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## Making problem solving in physics explicit

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### Abstract content <br> &nbsp; (Max 300 words)

Newly admitted students within the Extended Curriculum Programme (ECP) Physics course at the University of the Western Cape (UWC) have educational disadvantages which greatly affect their learning and success. In the context of physics, students generally have difficulty with problem solving in physics. Available information point out that the major impediment to problem solving in physics is the way physics is being taught at school and at university. As a result of this students view physics as mathematics in the context of substituting numbers into equations and they think it is disconnected pieces of information to be memorised without understanding. Moreover, students do not appreciate the importance of problem solving and its relevance to their future careers.

Socio-cultural perspectives on learning in the sciences have guided the development of our intervention strategies to direct students' learning toward gaining access to the ways of problem solving in physics. Such perspectives suggest that an exclusively individual or cognitivist approach may need to be complemented by those that recognise the social contexts in which science learning takes place, which emphasises on learning as participation and making the "ways of knowing" physics explicit to give students access to the ways of problem solving in physics. The curriculum, classroom practices, learning outcomes, learning activities and the assessment thereof were aligned, with the purpose of making the ways of problem solving in physics explicit to the students.

This paper reports on work done in the Physics Department at UWC within the ECP which is informed by educational theory and best practices in Physics Education, to provide students access to the ways of problem solving in physics.

### Apply to be<br> consider for a student <br> &nbsp; award (Yes / No)?

No

### Level for award<br>&nbsp;(Hons, MSc, <br> &nbsp; PhD)?

N/A

### Main supervisor (name and email)<br>and his / her institution

N/A

### Would you like to <br> submit a short paper <br> for the Conference <br> Proceedings (Yes / No)?

Yes

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