



Erasmus+

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# SCIENCE IS ALL AROUND US

**Theoretical Lyceum "Sfântu Nicolae" Gheorgheni  
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# Environments of Hybrid Learning



## *Blended learning (b-Learning)*

**Hybrid education** (developed by Clayton Christensen and Michael B. Horn) uses technology to enhance learning in an **online** and **face-to-face** environment - *blended learning*. In this way, it promotes the **differentiation of** teaching and learning - time, place, way and pace - so that students learn more and better.

This type of teaching implies the **reorganisation of the classroom** and the way the teacher manages it, as moments of interaction and collaboration should be created among students, who assume themselves as creators of their own learning, with the use of technology.



## - *Blended learning (b-Learning)*

- **Trends in 21st Century Education**

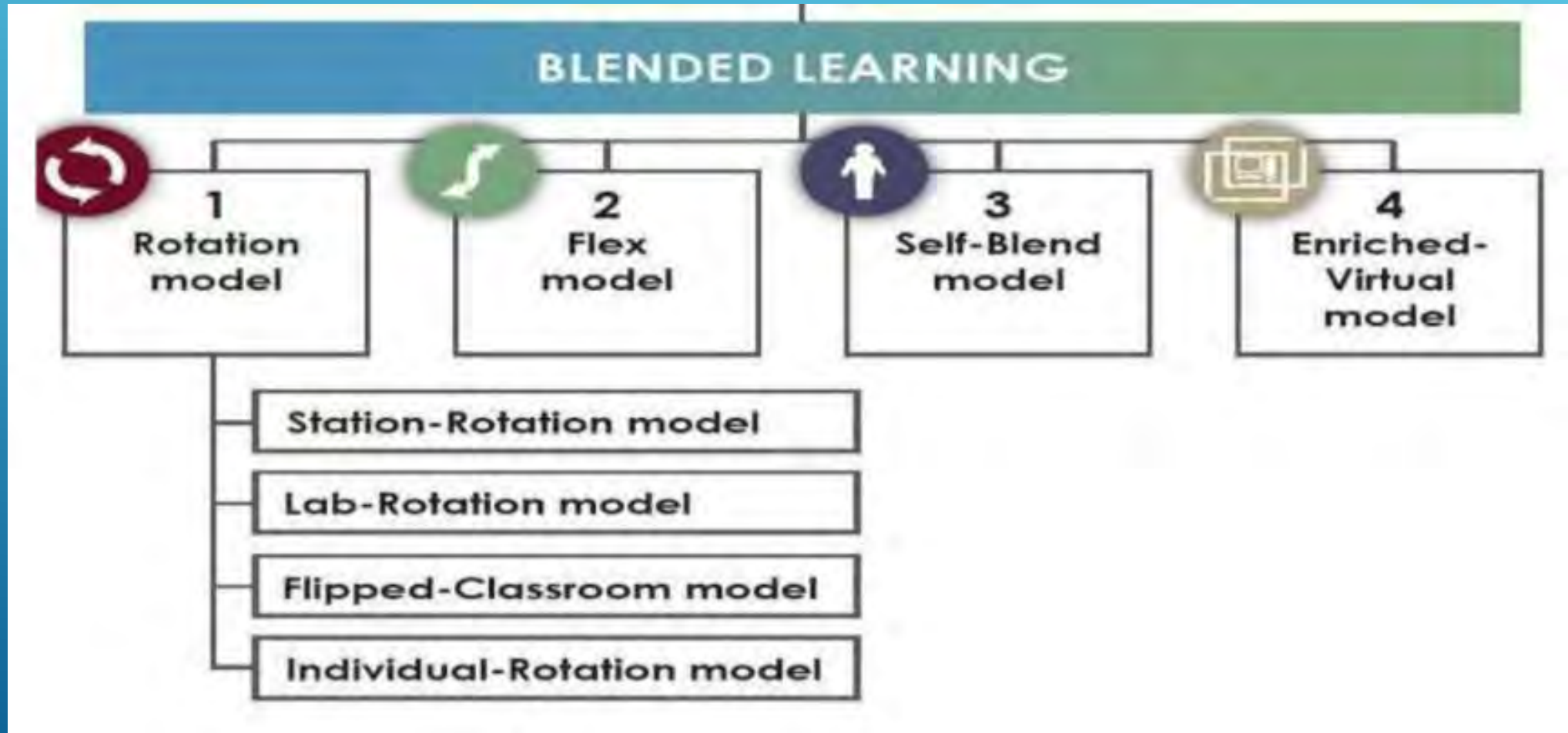
- Mixture between **face-to-face teaching** and **online teaching**.

Face-to-face: The process takes place in the classroom, where students interact with each other to exchange

Online: uses digital media so that the student has more autonomy in their learning.

