

From Official Statistics to International Classrooms: A Nordic eTwinning Collaboration

Svetlana Badina, Statistics Norway, post@skolesb.no

Kristín Ósk Ingvarsdóttir, Statistics Iceland, kristin.o.ingvarsdottir@hagstofa.is

Arndís Vilhjálmisdóttir, Statistics Iceland, arndis.vilhjalmsdottir@hagstofa.is

In a data-driven society marked by information overload and misinformation, citizens need statistical literacy to interpret and critically evaluate quantitative information. This creates new dissemination challenges for national statistical institutes (NSIs), whose role increasingly extends beyond producing and publishing official statistics to educational dissemination that supports statistical literacy.

This paper presents an ongoing Nordic collaboration between Statistics Norway and Statistics Iceland to develop a Nordic eTwinning project based on a teaching module on the Law of Large Numbers (LLN). Drawing on existing educational dissemination initiatives in both countries, the project combines inquiry-based learning, simulations, programming, and official statistics to support students' understanding of probability, variability, uncertainty, and statistical reasoning in an international digital learning environment.

Rather than evaluating a completed educational intervention, the paper presents the theoretical foundations, pedagogical rationale, and design of a dissemination model that connects NSIs, schools, and official statistics through European digital learning environments.

A key outcome of the initiative is the establishment of a Nordic collaboration between Statistics Norway and Statistics Iceland, providing a shared framework for developing educational resources for teachers based on official statistics. The proposed dissemination model is designed to be adaptable and reusable and may therefore be relevant for other countries seeking to strengthen connections between official statistics and education.

Keywords: statistical literacy; official statistics; educational dissemination; eTwinning; Nordic collaboration.

*“The case for substantial change in statistics instruction
is built on strong synergies between content,
pedagogy, and technology.”*
(Moore, 1997, p. 123).

1. Introduction

In modern societies, where statistical claims increasingly influence public debate and decision-making, the role of national statistical institutes (NSIs) extends beyond producing and publishing official statistics. Increasingly, this role also involves supporting citizens in interpreting, understanding, and critically evaluating statistical information through educational dissemination. Educational dissemination has therefore emerged as an important complement to traditional statistical communication by supporting statistical literacy and informed public discourse. Statistical literacy is widely recognized as an essential democratic competence, enabling citizens to interpret statistical information, evaluate uncertainty, and critically assess quantitative claims encountered in everyday life (Gal, 2002).

Moore’s (1997) observation remains highly relevant to the evolving role of NSIs. Meaningful learning requires more than making data available; it requires educational experiences that integrate statistical content, appropriate pedagogy, and digital technologies. Recent discussions within the official statistics community also emphasize that NSIs are increasingly expected to support statistical literacy alongside their traditional responsibilities for producing and disseminating official statistics (Radermacher, 2021). Gal (2003) further argues that NSIs can contribute by providing accessible datasets, educational resources, and meaningful societal contexts that connect statistical concepts with real-world issues.

These developments have encouraged several NSIs to expand their educational dissemination activities. This paper presents one example: an ongoing collaboration between Statistics Norway and Statistics Iceland to develop a Nordic eTwinning project based on Statistics Norway’s teaching module on the Law of Large Numbers (LLN). Building on existing educational initiatives in both countries, the project explores how official statistics, inquiry-based learning, programming, and international digital collaboration can support statistical literacy.

Rather than evaluating a completed educational intervention, the paper presents the theoretical foundations, pedagogical rationale, and design of a dissemination model in which NSIs collaborate with schools through reusable educational resources, official statistics, and international digital learning environments. A key outcome of the initiative is the establishment of a Nordic collaboration that provides a shared framework for developing educational resources and future Nordic and international school partnerships. Although still under development, the proposed model is intended to be adaptable and reusable and may therefore provide a model for other national statistical institutes seeking to strengthen connections between official statistics, education, and informed citizenship.

2. Educational Dissemination and Statistical Literacy

2.1. Educational dissemination and the role of NSIs

Educational dissemination has emerged as an increasingly important extension of the traditional dissemination role of national statistical institutes (NSIs). Its purpose is not only to communicate official statistics, but also to support statistical literacy by helping citizens understand, interpret, and critically evaluate statistical information (Radermacher, 2021).

Gal (2002) defines statistical literacy as the ability to interpret, critically evaluate, and communicate statistical information in meaningful contexts. This competence extends beyond technical knowledge and includes contextual understanding, critical questioning, communication, and informed judgement under uncertainty. In societies where statistical claims increasingly influence public debate, policy, and everyday decision-making, such competence is central to informed citizenship.

