ALL SySTEMS Go, Engaging Young Scientists

Presenters
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Presentation Overview

- Introduction
- Methodology
- Results
- Lessons Learned
- Future Plans
- Conclusions
INTRODUCTION
Introduction

• All SySTEMs Go is a STEM Outreach Extravaganza offered to year 10’s from post primary schools during 2016 and 2017.

• A range of schools across Northern Ireland were invited to the 2017 event which was fully evaluated. 700 pupils from 17 schools attended at either the Jordanstown or Coleraine Campus 2017.

• Interactive parallel sessions were delivered throughout the day and groups had the opportunity to take part in 4 sessions led by different STEM disciplines.
Introduction

• The main objective was to increase interest in STEM and raise aspirations to go to University. Research by Harland and McCready, 2012 had indicated that educational interventions with Year 10 pupils are more likely to positively impact on aspiration and engagement.

• All SySTEMs Go events were evaluated and this session will share key 2017 evaluation findings. It will also disseminate the approach and lessons learned. It should appeal to those with an interest in STEM, widening access and participation and educational outreach.
Introduction

- 17 Schools took part in All SysTEMS Go at Jodanstown and Coleraine

Key
- Mixed
- All Boys
- All Girls
Introduction

- The programme aligns to Ulster’s Strategic Plan and was funded as School Engagement as part of the annual WAP plan.

_ Ulster University strives to increase awareness among those groups currently under-represented in higher education and to raise the aspirations of all sections of our community regardless of their individual personal and social circumstances._
METHODOLOGY
Methodology

- Students took part in 4 group sessions led by different STEM disciplines.
Methodology (Some photographs)
The authors sought to evaluate and capture the impact of All SySTEMS Go using level one and two of the Kirkpatrick model of evaluation.

- **Level 1: Reaction**, which seeks to evaluate reactions, thoughts and feelings.
- **Level 2: Learning**, which seeks to evaluate increased learning, knowledge or capability.
- **Level 3: Transfer**, which seeks to evaluate behaviour and capability improvements.
- **Level 4: Results**, which seeks to evaluate the resulting impact from performance.
Methodology

- New efforts to capture level 2 and level 3 of the Kirkpatrick model for students are planned for the next event which will take place during 2018.

- We intend adapting the methodology next time.

- Smaller groups, week long event, different disciplines on different campuses and interactive sessions.
RESULTS FROM 2017
All SySTEMS Go was fun and I enjoyed taking part.
All SySTEMS Go has helped me think about the STEM subjects (Science, Technology, Engineering and/or Maths) I would like to study for GCSE.
All SySTEMS Go has helped me identify possible careers.
All SySTEMS Go has helped me discover subjects I would like to consider studying for A-Level.
All SySTEMS Go has made me more interested in considering a career in STEM.

I would like to attend other events like this again in the future.
I would recommend events like this to my friends.
Taking part in All SySTEMS Go has made me more interested in going to University.
Taking part in All SySTEMS Go has helped me discover suggested subjects at A-Level for programmes at Ulster University I may be interested in.

Some Key Findings Jordanstown (Student)
n=194
Some Key Findings Jordanstown (Student)

n=194

- All SySTEMS Go was fun and I enjoyed taking part: 98% Male (Strongly agree & agree), 94% Female (Strongly agree & agree)
- All SySTEMS Go has helped me think about the STEM subjects (Science, Technology, Engineering and/or Maths) I would like to study for GCSE: 80% Male, 69% Female
- All SySTEMS Go has helped me discover subjects I would like to consider studying for A-Level: 65% Male, 61% Female
- All SySTEMS Go has helped me discover suggested subjects at A-Level for programmes at Ulster University I may be interested in: 80% Male, 70% Female
- All SySTEMS Go has made me more interested in going to University: 86% Male, 86% Female
- Taking part in All SySTEMS Go has helped me identify possible careers: 71% Male, 68% Female
- All SySTEMS Go has made me interested in considering a career in STEM: 59% Male, 68% Female
- I would like to attend more other events like this again in the future: 80% Male, 70% Female
- I would recommend events like this to my friends: 90% Male, 92% Female