→ Learner-Centred

Within this hybrid learning modality there are two subcategories: sustained models, which hold characteristics of traditional education, and disruptive models, which aim to break with the traditional educational model.



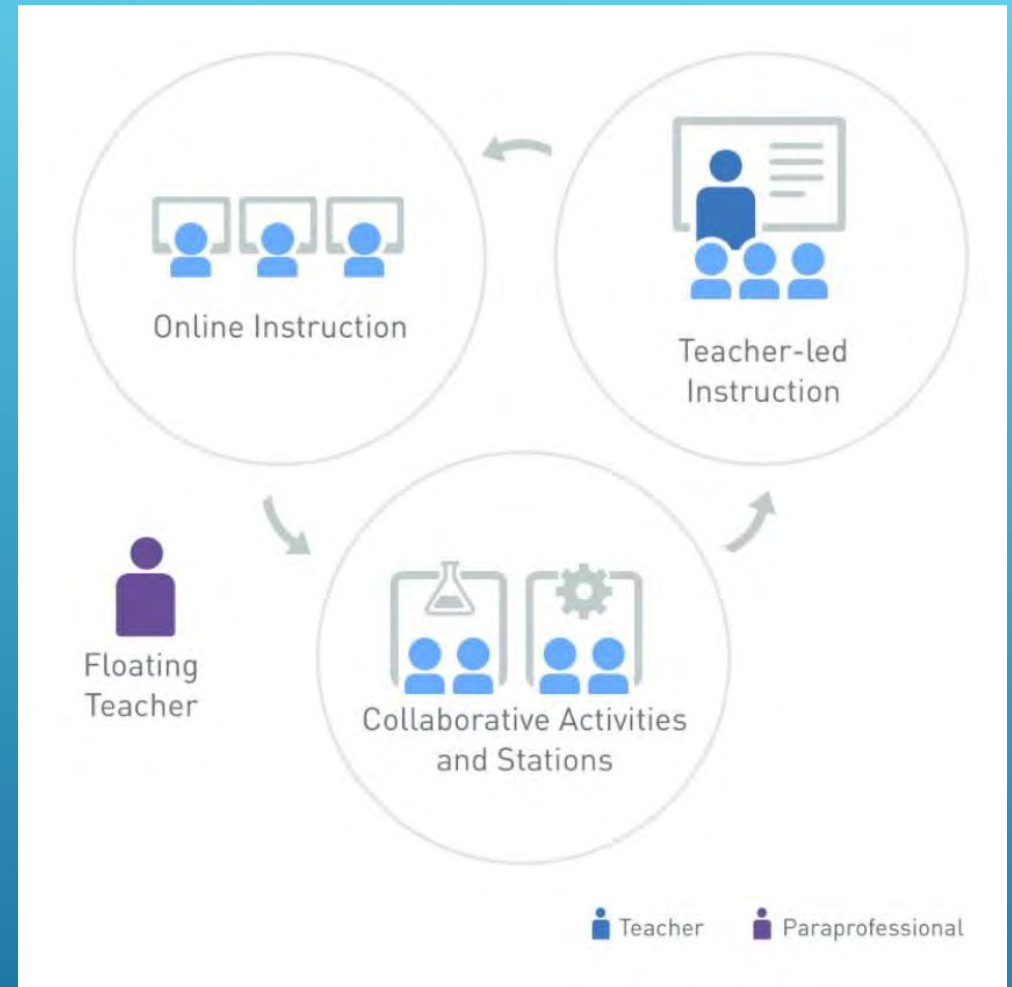
# Inverted Classroom

- The *Flipped Classroom* model reverses the traditional relationship between class time and homework.
- In this hybrid learning modality the student studies the content before the class, in order to prepare for the later activities.
- In this way, the student brings a baggage of knowledge to class and shares it with the rest of the class.



# Rotation by Stations

- The Station Rotation model allows students to move around the stations on a fixed schedule, where at least one of the stations is an online learning station so that students can have more autonomy.



# ROTATION BY STATIONS

The class is separated into groups that go through stations with micro-learning.  
The sub-themes of the stations complement a single study theme.  
At least one of the stations must be online.

## TEACHER

Helps students

## ONLINE STATION

video lesson  
digital platform  
Simulation  
Digital form



## INDEPENDENCE

The stations must be independent of each other

## STUDENT

Knowledge sharing

## OFFLINE STATION

Game  
Search  
Project  
Text analysis  
Infographic  
Challenge  
Experience



# Flex

- The Flex model allows students to move in fluid schedules between the learning activities according to with their needs.
- Online learning is the backbone of student learning.
- Teachers provide support and instruction in a flexible manner and according to the need, while students work on the curriculum and content of the course.
- This model can give students a high degree of control over their learning.

