

<p><b>1. Physics learned (and taught) in a way that is accessible and engaging for girls</b>  Research suggests that girls are more interested than boys in the social context of physics and how physics can be used to help people. This cluster explores how gender awareness regarding the content and examples used in physics lessons could contribute to physics being taught and learned in a way that is accessible and engaging for girls.</p> <p><b>Effective pedagogies:</b></p> <ul style="list-style-type: none"> <li>• Gender-neutral illustrations and examples</li> <li>• Non-technical language and analogies used where possible/appropriate</li> <li>• Context provided by linking topics and highlighting applications and social relevance</li> <li>• Variety of questioning techniques used; build in thinking time and discussion</li> </ul>	<p><b>2. Classroom managed to promote girls' engagement in group work</b></p> <p>Interventions in this research cluster explore how classrooms can be managed to promote girls' involvement in group work. The assumption is that teachers will already be adopting learner-centred practices, so interventions will focus on additional practices that can be adopted to engage girls.</p> <p><b>Effective pedagogies:</b></p> <ul style="list-style-type: none"> <li>• Roles assigned for practical work to promote engagement</li> <li>• Differentiation between social and learning groups</li> <li>• Students grouped for teaching and learning, not classroom control</li> </ul>
<p><b>3. Relevant careers promoted</b>  This cluster focuses on interventions that highlight the value of physics to a wide range of scientific and non-scientific careers. Physics education research has indicated that girls are more likely to link subjects to careers than boys, so making these linkages could help girls feel that physics is more relevant to their futures.</p> <p><b>Effective pedagogies:</b></p> <ul style="list-style-type: none"> <li>• Careers that interest students have been identified and promoted</li> <li>• Links to careers made within class</li> </ul>	<p><b>4. Progression routes visible</b>  This cluster looks at how teachers and careers staff within schools can promote the range of routes into physics post-16. The assumption here is that by placing physics in the context of a progression route, girls will see its relevance to their educational and career goals.</p> <p><b>Effective pedagogies:</b></p> <ul style="list-style-type: none"> <li>• Teachers aware of students' ability and confidence levels in physics</li> <li>• Information, advice &amp; guidance (IAG) provided reflects the range of routes into physics</li> </ul>
<p><b>5. Workforce: girls (and boys) access good physics teaching</b></p>	<p><b>6. Ethos of "physics is for everyone": positive perception of the subject in school</b>  Girls are less likely than boys to feel</p>

<p>This cluster explores how the physics teaching workforce within a school can be developed and deployed to give girls a greater level of access to specialist physics teachers. Educational research tells us that girls are more vulnerable to the detrimental effects of weak physics teaching.</p> <p><b>Effective pedagogies:</b></p> <ul style="list-style-type: none"> <li>• Physics staff are supported in development</li> <li>• Specialist teaching is accessed pre- and post-16 to give continuity</li> <li>• Workforce is effectively deployed to teach physics</li> </ul>	<p>competent in physics (although their attainment shows that this belief is unfounded). Through promoting a positive ethos, girls' physics self-concept (i.e. how they see physics as something relevant to them that they are good at) can be improved.</p> <p><b>Effective pedagogies:</b></p> <ul style="list-style-type: none"> <li>• Positive school culture identified, e.g. through Ofsted</li> <li>• There is support for physics at senior level in school, e.g. flexibility with timetable</li> <li>• Staff and students are proactive in discussing physics options</li> </ul>
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