Examining Change Strategies in University STEM Education

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**Motivation**

“Physics education reform has been focusing largely on classroom-based innovation rather than on the more political and institutional conditions required for long-lasting change. There appears to be a presumption at work among reformers that innovation inevitably leads to change.”


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**Selection Criteria**

Results presented here are based on an interdisciplinary literature review of journal articles published between 1995 and 2008. Multiple scans of key international databases were undertaken with different combinations of terms related to change, teaching, instruction and higher education. We then specifically examined the journals that appeared to produce the greatest number of articles that fit our inclusion criteria to ensure that we had gleaned all the relevant literature they offered. Finally, we examined the reference lists of the articles identified as most closely fitting our inclusion criteria. The final database contains 195 journal articles.

**Analysis – All Authors**

From the 195 articles which were reviewed in detail, they were roughly equally distributed amongst three quadrants: disseminating curriculum and pedagogy, developing reflective teachers, and developing policy. There were a much smaller number of articles coded as developing share vision.

**Analysis – FDR and HER Authors**

Using the same method, we selected out articles that contained at least one FDR, or one HER author. Faculty development researchers focus on developing reflective teachers, while higher education research focus on developing policy.

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**Discussion**

Tobias is concerned that physics education researchers focus more on developing new curricula but do not apply other strategies to promote instructional change. Namely, strategies that target institutional culture and belief systems. By reviewing STEM change literature, we found that science education researchers mostly take the approach of developing and disseminating innovative curricula and pedagogy, but rarely consider developing policy or share vision. For achieving long term sustainable change in STEM education, physics education researchers should look for opportunities to cooperate with researchers from faculty development and higher education, and also include developing policy and share vision into their approach.

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**More Information**

http://www.wmich.edu/science/facilitating-change
http://homepages.wmich.edu/~chenders

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