

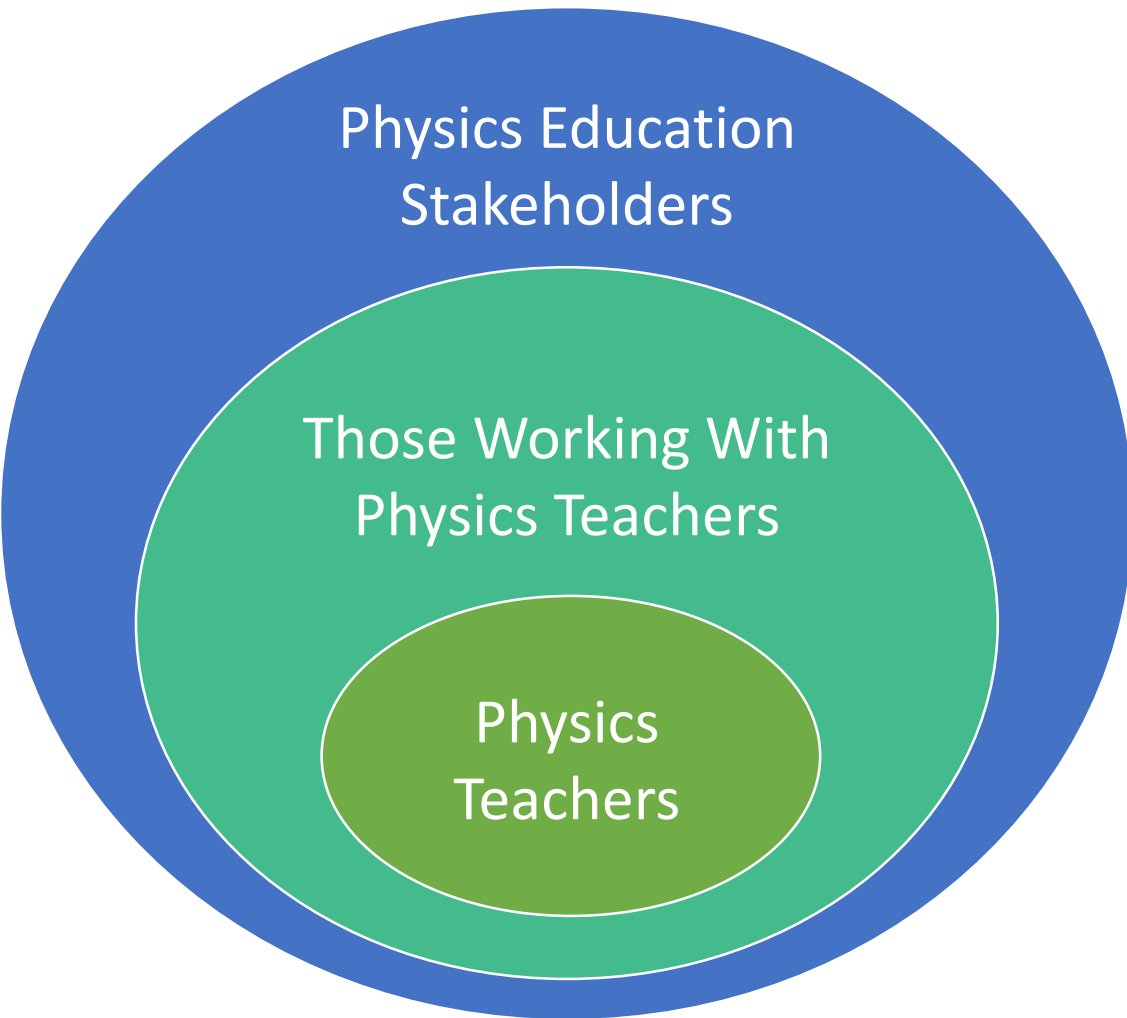
Physics Teachers in England

What is a 'good' one?

James de Winter



Who cares about 'good' physics teachers



Stakeholder Survey

'Identity' and expectations
(UK, Sweden, Finland, Singapore)

Developing 'identity' during
training year(s)

Focus on particular areas – e.g.
Maths and Physics

What do I want?

- What does the wider education community think/expect.
- To engage with the teacher education community to refine/develop an understanding of this.
- To see if it is possible to develop some kind of framework with subject specific exemplification.
- So we can better train the next generation of physics teachers.

Where to start?

Ask the people who have an interest in physics teachers and physics education what they think/expect



What is a
'good' physics
teacher?

What is the Question?

