

The Native Scientist project in Ireland: Promoting Heritage Languages through informal Engagements with Scientists

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Abstract

This project report focuses on the results of a series of heritage language STEM workshops which were run in Ireland by the organization Native Scientist. The results indicate that the workshops represent a positive experience for children and scientists, and show high potential to enhance the linguistic skills of bilingual pupils.

Keywords: *Native Scientist; Heritage Language; STEM*

1. Heritage languages in Ireland

Following an unprecedented economic growth during the decade of 2008, Ireland became the home of over 180 languages (La Morgia, 2011). The most recent Census (2016) recorded that 612,018 residents in Ireland spoke a language other than the country's official national languages. The changing linguistic landscape has resulted in an increase in the number of children whose home language is different from English or Irish (Department of Education and Skills, 2012). According to a report by the Economic and Social Research Institute (ESRI, 2009), 60% of primary schools had newcomer pupils enrolled, and in one in ten schools these pupils comprised more than 20% of the school population. The provision of English language support aims at ensuring that children have access to the curriculum and at enriching children's communicative repertoires to gain confidence in communicating with their peers. While the focus in schools is on the main language of instruction, teachers are advised to encourage parents to continue to support the development of the home language. The importance of home languages is recognized by schools and by the National Council for Curriculum and Assessment, however initiatives to introduce these languages in the classroom stem from individual efforts rather than institutional support (Mc Daid, 2011).

Supporting the development of all of the child's languages has a significant impact on socio-emotional development: the language spoken by a parent and often by the extended family



has an emotional significance, as it allows the child to create a sense of belonging to the family and to a wider community of speakers. Bilingualism also has positive effects on cognition: research shows that bilingual children outperform monolinguals on tasks measuring executive functions (for reviews, see Adesope, et al., 2010; Barac and Bialystok, 2011), and the results from a recent study indicate that proficiency in the home language of children from migrant backgrounds is essential to reap the cognitive advantages of bilingualism (Blom, Boerma, Bosma, Cornips and Everaert, 2017). It is therefore fundamental to enhance children's skills in each of their languages to support them in their development and to allow them to benefit from bilingualism.

To counteract the lack of heritage language education in schools, to support families in the development of their children's heritage language skills, and to give children the opportunity to generate fun, positive and exciting memories in the heritage language, a project called Native Scientist was introduced to Ireland. Native Scientist is a non-profit organization created in London in 2013 with the aim to bring together children and scientists who speak a common heritage language. The workshops are delivered by "real" scientists who engage children in non-formal STEM (Science, Technology, Engineering and Maths) education using heritage languages as medium of communication. Here we report on the perceptions from pupils, scientists, coordinators, and management team regarding the implementation of this innovative, award-winning project, in Ireland.

2. The Native Scientist workshops

The concept of 'science + language' workshops developed by Native Scientist relies on bringing together 20-25 children and 4-5 scientists who speak a common heritage language. It is based on a pedagogical method known as CLIL (content and language integrated learning), which is commonly used in bilingual schools (Nikula, 2016). Native Scientist workshops mainly target children between the ages of 5 and 12.

Each workshop runs in a speed-dating format and showcases a variety of 3 to 5 different STEM subjects to pupils. It lasts 1.5-hours and each scientist speaks to a group of 4-5 pupils for approximately 15 minutes. It can be organised in a school (mainstream school, Saturday

school, after-school club or similar) through liaison with a teacher (usually a language teacher), or in a suitable venue through registration of children by their parents/guardians. Before a workshop, scientists who volunteer to talk and demonstrate their scientific work are invited to attend a webinar on how to communicate science to bilingual pupils and further 1-to-1 bespoke support is provided upon request.

Most importantly, the Native Scientist ‘science + language’ workshops were designed not only to improve the language skills of bilingual children, but also to promote STEM knowledge and careers through exposure to role models. It is commonly accepted that a significant proportion of pupils by the age of 12 has already decided that STEM is “not for me” and that engaging primary school children with the world of work has a positive impact on academic achievement (ASPIRES report).

