

# Chapter 32

## A Literacy and Numeracy E-Learning Mobile Application for Pre-Schoolers

**Niall McCarroll**  
*University of Ulster, UK*

**Kevin Curran**  
*University of Ulster, UK*

### ABSTRACT

*The Northern Ireland pre-school curriculum promotes educational development through enabling learning environments and active learning through play and exploration. Enabling learning environments are rich in books, pictures, signs, symbols, rhymes, and multimedia technology. Through play and exploration, children are engaged in activities that interest and preoccupy them. The resources that are used as a context for play have an important bearing on the depth of learning experienced by a child. According to the Early Years Foundation Stage, from age 40 months, a child's literacy and numeracy can develop rapidly with the support of a wide range of interesting materials, activities, media, and technologies (Department for Education, 2008). The aim of this project is to create the "SmartFun" literacy and numeracy E-Learning application. "SmartFun" is a fun, engaging environment to promote the early learning of letters and numbers for pre-school and primary one children.*

### INTRODUCTION

The Nursery Education Guidelines Curriculum is a comprehensive statutory framework that sets the standards for the learning, development and care of children from birth to five in Northern Ireland. The guidelines set values for the educational development of young children in settings

outside of home, in an effort to promote educational progress and positive partnerships between parents and teaching professionals (NICC, 1998). Every child is a competent learner from birth and a nurturing environment plays a key role in supporting and extending children's development and learning. Children develop and learn in different ways and at different rates and all areas of learn-

DOI: 10.4018/978-1-4666-8200-9.ch032

ing and development are equally important and inter-connected (DENI, 1997). According to the pre-school curriculum in Northern Ireland, as set by the Department of Education (DENI) “There is no place at this stage for the introduction of formal schooling in the sense of an established body of knowledge to be acquired or a set of skills to be mastered” (NICC, 1989). The aim instead is to build upon children’s learning experiences and development at home through a rich variety of play activities and other experiences.

The curriculum aims to develop learning associated with Personal, Social and Emotional Development, Physical Development, Creative/Aesthetic Development, Language Development, Early Mathematical Experiences, Early Experiences in Science and Technology and Knowledge and Appreciation of the Environment. In order to fully understand how these areas are approached within local schools, an interview with a pre-school teacher was conducted. This helped to identify a number of important parameters within the pre-school educational framework that had particular relevance when designing this early learning application, such as limitations on formal learning techniques (Eames & Milne, 2011)

While there is no formal schooling as such, a number of key developmental areas are identified—or early learning goals—including language development and numeracy, which the ‘Smartfun’ application aims to promote. In the rest of the UK the curriculum is weighted slightly more in favour of formal academic teaching regarding letters and numbers, but the objectives are essentially the same—to effectively teach children in a stimulating and challenging environment. The Early Years Foundation Stage (EYFS) recommends that all the goals for learning and development must be delivered through planned, purposeful play, with a balance of adult-led and child-initiated activities (Department for Education, 2008). “Language development” is one of the main areas of development within the Northern Ireland pre-school curriculum. The areas within language development

focus on communication with others, attention and listening, enjoyment of books and writing/mark making. The ‘SmartFun’ application aims to incorporate all four of these key skills on different levels, as well as impart basic information about letters and their function within words. It is essentially aimed at bridging the gap between pre-school and primary one age children, when children move from simply recognising letters and being aware of their use, to actually using letters to form words and sentences (Fox-Turnbull & Snape, 2011).

Mathematical development and basic numeracy are also important components of the curriculum (Edwards, 2009). The areas within mathematical development aim to support children in their understanding of numeracy, reasoning and problem solving and focus on counting reliably up to ten everyday objects., recognising numerals 1 to 10, using language such as ‘greater’, ‘smaller’, ‘heavier’ or ‘lighter’ to compare quantities, talking about, recognising and recreating simple patterns., using language such as ‘circle’ or ‘bigger’ to describe the shape and size of solids and flat shapes and using everyday words to describe position, such as, in front of, behind, above and below. While this application primarily concentrates on language development, ‘SmartFun’ also incorporates some numeracy tasks to demonstrate how it can be further developed to promote learning in other areas. The focus here will be on recognising numerals 1 through to 10, basic counting of objects and simple number matching activities.

Much emphasis is placed on the role of imaginative and creative activities which can help children to make sense of their experiences and ‘transform’ their knowledge, fostering cognitive development ((Rabah, 2005; Mano et al., 2006; Tomas & Castro, 2011). By creating colourful characters which children can interact with on-screen, the ‘SmartFun’ application aims to create a new learning environment through story-telling and animation. It should appeal to children on a familiar level through the stories, as well as appeal

19 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:

[www.igi-global.com/chapter/a-literacy-and-numeracy-e-learning-mobile-application-for-pre-schoolers/126082](http://www.igi-global.com/chapter/a-literacy-and-numeracy-e-learning-mobile-application-for-pre-schoolers/126082)

## Related Content

---

### A 'Step into the Abyss'?: Transmedia in the U.K. Games and Television Industries

Keith M. Johnston and Tom Phillips (2016). *International Journal of Gaming and Computer-Mediated Simulations* (pp. 43-58).

[www.irma-international.org/article/a-step-into-the-abyss/147352](http://www.irma-international.org/article/a-step-into-the-abyss/147352)

### An Empirical Study of Gamification Frameworks

Patrick Buckley, Seamus Noonan, Conor Geary, Thomas Mackessy and Eoghan Nagle (2023). *Research Anthology on Game Design, Development, Usage, and Social Impact* (pp. 1852-1869).

[www.irma-international.org/chapter/an-empirical-study-of-gamification-frameworks/315571](http://www.irma-international.org/chapter/an-empirical-study-of-gamification-frameworks/315571)

### Computational Literacy in Online Games: The Social Life of Mods

Constance Constance Steinkuehler and Barbara Z. Johnson (2009). *International Journal of Gaming and Computer-Mediated Simulations* (pp. 53-65).

[www.irma-international.org/article/computational-literacy-online-games/2161](http://www.irma-international.org/article/computational-literacy-online-games/2161)

### Business Opportunities in Social Virtual Worlds

Danny Pannicke, Jonas Repschläger and Rüdiger Zarnekow (2011). *Business, Technological, and Social Dimensions of Computer Games: Multidisciplinary Developments* (pp. 432-447).

[www.irma-international.org/chapter/business-opportunities-social-virtual-worlds/53943](http://www.irma-international.org/chapter/business-opportunities-social-virtual-worlds/53943)

### Research Note: The Results of Formatively Evaluating an Augmented Reality Curriculum Based on Modified Design Principles

Patrick M. O'Shea, Christopher Dede and Matthew Cherian (2011). *International Journal of Gaming and Computer-Mediated Simulations* (pp. 57-66).

[www.irma-international.org/article/research-note-results-formatively-evaluating/54351](http://www.irma-international.org/article/research-note-results-formatively-evaluating/54351)