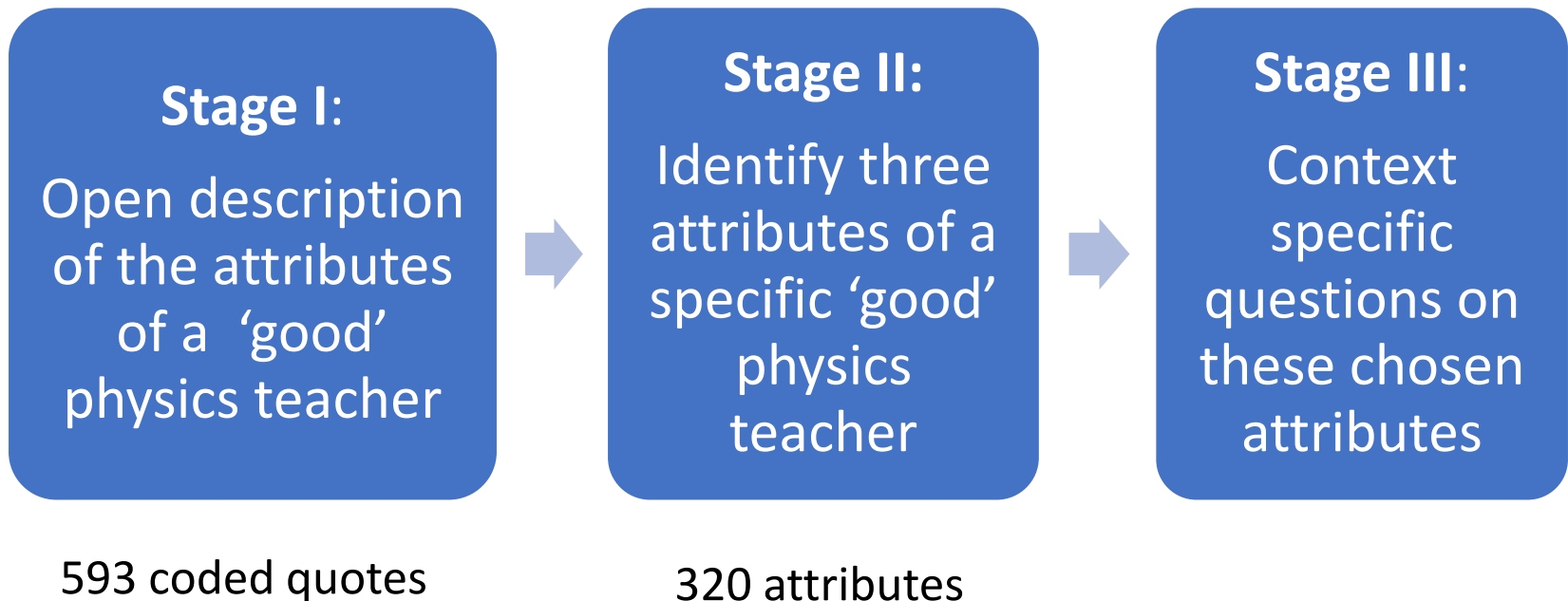
Is there a necessary and sufficient set of attributes for physics teachers entering the profession?

Research Questions

RQ1: What do a range of stakeholders see as the key attributes of a 'good' physics teacher?

RQ2: To what extent do these attributes vary across different stakeholder groups and between contexts?

How did we ask them?



Most common attributes from Stage I

- Subject knowledge
- Good communication and explanation skills
- Providing context and making physics relevant
- Understands the challenges students face
- Is enthusiastic
- Shows a love of physics
- Is engaging

Most common attributes from Stage I

- Regular practical work/demonstrations
- Breaks ideas down into accessible stages
- Knows and supports the mathematical challenges
- Knows, understands and is able to use appropriate pedagogies
- Believes in students and their ability to succeed
- Motivates, challenges and stretches students

Top 6: Stage I and Stage II

Stage I	Stage II
Subject Knowledge	Subject Knowledge
Explainer/Communicator	Explainer/Communicator
Context and Relevance	Enthusiasm
Novice Empathy	Good Student Relationships
Enthusiasm	Character/Personality
Love of Subject	Professional

46% of all coded responses (593)

64% of all coded responses (320)

RQ1: What do a range of stakeholders see as the key attributes of a 'good' physics teacher?

Whilst there was a large range of responses, from Stage I and Stage II, the following attributes were the most common.

Subject Knowledge	Good Student Relationships
Explainer/Communicator	Character/Personality
Context and Relevance	Professional
Novice Empathy	Enthusiastic
Love of Subject	

Theme #1

- Might some attributes be innate?
- What can be learned?
- How can you learn it?
- And when?
 - If it is innate does it become a recruitment criteria?
 - What can be achieved in a training year?
 - What should part of in-service professional development

Theme #2

- Do we have a language to talk about what physics teachers are and we want them to be?
- ***Has PCK become to all encompassing?*** - Novice Empathy was a focus solely on conceptual challenges.
- Classroom examples of attributes were vague and often ill defined.

Reflection on Practice #1

- Communication/Explanation was one of the most regularly chosen attributes.
 - In my work, have I placed enough explicit emphasis on this?

Stage III: Context

Using the participant-identified attributes from stage II

Is the importance of these attributes dependent upon?

- Age of students
- Academic ability of students
- Physics, science or any subject

RQ2: To what extent do these attributes vary across different stakeholder groups and between contexts?

In most cases, attributes were seen as being of equal value to students of all ability and all age ranges.

However:

- *A significant minority of respondents felt that **subject knowledge** is;*
 - *more important for older students (A level)*
 - *more important for academically able students*
- *A significant minority feel that the attribute **explainer/communicator** is more important for less academically able students*

Next Steps

- Collect 'good' physics teacher data from students (11-18)
- Follow up interviews with a sample of respondents to look more deeply at response
- Refine the attributes and use these to help develop a framework to investigate trainee teachers as they move from graduates (pre-course), through the trainee year and into their early careers.



Questions?
Comments?
Thoughts?
Ideas?

Links

- James's email: Jad26@cam.ac.uk
- ESERA presentation on this work: <http://uu.diva-portal.org/smash/record.jsf?pid=diva2%3A1138493&dswid=422>
- ESERA paper on this work (4 pages)
- https://keynote.conference-services.net/resources/444/5233/pdf/ESERA20171233_paper.pdf