

# Hispanic Students and STEM at Selected Houston Schools

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## INTRODUCTION

Despite many efforts by the US federal and various state governments, and many institution of higher education and private organizations in the USA, there is still a shortage of interest among prospective college students in general in Science, Technology, Engineering and Mathematics (STEM) fields. These fields, especially engineering, are essential to the current and future state of economy in the US.

The situation is even more critical in minority groups. A recent report by the US Department of Commerce (Langdon et. al., 2011) found out that there are several and deep gender gaps between males and females in STEM fields both before graduation from college and after entering the workforce indicating that more efforts are still needed to attract females to these highly in demand fields. It has been reported that the enrollement of blacks in STEM fields has even declined in the past decade (Washington, 2012).

Further, It has been well established that hispanics are not represented well in STEM fields (Koebler, 2011). For instance, in the State of Illinois which has a large hispanic population, only 5% of the jobs in STEM workforce are of latin origin (IWE & ILS at ND, 2009). Recently, many organizations have devoloped and are promoting various programs to attract this demographic group to the fields of STEM.

This study is focusing on the Hispanic demographic group in the USA. There are currently over 50 million latinos in the USA (Humes et. al., 2011) which makes this group a significant component in the US workforce both currently and in the future. The rate of increase in population among americans with latin origin is much higher than the increase in US general poulation (Saenz, 2010). All of this indicates that latinos will have a bigger influence in the US in the near and far future (Saenz, 2010).

In particular, this study is conducted in the metropolitan area of Houston, Texas for tow reasons. Primarily, many hispanics live in this area for various historical and geographical reasons. Recent reports estimate that hispanics constitute up to half of of Houston's population. Only two cities in the US surpass Houston in the number of population with latin origins. Secondly due to the proximity of this area to Sam Houston State University, the institute of the presenter. Sam Houston State University is in the nearby city of Huntsville, Texas.

## THE STUDY

To help understand the reasons behind the underepresentation of Latinos in STEM education, a study is being prepared to take place at various schools in Houston, Texas. The study targets hispanics in these schools. It is conducted totally volunterly based on consents from schools, students, and parents. The basic methodology of the study is based on many personal interviews and various questionnaires. Several surveys will be distributed to the students and their parents. Other surveys will also be distributed to teachers and administration staff at the schools. The surveys and interviews will be evaluated and assessed. Conclusions will be inferred from the study and appropriate reccommendations will be made accordingly.

The components of this study include:

1. Finding out the perception of STEM among Latino students and parents.
2. Identifying whether Latino students are interested or lacking interest in pursuing STEM education.

3. Exploring what motivates those who are interested in STEM education.
4. Exploring what discourages those who are not interested in STEM.
5. Highlighting the differences of opinion, if there are any, between the students and their parents on STEM education.
6. Identifying obstacles facing Hispanic students who aspire to join STEM education
7. Exploring ways and ideas to remove such obstacles that prevent hispanic students to pursue STEM education
8. Determining the role of schools to promote STEM education based on students' opinions.
9. Determining the role of universities and colleges to promote STEM education based on students' opinions.
10. Determining the role of the federal and state government to promote STEM education based on students' opinions.
11. Assessing the impact of those programs which promote STEM education.
12. Probing immigration issues regarding STEM among Latinos.

The main objective of this study is to produce a report on the state of STEM education in this particular sample of Hispanic students in the selected schools in the Houston metropolitan area based on actual interviews and questionnaires. This study can be either extrapolated to or repeated in other geographical areas, and the results can then be used to devise measures to attract more Hispanic students to the STEM fields of education.

#### **THE PRESENTATION**

This study is still in its early stages. The study will take one or two years to complete. For various reasons, conducting such a study is challenging. The difficulties facing conducting such a study will be highlighted in the presentation. Mitigations measures to alleviate such difficulties will be reported.

The presentation at the conference will highlight the importance and relevance of the study. It will explain its methodology and typical questionnaires and surveys to be used in the study. It will show preliminary results if they are available, and it will if appropriate make several preliminary suggestions and recommendations to promote STEM and especially engineering education.

#### **ACKNOWLEDGEMENT**

Special thanks are extended to those schools who agreed to participate in this study. A complete list is not available at this time, but a full acknowledgement will be appropriately stated at the presentation.

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