Gal (2003) further argues that NSIs can support statistical literacy by providing accessible datasets, educational resources, and meaningful societal contexts that connect abstract statistical concepts with real-world issues, increasing both relevance and motivation. Educational dissemination¹ can therefore transform official statistics from information products into learning resources. Building on this perspective, the present project uses official statistics as a basis for inquiry, discussion, and

¹ We use the term as an extension of dissemination activities discussed by Radermacher.

international collaboration, exploring how schools can become active partners in developing statistical literacy among future users of official statistics.

2.2. Learning with official statistics

Learning with official statistics gives students access to data that are both trustworthy and socially meaningful. Such data enables students to investigate real-world questions while developing statistical reasoning and critical thinking.

The GAISE Guidelines emphasize that statistics education should focus on inquiry, data, variability, interpretation, and communication rather than procedural calculation alone (Bargagliotti et al., 2020). Statistics is presented as an investigative process in which learners formulate questions, analyze data, interpret findings, and reflect on uncertainty.

Rather than learning statistical concepts in isolation, students investigate demographic data, survey results, and election statistics, connecting official statistics with real societal issues.

2.3. Designing learning: content, pedagogy, and technology

Moore (1997) argues that effective statistics instruction depends on strong synergies between content, pedagogy, and technology. This idea provides a useful pedagogical frame for the present project.

In the project, official statistics provide the statistical content, inquiry-based learning provides the pedagogical approach, and simulations, programming, and eTwinning provide digital tools for exploration and collaboration. Consistent with research in statistics education, these elements create active learning environments in which students investigate statistical phenomena, discuss interpretations, communicate findings across national contexts, and construct understanding through experimentation and reflection (Doyle, 2008; Garfield & Ben-Zvi, 2008). Programming is used not as an end in itself, but as a tool for exploring statistical ideas, visualizing variability, and strengthening conceptual understanding. The project also draws on the PRIMM model (Sentance et al., 2019), which encourages students to predict, investigate, modify, and create simulations as part of the learning process.

2.4. *The Law of Large Numbers as a learning context*

The Law of Large Numbers provides an accessible context for exploring randomness, variability, sample size, and uncertainty. Through experiments, simulations, and comparisons with official statistics, students observe how empirical frequencies fluctuate in small samples but gradually stabilize as the number of observations increases. Learning statistical concepts through repeated experimentation and meaningful data contexts supports conceptual understanding and statistical reasoning (Garfield & Ben-Zvi, 2008).

The teaching module was originally developed as part of the first author's pedagogical qualification studies and subsequently further developed through Statistics Norway's SSB School. Within the present collaboration, the module serves as the first reusable educational resource illustrating how official statistics, inquiry-based learning, digital technologies, and international collaboration can be combined to support statistical literacy.

3. Project Design

The project presented in this paper emerged from a shared ambition within Statistics Norway and Statistics Iceland to strengthen statistical literacy through educational dissemination and international school collaboration. Building on existing educational dissemination initiatives in both countries, the collaboration combines curriculum-oriented teaching resources developed through Statistics Norway's **SSB School**²—including earlier initiatives to strengthen statistical literacy through adapted teaching materials and school collaboration (Badina, 2022)—with Statistics Iceland's experience from the **SAILS** system (Calian et al., 2019)³, **Greindu betur**⁴, the European Statistics Competition⁵, and its collaboration with the Icelandic Centre for Research (ICR) in implementing eTwinning as part of the Erasmus+ programme. Similar educational initiatives are also emerging elsewhere in the Nordic region, indicating that supporting statistical literacy through education is becoming a broader

² <https://www.ssb.no/ssb-skole/undervisningsopplegg/store-talls-lov>

³ <https://statice.is/publications/learning-statistics/>

⁴ <https://www.greindubetur.is/>

⁵ <https://www.statscompetition.eu/>

priority among Nordic NSIs⁶. Together, these complementary initiatives provide the foundation for a reusable educational model that may be adapted by schools and national statistical institutes in other countries.

Within this framework, the Law of Large Numbers (LLN) serves as the first teaching module illustrating the dissemination model. The LLN module was selected because it provides an accessible context for exploring randomness, variability, sample size, and statistical uncertainty—concepts that are fundamental for understanding surveys, demographic statistics, election results, and other official statistics. Through simulations, programming, classroom investigations, and comparisons with official statistics, students develop an intuitive understanding of how randomness and stability interact in real-world contexts⁷.

