NEW METHODOLOGIES IN STEM EDUCATION

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(Adaptive e-learning systems)

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think up digital

1. INTRODUCTION

- Think Up Digital is NGO dealing in digital topics

- Our goal is to improve overall digital competence

- Dealing in topics of STEM education

- Online platforms for education

- Web sites, Frontend and Backend development, QA

- We organize courses for teachers in different locations

- KA1, KA2, KA3 Erasmus projects (SCH, VET, ADU, YOUTH)

- Find us (follow) on Facebook, Instagram, Linkedin

Our staff: tthee CS Engeneers, one QA Engineer, 4 CS highschool teachers

- http://thinkupdigital.org/

1. ROBOLOCO GAME

- Mobile game for computational thinking

- Roboloco is a racing game for

- It helps students to understand concept of coding

- Students learn coding in Python

- Participants compete to each other

- The student with best code wins the race

- Great tool for homework

- https://teducativas.madeira.gov.pt/roboloco/en

2. HICLASS- HYBRID AND INNOVATIVE DIGITAL AWARE CLASS

Objectives

• Make the teaching-learning process more effective in the context of mixed and hybrid teaching;

• Enhance the key competence of students in developing an autonomous learning methodology of knowledge

• Use of digital technological tools as a way to access in the extent of information available on the Internet.

Results

•Digital Duty Manager profile

•Repository of online teaching methods and paths

•Development of a peer learning framework for Teachers

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2. HICLASS– HYBRID AND INNOVATIVE DIGITAL AWARE CLASS

New teaching methodologies:

1. Hybrid debate

(Researcher is providing relevant materials for the debate - Languages, Social sciences)

2. Project based learning

(Researcher is helping in online research for the project – All subjects)

3. Coggle-Cognitive maps

 (Researcher is providing relevant materials from books - Social sciences)

4. Hybrid laboratory

(Researcher is helping in the experiment with ideas - Biology, Chemistry, Physics

Robot programming, Logistic)

Researcher-student online

3-5 students in a team

Resource: https://hi-class.erasmus.site/

LESSON PLAN FOR BLENDED/HYBRID DEBATES

1.Pre-debate

Stages (rules) :

The clear rules and criteria are set in order to have an easy and non-biased process of evaluation.

•Formation of teams, rules explained , designating a space for the speakers , mocking debate

•There are two teams –affirmative and negative.

•We are going to use classical debate form and add a twist to it with introduction of two online members thus actively involving all the participants and simultaneously working live /online.

•Each team consists of three members who are on the site/live and two members who are online .

•The three team members of affirmative and negative teams are Speaker 1,Speaker 2 and Speaker 3 .

•They have specific roles according the classical debate protocols.

•The online members are designated the roles of **Researcher** and **Coordinator** and they do research on the motion in the time of 15 minutes and then coordinate the onsite team members respectively (time may be prolonged or shortened depending on the online) .

2. DURING DEBATE

Step 1

Additionally there is a time keeper who announces the motion and then sets 15 minutes preparation time. They also call the partakers and signal starting and ending of the speaking time and keep order of speaking, exchange of the affirmative and negative team members.

Step 2

He calls: the 1st speaker of the affirmative team, ordering them to approach the front of the room ,introduce themselves and begin. Each member has limit of 3 minutes; time is measured and knocking once is an alarm at the 2nd minutes, knocking twice is the signal to wrap up and finish.

Step 3

Then the negative team has 60 seconds to prepare and the 1st speaker of the negative team is called up.

The **steps 4,5,6,7** are completed in the same fashion and the scoring and comments are filled out timely by the judges.

Step 8

When all the speakers are done and the final speaker is scored ,before the winner is announced each team has 90 seconds to work on and give feedback and advice to the other team.(Step 11 –optional)

To score well one must be courteous, constructive and kind.

Step 9

The teams express their opinion about the opposition

Step 10

The winner is announced

POST DEBATE

The clear rules and criteria are discussed in order to have an easy and non-biased process of evaluation.

The two online members are the new blended /hybrid component we introduced in the otherwise classical debate. Their roles are absolutely paramount as they are the pillars of the flow of the debate with the efficient, speedy, clear, concise, organized input they bring and the non-confusing, smooth and efficient coordination with the information and ideas of the team on site.

Researcher is evaluated on basis of research

- **Quality(Google docs evidence)**

- **Clarity (of information)**

Coordinator is evaluated on the basis of :

- **Quality (of the coordination on site ideas and online research)**

- **Focus(smooth and efficient interaction)**

Debate Scoring criteria and Guidelines

1 Needs work **2-3** Acceptable **4** Average **5-6** Strong **7** Exceptional

Presentation

•Speaking

•Presence

Strategy

•Organization

•Rhetoric

Content

•Evidence

•Rebuttal

Teamwork

•Cohesiveness

•Behavior

Feedback

•**Helpfulness**

•**Respectfulness**

SUMMARY

"It's a passport to the world. Engineering is that base qualification that can take you anywhere."

R.Moran

THANK YOU

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