

*TEACHING PHYSICS AND ASTRONOMY
INSPIRING FURTHER STUDY
USING AT-BRISTOL SCIENCE CENTRE, UK*

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My research

- I have developed a real passion for physics and astronomy as part of my degree.
- I wanted to explore how to ignite that passion in children at a young age to encourage their further study and the role that science centres can play in this.
- I worked closely with both the AT-Bristol science centre and Shield Road Primary School in Bristol, UK to conduct my research.
- I wanted to explore whether encouragement and solid understanding from early on, can strongly influence future study choices particularly in physics/ astronomy which have not always been popular subjects for further study.

Key terms

- **NC-** National Curriculum - Government accredited syllabus for all state education in England
- **KS2-** Key Stage 2- Children aged between 7-11 in years 3, 4, 5 and 6 at primary school
- **At-Bristol-** UK based interactive science centre and planetarium
- **HE-** Higher Education – Post secondary optional education

What

Sufficient teaching and engagement in science subjects - inside and outside of the classroom: does it increase voluntary further study in this field?

- ✓ NC and school taught science modules have improved-increased study in physics and astronomy at HE
- ✓ Ensuring pupils engage from as early as lower key stages in these subjects
- ✓ Informal and formal reinforcement from science centres

How

QUANTITATIVE

Exhibit texts
content analysis

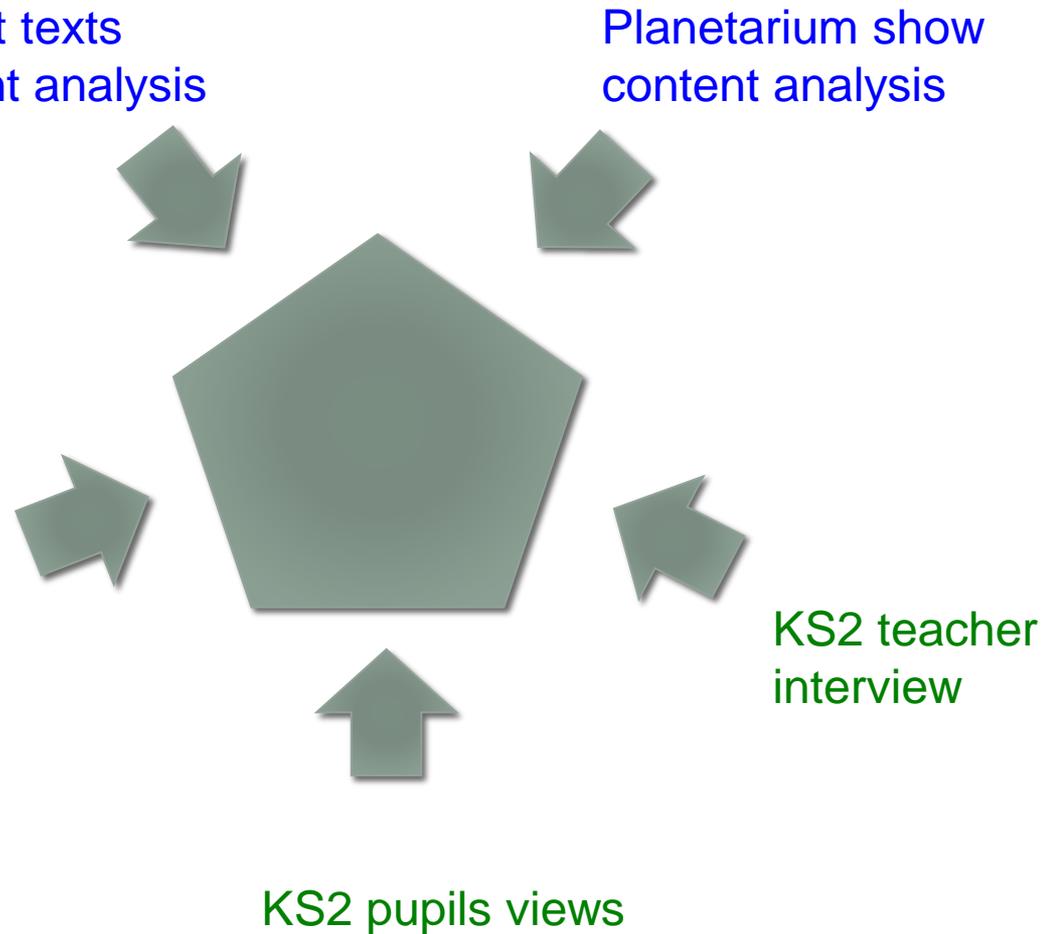
Planetarium show
content analysis

QUALITATIVE

Science centre's
Education officer
interview

KS2 teacher
interview

KS2 pupils views



WHY KS2

Research shows pupils as early as Key Stage 2 are able to make conscious and individual decisions in science subjects:

- ✓ Decisions made at KS2 – reflect in later key stages and beyond
- ✓ However, just 5/14 compulsory modules taught on NC are related to physics/astronomy

Results

- Content analysis methods:
- ✓ Clear alignment between NC subjects and current exhibits

Physics (NC)	Total
Light	28
Sound	11
Magnet	16
Force	9
Electricity	7
Gravity	1

Physics (exhibit)	Total
Light	41
Sound	31
Magnet	21
Force	9
Electricity	11
Gravity	11

