IoT, Big Data And AI: Innovating STEM Teaching Through Strengthening Teacher Professionalisation

Welcome & Introduction
Thursday, 23 Sep 2021    I    13:30 – 15:00 CET
1. Introduction: School Coordinators & Partners, ASEF & ScienceScope
2. Who is Who: Participants & Schools
3. Icebreaker: Get to know each other
4. Programme
   • Timeline, Programme Elements, Framework & Pedagogy
   • Thematic Sessions & Technical Sessions
   • Peer-to-Peer Group Discussions
5. Teaching Modules Development
6. Roles & Responsibilities
7. Questions & Answers
1. Introduction
Coordinator & Partners

Coordinator

Mr Adam STEPINSKI
Teacher
Copernicus Upper-Secondary School in Tarnobrzeg
Poland

Partners

Mr Milan CHALUPNÍK
Teacher & Headmaster
Základní Škola, Seč, okres Chrudim
Czech Republic

Ms Jana VIDOVÁ
Teacher
Obchodná akadémia Roznava
Slovakia

Dr Andrea Molnarne LASZLO
Teacher
Márton Bálint Primary and Secondary School
Hungary

Mr Pavol TRUBAC
Teacher
Spojena Skola
Slovakia
ASEF – Project Management Partner

• Intergovernmental not-for-profit organisation established in 1997 and funded by the 53 ASEM Partners

• Only permanent institution of the Asia-Europe Meeting (ASEM) Process

• Project portfolio across Asia & Europe to connect civil society with government officials & policy makers

• Portfolio covering 7 themes: culture, education, economy, governance, media, public health and sustainable development

• Visit ASEF’s website to learn more: https://asef.org/
ScienceScope Team

Dr David CRELLIN
CEO
ScienceScope Ltd
United Kingdom

Mr Josh WRIGHT
Software Engineer
ScienceScope Ltd
United Kingdom
Founded in 1983, ScienceScope is an education technology company based in UK that focuses on linking digital technology with science.

The key aim is to give students and adults alike, the tools and resources to aid their growth with technology and to see change in digital education around the world.

ScienceScope developed the IoT for schools’ programme with research funding from Innovate UK, EXPO Live and IMDA in Singapore.

In collaboration with the BBC in the UK we developed the micro:bit (a small codeable computer for schools) and together with IMDA it created the digital maker programme to inspire students to be creative with electronic to solve real world problems.

Visit ScienceScope’s website to learn more: https://sciencescope.uk/
2. Who is Who: Participants
Participants Per Country
(Including Coordinators and Partners)

- Czech Republic: 9
- Hungary: 3
- Poland: 7
- Slovakia: 1
<table>
<thead>
<tr>
<th>No.</th>
<th>Country</th>
<th>Name of School</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Hungary</td>
<td>Szent Piroska Görögkatolikus Általános Iskola</td>
</tr>
<tr>
<td>2</td>
<td>Hungary</td>
<td>Lánczos Kornél Gimnázium</td>
</tr>
<tr>
<td>3</td>
<td>Poland</td>
<td>Liceum Akademickie Da Vinci</td>
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<tr>
<td>4</td>
<td>Poland</td>
<td>I Liceum Ogólnokształcące im. Kazimierza Jagiellończyka w Sieradzu</td>
</tr>
<tr>
<td>5</td>
<td>Poland</td>
<td>I Liceum Ogólnokształcące Collegium Gostomianum</td>
</tr>
<tr>
<td>6</td>
<td>Poland</td>
<td>Zespół Szkół Informatycznych im. Gen. Józefa Hauke Boska w Kielcach</td>
</tr>
<tr>
<td>7</td>
<td>Slovakia</td>
<td>SOS Bernolákovo</td>
</tr>
<tr>
<td>8</td>
<td>Slovakia</td>
<td>Súkromné Gymnázium DSA v Sabinove</td>
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<tr>
<td>9</td>
<td>Slovakia</td>
<td>Grammar school Mikulaš Kováč in Banská Bystrica</td>
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<tr>
<td>10</td>
<td>Slovakia</td>
<td>Škola umeleckého priemyslu Košice</td>
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<tr>
<td>11</td>
<td>Slovakia</td>
<td>Gymnázium Jána Hollého</td>
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<tr>
<td>12</td>
<td>Slovakia</td>
<td>Secondary School of Electrical Engineering (SPŠE)</td>
</tr>
<tr>
<td>13</td>
<td>Slovakia</td>
<td>Besst Gymnázium</td>
</tr>
</tbody>
</table>
Gender Balance of Participants (Including Coordinators & Partners)

