

Educational Game Design for Girls and Boys – Towards an Inclusive Conceptual Model for Learning Programming

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Abstract

INTRODUCTION: Programming is an important skill in the 21st century and it is important to reach and motivate the younger audience. Educational games have proved to motivate students, but research reports about girls not feeling welcome in game environments.

OBJECTIVE: The overall objective of this study is to gather information for the development of a preliminary conceptual model for girl inclusive educational game design.

METHODS: This study was conducted as a requirement-focused Design science study. The focus was set on gathering requirements for a future design and development of educational games on fundamental programming.

RESULTS: A thematic analysis resulted in the main themes of Exploration Without Violence, Collaborative Interaction, Character Diversity, Customisation, Graphics, Game Mechanics, Game Content, and Learning and Motivation

CONCLUSION: The accumulation of results from the literature study and the survey have been merged into a preliminary conceptual model. The conclusion is that a thoughtful consideration of the found factors can support the idea of a Girl Inclusive Educational Game Design.

Keywords: Game design, Girls and gaming, Gender inclusion, Inclusive design, Educational games, Serious games, Game-based learning, Programming education.

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1. Introduction

During the last decade the labour market has showed an increased need for professionals with knowledge and skills in programming [1-2]. Computer science and programming courses are an important, as well as challenging part of education process to meet this need [3]. A contemporary global trend is to integrate programming in various ways in

K-12 education [2, 4]. Considering this new and younger learner group there is, at the same time, a need for curriculum development and more joyful learning activities. An old and well-known concept for learner motivation that got its digital renaissance, is the one of game-based learning (GBL) [5]. GBL has been used frequently used in a wide variety of subjects such as science, technology, engineering and mathematics (STEM). There are also research studies reporting on

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