



STARTALK LEARNING PLAN

Designing Learning Experiences

Date: 07/26/2023	Grade Range: K 9-12	Targeted Performance Level: Adv. M.	Total Time for this In-person class of 1h. 20 min.
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Curriculum Connection

Program Can-Do Statement & Performance Assessment Task

Copy the specific program can-do statement from the curriculum (stage 1) and performance assessment task (stage 2) that you are working toward in this learning plan.

Interpretive Reading:

I can read article in STEM topics and understand the main idea and many details from what I have read.

Interpretive Listening:

I can watch video lectures or documentary in STEM topics, identify the main idea and many interesting details from what I have watched or listened to.

Interpersonal Oral

Communication:

I can understand how planes fly (airplane aerodynamics) and discuss problems and challenges of airplane design with partners.



Students know major parts of airplanes and are able to describe their major functions.

Students are able to identify forces effected on airplane during 1) take off/landing and 2) cruising.

Students are able to explain how planes fly (airplane aerodynamics) with the graph visual support.

Students can watch a documentary about history of aircraft building and recognize different approaches to designning airplanes.

Students are able to discuss and explain differences between experimental aircraft building and new era of airplane design.

Learning Episode: Warm-up activity

Number of minutes for this episode: 10

Lesson Can-Do Statement

Vocabulary

Check for Learning

“Russian in the Sky and Outer Space”

Program for High School Heritage Language Learners of Russian at the University of Washington

<p><i>Identify the lesson can-do statement(s) from the curriculum (stage 3) that are the goals for this learning episode.</i></p>	<p><i>How are culture and/or content part of the language chunks and words that learners will use?</i></p>	<p><i>What formative task will learners do to provide evidence that they met the lesson can-do statement?</i></p>
<p>Warm-up activity: Students know major parts of airplanes and are able to describe their major functions</p>	<p>Give definition of objects, constructions etc: good repertoire for the verb ‘to be’: конструкция представляет собой; фюзеляж является «телом» самолёта; оперение – это аэродинамические поверхности; оперением называются аэродинамические поверхности; Explain that something is somewhere: Grammar construction of locative + verbs in active and passive forms: в нём располагаются;</p>	<p>Students use the names of airplane major parts and are able to describe their functions correctly.</p>
<p>Learning Experiences <i>What sequence of activities will learners engage in before they complete the check for learning for this episode? How will learners move through a cycle of input, sharing, guiding, and applying in each episode? Consider how you might differentiate in order meet the needs of all learners.</i></p>		
<p>Students work in groups of four, each student takes his/her turn and pulls out a card with images of major parts of airplanes, call them and describe their major functions</p>		
<p>Materials Needed <i>What authentic resources, supplies, and other materials will you need to successfully implement this learning episode?</i></p>		
<p>A set of cards with images of major parts of airplanes for each group of students.</p>		

<p>Learning Episode #1</p>		<p>Number of minutes for this episode: ___20__</p>
<p>Lesson Can-Do Statement <i>Identify the lesson can-do statement(s) from the curriculum (stage 3) that are the goals for this learning episode.</i></p>	<p>Vocabulary <i>How are culture and/or content part of the language chunks and words that learners will use?</i></p>	<p>Check for Learning <i>What formative task will learners do to provide evidence that they met the lesson can-do statement?</i></p>

“Russian in the Sky and Outer Space”

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<p>Interpretive Reading:</p> <p>Students read Russian authentic articles about aerodynamics and understand main ideas and many details from it.</p>	<p>Forces: g, F drag, F lift: Силы, воздействующие на самолет в полете: <i>сила тяжести, сила сопротивления воздуха, подъемная сила, сила тяги.</i></p> <p>Terms of Aerodynamics: <i>Обтекаемость, непрерывный поток, поток газа, обтекаемое тело, профиль крыла, подъемная сила, сила сопротивления воздуха, низкое/высокое давление.</i></p> <p>Expressions (how forces affect on a body):</p> <ul style="list-style-type: none">• <i>Во время покоя на самолет действуют следующие силы...</i>• <i>После начала движения встречный поток воздуха обтекает крыло самолета...</i>• <i>Из-за (каких?) особенностей контура крыла самолета поток воздуха...</i>• <i>По закону Бернулли...</i>• <i>Таким образом, возникает ... и самолет...</i>	<p>1) Students draw two pictures of an airplane and write down forces effected on the body during a) take off/landing and b) cruising</p> <p>2) In pairs, students practice explaining each other how planes fly (airplane aerodynamics) with the graph visual support.</p>
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Learning Experiences

What sequence of activities will learners engage in before they complete the check for learning for this episode? How will learners move through a cycle of input, sharing, guiding, and applying in each episode? Consider how you might differentiate in order meet the needs of all learners.

