Integrated lesson plan by **STEAM**

School	Teacher	Grade	Duration
Vilnius Zemynos gymnasium	Asta Navickaite	3	45 min

Subjects

☐	Lithuanian	☑	English	☐	Geography	☐	Physics	☐	Religion	☐	Arts	☐	Theatre
☐	Mathematics	☐	Russian	☐	Citizenship	☐	Chemistry	☐	Ethics	☐	Photography	☐	Others
☐	German	☐	History	☑	Biology	☐	Technologies	☐	Physical Education	☐	Dance		

Skills and competencies

☐	Initiative	☐	Leadership	☐	Creativity	☐	Complex problem solving
☑	Responsibility	☑	Cooperation	☑	Communication	☐	Cognitive flexibility
☐	Autonomy	☑	Critical thinking	☐	Emotional intelligence	☐	Others

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Lesson/Project topic	Task/problem to solve	Assessment methods
Energy transformations in a cell: photosynthesis	Revision lesson. Using tablets or mobile devices, the pupils will apply the knowledge of photosynthesis obtained, will link adaptation of plants to make this process more effective (assimilation, covering and circulation).	Conversation, discussion, writing, reading, thinking, independent work. When assessing, active pupils' participation in the lesson shall be taken into consideration, as well as their ability to analyse and summarize the teaching material. The activity of a pupil is assessed by a mark.

Notes

	Activity description	Time	Teacher	Resources	Inclusive teaching	Teachers' notes
Lesson structure	Introduction • Organizational part; • Introductory part. Revision;	1 min 5 min	Brief introduction. Topics, related to material on photosynthesis, which have been studied previously, before are reminded in short. https://www.youtube.com/watch?v=LEQqd91uWsY	• Tablets • Students' notes • Textbooks • Computer • Projector **Key sources.** S. Mader "Biologija" (*Biology*) Part I J. Kadžiauskas "Ląstelė – gyvybės pagrindas. Medžiagų apykaita ir pernaša" *(A Cell is the Basis of Life. Metabolism and Transportation of Materials")*	Listening, watching, memorializing material emphasized by the teacher and which must be known. The pupils will memorialize and apply the knowledge held better doing tasks in writing.	Presentations are used
	• Topic and aim of the lesson;	5 min	Presents the aims and the topic of the lesson.		The pupils get acquainted with the course of the lesson intended and principles applied.	Presentation is used, pupils are encouraged to go to Google Forms platform

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					The pupils are empowered to perform active work through understanding the aim of the lesson.	
	Main part (revision through assignments being performed)		A slide is demonstrated on the screen and principle of work explained how to perform the first part of the questionnaire of the assignment notebook.		The pupils are engaged in the work with the electronic notebook of assignments, are answering in writing short questions of part I. The pupils are trained to answer purposefully and correctly general questions related to the photosynthesis process.	After the time devoted has elapsed, correct answers are displayed on the screen. The pupils mark their mistakes independently and self-assess themselves by the points scored.
		5 min	The teacher monitors the work of pupils, advices, consults		The pupils are engaged in the work with the electronic notebook of assignments. They will improve their knowledge on the layout of cells of wood material and bast in the stem and roots of plants, and consolidate their ability to recognize a vascular bundle.	After the time devoted has elapsed, the answers are discussed orally. The pupils mark their mistakes independently and self-assess themselves by the points scored.
		8-10 min	The teacher reminds the importance of plant circulation tissues to the photosynthesis process, urges starting the work with the questions from Part II of the assignments.		The pupils are answering in writing the questions of the structural assignment.	

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		8-10 min	Photosynthesis scheme is displayed in the presentation slide. The teacher explains that according to this scheme, the pupils must answer to the questions from Part III and reminds that each question is evaluated by points, which allow understanding to what extent the pupils must formulate their accurate answers.		The pupils are answering in writing the questions of the structural assignment. They will apply the knowledge obtained about light and dark reactions that take place during the photosynthesis, indicating / recognizing a certain place of a cell / organelle. They will explain the significance of the photosynthesis by providing 1 argument.	After the time devoted has elapsed, the answers are discussed orally. The pupils mark their mistakes independently and self-assess themselves by the points scored.
	Conclusions • Consolidation • Feedback/self-assessment	2 min 5 min	The teacher displays state maturity examinations (VBE) and VUP requirements, what pupils must know about energy transformations, related to photosynthesis. The teacher encourages to perform self-assessment individually on the Google Forms platform.		Attentive listening of pupils. Will be able to self-assess critically the knowledge obtained during the lessons, performing homework assignments and electronic assignments (egzaminatorius.lt). The pupils perform electronic self-assessment. They are allowed to understand what they understood, learnt by their individual capabilities. They	

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	• Summary and homework • The end of the lesson	1-2 min 1 min	The teacher gives review on the assignments performed, emphasizes the most common mistakes and displays her pleasure concerning things mastered by the pupils best. The teacher informs that homework is uploaded in the e-diary (it is the link to Action bounds platform). It is announced the end of the lesson		get acquainted with their weaknesses (to be improved) and strengths. Encouragement takes place to assume responsibilities for learning outcomes and progress.	

Feedback	How?	When?
	Further discussions in biology lessons	According to study program

Self-evaluation	Individual self-assessment on the Google Forms platform. It is allowed to understand what the pupils understood, learnt by their individual capabilities. They get acquainted with their weaknesses (to be improved) and strengths.

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