a visual dashboard through guided demo simulations and hands-on labs. The foundational-level unit is designed as supplemental STEM\(^1\) and CTE\(^2\) content for educators to incorporate into their classroom curriculum.

The 90-minute unit is broken into two 45-minute modules of presentations, guided demo simulations, and hands-on labs activities using the AWS Management Console, Amazon Athena, and Amazon QuickSight.

Intended audience

This unit is intended for students and educators:

**Students:**
- At least 13 years or older
- Enrolled in participating AWS Spark secondary school STEM, CTE, and/or Physical Education classes

**Educators:**
- Teach STEM, CTE, and/or Physical Education classes to eligible secondary school students at a participating AWS Spark school
- Interested in supplemental curricular content designed to highlight the ways in which cloud computing technology is used in the subjects they teach

Recommended delivery method

This unit is designed to be facilitated by an educator in a classroom setting. If necessary, the unit may be delivered in a virtual or "flipped classroom" manner with minimal educator instruction.

Prerequisites

We recommend the following prerequisites for students and educators:

**Students:**
- Completed *Introduction to the AWS Cloud and Sustainability* unit

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\(^1\) Science, Technology, Engineering, Mathematics (STEM)

\(^2\) Career and Technology Education (CTE)
Basic understanding of how data can be visually presented in graphical and tabular formats
Basic understanding and practice in using probability to make decisions

**Educators:**

- Completed *Introduction to the AWS Cloud for K-12 Educators* training
- Reviewed and completed the Instructor Guide for *Sports Data Analytics* unit

**Technical requirements**

Educators and students must have:

- Access to a laptop or desktop computer running Windows, Mac or Linux, or a Chromebook
- Access to internet connection
- Access to the AWS Spark Canvas LMS
- Access to the following sites prior to teaching the unit:
  - [labs.vocareum.com](http://labs.vocareum.com)
  - [proxy*.vocareum.com](http://proxy*.vocareum.com)
  - [*.aws.amazon.com](http://*.aws.amazon.com)

**Unit and module objectives**

In the *Sports Data Analytics* unit, students will:

- Recognize the important role in which big data and the cloud computing play in sports analytics
- Conduct basic data analysis and data modeling in gaining business insights in sports industry
- Describe basic quantitative reasoning and techniques
- Use data models and visualization tools to support decision-making

This unit features two modules, where students should learn and recognize:

<table>
<thead>
<tr>
<th>Module 1: Introduction to data analytics in sports</th>
<th>Module 2: Visualization of sports big data</th>
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<tbody>
<tr>
<td>• Describe the basic concepts and techniques of data analytics.</td>
<td>• Compare different data models using selected variables for analysis.</td>
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<td>• Investigate the ways the AWS Cloud powers big data and sports analytics.</td>
<td>• Explore the Amazon QuickSight data visualization tools to gain insights in sports industry.</td>
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<td>• Explore Amazon Athena to retrieve relevant data.</td>
<td>• Create dashboard with graphs and charts to analyze various data models.</td>
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<td>• Describe data analytics workflow. Introduction to data analytics and AWS Cloud in sports</td>
<td>• Create a presentation using data visualizations to support decision-making</td>
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Unit outline

Module 1: Introduction to data analytics in sports (45 minutes)
- Introduction of data analytics in sports
- **Activity:** Role of AWS Cloud in sports analytics
- Role of sports analytics to improve spectators viewing experience
- Basics of quantitative reasoning techniques
- Overview of Amazon Athena
- **Simulation demo:** Explore Amazon Athena and SQL query
- **Hands-on lab:** Use Amazon Athena to work with big data

Module 2: Visualization of sports big data (45 minutes)
- Overview of data visualization, dashboards, and data tracking
- Interpret data and insights based on graphs
- Overview of Amazon QuickSight
- **Simulation demo:** Explore Amazon QuickSight
- **Hands-on lab:** Create a data dashboard with Amazon QuickSight