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SIGN LANGUAGE IN ASTRONOMY AND SPACE SCIENCES

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RESUMEN

Enseñar ciencias a estudiantes con deficiencia e impedimento auditivo puede ser una experiencia agradable y valiosa tanto para el profesor como para el estudiante, y también necesaria para la sociedad a fin de reducir las políticas excluyentes en el sistema educativo formal. El mayor obstáculo en la enseñanza de las ciencias a estudiantes con deficiencia e impedimento auditivo es la falta de vocabulario en lengua de señas para expresar los conceptos precisos que se manejan en el quehacer científico. En un proyecto de colaboración entre el Centro de Investigaciones de Astronomía "Francisco J. Duarte" (CIDA), la Universidad Pedagógica Experimental Libertador-Instituto Pedagógico de Maturín (UPEL-IPM) y la Unidad Educativa Especial Bolivariana "Maturín" (UEEBM) iniciado en 2006, hemos intentado llenar este vacío acuñando señas para conceptos de astronomía y ciencias del espacio. Durante dos talleres de tres días cada uno, realizados en el CIDA en julio de 2006 y en la UPEL-IPM en marzo de 2007, un total de 112 conceptos de astronomía y ciencias del espacio fueron acuñados en lengua de señas usando un método interactivo que se explica en el texto. El objetivo inmediato del proyecto es incorporar estos términos a la Lengua de Señas Venezolana (LSV).

ABSTRACT

Teaching science to school children with hearing deficiency and impairment can be a rewarding and valuable experience for both teacher and student, and necessary to society as a whole in order to reduce the discriminative policies in the formal educational system. The one most important obstacle to the teaching of science to students with hearing deficiency and impairments is the lack of vocabulary in sign language to express the precise concepts encountered in scientific endeavor. In a collaborative project between Centro de Investigaciones de Astronomía "Francisco J. Duarte" (CIDA), Universidad Pedagógica Experimental Libertador-Instituto Pedagógico de Maturín (UPEL-IPM) and Unidad Educativa Especial Bolivariana de Maturín (UEEBM) initiated in 2006, we have attempted to fill this gap by developing signs for astronomy and space sciences terminology. During two three-day workshops carried out at CIDA in Mérida in July 2006 and UPEL-IPM in Maturín in March 2007 a total of 112 concepts of astronomy and space sciences were coined in sign language using an interactive method which we describe in the text. The immediate goal of the project is to incorporate these terms into Venezuelan Sign Language (LSV).

Key Words: education

1. INTRODUCTION

The deaf and the hard of hearing have traditionally been at a disadvantage with respect to their hearing counterparts in all walks of life (Levy 2002), but this is of special concern to society as a whole when access to education and knowledge is denied or significantly reduced due to individual physical impairments which in no way affect the individual's capacity to learn and communicate. Some countries, such as Venezuela in 1999, have recently incorporated the right to sign language and Deaf culture into their constitutions, thereby recognizing the fundamental role of bilingualism in the intellectual and cultural development of the Deaf and hard of hearing (Grosjean 2004). At the school age level, the use of sign language as first language and the primary means of learning and communicating can be an obstacle to learning if the necessary signs are not available. Since sign language in general is the accumulation of different signs in common use which have been incorporated by tradition or coined and propagated by a particular group of Deaf people, most country sign languages are basically constrained to

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the terms and concepts necessary to describe everyday life and therefore very limited when used to describe specialized terms and concepts, such as those of science and technology. It is in this context that a collaborative project designed to coin terms and concepts of astronomy and space sciences was initiated in 2006 between Centro de Investigaciones de Astronomía "Francisco J. Duarte" (CIDA), a public research center under the Ministry of Science and Technology which operates and administers the Venezuelan National Observatory at Llano del Hato; the Universidad Pedagógica Experimental Libertador-Instituto Pedagógico de Maturín (UPEL-IPM), the Maturín campus of the Venezuelan national teachers college; and Unidad Educativa Especial Bolivariana "Maturín" (UEEBM), a special education school for the deaf and hard of hearing operated by the Ministry of Education in Maturín.

2. COINING TERMS AND CONCEPTS

It is now generally accepted that the deaf and hard of hearing who utilize signed language constitute a cultural minority who share not only a common language but also have common interests, hopes and fears and general outlook on life (Humphries 1993). This cultural minority is known as the Deaf community. It is totally impractical, therefore, for the hearing alone to coin signs which will represent terms and concepts of science without the active participation of the Deaf in the process. The method that we devised to assure that the signs which were coined were consistent with the Deaf culture involved an expert, a teacher-translator and a group of deaf students. The method used in each case entailed five steps: (1) the concept was explained by the expert with visual aids and translated into sign language by the interpreter, (2) an interactive session of discussion with the deaf students ensued in order to dispel all doubts regarding the precise meaning of the term, (3) discussion among only deaf students which were divided into groups of 3 and 4 to discuss and propose the most appropriate sign, (4) a plenary session among deaf and hearing to present the different proposals, discuss and select the most appropriate, and (5) the audiovisual recording of the selected sign. The three parties involved in this process (expert, interpreter and the Deaf students) are absolutely necessary to assure a useful and precise sign. In science it is imperative to avoid ambiguous terms so the expert and interpreter must be watchful that the resulting signs will be consistent and will not be possibly confused at a later stage with the remaining terms to be coined. As an example, the term "light" might be coined and later revised when considering other terms such as "radiation", "illumination" or "magnitude". Using this method, 112 terms and concepts of astronomy and space sciences were coined and we expect to continue the project in 2008 with the immediate goal of coining at least the 500 basic terms and concepts of astronomy and space sciences and creating an interactive web page necessary to evaluate and propagate the use of the signs by the Deaf community.

3. CONCLUSIONS

The result of this experience demonstrates that the interdisciplinary collaboration in the coining of signs for the sciences can open to the Deaf community the possibility of learning and exchanging ideas and experiences in the diverse fields of science and research.

The Deaf community and especially those individuals, both young and old, who are motivated and talented deserve to have made available to them the possibility to engage in the fascinating world of scientific research and enquiry. The coining of signs to represent as closely as possible the precise meaning of the terms and concepts used in science and technology requires the active participation of the scientific community in collaboration with the diverse groups and national associations which promote the recognition and advancement of the Deaf community. The preliminary results obtained in this work will form the basis of a much more ambitious national project which will be carried out during 2008 and 2009 by the participating public institutions of Venezuela and the updated results and activities made available to the public in the form of the interactive web page `www.cienciaensenas.org`.

REFERENCES

Grosjean, F. 2004, in Le bilinguisme aujourd'hui et demain, ed A. Gorouden & B. Virolle (Paris: Editions du CTNERHI), 51

Humphries, T. 1993, in Multicultural Issues in Deafness. White Plains, ed. K. Christensen & G. Delgado (New York: Longman), 3

Levy, N. 2002, J. Med. Ethics, 28, 284