# RaY

## Research at the University of York St John

# Research in the classroom: Using Action Research to improve Practice

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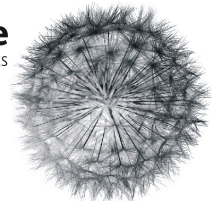
# Learning Outcomes

**By the end of the session participants will be able to:**

- describe the mechanics of action research
- consider types of evidence that might be collected to demonstrate impact
- plan a piece of action research that they can carry out

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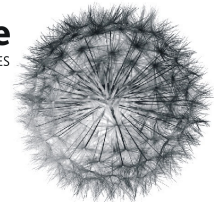
# Starter for three…

3 things you know…
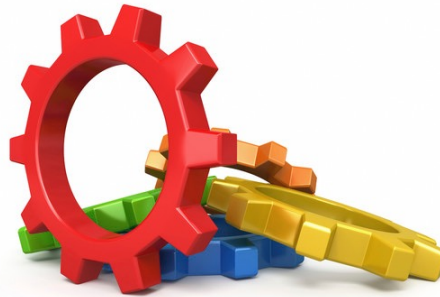
3 things you think you know…

3 questions you'd like to ask…

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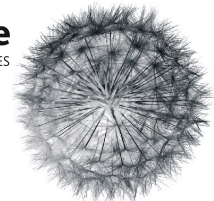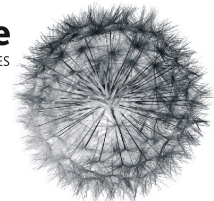
# So what *is* Action Research?

A methodology in which a professional improves or develops practice in a cyclical way, by planning the next step of action as a result of analysis of the previous action or development.

It therefore involves reflective practice.

It is distinct from other forms of research in that the professional looks at his or her own practice, and develops an aspect of it, rather than producing new knowledge.

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# Action Research *isn't . . .*

- **a randomised control trial**

- **always intended to 'prove something'**

- **always objective**

- **research 'done to' teachers or lecturers**

- **a new idea**

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# What does it involve?



Share learning, next steps → Decide research question → Plan action research → Do action research → Analyse and reflect → (cycle continues)

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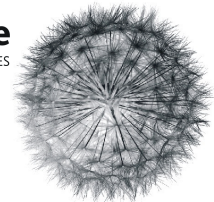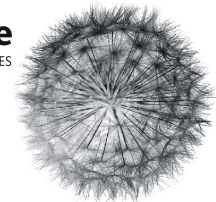
# Evaluation and Impact

Evaluation explores whether an intervention has been effective in terms of delivering what was intended and expected.

The impact of an initiative is the direct effects of that initiative on those who participated in it.

It could also include the indirect effects on other individuals that you might work with – in the case of professional development this includes young people (e.g. benefitting from updated knowledge and skills and changes in practice) and colleges/employment and learning providers (e.g. staff benefiting from the sharing/cascading of learning and best practice or improved leadership).

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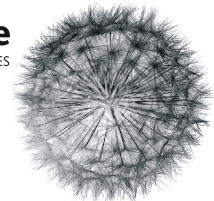
# What impact are you looking for?

Impacts may take some time to be realised, particularly on your students and colleagues.

- **When** are you going to be collecting evidence of impact?

- **What** are you looking for? This will affect what evidence you decide to collect.

**Task 2**: what direct or indirect effects might you see for:
a) yourself
b) your students
c) your colleagues/ college or provider

*Jot thoughts*

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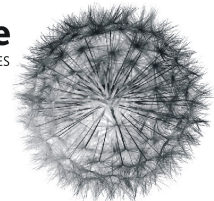
# Impacts on yourself

- Improved enthusiasm and confidence in your role

- Improved subject knowledge and understanding

- Increased pedagogical knowledge, skills and understanding (e.g. of science curriculum/assessment/practicals)

- Use of new subject knowledge and skills and/or pedagogies

- Improved leadership knowledge, skills and understanding (includes effective lesson organisation and planning, time management, collaboration and sharing of good practice)

- Use of new leadership knowledge, skills and understanding

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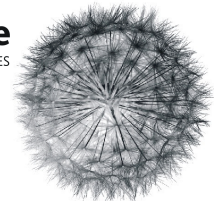
# Impacts on young people

- Improved students' progress in STEM knowledge, skills and understanding

- Improved students' attainment in subject knowledge, skills and understanding

- Increased students' confidence, motivation and engagement in lessons

- Improved students' behaviour and working safely

- Increased students' interest in pursuing STEM subjects and apprenticeship further

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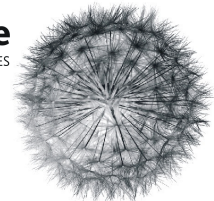
# Impacts on your colleagues/ college or provider

- Improved quality of teaching

- Improved leadership of STEM department/STEM curriculum

- Improved progress and attainment of young people

- Increased profile/priority of science in colleges or ELPs

- Improved sharing of effective practice and resources

- Increased student progression in STEM subjects and apprenticeship (e.g. larger numbers taking STEM subjects pre/post-16)

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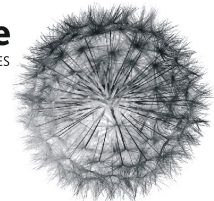
# Research informed teaching

Not everything that teachers/lecturers do (or what leaders implement) is based on research.

