



Feature

Mentoring: The Relationship That Makes The Difference In Scientific Research Training For Youth in Brazil

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Brazilian socio-economic inequalities and their impact on education and employment are well documented (Menezes Filho & Scorzafave 2009). In general, Brazilian students tend to achieve less in science, mathematics and problem-solving (PISA, 2006; Bussière et al 2006). Nevertheless, those in Brazil who have the opportunity to go to High School may take part of interesting educational programs in science training for youth.

Current Brazilian initiatives in science call for educators, scientists, and students in all levels to participate in endeavors in diverse environments both at school and outside the classroom. Some of these programs are funded by the Brazilian States. A few are slowly becoming more democratic because they started attracting teenagers from underprivileged backgrounds.

The importance of research training in science for youth is that they may foster related interests and demystify science practices. For instance, Roberts & Wasserug (2009) have demonstrated that in the United States High School students who had the chance to take part of scientific research are more prone to develop a career in science than those students who only began these activities during their undergraduate studies.

Our study concentrates on the relationships between advisors and their students at the Vocational Scientific Program (Programa de Vocaç o Cient fica) called Provoc, at Joaquim Ven ncio Politechnical Health School (<http://ewh.ieee.org/soc/pcs/newsletter/www.epsiv.fiocruz.br>). This program emerged in Rio de Janeiro, in 1986, and it is part of a much larger biomedical research organization named Oswald Cruz Foundation (Fundac o Oswaldo Cruz - FIOCRUZ), associated with the Brazilian Ministry of Health.

Over the years, Provoc has stimulated High School students to experience research activities, primarily in Biomedicine, but also in the fields of Human and Social Sciences. Provoc works with partnerships between public and private High Schools, and is a model to other Brazilian institutions of Science and Technology. Provoc's mission is that High School students take part in research activities weekly during up to three years. This program depends on researchers' will to play the role of advisors (Filipecki et al. 2006, Filipecki et al. 2009).

We studied the advisor-student relationship from the perspective of both the researchers and their students. In 2005, we interviewed the best 22 researchers according to Curriculum Vitae standards. Later, in 2007 and 2008, we interviewed 24 alumni from the program who remained at the institution conducting research.

We concluded that the relationships students have with their advisors are crucial for former students' continuation in the scientific career (Sousa, 2009). In these relationships, advisors give material and symbolic incentives to students. Advisors invest in seeking grants to have students as research assistants. Advisors may also guide students toward the rituals of higher academic levels. Sometimes, advisors become mentors because the relationship with their students unfolds into a lasting influence in their scientific careers and sometimes in personal matters.

To track the way this process evolves, it was observed that many students follow their advisors' professional fields of studies. Advisors act as role models and may help students either confirming their career choices previous to entrance in the program or in awakening students to a new professional occupation.

The results indicate that the advisors' investments in students' careers develop in different ways. More often, advisors help students' progress at the same institution where research activities are performed. In a few cases, alumni reported that advisors guide them toward research activities at other universities, and may even provide them contacts to progress in their scientific careers or professionally elsewhere. It was finally observed that other professional role models or other circumstances that occurred had a more impacting influence than the advisor in the pursuit of a scientific career.

Contemporary science development poses many challenges concerning educational matters for the next generation of scientists. Questions about ethical responsibilities of scientists are central (Petersen, 2003). The scenario in science is distracting because, increasingly, entrepreneurial skills are being required from the researchers and students alike, obscuring the greatness of the human dimension that all activities unfold.

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