

Making Games, Making Literacy: A Case-Study in Formal Educational Contexts

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GamiLearning (2015-2018)

Main Goal

To explore **digital game creation** as a promoter of **Media and Information Literacy (MIL)** in formal educational contexts

Assess the effectiveness of
the intervention

Document the process in a
comprehensive manner

MIL Framework

MIL is central in a highly mediatized society

Enables students to:

- Understand how the media operate;
- How they construct meaning;
- How they can be used;
- How to evaluate information.

MIL Framework

Requires a wide set of skills

- Operational skills (including coding and computing);
- Editorial skills (including multimedia writing-reading-producing and mixing);
- Organisational skills (including navigating, sorting, filtering, evaluating) (Frau-Meigs, 2014);
- Sociocultural component, implying that people don't create meanings individually, but as members of "interpretive communities" (Livingstone et al., 2013);
- Digital identity management skills, relevant to reflect the ability of individuals manage their e-presence in a safe and sustained manner (Costa et al., 2017).

MIL, media creation and play

- Promotion of MIL requires immersion in the learning process, namely in an environment that allows experimentation of different roles, and evokes a critical dimension of knowledge (Tuominen and Kotilainen, 2012, p. 17)

“What did I learn about media through this exercise?”

Pedagogical Strategies

Constructionism

Project-Based
Learning (PBL)

Experiential Learning

Learning through
Game Creation

Affordances and Constraints

- Dominance of essentialist educational practices:
 - Marginalizes the individual interests of students and focuses on the role of experts who efficiently teach the same disciplinary and practical subject matter for all students (Bagley, 1905)
- Problems with the design of the learning space (Madill and Sanford, 2007)

Aim of this study

Discuss the challenges of implementing a game creation learning strategy to approach MIL.

Reflecting on how different affordances and constraints, such as classroom's design, setting and adopted pedagogical strategies impact the learning process.

Sample

	Age	Gender	
		Male	Female
Total Sample ($N = 45$)	$M = 9,98$ $SD = 0,583$	28	17
School 1 ($N = 20$)	$M = 9,70$ $SD = 0,470$	10	10
School 2 ($N = 6$)	$M = 10,00$ $SD = 0,000$	6	0
School 3 ($N = 19$)	$M = 10,26$ $SD = 0,653$	12	7

Intervention

- Once per week in each participant schools
- Sessions ranging between 45 and 90 minutes
- Total intervention ranged between 4 months and an entire school year (9 months)

Aiming the promotion of MIL, with a specific emphasis in Digital Identity Management Skills

Intervention

Activities

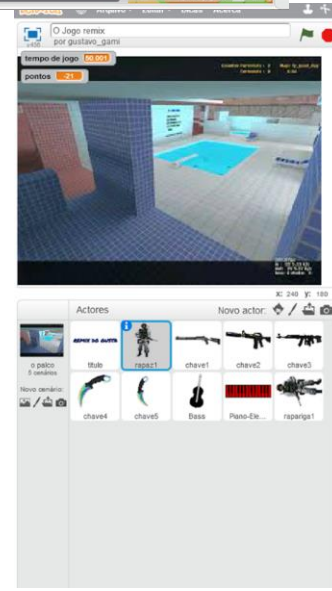
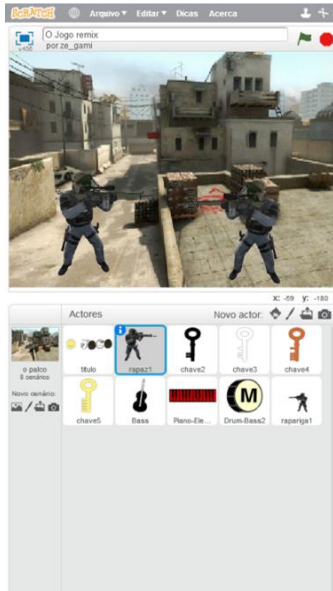
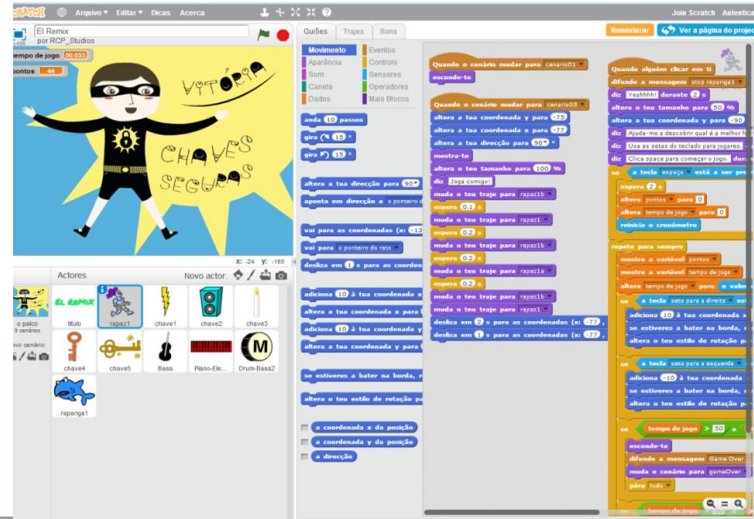
Animated Stories creation using Scratch