**Task  3: Is there evidence?**

- Decide how strong the evidence base is behind the different ideas in education on the following slide

- You may wish to discuss your answers with a partner.

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| Strategy | Strong evidence base | Some research evidence | No research or shown to be ineffective |
|---|---|---|---|
| Brain Gym | | | |
| SEAL (primary) | | | |
| SEAL (secondary) | | | |
| small class sizes | | | |
| homework | | | |
| Learning styles | | | |
| Synthetic phonics | | | |
| CASE (cognitive acceleration in Science) | | | |
| Use of tablet computers in classes | | | |
| Feedback | | | |

| Strategy | Strong evidence base | Some research evidence | No research or shown to be ineffective |
|---|---|---|---|
| Brain Gym | | | ✓ |
| SEAL (primary) | | ✓ | |
| SEAL (secondary) | | ✓ (much less effective than primary) | |
| small class sizes | | ✓ (but only if below 15 or 20 in class) | |
| homework | | ✓ (secondary) | ✓ (primary) |
| Learning styles | | | ✓ (no such thing as learning styles) |
| Synthetic phonics | ✓ | | |
| CASE (cognitive acceleration in Science) | | ✓ | |
| Use of tablet computers in classes | | | ✓ |
| Feedback | ✓ (though there is also evidence that some feedback is not effective) | | |

# John Hattie

- "…perhaps the most significant discovery from the evidence in Visible Learning: namely, that almost any intervention can stake a claim to making a difference to student learning…

- When teachers claim that they have a positive effect on achievement, or when it is claimed that a policy improves achievement, it is a trivial claim, because virtually everything works."

   - pg. 15 John Hattie, Visible Learning for Teachers

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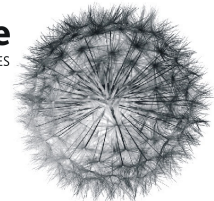
# Experienced or Expert

John Hattie searched the research literature and identified a number of differences between **Expert** and **Experienced** educators.

There were 5 major dimensions of expert educators:

A.  can identify essential representations of their subject
B.  can guide learning through classroom interactions
C.  can monitor learning and provide feedback
D.  can attend to affective attributes
E.  can influence student outcomes

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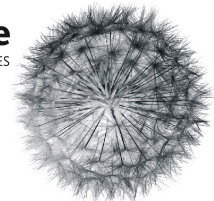
# Where are you now?

It can often be helpful to consider where you are now in terms of your practice/current approach/workload in order to help you focus further.

**Task 4**
**Use the self-evaluation form on Handout 2 to help you consider which of the pedagogies Hattie identified you are using in your sessions.**

*[This may also help you decide whether you are looking at collecting evidence of impact on yourself, your students, your colleagues, the wider college or provider, or a combination of these.]*
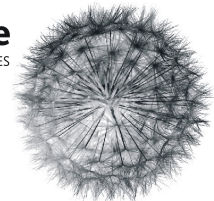
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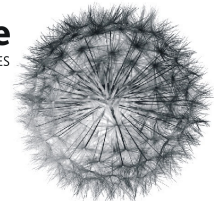
# Interventions

**Task 5**

In small groups, review these examples of research questions on Handout 3, and think about how you could improve them. From this, decide what good criteria for a research question would look like.

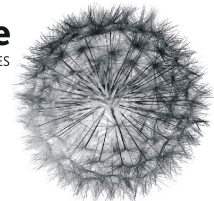Each group to discuss and suggest 1-2 points to feedback to the others.

**S** – **Specific**

**M** – **Measurable**

**A** – **Attainable / Achievable**

**R** – **realistic**

**T** – **Time**

**E** – **Evaluated**

**R** – **Reviewed**

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# Effective Pedagogies

Now that you have some idea of what good questions look like, you may want to focus your thinking into more defined pedagogical areas.

**Task 6**: Consider the pedagogical areas that are included in the self-evaluation on Handout 2.

Which ones did you respond 'sometimes' or 'rarely' to?
Could one of these be a starting point? If not, why not?

