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### **What prompted you to apply for a TEG?**

In the 21st century, the competency of Science graduates impacts many aspects of our society, including our quality of life, our living environment and the world economy [1]. In addition to technical competency, the ability to communicate and articulate scientific ideas and theories also contributes to the measurement of competency of our graduates.

Many top universities like Harvard [2] and Yale [3] have long recognized the importance of compulsory communication courses in their core curriculum. In 2011, NUS Provost Professor Tan Eng Chye (current President) shared his vision and belief that language and communication modules should be made compulsory in the undergraduate curriculum [4].

Since 2007, the Faculty of Science (FOS) in collaboration with the Centre for English Language Communication (CELC) has been offering a plethora of communication modules to different groups of Science students. *SP1202 Communicating with the Academy* is an elective module designed with the aim of developing critical thinking, reading and writing skills with regards to relevant undergraduate scientific texts. Similarly, Pharmacy majors read *SP1203 Foundation in Effective Communication* as part of their graduation requirement while the Bachelor of Environmental Studies (BES) students read *ENV1202 Communication for Environmental*. While these modules play a critical role in enhancing the communication skills of Science undergraduates, only a small fraction of Science students (15%) are reading these courses.

Considering the importance of communication skills to the competency of our graduates and the current lack of communication education within the FOS, there is a strong impetus to develop a compulsory communication course for all Science freshmen. To address this need, the FOS and CELC *co-developed a new module, ES1541 Exploring Science Communication through Popular Science* in 2013. The module is offered to all Science freshmen from the Semester 1 of Academic Year 2013/14 and is a graduation requirement for all FOS students (except Pharmacy and BES students, as well as UTown residents who have read or will be reading IEM and UWC modules). The four main objectives of *ES1541* are listed below:

1. To develop a habit of reading, especially in science-related topics.
2. To enhance the ability to critically question published scientific information.
3. To enhance the ability to articulate opinions and perspectives.
4. To develop a student's coherence in writing and oral communication.

New modules are constantly being proposed across the University and existing ones are also being revised to suit the needs of the changing curriculum. However, to the best of our knowledge, very little has been done to assess the effectiveness of a new module. With an estimated enrolment of 1200 every academic year, the potential impact of this new module on our students is significant. Our research team therefore applied for the TEG to measure the effectiveness of the module systematically and prospectively via a series of pre-course and post-course surveys.

### **To what extent have the findings of your TEG inquiry led to changes in your teaching practice?**

Perception survey and reflective letter analysis suggest that the initiatives implemented in the new module are broadly effective in improving the competency and confidence in students' academic literacy skills and shed light on preference of reading materials [5]. Our study contributes towards augmenting our appreciation of the epistemologies in the teaching and learning of communication within a multi-racial context and informs English language educators on the potential benefits of personalising the instructional design of a communication course for science freshmen.

There have been major changes in the materials and assessment tools used in the course, arising from observations made in the study. For instance, course materials which are closely related to the public communication of science, including media reports have been incorporated into the course. Also, in terms of assessment, the set of rubrics developed has sharper alignment with the criteria for effective science communication rather than for effective communication in the academic context. We are also more conscious of test validity and have subjected the rubrics to assessment matrices tests so as to validate its use.

### **Have you noticed any implications of student learning as a result of the TEG inquiry?**

Course materials and assessment tasks were aligned more closely with the learning outcome on effective public communication skills. For instance, instead of a science essay written for an academic audience, one of the course task was changed to the writing of a media report. Rubrics outlining relevant criteria for effective public communication of media pieces were listed for student use. It was observed that students could appreciate the direct connection between materials, tasks and assessment criteria and thus, engaged themselves in the course with a clearer sense of aim, interest and invested effort in the completion of relevant tasks.

### **References**

[1] Shawn M. Glynn and K. Denis Muth (1994). Reading and Writing to Learn Science: Achieving Scientific Literacy. *Journal of Research in Science Teaching* 31(9), 1057-1073.

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[3] <http://writing.yalecollege.yale.edu/writing-yale>

[4] <http://blog.nus.edu.sg/provost/2011/10/18/writing-and-communications/>

[5] S. Zhang, M. Chng, K.L. Ng, S.M. Wu, and E.C.Y. Chan (2017). Enhancing the Communicative Competence of Science Undergraduates Through the Use of Popular Science: A Perspective from the Students. *Asian Journal of the Scholarship of Teaching and Learning (AJSoTL)*, 7(2), 30-57.

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