







No.4

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STEM workshop - an egg quiz

Monady morning we arrived at school and after some ice-breaking activities, Polish teachers divided us in two groups. While a group was learning how to program a robot, the other one had a quiz about chemistry, physics and eggs. They divided us in three teams made of students from different countries and we had a competition full of experiments. We analized different reactions between chemical elements and eggs. Some of them could have been dangerous, so we had to wear protections, like gloves. First of all we had to read and remember definitions of different parts of the egg and tell them to the leader who had to write them down. Then we wrote on an egg image its parts' names. In the 3rd experiment we had to understand between three eggs which one was row. Then we broke the row egg to understand if it could host an embrion or not. We wrote parts of the world on the egg, we spreaded on the egg some chemical elements to see their reaction. We also had to understand what kind of reaction those were. We've also calculated egg's density, we tried to understand between two test-tubes wich one contained albumen using chemical reactions and then we produced some glucose and proteins. At last, on Kahoot website, we had a quiz about what we did during this activity.

Luca Barbaglia and Giulia Magnoni Italy











IT Workshop

- how to program a robot

In the workshop IT we learned to program a robot that follows lines, turns on the lights and does more things. First of all we arrived at the classroom where the IT teacher was waiting for us.

We chose a computer to start connecting the robot with the PC, then when it was connected, we tried to turn on the lights to check if it was working. After that, we started to use different options as, for example, the car running forward using arrows. To finish the workshop, we tested the robots/cars on a race circuit following the black lines.

We enjoyed that workshop specially because we are studying Computer Science and we want to learn more about that In the future.



Sebatian Preda and Jose Pascual Spain







Handcraft Workshop in Osikowa Dolina

We took the bus to go to Osikowa Dolina Handcraft Workshop. When we arrived, we saw a beautiful shop full of handmade toys and decoration made with wood sheets in many different desings for example: rabbits, minions, birds and many more.

We were told how the flakes are made from Aspen trees, very common in the area, and that they grow quite fast, up to 2.5m per year. It is a way to give a chance to small pieces of wood that other way would not be used.

A young man explained us how to make the handmade toys and use materials to make them.

He took us at a room with tables and materials to prepare the handmade toys. A woman explained us the way to make a sheep toy. We used wooden flakes pretending the hair of the sheep, after that we added the eyes, the legs and the wool.

After that we made an Easter Palm. Easter Palm is a tradition in catholic countries, for Sunday Palm, firs day of Easter. We used two cardboard sheets,



we decorated them with a lot of flakes with differents colors. Next, the workshop teacher glued both and add a stick between the cardboards sheets. It was very interesting and made us laugh a lot. We never did it before.

Sebatian Preda and Jose Pascual Spain







The process of producing energy – visiting exhibits in the Centre of Science and Technology in Łódź

On Tuesday we went to Łódź by bus. Here we visited the Center of Science and Technology. It was a very big building that was used to produce electricity. On every level of the building there was a different theme you could explore, for example: deep space, nano technology, humans in space, etc. We got some time to look around and try the interesting science games.

The games where connected to chemistry, geography, astronomy and physics. We learned about the history of the building and also looked at some interesting things through a microscope. We took a little break in the cafeteria of the museum where we could eat and drink something.

After this we went to the planetarium that was located in the same building as the museum. We all got headphones so we could follow the explanation in English. First, they told us about stars and the zodiac signs. We could see the stars and beautiful illustrations projected on the screen that had the shape of half a globe. We also watched a film about exoplanets. We learned about the conditions needed for life to be able to exist. It was very educational and fun to watch.

Again in the same building, we went to the Leonardo da Vinci Exhibition. This was an exhibition where we could see all kind of builds based on the drawings and designs of the great Italian inventor and artist Leonardo da Vinci. This is where we saw the devices he designed to make work easier. We also saw his dreamy inventions like devices to fly with. The walls where decorated with giant drawings made by Leonardo and a lot of illustrations with the needed



explanation written next to it. At the end of the exhibition there was a little history lesson about Polish film. The first camera was apparently made by a Polish inventor.

We saw and learned a lot on our trip to the science center in Łódź. We really loved this activity and would recommend visiting it if you ever go to Poland.