Ulster University
# Some Key Findings (Student) Jordanstown

<table>
<thead>
<tr>
<th>Students Liked Most</th>
<th>Students Liked Least</th>
<th>Ideas for improvements</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Everything including when they told us the career options</td>
<td>• Nothing</td>
<td>• Make it more interactive</td>
</tr>
<tr>
<td>• It was fun and interesting as it had good activities</td>
<td>• Ask students what they like instead of forcing them to do things they don't like</td>
<td>• Less talking, more activities</td>
</tr>
<tr>
<td>• The activities and different demonstrations</td>
<td>• Don't need t shirts</td>
<td>• Have more activities for us to do</td>
</tr>
<tr>
<td>• I like learning about the subjects</td>
<td>• You didn't get to do anything fun - was more listening</td>
<td>• Have more activities and challenges</td>
</tr>
<tr>
<td>• All the students at the University were helpful</td>
<td></td>
<td>• Make it more interactive because some aspects where very boring</td>
</tr>
<tr>
<td>• Learning about other subjects</td>
<td></td>
<td>• Just keep it up. Teach different careers</td>
</tr>
<tr>
<td>• I liked doing all the different sciences</td>
<td></td>
<td>• Air conditioning</td>
</tr>
<tr>
<td>• It made me more interested about going to University</td>
<td></td>
<td>• Provide seats and tables for lunch</td>
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<tr>
<td></td>
<td></td>
<td>• Longer lunch times</td>
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<tr>
<td></td>
<td></td>
<td>• Make it last forever</td>
</tr>
</tbody>
</table>

Several listed sessions/subjects they liked most and least
Some Key Findings (Student) Jordanstown

n=194

Q5 What did you like most about All SySTEMS Go?

Murder Hall Enjoyed Investigation Engineering 3D Printer
Sports Media Crime Scene Art and Design
Science Physical CSI Coding Liked
Chemistry Activities CPR Chocolate Seeing
Fun Lunch School University Getting Interactive Learning

Q6 What did you like least about All SySTEMS Go?

Enjoyed Physical Activities Investigation Stand Boring Fun
Rushed Talking Coding Engineering
Forgot to Bring Food Liked Overall
Biomechanics CSI
Artificial Intelligence Disliked CPR Science
Wearing Listening Formula 1 Lunch Sports Golf

Q7 Have you any ideas about how we could improve All SySTEMS Go?

Games Boring Sports Shops to Buy Food Interactive
T Shirts Fun Stop Doing Activities Longer Lunch
Nope Students Practical Schools
Some Key Findings Coleraine (Student)
n=172

- 96.5% agreed or strongly agreed All SySTEMS Go was fun and I enjoyed taking part.
- 69.1% agreed or strongly agreed All SySTEMS Go has helped me more interested in going to University.
- 91.0% agreed or strongly agreed I would recommend events like this to my friends.
- 2.9% disagreed or strongly disagreed All SySTEMS Go has helped me discover subjects I would like to consider studying for A-Level.
- 4.8% disagreed or strongly disagreed I would like to attend other events like this again in the future.

All SySTEMS Go has helped me think about the STEM subjects (Science, Technology, Engineering and/or Maths) I would like to study for GCSE.
Some Key Findings Coleraine (Student)

n=172

All SySTEMS Go was fun and I enjoyed taking part. Male: 94.4% / Female: 98.0%

All SySTEMS Go has helped me think about the STEM subjects (Science, Technology, Engineering and/or Maths) I would like to study for GCSE. Male: 87.5% / Female: 82.7%

All SySTEMS Go has helped me discover subjects I would like to consider studying for A-Level. Male: 78.9% / Female: 72.7%

All SySTEMS Go has helped me discover suggested subjects at A-Level for programmes at Ulster University I may be interested in. Male: 74.3% / Female: 74.3%

All SySTEMS Go has made me more interested in going to University. Male: 82.5% / Female: 82.5%

Taking part in All SySTEMS Go has made me more interested in going to University. Male: 87.9% / Female: 87.9%

Taking part in All SySTEMS Go has helped me identify possible careers. Male: 82.6% / Female: 83.3%

All SySTEMS Go has helped me identify possible careers. Male: 64.8% / Female: 72.2%

I would like to attend other events like this again in the future. Male: 91.7% / Female: 91.5%

I would recommend events like this to my friends. Male: 94.9% / Female: 90.6%
Some Key Findings (Student) Coleraine

n=172

Q6 What did you like most about All SySTEMS Go?