3. Outputs and outcomes

Four Native Scientist workshops were delivered, two in Cork for Portuguese- and Spanish-speaking children, and two in Dublin for Italian-speaking children. A total of 75 children, 17 scientists (3-6/workshop) and 3 coordinators took part. None of the workshops was organised in a school setting. An online free-of-charge registration form allowed parents to register their children and was distributed by email and social media channels.

3.1. The pupils’ experience

At the end of each workshop, children were asked to fill in a feedback form with the following four questions:

How old are you?

Did you like to meet the scientists?

Did you learn something new?

Which language do you prefer to speak?

As shown in Figure 1, the majority of pupils liked the workshop a lot (87.32%) and learned a lot (88.41%), which is within the expected level of success based on results from workshops carried outside Ireland (93.88% liked the workshop a lot and 81.16 learned a lot, n = 1238,

unpublished data). Among the 75 participating children, 68 were aged between 5 and 10 years old and 7 were aged between 11 and 14 years old, meaning that most of the participants were within the targeted age group. Over half of participants (52%) did not express a preference for the home or the school language, likely indicating a balanced education and healthy bilingual development. The remaining children either prefer speaking in the home language (28%) or the school language (20%). This imbalance may result from differences in time since arrival to Ireland (just arrived, first or second generation), support and engagement of parents in their children's education and amount and type of the exposure to each language (at home only, mainly summer holidays, etc).

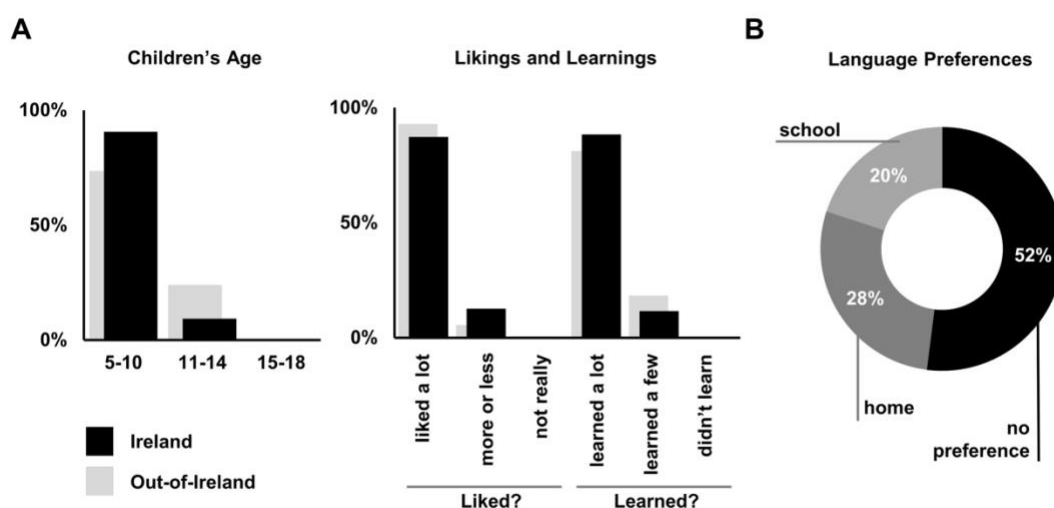


Figure 1: Results of the feedback collected from children at the end of the workshop. (A) Percentage of children per age group and per liking and learning outcomes, in workshops organised in Ireland and abroad (UK, France, Germany). (B) Percentage of children showing preference and no preference to speak the home and the school language.

3.2. The scientists' experience

After each workshop, scientists were invited to fill in an anonymous online feedback form. Of the 18 scientists who participated in workshops, nine provided feedback. All agreed that the organization of the workshop, the speed-dating format and the children's reaction was "good" or "very good", on a 4-point scale where very good was the maximum. Eight scientists said they would repeat the experience (the remaining scientist replied "maybe"). When asked

how often each scientist volunteers per year, five (55%) replied “sometimes (2-4 times/year)”, indicating that in Ireland scientists are very much engaged in volunteering initiatives when compared with other countries which led Native Scientist workshops - the same response in combined data from UK, France and Germany was given by 40% of the respondents (n = 124, unpublished data). To the same question, three scientists (27%) replied “never (this was the first time)”, which corroborates the observation made earlier as the same answer in other countries was given by 42% of the respondents. Finally, one replied “occasionally (1 time/year)” and none replied “a lot (almost every month)”.

