

## ABSTRACT

**I.D. No.:** 5519849

**Key Words:** STUDENT RESEARCH, STUDENT PUBLISHING, SECONDARY SCIENCE, AUTHENTIC SCIENCE

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**Dissertation Title:** STUDENT RESEARCH AND PUBLISHING IN SECONDARY SCHOOL SCIENCE: A STUDY OF ITS EFFECTS AND DEVELOPMENT OF A MODEL FOR IMPLEMENTATION

**Dissertation Advisor:** DR. SANGOB LAKSANA

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The Student Research and Publishing Program (SRPP) in Secondary School Science is a program, embedded in a standard science curriculum, which requires students to design and conduct authentic, original research, and offers them the opportunity to publish their work in an entry-level, peer-reviewed, scientific journal.

The purpose of this study was, firstly, to determine the effects of the SRPP on student outcomes in four areas: science-related attitudes, understanding of the Nature of Science (NOS), experimental research and publishing skills and attitudes, and development of 21<sup>st</sup> Century Skills. Secondly, this study aimed to develop a Model for Implementation of the SRPP into other schools.

For the first part of the study, students enrolled in an IB Physics course with the SRPP were compared with students in a standard IB Physics course with no SRPP. A series of surveys was used to gather data from both groups. It was found that the SRPP had significant positive effects on students' research and publishing skills and attitudes, as well as on students' development of 21<sup>st</sup> Century skills. However, the SRPP was shown to have no significant effects on students' science-related attitudes and understanding of NOS.

The second part of the study used two approaches. Firstly, the process and effects of a Trial Expansion of the SRPP into IB Biology and Chemistry were studied. The process of the Trial Expansion was studied through the use of a semi-structured interview with the implementing teachers, and its effects on student outcomes were studied using the same instruments as in the first part of the study. Secondly, semi-structured interviews, addressing perceived requirements and

challenges of the process of implementing the SRPP in a new school, were administered to stakeholders with experience of the SRPP. The findings from the interviews, along with the results of the study of the Trial Expansion, were used to inform the development of a draft Model for Implementation of the SRPP. The final, expert-validated Model proposes a four-phase approach to the implementation of the SRPP in a new school.

This study demonstrates the benefits of the Student Research and Publishing Program in Secondary School Science established at International School Bangkok. The study also develops a Model for Implementation of the SRPP in other schools. It is recommended that schools consider implementing the SRPP using this Model in order to realize the demonstrated benefits for their students.



**Field of Study:** Doctor of Philosophy in Educational Leadership

**Graduate School of Education**

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**Academic Year 2014-2015 Advisor's signature .....**