- Crime
- Scene
- Fun
- Dinosaur
- Able to Work
- Friends
- Marshmallows
- Activities
- Science
- Sports
- Games
- Liked
- Robotics
- Chocolate
- Programming
- Coding
- Design
- CSI
- Learning Agency
- Technology
- Enjoyed
- Making Sheep
- App
- Fairtrade
- Seeing the University
- Media

Q7 What did you like least about All SySTEMS Go?

- Activity
- Coding
- Crime
- Scene
- Chemistry
- Science
- Writing
- Sport
- Walking
- Robotics
- App
- Liked
- Fair Trade
- Game
- CSI
- Designing
- Chocolate
- Hear

Q8 Have you any ideas about how we could improve All SySTEMS Go?

- Vegan
- Chocolate
- Fun
- Interactive
- Think
- Sports
- Sheep
- Nope
- Perfect
- Activities
- Liked
- Longer
- Practical
- Mix with different Schools
- Tea
- Art
- Enjoyed
- Eating
## Some Key Findings (Student) Coleraine

### Students Liked Most
- It was well organised
- It was an enjoyable event
- That was a fun event
- The people are very friendly and it is a very good chance to get to know the subjects
- Being able to work together in the group work
- Working in groups to figure out problems
- I enjoyed interacting with other pupils
- I liked doing all the different subjects
- It suggested some different career paths
- I liked learning all of the different options for my future and learning about heart rate

### Students Liked Least
- Sometimes unable to hear instructions
- It was quite boring in some activities
- Lessons were too long
- Not enough time for each activity, too much talking
- The work and they talked a lot
- The long talks
- The standing up and running
- We didn't know where to go
- We should be grouped with more schools
- Writing
- Walking

### Ideas for improvements
- Give a map
- Explain the activities better
- Talk more about career opportunities in STEM
- More activities to take part in
- More time to do activities
- I think it would have been better if we got to pick our own groups including other schools
- Mix with different schools more
- More time for subjects you like
- Make it longer

Several listed sessions/subjects they liked least (and most)
Some Key Findings (Teacher)
n=22

I think All SySTEMS Go was suitable for Year 10 pupils. 75%
I think pupils found All SySTEMS Go fun and enjoyed taking part. 57%
I think All SySTEMS Go has helped pupils think about the STEM subjects they would like to study for GCSE. 67%
I think All SySTEMS Go has helped pupils discover subjects they would like to consider for A-Level. 48%
I think All SySTEMS Go has helped pupils discover suggested subjects at A-Level for programmes at Ulster University they may be interested in. 30%
I think taking part in All SySTEMS Go has increased pupils aspirations to go to University. 30%
I think taking part in All SySTEMS Go has increased pupils aspirations to consider careers in STEM. 29%
I think taking part in All SySTEMS Go has increased pupils aspirations to consider programmes at Ulster University they may be interested in. 29%
I think taking part in All SySTEMS Go has increased pupils aspirations to consider careers in STEM. 29%
I think taking part in All SySTEMS Go has increased pupils aspirations to consider programmes at Ulster University they may be interested in. 29%
I think All SySTEMS Go helped pupils discover subjects they would like to consider for A-Level. 38%
I think All SySTEMS Go has helped pupils discover suggested subjects at A-Level for programmes at Ulster University they may be interested in. 24%
I think All SySTEMS Go has helped pupils discover subjects they would like to consider for A-Level. 29%
I think All SySTEMS Go has helped pupils discover suggested subjects at A-Level for programmes at Ulster University they may be interested in. 29%
I think All SySTEMS Go has helped pupils discover subjects they would like to consider for A-Level. 30%
I think All SySTEMS Go has helped pupils discover suggested subjects at A-Level for programmes at Ulster University they may be interested in. 0%
I think All SySTEMS Go was suitable for Year 10 pupils. 19%
I think pupils found All SySTEMS Go fun and enjoyed taking part. 29%
I think All SySTEMS Go has helped pupils think about the STEM subjects they would like to study for GCSE. 25%
I think All SySTEMS Go has helped pupils discover subjects they would like to consider for A-Level. 35%
I think All SySTEMS Go has helped pupils discover suggested subjects at A-Level for programmes at Ulster University they may be interested in. 0%
I think All SySTEMS Go was suitable for Year 10 pupils. 0%
I think pupils found All SySTEMS Go fun and enjoyed taking part. 14%
I think All SySTEMS Go has helped pupils think about the STEM subjects they would like to study for GCSE. 5%
I think All SySTEMS Go has helped pupils discover subjects they would like to consider for A-Level. 10%
I think All SySTEMS Go has helped pupils discover suggested subjects at A-Level for programmes at Ulster University they may be interested in. 0%
I think All SySTEMS Go was suitable for Year 10 pupils. 0%
I think pupils found All SySTEMS Go fun and enjoyed taking part. 0%
I think All SySTEMS Go has helped pupils think about the STEM subjects they would like to study for GCSE. 0%
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I think All SySTEMS Go has helped pupils discover suggested subjects at A-Level for programmes at Ulster University they may be interested in. 0%
I think All SySTEMS Go was suitable for Year 10 pupils. 0%
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I think All SySTEMS Go has helped pupils think about the STEM subjects they would like to study for GCSE. 0%
I think All SySTEMS Go has helped pupils discover subjects they would like to consider for A-Level. 0%
I think All SySTEMS Go has helped pupils discover suggested subjects at A-Level for programmes at Ulster University they may be interested in. 0%
# Some Key Findings (Teacher)