Students read the article and demonstrate their comprehension by labeling pictures of airplanes with forces affected on them during take-off/landing and cruising. Then they work in pairs and practice to explain to each other how planes fly (airplane aerodynamics) with the visual support.

“Russian in the Sky and Outer Space”

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Materials Needed

What authentic resources, supplies, and other materials will you need to successfully implement this learning episode?

Article in Russian “Уравнение Бернулли” -- handout

<http://elementy.ru/trefil/21103>

Learning Episode #2

Number of minutes for this episode: 30

Lesson Can-Do Statement

Identify the lesson can-do statement(s) from the curriculum (stage 3) that are the goals for this learning episode.

Vocabulary

How are culture and/or content part of the language chunks and words that learners will use?

Check for Learning

What formative task will learners do to provide evidence that they met the lesson can-do statement?

Interpretive Listening:

Students watch a documentary about history of aircraft building and identify challenges of designing aircrafts.

Terms of Aerodynamics:

Обтекаемость, непрерывный поток, поток газа, обтекаемое тело, профиль крыла, подъемная сила, сила сопротивления воздуха, низкое/высокое давление. Модель аэроплана, аэродинамическая/экспериментальная труба/установка, обдуть/обтекать (модель) газом.

Students write down three “missed steps” in their notes.

Learning Experiences

What sequence of activities will learners engage in before they complete the check for learning for this episode? How will learners move through a cycle of input, sharing, guiding, and applying in each episode? Consider how you might differentiate in order meet the needs of all learners.

After answering preview questions about history of aircraft design, students list three “missed steps” between experimental aircraft building (late 19- early 20 century) and new era of aircraft building based on aerodynamic models. They look for those “missed steps” and make notes while watching the documentary.

Materials Needed

What authentic resources, supplies, and other materials will you need to successfully implement this learning episode?

Documentary “Дорога в небо”

<https://www.youtube.com/watch?v=pCgBEQwvyVQ>

Learning Episode #3

Number of minutes for this episode: 20

Lesson Can-Do Statement

Identify the lesson can-do statement(s) from the curriculum (stage 3) that are the goals for this learning episode.

Vocabulary

How are culture and/or content part of the language chunks and words that learners will use?

Check for Learning

What formative task will learners do to provide evidence that they met the lesson can-do statement?

Interpersonal Oral Communication:

Students answer questions and provide examples and reasons from the film and articles to support their opinions about challenges of new aircrafts design.

Terms of Aerodynamics:

Обтекаемость, непрерывный поток, поток газа, обтекаемое тело, профиль крыла, подъемная сила, сила сопротивления воздуха, низкое/высокое давление.

Модель самолета, аэродинамическая/экспериментальная труба/установка, обдувать/обтекать (модель) газом.

Students work in groups of four and ask each other questions based on their “missed steps” notes.

At the end, every group of students delivers a short presentation and explain differences between experimental aircraft building and new era of airplane design in a formal style to the entire class.

Learning Experiences

What sequence of activities will learners engage in before they complete the check for learning for this episode? How will learners move through a cycle of input, sharing, guiding, and applying in each episode? Consider how you might differentiate in order meet the needs of all learners.

Students work in groups of four and discuss differences between experimental aircraft building and new era of aircraft manufacturing (based on aerodynamic models and wind tunnel experiments). Students ask classmates about their understanding of challenges of new aircrafts design and why they have the same/opposite points of view on the topic as they do. They ask classmates to provide examples and reasons from the documentary and the article to support their opinions. Then each group of students summarize their discussions in a formal style to the entire class.

Materials Needed

What authentic resources, supplies, and other materials will you need to successfully implement this learning episode?

N/A

Post-Lesson Reflection

“Russian in the Sky and Outer Space”

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After implementing this learning plan, consider the following questions while reflecting on the successes and challenges of the lesson:

- What were the strengths of the lesson? Which activities helped to maximize the learning?
- Did all learners meet the goals of the lesson? Why or why not?
- What could you do to improve this learning plan if you address these lesson can-do statements again?