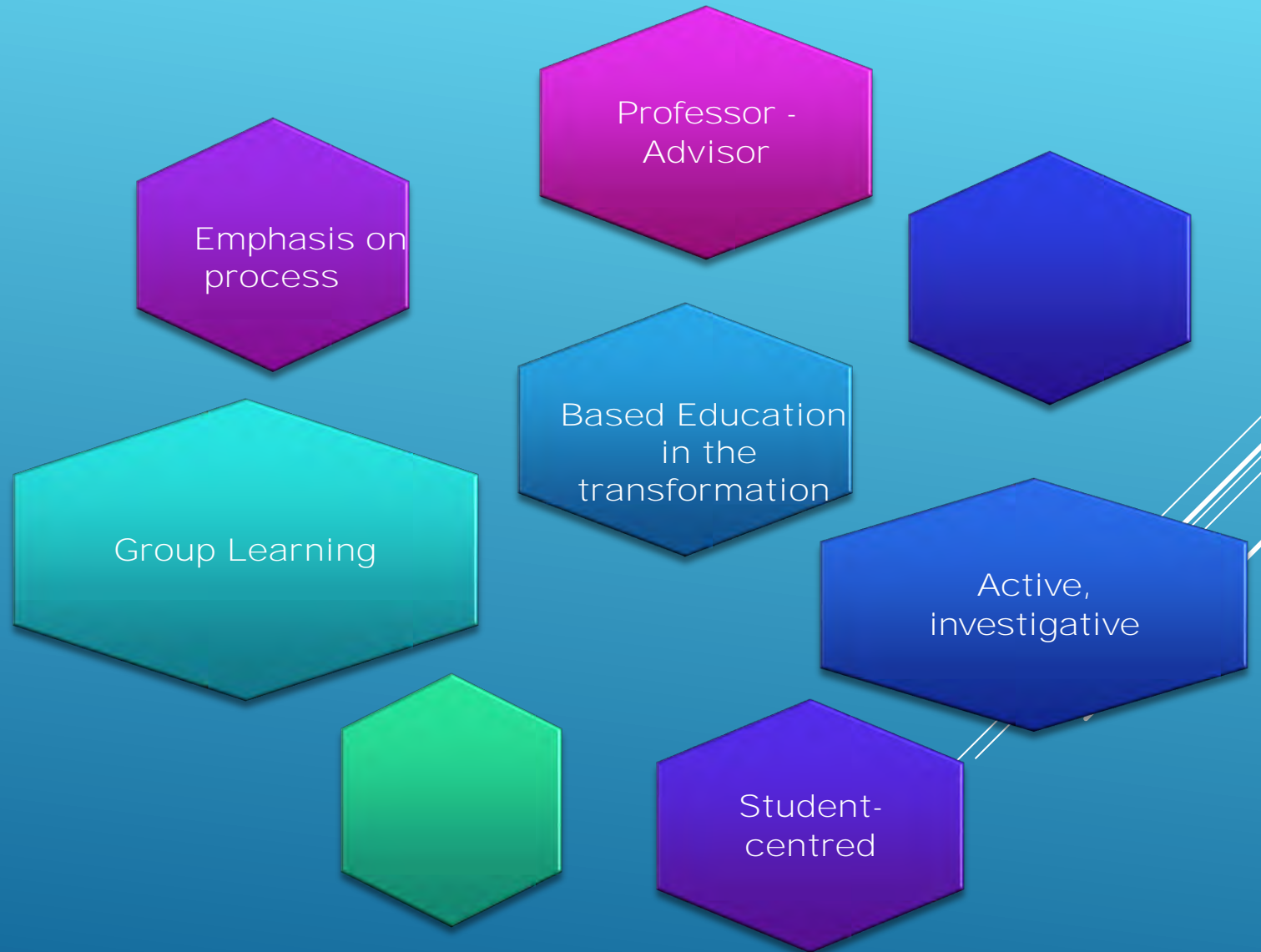


Source: <https://www.blendedlearning.org/models/>




# ADVANTAGES OF HYBRID EDUCATION

Hybrid education can be a transformative and enriching strategy due to the flexibility of the strategies that can be adopted.

The biggest advantage of hybrid education is the involvement and freedom of students, giving them autonomy to learning process.



Discipline	Mathematics			Year
Duration	( 3 ) Lessons   ( 90 ) Times			No. of Students
Hybrid model	( x ) Inverted Classroom	( x ) Flex Model	( ) Self-Blend Model	( ) Enriched Virtual Model
	( x ) Rotation by stations	( ) Rotational Laboratory	( ) Individual Rotation	
Theme/ Topic and Sub-Topic				
Geometry Polyhedra. - Properties. - Planning.				
Essential Learning/Competencies				
Identify pairs of parallel faces and pairs of perpendicular faces. Formulate and test conjectures by identifying regularities in the set of polyhedra involving their elements and express them using everyday language or through algebraic expressions. Justify relationships between elements of polyhedra using their spatial organisation, presenting and explaining reasoning and representations. Identify and construct solids from their planograms.				