Results

- Analysis of KS2 planetarium show:
 - ✓ $\frac{3}{4}$ of the NC content appear in the planetarium show transcript
 - ✓ P-value of <0.05
 - ✓ Increased incidence of relevant key words:

Astronomy (NC)	Total
Earth	11
Sun	8
Moon	5
Solar System	5
Planets	4
Space	1

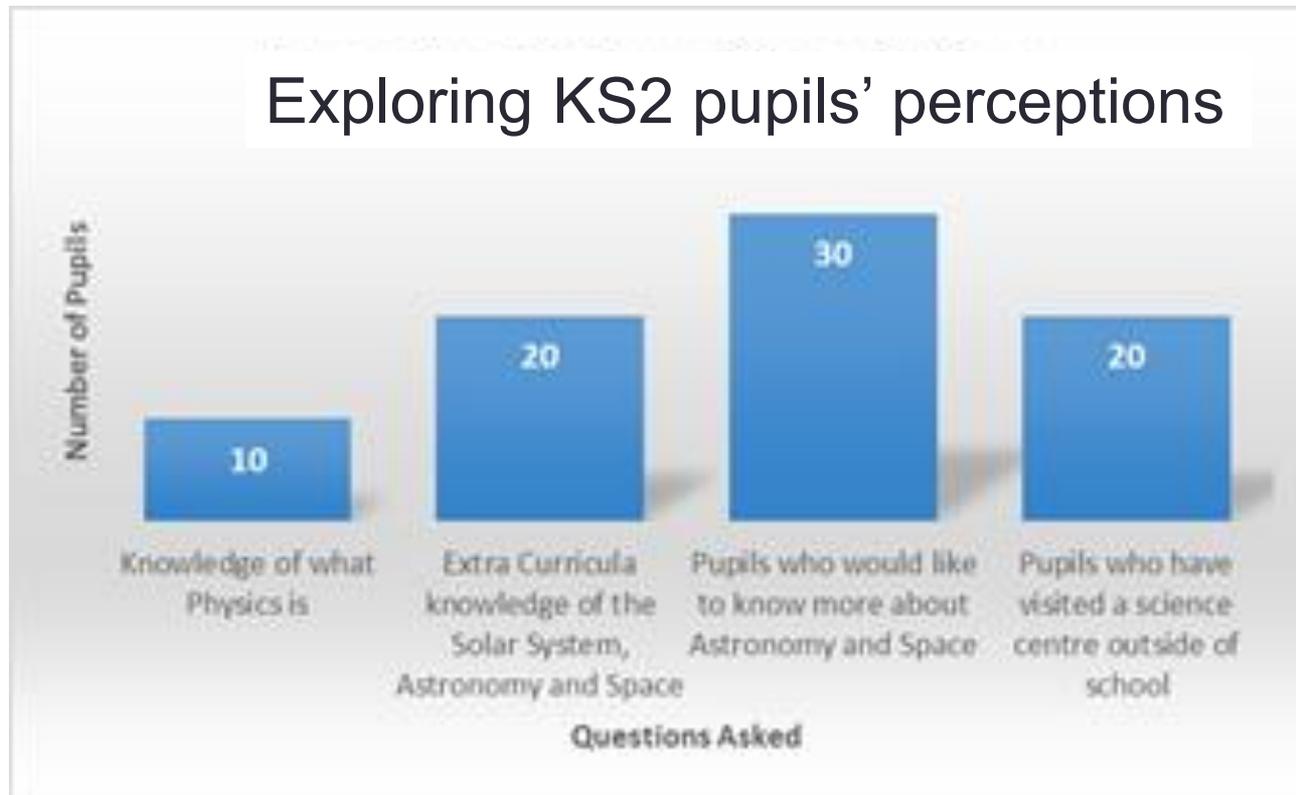
Astronomy (transcript)	Total
Earth	39
Sun	28
Moon	16
Solar System	21
Planets	21
Space	6

Results

- Interview with a professional Educations Officer from At-Bristol. Summary:
 - ✓ Overall, learning inside and outside of the the classroom is significant
 - ✓ Science centres are undoubtedly a useful, accessible resource for schools and the general public
 - ✓ Questions can be answered and explored with specialized staff in subjects such as physics and astronomy

Results

- Views and observations collected by a KS2 teacher from pupils:



Results

- The KS2 teacher was asked for her professional view relating to the NC content and learning science outside of the classroom:-
 - ✓ Agreed that visiting science centres reinforces NC content and encourages further learning
 - ✓ Stated that upper key stage teaching staff agree physics/astronomy based modules should be increased/encouraged at lower Key Stages.

Conclusion and Recommendations

Conclusions

- Evidence gathered showed a positive correlation between At-Bristol and KS2 NC content = effective resource in supporting content taught in physics and astronomy.
- Interactive science centres are undoubtedly useful in reinforcing formal education as well as offering specialist knowledge outside of the curriculum

Recommendations

- Use research as encouragement is needed to ensure schools make the most of the science centres available for their use
- Government publicity and funding could be motivated using research
- Use research to inspire future scientists in the next generation

Q&A

I'm really keen to continue exploring this area of work.

It would be great to keep in touch !

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