Explain to a partner why what you have chosen is of interest to you in developing your practice.

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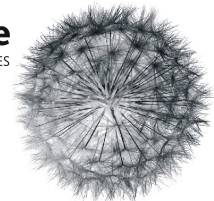
# Types of evidence to collect

It is important to consider the types of evidence that you might collect to demonstrate the impact of your intervention. This will depend on the content and focus of the intervention, so its important to be really clear about your research question.

You might want to collect qualitative or quantitative evidence, or a mix of the two.

Some evidence may need to be collected before the intervention and some after. You may wish to collect a range of different types of evidence. This will enable you to confirm/corroborate the findings from one source with those of another. This is called triangulation.

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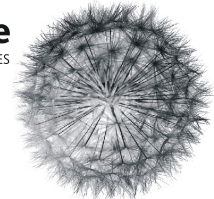
# Examples of evidence sources

Use Handout 4 to consider examples of evidence that you can collect, focusing on different beneficiaries of impact.

**Task 7**:
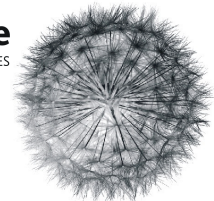For the area(s) that you are have identified an interest in:
a)   what are the relative merits of different types of evidence and how it can be collected, and therefore
b)   what types of evidence do you consider would be suitable to collect?

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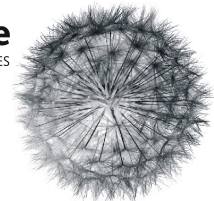
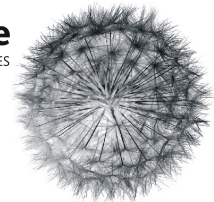# Putting it all together…

Now use this on the research question you were thinking about earlier:

- **Task 8**: Start to fill in your Action Research Planning Template (Handout 5)

- Share with the colleagues on your table.

- Ask 1-2 probing questions of each other to help you all evaluate your own proposals

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# What next?

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**Example transcript excerpt**

**Codes and comments**

Response to gendered examples

Relevance

Goal-oriented approach

*Teacher:* OK so what about when we did the comparison between the different cars, looking at their power and mass and top speed, what did you think about that?

*Dean:* I liked that, I like cars so it was good.

*Aimee:* I like cars, but I wasn't too sure about that lesson.

*Teacher:* Why do you say that?

Well I just couldn't see what the point of it was really, like I didn't understand what all the different facts about the cars were and they all had different numbers and it was pretty confusing.

Girls seemed more switched off by lack of relevance than "male" cars example

*Leanne:* In our group, we thought it was OK but we just got on with it so we could put the answer in.

*Dean:* In my group we just liked going on the internet and looking at all the websites for the sports cars.

*Teacher:* So how could I have made that lesson more interesting?

Boys and girls sound like they could be better engaged with a real-life scenario

*Leanne:* I dunno, maybe if like if it had more to do with like what we were interested in.

*Sofia:* Like what about if you made it more of a challenge and said we won the lottery or something and we had whatever amount of money and we had to try and buy a sports car with the most efficiency or horse power or whatever.

Example from IoP Girls into Physics Action Research February 2010

*Dean:* Yeah or you could have different groups buying different cars for different reasons or countries or something.

# Analysing Numerical data

- For questionnaires use a spread sheet and code your responses to calculate average values.

- For pre- and post-intervention tests compare the average mark and spread of results before and after the intervention
  *Girls into Physics: Action Research, IOP, 2006, pp 24-25*

- For interventions which use a comparison group calculate an 'effect size' showing the difference between the groups.
  *The DIY Evaluation Guide, Coe and Kime, EEF, 2012 pp 17-19*
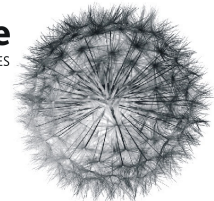
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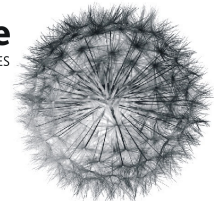
# Plenary

Now let's revisit your starter for three to see how your learning has moved on in this session.

What has changed for you?

What will you do as a follow up to this session?

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# Further reading

- "School-based research: A guide for education students" Elaine Wilson

- "A handbook for Teacher Research: From design to implementation" Colin Lankshear & Michele Knobel

- EEF DIY evaluation guide http://educationendowmentfoundation.org.uk/uploads/pdf/EEF_DIY_Evaluation_Guide_%282013%29.pdf

- Action Research in Education http://www.edu.plymouth.ac.uk/resined/actionresearch/arhome.htm

- Teacher Action Research gse.gmu.edu/research/tr

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