STEAM &Sports

Lesson 4 - From idea to realisation

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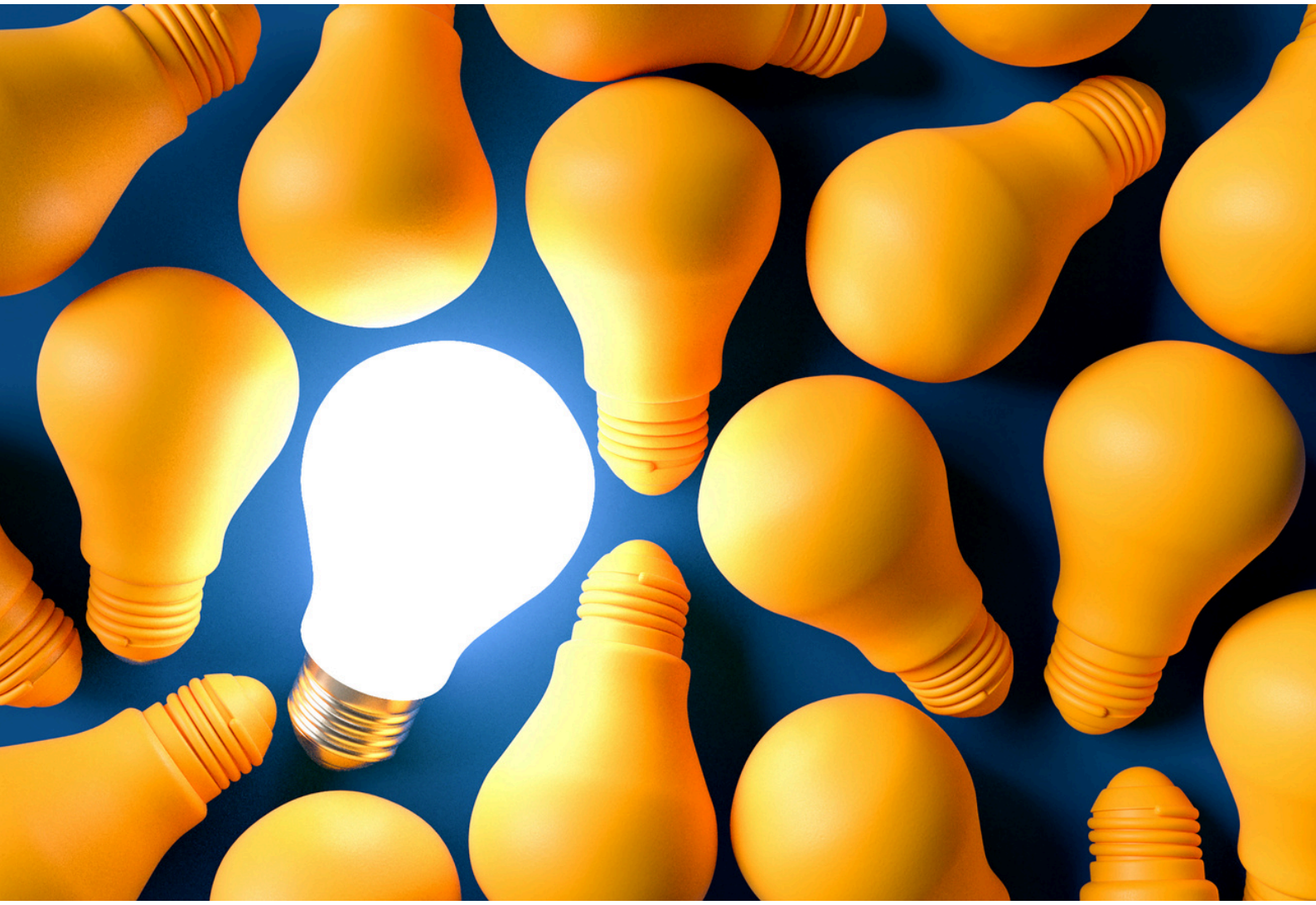
From idea to realisation

Concept

This lesson should include some of the following concepts:

1. Technology - Students can use fitness trackers to analyze their results when crossing a sports field that they have designed;
2. Engineering - Students should conceive and design a sports field and its elements and, if possible, display it in an appropriate computer program (Sketchup...);
3. Art - Students design polygon elements of various shapes and forms.
4. Mathematics – Students measure length, height, shape, distances when making props and planning the polygon;

Sports – Students develop their motor skills, perform various exercises.



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Learning objectives and Outcomes

1. Objectives:
   a. - Students plan activities and sequences of actions that will lead to the construction of the polygon;
   b. - Students perform exercises on a polygon they have built themselves and develop sportsmenship.
2. Outcomes

Students will be able to:

a. use the internet to search and access online resources;
b. design and draw a simple sports field using a computer program;
c. create field elements using a variety of materials and tools;
d. collaborate with other students;
e. solve problems in a creative and innovative way;
f. develop a sense of cooperation and team spirit and an awareness of the importance of a healthy lifestyle;
g. independently improvise a training ground from materials they have in their immediate surroundings;
h. organize their leisure activities effectively and meaningfully
i. develop team spirit and togetherness.
j. development of awareness about the importance of recycling and its role in life protection.