Kelly Halbach & Margo Braeckman, Belgium

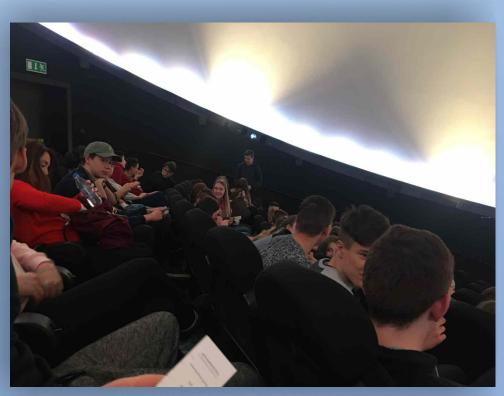






Undiscovered Worlds – educational film in the Planetarium in Łodź

On Tuesday we visited Planetarium in Lodz, a city not so far from Kamienica Polska, which is one of the most modern in all Europe. It has a spherical screen with 8K resolution. When we just arrived, everyone was interested and we were looking forward to enter. Inside Planetarium there were a lot of seats (110) and they were very confortable. When the film Undiscovered Worlds began all of us were concentrated in watching that: we learned a lot of things about space and planets. Before the film a guide showed us some stars and constellations and told us the most important information. The film talked about exoplanets, that represent an important point in the space research and



exploration. Exoplanet studies can give us the possibility to find new life on other planets and to try to live outside the Earth and the solar system. It was a fantastic experience and can help everyone to increase his own knowledge about space!

Niccolo` Buffoni and Andrea Caimi Italy







Leonardo da Vinci Exhibition – reflection of STEM skills

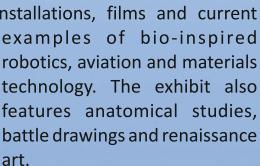
Leonardo Da Vinci (15 April 1452 – 2 May 1519) was an Italian Renaissance polymath. He not only created inventions but was also dedicated to painting, sculpting, architecture, science, music, mathematics, engineering, literature, anatomy, geology, astronomy, botany, writing, history and cartography.

When we went to Łódź, we visited Leonardo Da Vinci Exhibition "The Energy of the Mind",

where we saw works which included the first concepts of a car, bicycle, helicopter, glider, parachute, submarine, military tank, etc.

The exhibition was divided in three parts, in every one we could see different things, like historical models, interactive installations, films and current





The exhibition reflects the connection between creativity, critical thinking and problem solving.

Francesco Visigalli, Alberto Debin, Italy Jakub Miodek, Poland









MANUFAKTURA SHOPPING CENTRE

combining the old and the new

On Wednesday we went to Manufaktura - an unusual shopping centre in Łódź. It was very big and it was rebuilt on the base of an old industry. The place was once a series of factories producing various textiles. The original brick buildings have been renovated and some new ones have been



built. The inside is very modern and it contains a lot of different types of shops, like a supermarket, some sport article shops, some optical centre and computer shops. There is also a located section where you can eat in different kinds of restaurant and fast food. The outside of Manufaktura is composed by different types of architecture and it looks like a historical complex.

Simone Fuse & Riccardo Colombo Italy

Workshops at Częstochowa University of Technology

On Wednesday afternoon we went to Częstochowa to visit University of Technology. At the University we made three experiments about color changes of ph indicator. The lecturer demonstrated all three experiments. Firstly we mixed NaOH with HCl and using the titration technique we saw the color changing from transparent to purple. Then we put ammonia buffer into EDTA



and using the same titration technique, the color of the solution changed from purple to blue. And lastly we made one more solution of base and phenolphthalein and also using titration, the color changed to light orange or salmon. We enjoyed doing all three experiments which were very interesting.

> Kamile Maigyte, Gabija Zvinyte, Mazvydas Datenis, Titas Zibas







Museum of Iron Ore Mining in Częstochowa – history lesson of mining traditions

During the visit in Poland, we accompanied our quests on the trips and had a chance to see many interesting places we had not seen before. One of them was the Museum of Iron Ore Mining, which is the only of its kind, presenting the history and development of iron ore mining in Poland.



The museum is placed in Częstochowa, in the

park belonging to Jasna Góra Monastery. Despite the fact that this museum is a small area placed underground, there are a lot of

historical photos and monuments. Original machines and means of transportation are placed in the headings and chambers. The exhibition hall is divided into several parts and contains a full set of tools and machines used by miners in the past, for example miner's lamps and minerals. There is also a presentation of historic tools and methods of iron are mining.

There are also wax figures, which symbolize the miners.



The museum was opened to show the original sizes of the iron ore mines, which weren't as huge as the other mines, and to present the most typical model of iron ore mine.

Patryk Filipiak & Jakub Sarna, Poland







Educational visit to Auschwitz Birkenau Memorial and <u>Museum</u>

On Thursdays morning we went on a trip to Auschwitz – Birkenau Concentration Camp. A guide showed us around the concentration camp, barracks, crematorium, told us about history of the camp. In the barracks we saw living conditions of



those who had suffered there and it was sad and awful to see. People were brought here from all around the world. German soldiers told pseople that they are going to start a new life, but that was just a propaganda — they were either killed immediately or selected to be slaves of the camp. The elder, weak people and children under 14 were killed at the same moment they were brought at the camp. The chances of surviving were very low, but it was possible. Because of one person died so many innocent people - up to 1.5 million people from various countries. Although this part of the history is horrible, it was very interesting to visit this place and learn even more about the

history of Auschwitz concentration camp.



