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2020-1-HU01-KA203-078810 - Poly-UNiverse in Teacher Training Education - PUNTE

PUNTE course – J. Selye University, Komárno

Academic year 2021/22, summer semester

Subject: Methods for developing logical thinking

Code: KPP/UPVdm/MAT9/15

Type of lesson: practice/seminar

Number and duration of lesson: 10 lessons, 5 weeks, 90 min/week

Course description:

The PUNTE course will be offered at the Faculty of Education JSU in the academic year 2021/22, in the Teacher Training for Primary Education (TTPE) study programme. The content of the PUNTE course will be determined by the teachers participating in the PUNTE project. The participants of the course are students of the TTPE, master study, 2nd grade.

Number of students: 15.

The course aims:

- to show students how the Polyuniverse toolkit can be used in an experience based learning method that allows for differentiated development. The course aims to create a learning-teaching environment through which students will recognise that the Polyuniverse is a tool for motivating and developing creative qualities in the teaching of different subjects.
- to prepare students to apply the Polyuniverse to teaching using different approaches,
- to develop students' abstract thinking, logical thinking and artistic sense, analytical skills, spatial vision, problem-solving and modelling skills through the use of play in the course.
- to develop the student's creativity and ability to work independently by inventing new tasks.

Structure of the course:

1. *Introduction* – getting to know the elements of the Polyuniverse game family, description of their characteristics and artistic background. Theoretical background of the possibilities of its application in the teaching-learning process (2 lessons)

2. *Combinatorics* - the application of the Polyuniverse to the development of combinativity, methodology for teaching combinatorics. Exercises on combinatorics (2 lesson)





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3. *Geometry* - using the Polyuniverse to teach geometry, methods, geometric problems (2 lessons)
4. *Logic* - developing abstract, logical thinking and analytical skills through the Polyuniverse. Complex, interdisciplinary problems that can be solved using the Polyuniverse (2 lessons)
5. The role of play in the teaching-learning process in general. Demonstration of game-based methods through the Polyuniverse toolkit. Polyuniverse and art. Teaching/learning through art (2 hours)

Content of the course:

1. Introduction - square, triangle, circle, shapes, colours, set concept, properties. Set theory, methods of ordering and classification in solving problems.
2. Combinatorics - basic concepts explained and illustrated using the Polyuniverse. Order of elements, all possible cases, number of cases under a given condition, selection of elements, selection of elements under a given condition.
3. Geometry - square, triangle, circle forms, constructing shapes and their properties. Problems of different levels of difficulty for each grade (1-4) of primary school pupils. Plane geometric transformations, construction of shapes. Calculating the perimeter and area of geometric shapes using the Polyuniverse game.
4. Logic - basic concepts, basic elements of logic, logical problems, interdisciplinary problems to develop thinking. Physics and chemistry tasks.
5. Games - using didactic games for learning. Different games for the acquisition of mathematical concepts and the development of pupils. Inventing games, creating game rules. Applications of the Polyuniverse kits through games.

