


# Developing Written Argumentation Skills With an Educational Simulation Game (ESG): The Design and Implementation of the GlobalEd ESG

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## **EXECUTIVE SUMMARY**

*In this chapter, the authors present the case of GlobalEd, a virtual educational simulation game (ESG) that focuses on the development of student written argumentation and socio-scientific literacy skills over the course of play. Interactions within the simulation emphasize the use of written argumentation among players throughout the game's entire duration through an online communications system that is a fundamental part of all play interactions. Through this case illustration, they describe the rationale and design for GlobalEd, particularly toward its primary learning outcomes of written communication, argumentation, and collaboration. They illustrate the interactive portions of the game that are designed to elicit skill development in these areas and provide examples of actual interactions by students as they work toward these goals. Finally, they provide a brief synopsis of the studied effects of GlobalEd over the last decade in authentic classroom settings through experimental and other efficacy analyses.*

## **INTRODUCTION**

Over the last three decades, worldwide emphasis has been placed on high stakes standardized testing and curricular standards. Although such foci on mastery and testing are targeted toward meeting the modern needs of the knowledge-based workforce, this shift has subsequently reduced the frequency and richness of opportunities that are dedicated to learning critical skills for success in multiple fields (Andriessen, Baker, & Suthers, 2003; Applebee & Langer, 2006; NRC, 2014). 21st Century skills, such as socioscientific literacy, inquiry, written communication, critical thinking, and problem solving are all universally hailed as essential for success in careers today but are often set to the wayside in lieu of subjects that consume the most classroom time during a typical class day due to their prominent appearance in standardized testing batteries (Chalkiadaki, 2018; Pellegrino, 2017).

As one of these essential skills, argumentation mastery is critical for 21st century success to enable scientifically literate citizens to engage with the challenges and future work of the digital economy (Scogin et al., 2017). Specifically, argumentation skills are critical within most modern fields of work, with people required to increasingly perform tasks that include critical thinking, evidence-based analysis, and effective collaboration across multiple team contexts (Bathgate et al., 2015). Additionally, argumentation skills lend to success in other mastery areas, such as information literacy, effective evaluation of evidence, analysis and synthesis of information, and research skills are all hallmark skills for work in the digital era (Van Laar et al., 2017). As such, the ability to successfully engage with content and make evidence-based decisions is a key skill that should be gained during the typical K-12 school experience.

Simulations and games that emphasize authentic play continue to demonstrate effectiveness at providing critical experiences for students to practice 21st century skills, including written communication and argumentation (Noroozi, Dehghanzadeh, & Talaei, 2020; Pinkwart & McLaren, 2012; Veerman, 2000). Simulations and games that prioritize open-ended challenges for players to solve give players control of the direction of play and allow them to pursue their own interests while practicing key skills that are embedded into the game's play mechanics (Hmelo-Silver & Barrows, 2006; Veletsianos & Doering, 2010).

In this chapter, we present the case of GlobalEd, a virtual educational simulation game (ESG) that focuses on the development of student written argumentation skills over the course of play. Since 2000, GlobalEd has been implemented in hundreds of classrooms and has been used by thousands of students. Interactions within the simulation emphasize the use of written argumentation among players throughout the game's entire duration through an online communications system that is a fundamental part of all play interactions. In GlobalEd, argumentation skills are repeatedly modeled through a variety of instructional and curricular prompts, teacher participation in the simulation, live human moderators, and through peer interactions with other players.

Through this case illustration, we describe the rationale and design for GlobalEd, particularly toward its primary learning outcomes of written communication, argumentation, and collaboration. We illustrate the interactive portions of the game that are designed to elicit skill development in these areas and provide examples of actual interactions by students as they work toward these goals. Finally, we provide a brief synopsis of the studied effects of GlobalEd over the last decade in authentic classroom settings through experimental and other efficacy analyses.

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