The module is currently being adapted for implementation through **eTwinning**, a European platform⁸ supporting collaboration among schools across participating countries. Through the shared digital learning environment that eTwinning provides, students investigate statistical questions, compare national datasets, exchange interpretations, and discuss findings within an international learning community. These activities align with principles of collaborative and inquiry-based learning (Doyle, 2008). Because the learning activities are built around official statistics from each participating country, the platform also functions as a dissemination infrastructure for NSIs, creating new connections between statistical institutes, teachers, and students while allowing official statistics to become an active component of classroom inquiry rather than simply information presented to users. The project is currently in a developmental phase. Accordingly, the purpose of this paper is not to evaluate educational outcomes but to present the rationale, design principles, and collaborative framework of the initiative. Pilot implementations involving schools in Norway and Iceland are planned as the next stage of the

⁶ [Mit liv med statistik - Danmarks statistik](#)

⁷ The complete Project Kit describing the learning sequence, classroom activities, and international collaboration tasks is currently being finalized and is expected to be published on the eTwinning platform during summer 2026. Until then, draft materials are available from the authors upon request.

⁸ <https://school-education.ec.europa.eu/en/etwinning>

collaboration and will explore feasibility, teacher experiences, student engagement, and opportunities for further refinement of the proposed dissemination model⁹.

4. Discussion

The collaboration presented in this paper illustrates how educational dissemination can complement the traditional dissemination role of national statistical institutes by connecting official statistics more directly with education. By integrating existing educational dissemination initiatives from Statistics Norway and Statistics Iceland within a shared Nordic framework, the project demonstrates a reusable dissemination model that may be adapted by other national statistical institutes.

In this sense, the project suggests that NSIs may benefit from a broader understanding of dissemination activities, extending beyond the publication of statistics to include active engagement with future users through schools. Rather than focusing exclusively on communicating statistical outputs, the model explores how official statistics can become part of inquiry-based learning and international school collaboration.

Although the project remains under development and will require further evaluation, it already provides a conceptual and practical foundation for future pilot implementations and international educational partnerships. Several practical challenges remain, including teacher engagement, curriculum alignment, and the organization of international collaboration. A conceptual representation of the proposed dissemination model is provided in Appendix A.

5. Conclusion

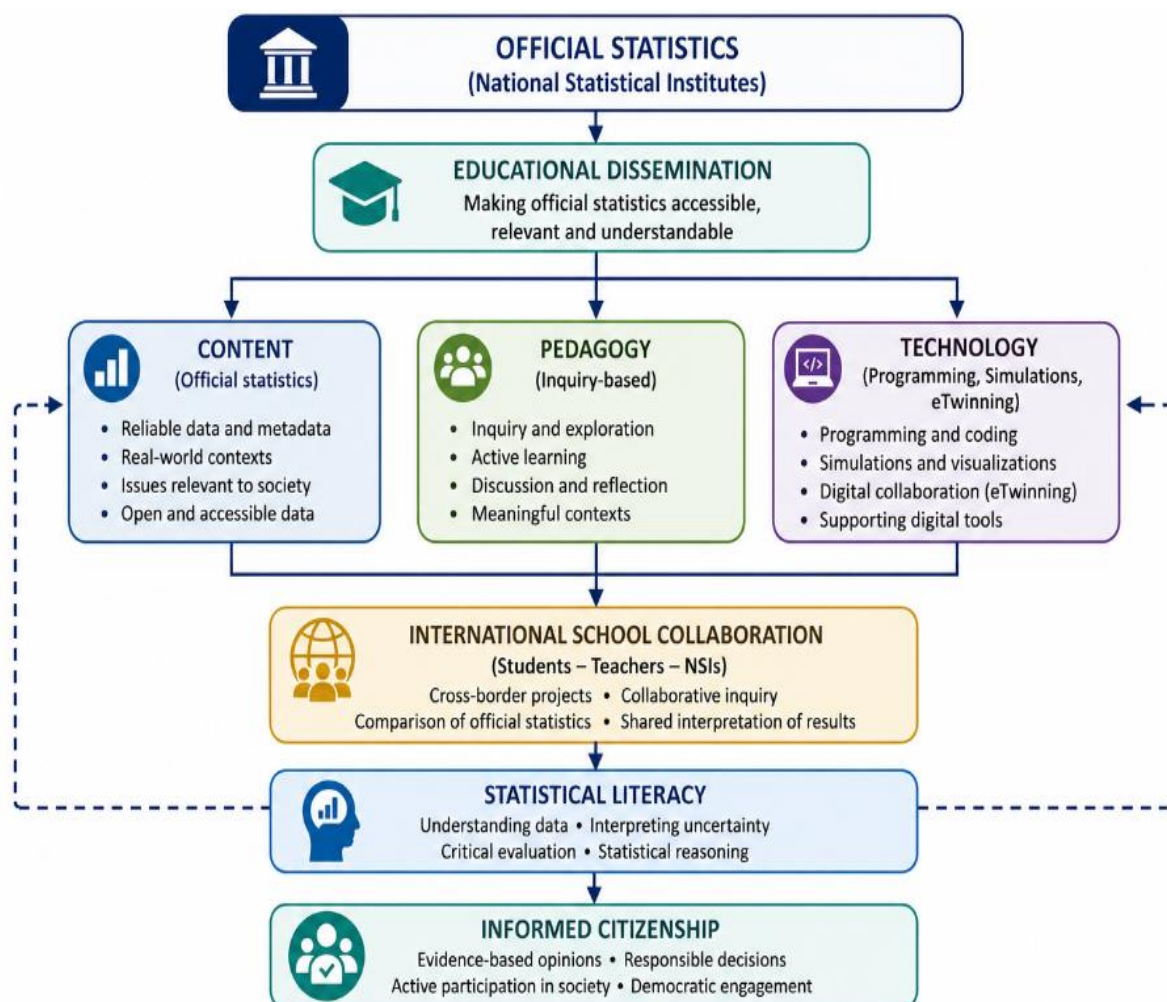
This paper presents a Nordic eTwinning collaboration that demonstrates how national statistical institutes can support statistical literacy through educational dissemination. Although still in the design phase, the proposed dissemination model illustrates how official statistics can become an active component of classroom learning and may be adapted for similar initiatives in other countries.