Moments	spaces	Activity	Resource	Duration	student role	teacher's role
1st	Flipped classroom	Collection of information on the topic.	Computer Journal	50 min	You should review and research on polyhedral geometric solids and their elements. You must register.	Indicates the topic, objectives and information roadmap to search, namely from videos, informative text, power point ,, books...
2nd	Flex	Class group debate/systematization of information collection carried out by students	Painting	40min	Answer the questions posed by the Teacher and clarify doubts raised by students.	It poses questions and clarifies doubts, prejudices and simultaneously synthesizes the contents by building a map of concepts on the board.
3rd	Rotation by stations	<b>1st station</b> The manipulable geometric solids and a worksheet are available: 1. Identification of solids. 2. Polyhedra and non-polyhedra. 3. Relate the number of faces, edges and vertices of a prism and a pyramid to the base polygon. 	manipulable material Work sheet	45 min	Using manipulatives and the form, it allows the student to relate the number of faces, edges and vertices of a prism and a pyramid with the base polygon.	The teacher will go through the various stations in order to motivate, clarify, question, promote mathematical communication and guide the work.
		<b>2nd station</b> Several flat patterns of geometric solids are available. 1. Cut out the flat pattern of a solid. 2. Fold in the indicated parts. 3. Paste in the indicated location. 4. Identify the constructed solid. 5. What are the characteristics of this solid? 	. Various flattening of geometric solids - Scissors, - glues	45min	It allows the student to know the flatness of solids and from their manipulation and construction, to develop the concepts of faces, edges, vertices and shapes.	
		<b>3rd station</b> It is proposed to carry out the digital resource: <a href="https://www.geogebra.org/m/ghQe2gbW">https://www.geogebra.org/m/ghQe2gbW</a> with questionnaire. <a href="https://www-geogebra-org.translate.goog/m/ghQe2gbW? x_tr_sl=pt&amp; x_tr_tl=en&amp; x_tr_hl=en&amp; x_tr_pto=sc">https://www-geogebra-org.translate.goog/m/ghQe2gbW? x_tr_sl=pt&amp; x_tr_tl=en&amp; x_tr_hl=en&amp; x_tr_pto=sc</a> 	Computer	45 min	From a dynamic and interactive resource, it allows the student to know the geometric solids with examples of representative figures, an explanatory video about the characteristics of solids and a sequence of activities and interactive questions.	
		4th station digital resource Khan exercises are proposed Academy <a href="https://pt-pt.khanacademy.org/math/5ano2020/x63996eb39621e6b2:geometria-e-medida#x63996eb39621e6b2:solidos-geometricos">https://pt-pt.khanacademy.org/math/5ano2020/x63996eb39621e6b2:geometria-e-medida#x63996eb39621e6b2:solidos-geometricos</a>	- Computer	45 min	The student performs exercises to consolidate their learning. You can also view video / or information if you answer incorrectly.	
4th	Flex	In conjunction with the ICT discipline, it is proposed to create an infographic, using Canva . Which will be posted in the different 2nd cycle classrooms. Example <a href="https://www.canva.com/design?create&amp;type=TACQ-jGq9fY&amp;template=EAEwbEhQTRY&amp;category=tACFat6uXco&amp;analyticsCorrelationId=e6355b01-6cea-480c-a2d0-9a081430d5e9&amp;schema=web-2">https://www.canva.com/design?create&amp;type=TACQ-jGq9fY&amp;template=EAEwbEhQTRY&amp;category=tACFat6uXco&amp;analyticsCorrelationId=e6355b01-6cea-480c-a2d0-9a081430d5e9&amp;schema=web-2</a>	Computer	90 min	In pairs, students will create an infographic about the characteristics of a polyhedron	The teacher moves between the groups, clarifying doubts and motivating them to complete the work.

Evaluation
<b>Formative</b>
<p data-bbox="412 449 845 492"><b>Quizzes or google forms.</b></p> <p data-bbox="412 535 1477 578"><a href="https://quizizz.com/admin/quiz/6239fcd5b011ba001d435a7a">https://quizizz.com/admin/quiz/6239fcd5b011ba001d435a7a</a></p> <p data-bbox="412 578 1082 621"><a href="https://quizizz.com/join?gc=34999781">https://quizizz.com/join?gc=34999781</a></p> <p data-bbox="412 778 687 821"><a href="https://joinmyquiz.com">joinmyquiz.com</a></p> <p data-bbox="1057 692 1592 892">invite via game code <b>1. Ask the participants to open</b> <b>2.And enter this code</b> 3499 9781</p> <p data-bbox="412 935 1082 978"><b>Record in the direct observation grids.</b></p>

Thank you!



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