3.3. The coordinators’ experience

Coordinators are responsible for organizing workshops and liaising with scientists and with families. The experience is rewarding, as quotes from coordinators in Cork, Dr Ana Almeida and Dr Maria Nuñez show:

“Our workshop was a real success!”

“The parents were delighted with the workshop and the kids were amazing!”

Like in other locations, coordinators in Ireland feel that children are “wowed” by what scientists have to show and they report high levels of positive interactions between scientists and children, who are reported to ask many questions and fully engage in the 15 minutes they spend with each scientist. Importantly, they also feel that scientists themselves have boosted joy and satisfaction at the end of the workshop and that there is an increased awareness of the impact of each scientist’s work.

3.4. Perceptions from the management team

Within the Native Scientist context, Ireland is the fastest growing country. In only five months the project was implemented in two cities and in three different languages. In France and the UK, the same number of languages was reached after 3 and 1 year, respectively. Additionally, scientists in Ireland enrolling and organising workshops are experiencing more support from their institutions, universities and local landmark venues than scientists in France, Germany or the Netherlands. For example, in Cork, the APC Microbiome Institute helped scientists prepare their interventions and provided t-shirts and various demonstration materials to the

scientists. In Dublin, the Science Gallery provided rooms and promotion of the event on their website, while the Equality Fund from Trinity College Dublin funded the workshops. This puts Ireland among the main promoters of STEM education in heritage language and shows a positive image of Ireland's science outreach and engagement abroad and among the nearly 1000 scientists that belong to Native Scientist network.

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References

- Adesope O. O., Lavin T., Thompson T. and Ungerleider C. (2010). A systematic review and meta-analysis of the cognitive correlates of bilingualism. *Review of Educational Research*. 80 207–245
- Barac, R., and Bialystok, E. (2011). Cognitive development of bilingual children. *Language Teaching*, 44(1), 36-54.
- Blom, E., Boerma, T., Bosma, E., Cornips, L., and Everaert, E. (2017). Cognitive Advantages of Bilingual Children in Different Sociolinguistic Contexts. *Frontiers in Psychology*, 8, 552.
- Central Statistics Office. (2016). *Census 2016 Summary Results*. Dublin: Central Statistics Office.
- Department of Education and Professional Studies, *ASPIRES Report, Young people's science and career aspirations, age 10 –14*, Kings College London. Retrieved from <https://www.kcl.ac.uk/sspp/departments/education/research/aspires/ASPIRES-final-report-December-2013.pdf>
- Department of Education and Skills (2012). *English as an Additional Language in Primary Schools in 2008*. Dublin: Inspectorate Evaluation Studies.
- Economic and Social Research Institute (2009). *Adapting to Diversity: Irish Schools and Newcomer Students*. Dublin: ESRI.
- La Morgia, F. (2011). Who is afraid of multilingualism? Evaluating the linguistic impact of migration in Ireland. In Darmody, M. Tyrrell, N. and Song, S. (Eds). *The Changing Faces of Ireland: Exploring Immigrant and Ethnic Minority Children's Experiences*. Rotterdam: Sense, pp. 3-16.
- Mc Daid, R. (2011). GŁOS, VOCE, VOICE: Minority Language Children Reflect on the Recognition of their First Languages in Irish Primary Schools. In Darmody, M., Tyrrell, N. and Song, S. (Eds.) *The Changing Faces of Ireland: Exploring Immigrant and Ethnic Minority Children's Experiences*. Sense, pp. 17-33.
- Nikula T. (2016). CLIL: A European Approach to Bilingual Education. In: Van Deusen-Scholl N. and May S. (Eds.) *Second and Foreign Language Education. Encyclopedia of Language and Education* (3rd ed.). Springer.