- Female: 10
- Male: 10
3. Icebreaker: Get to Know Each Other
Self Introduction

Tell us in 30 seconds

- Who you are
- Your area of expertise
- What brought you to the project

... and then hand over to a person who you are do not know (yet).
Please visit https://www.mentimeter.com/

And key in this code – 7853 0235
Alternatively, use
4. Programme
<table>
<thead>
<tr>
<th>Date</th>
<th>Activity</th>
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</thead>
<tbody>
<tr>
<td>End September 2021</td>
<td>Welcome &amp; Introduction</td>
</tr>
<tr>
<td>End-September – End-October 2021</td>
<td>Thematic Sessions Technical Sessions Peer-to-Peer Meetings</td>
</tr>
<tr>
<td>End-October – Mid- December 2021</td>
<td>Project Implementation &amp; Development of 6 Teaching Modules</td>
</tr>
<tr>
<td>Before Christmas Break in December 2021</td>
<td>Learning Outcome Sharing, Closing &amp; Evaluation</td>
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Programme Pedagogy

**Thematic Training**
To build Knowledge on thematic areas for developing innovative teaching modules

**Technical Training**
To build required digital competencies for using the IoT Device

**Peer-to-Peer Discussion**
Opportunity for exchange and idea sharing

**Resource Creation**
Developing a Handbook on Innovative STEM Teaching
Thematic Training Sessions

• **Thematic Training #1** - Understanding “Education for Sustainable Development (ESD)”

• **Thematic Training #2** – Implications of Climate Change, Global Warming, and the Future of STEM

• **Thematic Training #3** – “Building the Connection: STEM, ESD and 21st Century Skills”
Technical Training Sessions

- Technical Training Session #1 - What is Internet of Things (IoT)? How does it work?
- Technical Training Session #2 - What is Big Data, what is Artificial Intelligence (AI)?
- Technical Training Session #3 - Introduction to ScienceScope’s IoT Device, the Weather Station, and its relevance to STEM Learning
- Technical Training Session #4 - IoT, Big Data and AI in the environmental contexts
- Technical Training Session #5 - Hands on Training – Using ScienceScope’s IoT device and the weather station
Peer-Peer Group Discussions

• **Peer-to-Peer Discussion #1**
This session will take place after the 3rd thematic training session to provide participants with the opportunity for team reflection and learning by exchanging ideas and knowledge on thematic areas with each other.

• **Peer-to-Peer Discussion #2**
This session will happen after the 5th technical training sessions to provide participants with the opportunity to discuss the various creative modes of usage of the IoT Device and brainstorm ideas for the implementation phase.
5. Teaching Modules Development
### Teaching Modules

<table>
<thead>
<tr>
<th>No.</th>
<th>Teaching Module Theme</th>
<th>Module Coordinator</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Module on Total Rainfall and Rain Rate</td>
<td>Dr Andrea Molnarne LASZLO Teacher Márton Bálint Primary and Secondary School (Hungary)</td>
</tr>
<tr>
<td>2</td>
<td>Module on Temperature</td>
<td>Ms Jana VIDOVÁ Teacher Obchodná akadémia Roznava (Slovakia)</td>
</tr>
<tr>
<td>3</td>
<td>Module on Barometric Pressure</td>
<td>Mr Pavol TRUBAC Teacher Spojena Skola (Slovakia)</td>
</tr>
<tr>
<td>4</td>
<td>Module on Windspeed and Wind Direction</td>
<td>Mr Adam STEPINSKI Teacher Copernicus Upper-Secondary School in Tarnobrzeg (Poland)</td>
</tr>
<tr>
<td>5</td>
<td>Module on Solar Radiation &amp; UV Index</td>
<td>Mr Milan CHALUPNÍK Teacher &amp; Headmaster Základní Škola, Seč, okres Chrudim (Czech Republic)</td>
</tr>
</tbody>
</table>
Teaching Module Development Process