Methodology

Planning: students jointly develop ideas for the polygon, allocate tasks and make decisions about materials;

Construction: students use different tools and materials to realize their ideas;

Testing: students try out the polygons and make necessary changes;

Active learning: students are active participants in the entire process, which improves their memory and understanding;

Motivation: through play and practice, students are further motivated to learn;

Skill development: students develop creativity, cooperation, problem solving, critical thinking;

Application of knowledge in practice: students see how the acquired knowledge can be applied in real life;

Evaluation: students reflect on their work and provide feedback.

Individualization: each student can contribute to the creation of the polygon according to their abilities (student with motor difficulties draws sketches of the polygon; student with visual impairment can describe what the element should look like; student with learning disabilities can be in charge of counting, measuring or searching for certain materials...)
The emphasis is on all students having an important role and that everyone feels accepted and enjoys the activity

Educational standards in connection with sports

problem – solving,
empathy and communication,
teamwork,
motor coordination,
group interaction,
respect for diversity,
speed and flexibility,
anticipation,
autonomy in action,
strategic planning,
inclusion,
environmental care,
group challenges.

This lesson includes elements of these school subjects

Technique and technology (Tehnika i tehnologija), Informatics and computing (Informatika i računarstvo), Mathematics (Matematika), Art education (Likovno vaspitanje) and Physical education (Fizičko vaspitanje)

Timeframe

- 1st lesson - students exchange ideas, find solutions using the Internet or other resources (magazines, books, ...) and agree on the appearance and implementation of the elements they will make;
- 2nd lesson - They draw sketches, agree and use appropriate software to create the final appearance of the polygon and its elements;
- 3rd lesson - They plan, collect and sort the materials, tools and equipment from which they will make the polygon elements and build it;
- 4th lesson - Students set up the polygon and determine the propositions, refine the props and try out exercises on the polygon;
- 5th lesson - Students cross the polygon, measure time and record the results achieved.

Students Age

12-13 years

Material needed

cardboard boxes, plastic bottles, corks, sponges, styrofoam, paper, scissors, glue, string, computer, smart watch...

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Short description of the content

Students design a training ground, make drawings, choose materials, and create the elements that make up the training ground. They set up and test the training ground by performing exercises on it and measuring the time it takes to cross it. Finally, they compare the results and evaluate their success.

Sequence of Lesson

Engage (30 min): Students are given the task of designing a polygon that they could build themselves. They find ideas on the Internet, agree, exchange ideas about the layout of the polygon and its elements. They are thinking about how and from what materials they could make polygon elements. Students can divide into smaller groups and present their ideas at the end.

Explore (60 min): Students sketch the layout of the elements, determine their dimensions and transfer it to the computer. They get the final look of each prop and the entire polygon. What is the distance of props from each other, what is the dimension of the whole polygon. They choose the materials and accessories they will use.

Elaborate (60 min): Students make props from selected materials. They place the elements on the polygon and finish them. They determine the rules for crossing the training ground and try individual exercises.

Evaluate (45 min): Students test the polygon, measure the time needed to cross it, record the results and evaluate the correctness of the exercises.

Extend (15 min): Students organize a competition at the training ground.

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Tips for age group differentation (for older/younger kids than indicated in the lesson)

Younger kids (10 - 11): - the teacher gives several simple examples of props (bottle cones, hose hoops, box obstacles). Students in smaller groups draw one prop on paper or can use a template. They make simple props from recycled materials. The polygon is shorter by 3-4 obstacles.

Older kids (12 - 13) - Students themselves design the layout of one segment of the polygon (e.g. an obstacle to jump over, crawl under something, throw a ball into the goal) They draw a plan of the props. They choose the material themselves.

The oldest (14 - 15): They design the layout of the entire polygon. They draw a complete plan on A3 paper (sketch with legend). They procure the material themselves. They organize a competition (time, points, jury).

To which SDG(s) does the lesson relate most

SDG 9. Industry, innovation and infrastructure
technical drawing, spatial planning, design

SDG 12. Responsible consumption and production
recycled material, independent production, saving money.

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What Inclusivity and Accessibility measures can or should the teacher take for this lesson

Drawing props - draw with the help of an assistant or friend, color the given shapes instead of drawing them themselves, combine collage techniques if it is easier for them than drawing

Making obstacles - use templates, stickers and already cut out shapes

Mastering the polygon - participate in a trial version of the polygon with fewer props, have more time or a task of lower complexity (e.g. Pushing a ball instead of carrying it)

Competition - time keeping, cheering, recording

Teamwork - in planning the polygon, helps in choosing the team name, color for the props.

Objectives:

Through teamwork, students design, draw and make props for the polygon, then participate in mastering the polygon through games and competitions.

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