⁹ A detailed evaluation framework is available upon request.

6. References

- Badina, S. (2022). *"Catch me if you can": How to help young generations to be statistically literate?* [Conference paper]. Nordic Statistical Meeting (NSM 2022), Reykjavík, Iceland. <https://www.nsm2022.is/disseminate>
- Bargagliotti, A. E., Franklin, C. A., Arnold, P., Gould, R., Johnson, H. D., Kader, G., Scheaffer, R., Spangler, D. A., & Stevens, M. (2020). *Pre-K–12 Guidelines for Assessment and Instruction in Statistics Education II (GAISE II)*. American Statistical Association.
- Calian, V., Jónsdóttir, A. H., Stefánsson, G., & Lentin, J. (2019). *SAILS: An e-learning system using data of official statistics* [Conference paper]. Nordic Statistical Meeting (NSM 2019), Helsinki, Finland. <https://hagstofas3bucket.hagstofa.is/hagstofan/media/public/2023/a7d0101c-b086-4b0a-833a-ac2280ca3937.pdf>
- Doyle, P. G. (2008). Doing statistics in schools: Inquiry, learning and statistical thinking. In C. Batanero, G. Burrill, C. Reading, & A. Rossman (Eds.), *Teaching statistics in school mathematics: Challenges for teaching and teacher education* (pp. 39–50). Springer.
- Gal, I. (2002). Adults' statistical literacy: Meanings, components, responsibilities. *International Statistical Review*, 70(1), 1–25.
- Gal, I. (2003). Teaching for statistical literacy and services of statistics agencies. *The American Statistician*, 57(2), 80–84.
- Garfield, J., & Ben-Zvi, D. (2008). *Developing students' statistical reasoning: Connecting research and teaching practice*. Springer.
- Moore, D. S. (1997). New pedagogy and new content: The case of statistics. *International Statistical Review*, 65(2), 123–137.
- Radermacher, W. J. (2021). Literacy in statistics for the public discourse. *Statistical Journal of the IAOS*, 37(3), 747–752. <https://doi.org/10.3233/SJI-210852>
- Sentance, S., Waite, J., & Kallia, M. (2019). Teaching computer programming with PRIMM: A sociocultural perspective. *Computer Science Education*, 29(2–3), 136–176.

Appendix A. Conceptual Model of Educational Dissemination through Official Statistics



This figure illustrates how educational dissemination can connect official statistics, pedagogy, technology, and international school collaboration to support statistical literacy.