Training Phase
- Learn relevant themes and concepts
- Practice the use of the IoT device
- Team building

Implementation Phase
- Conceptualise structure and activities
- Implement together with students and document achievements

Closing Phase
- Team presentation during closing meeting
- Submit all key lessons and relevant materials for producing the Handbook
6. Roles & Responsibilities
Responsibilities of ASEF

1. **Project Management**: Manages all project activities and produces necessary project documents, manages overall communication and coordination with all partners.

2. **Conceptualisation, Programme Development**: Takes lead in developing programme and project activities; conducts 3 thematic sessions and 2 technical sessions

3. **Partner Liaison**: Leads communication and coordination activities among all partners involved

4. **Edit & Documentation**: Edits all relevant documents to finalise content and keep a record of all implemented activities for reporting and resource creation

5. **Communication**: Designs, plans and implements communication activities throughout project period for Social Media Engagement & Visibility

Responsibilities of ScienceScope

1. **IoT Device Delivery**: Provides all participating schools, coordinators and partners with the IoT Device and Weather Station and liaises with all participants on possible concerns.

2. **Support Conceptualisation & Programme Development**: Supports ASEF in developing programme and project activities when required.

3. **Conduct 3 Technical Sessions**: Conducts 3 technical sessions that enable all participants to build required digital competencies needed for creatively and innovatively using the IoT Device and the Weather Station, and analyses environmental data collected through the Device.
Responsibilities of the Coordinator

1. **Overall Project Managing:** Stay up to date and keep track of all the project activities & documents

2. **Financial Management:** Liaise with the Visegrad Secretaries and all the relevant partners and participants regarding budget and cost

3. **Leadership:** Lead peer-to-peer sessions together with the V4 Partner Schools and small teams during project implementation phase to co-develop the Teaching Modules with participants and their students

4. **Documentation & Translation:** Keep a record of all implemented activities & coordinate the translation process with selected translators to translate relevant final project documents in respective V4 country’s language

5. **Communication:**
   - Collect photos and videos of relevant project activities and share with ASEF Team for Social Media Engagement & Visibility
   - Communicate with the ASEF Team to keep them up to date on relevant issues
   - Share & disseminate public project documents among your own network to increase visibility and showcase the impact of the project
Responsibilities of V4 Partners

1. **Overall Project Managing:** Stay up to date and keep track of all the project activities & documents

2. **Leadership:** Lead peer-to-peer sessions and small teams during project implementation phase to co-develop the Teaching Modules with participants and their students.

3. **Documentation & Translation:** Keep a record of all implemented activities & coordinate the translation process with selected translators to translate relevant final project documents in respective v4 country’s language

4. **Communication:**
   - Collect photos and videos of relevant project activities and share with ASEF Team for Social Media Engagement & Visibility
   - Communicate with the ASEF Team to keep them up to date on relevant issues
   - Share & disseminate public project documents among your own network to increase visibility and showcase the impact of the project
Responsibilities of Participants

1. **Active Participation**: Stay up to date about all activities and actively participating in all activities

2. **Engage & Share**: Share ideas and knowledge during all sessions and small teams during project implementation

3. **Intellectual Contributions**: Keep a record of all implemented activities and necessary intellectual materials for Teaching Module Development

4. **Communication**:
   - Collect photos and videos of relevant project activities and share with the ASEF Team for Social Media Engagement & Visibility
   - Communicate with the relevant Coordinators & Partners of the Project to keep them up to date on important issues
   - Share & disseminate public project documents among your own network to increase visibility and showcase the impact of the project
7. Questions & Answer
Thank You!