Kamile Maigyte, Gabija Zvinyte, Mazvydas Datenis, Titas Zibas Lithuania







History lesson in CRACOW

We went to Cracow on Thursday 22 March. First, we learned about the most famous legend: the Dragon of Cracow. The fearsome dragon terrorized Cracow, eating the livestock and the Cracow virgins. No one could defeat him, until a clever knight deceived the dragon by making it eat a fake sheep filled with hot spices. The dragon then drank the whole Vistula River and exploded. This legend was told near a statue of a dragon which breathed flames every five minutes. The Vistula River is the longest river in Poland, making this also something special to see in Cracow.

After that, we visited the Wawel Hill where our guide showed us the castle and the cathedral, she told us about all the legends and then we climbed our way up to the bell at the top of the Cathedral. The stairs got very narrow and we had to climb between the wooden supports of the cathedral. People with claustrophobia had to stay downstairs. Legend has it that if we touched the heart of the bell with our left hand, it could make our wishes come true. There was also a beautiful view of the city. We made our way down on another set of precarious stairs and then went even lower to the crypts, where the old kings are kept in sarcophagus. The special thing about these crypts was that the real remains of those kings laid there. After that we went to the courtyard of the palace, which was being renovated. We lost our guide while going to the courtyard.

Then, we went down the Wawel Hill to the Old Town, which is a UNESCO world heritage. We went to the main market square. Here, there is the tower of St. Mary's Basilica, the Cloth Hall and the Town Hall Tower. Every hour, 24 hours a day, live music is played to honour the trumpeter who was shot in the middle of his play while playing on the St. Mary's Tower. Another big eye catcher is the Cloth Hall, where there is a little market with different shops and a museum on the second floor.







History lesson in CRACOW

During our free time, we ate something in a restaurant on the Market Square. Even the restaurants gave us the feeling of being in an old, but stylish, building, as the restaurant was also built in the same gothic renaissance style. Then came the 2 - hour bus ride back to the hotel and hosting families.

Lauren Schouppe & Aline Saeyens Belgium









Our impressions of Poland

When we arrived on Sunday afternoon in Poland, it was really cold. We didn't mind the cold, because the nature looked wonderful with the snow on it. We were impressed by the beautiful nature with all the trees, lakes, animals... We saw at least 20 deers. That's really special because it's rarely to a lot of them in Belgium. The food was also good, especially lunches were very tasteful. We also learned something new about Polish food. For example, they like to drink a sweet beverage during their meal, that's something we're not used to, but we liked it. We also think that their favorite meal is chicken with mashed potatoes, because we ate it quite often this week, but it was delicious. We could write a

whole page about the people here, because they are so wonderful. Everybody here is very kind and funny. They are all trying to give us a great experience here and they succeed, because this was an amazing week. We're definitely going to miss everyone and we hope to see everybody again, maybe in Belgium for a big reunion.;)



Femke De Rouck and Hanna Van Cauwenberge Belgium







My impressions of the visit

During the visit in Poland we met a lot of friends from: Italy, Belgium, Spain and Lithuania. They are very cheerful and positive. We spent a lot of time together, we were singing songs, dancing, talking photos and a lot of stuff like this. On the first day we had ice-breaking activities at school and we got to know each other a little bit.

In our opinion our English improved, because we had to talk with our guests in English all the time. They were trying to teach us their national languages, it wasn't easy but now we can say 'I love you' in Spanish, Italian, Belgian and Lithuanian. It's really weird when you are listening to people who speak different language than Polish, you don't know what are they talking about so you are confused.

The most interesting trip we have participated in was a trip to Auschwitz and Cracow. Our international guests were really impressed.

During the exchange we had an amazing time. We got on very well with all



participants of the visit. Spending time together with peers from other countries is a great lesson of tolerance and friendship.

Ola Żurakowska, Julia Rogacz, Żaneta Litarska Poland







SUMMARY

During the ERASMUS + Learning/Teaching/Training Activities, organized in the framework of a project "Innovative Generation" by Liceum Ogólnokształcące in Kamienica Polska (19.03.2018 – 23.03.2018), students and teachers took part in various STEM activities, carried out in Liceum and in Częstochowa University of Technology.

All the workshops, lectures and laboratory experiments have been prepared and carried out by the teachers of Liceum with the collaboration of its partners – Częstochowa University of Technology and Teacher Training Centre (SOD in Częstochowa).

Students and teachers have also taken part in interactive games, connected with STEM subjects and laboratory experiments during the visit in The Centre of Science and Technology in Łódź.

Participants of the project have acquired and developed skills such as: creativity, critical thinking, problem solving, working collaboratively in teams and communication in English language.

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