## Teachers Liked Most
- Opportunity to visit and see a University
- Session broke down the idea of some students going to universities - some pupils are now more aware of Uni and will consider the option now, where as, before today they have not have
- Vital information regarding GCSE/A-Levels
- Subject areas, particularly sports science. Showed pupils different career paths
- That there was a range of activities for the participants to engage with
- Being in a University environment

## Teachers Liked Least
- Lack of interaction in some workshops
- Could have had more activities/opportunities for pupils to interact and move about, too much sitting
- Perhaps a little more interactive
- Not enough 'hands on'.
- The activities on offer were less practical/engaging than in previous year

## Topics for future events
- AI
- Computer activities
- CSI sessions was excellent - kids really were interested
- Hands on practical tasks
- I think all areas were covered really well
- More sports
- Physiotherapy
- Science, forensics and biology
- Science
- Space technology
- Sports
- Sports, engineering, forensics
- STEM
- Sustainability
- Technology approaches to STEM subjects.

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n=22
LESSONS LEARNED AND FUTURE PLANS
Lessons Learned

- **Smaller groups**: Initially we worked 350 pupils per day, created a sense of “open day” rather than learning experience

- **Week long event**: to support the smaller group sizes we stretched the activities across a week long festival

- **Different Disciplines on Different Campuses**: Ulster University recently went through a campus redefine, therefore specialisms located together

- **Interactive sessions**: Feedback reaffirmed that pupils did not like writing activities and favoured full interaction
Future Plans

Extend the event to primary aged pupils:

• October 2017, launched the primary event, attended by 120 P7 pupils
• 4 schools attended the Coleraine Campus
• Participating pupils were offered the opportunity to take part in parallel interactive learning workshops delivered by schools within the Faculty of Life and Health Sciences
  - School of Biomedical Sciences
  - School of Geography & Environmental Sciences
  - School of Pharmacy & Pharmaceutical Sciences
  - School of Sport
Future Plans

Incorporate within the Regional Science Festival:

• Partner with NI Science Festival (February 2018)
• The NI Science Festival offers 180 events across 50+ venues
• Festival events focus on the wonders of science, technology, engineering and mathematics “All Systems Go” is now a programmed activity of this week long festival.
CONCLUSIONS
Conclusions

Ulster University reaction and evaluation of All SySTEMs Go!

Play video

http://www.ulster.ac.uk/insight/news/2016/06/all-systems-go/
References


FEEDBACK & ANY QUESTIONS?

For further Information please contact Catherine (c.odonnell@ulster.ac.uk) or Lorraine (l.lavery-bowen@ulster.ac.uk)