World Academy of Science, Engineering and Technology
International Journal of Educational and Pedagogical Sciences
Vol:13, No:01, 2019

Using Teachers' Perceptions of Science Outreach Activities to Design an 'Optimum' Model of Science Outreach

Authors : Victoria Brennan, Andrea Mallaburn, Linda Seton

Abstract : Science outreach programmes connect school pupils with external agencies to provide activities and experiences that enhance their exposure to science. It can be argued that these programmes not only aim to support teachers with curriculum engagement and promote scientific literacy but also provide pivotal opportunities to spark scientific interest in students. In turn, a further objective of these programmes is to increase awareness of career opportunities within this field. Although outreach work is also often described as a fun and satisfying venture, a plethora of researchers express caution to how successful the processes are to increases engagement post-16 in science. When researching the impact of outreach programmes, it is often student feedback regarding the activities or enrolment numbers to particular science courses post-16, which are generated and analysed. Although this is informative, the longevity of the programme's impact could be better informed by the teacher's perceptions; the evidence of which is far more limited in the literature. In addition, there are strong suggestions that teachers can have an indirect impact on a student's own self-concept. These themes shape the focus and importance of this ongoing research project as it presents the rationale that teachers are under-used resources when it comes to considering the design of science outreach programmes. Therefore, the end result of the research will consist of a presentation of an 'optimum' model of outreach. The result of which should be of interest to the wider stakeholders such as universities or private or government organisations who design science outreach programmes in the hope to recruit future scientists. During phase one, questionnaires (n=52) and interviews (n=8) have generated both quantitative and qualitative data. These have been analysed using the Wilcoxon non-parametric test to compare teachers' perceptions of science outreach interventions and thematic analysis for open-ended questions. Both of these research activities provide an opportunity for a cross-section of teacher opinions of science outreach to be obtained across all educational levels. Therefore, an early draft of the 'optimum' model of science outreach delivery was generated using both the wealth of literature and primary data. This final (ongoing) phase aims to refine this model using teacher focus groups to provide constructive feedback about the proposed model. The analysis uses principles of modified Grounded Theory to ensure that focus group data is used to further strengthen the model. Therefore, this research uses a pragmatist approach as it aims to focus on the strengths of the different paradigms encountered to ensure the data collected will provide the most suitable information to create an improved model of sustainable outreach. The results discussed will focus on this 'optimum' model and teachers' perceptions of benefits and drawbacks when it comes to engaging with science outreach work. Although the model is still a 'work in progress', it provides both insight into how teachers feel outreach delivery can be a sustainable intervention tool within the classroom and what providers of such programmes should consider when designing science outreach activities.

Keywords : educational partnerships, science education, science outreach, teachers
Conference Title : ICSME 2019 : International Conference on Science and Mathematics Education
Conference Location : Rome, Italy
Conference Dates : January 17-18, 2019