Game remix using Scratch

Algorithm Game

Caesar's Cipher Game

Games remix using Scratch



Algorithm Game

Game Design Process... in the Beginning:

CODE TO SNACK

Robot make me a Snack!

For the Robot to make my snack, I need to turn it on and program it. Your table is going to be the counter where he will work later on. And you can have some appliances, but don't forget to identify them.

1* Decide what you want to snack.

2* Work on the programming, that is describing each step on the sheet.

3* One each sheet of the notepad, draw what you need to cook or to eat with and identify it. You can create a refrigerator and a pantry shelf to pack the food and the necessary supplies.

If the programming passes to another sheet of paper, it's necessary to number the sheets, so the robot doesn't shuffle the sequence.



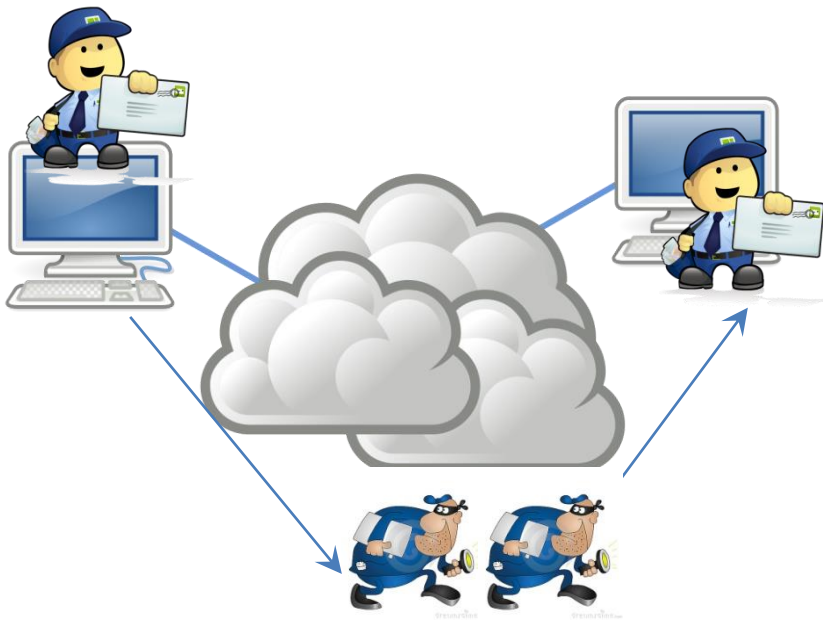
4* Turn on your robot to test your code, so you can find out if there are any bugs that you need to put straight.

Material needed per student:

- 2 sheets of paper (A4)
- pencil and eraser
- 1 sticky blank notepad



Playing Digital Security



Data Collection

- Every project session had the presence of a researcher, carrying out a participant observation procedure, through the filling of the developed observation grids.

Section
Activities
Adequation to student's language level (difficulties vs autonomy)
Behavioral observation
Content apprehension/content production
Other aspects/observations

Data Analysis

- Content analysis of the 58 observation grids was performed using NVIVO version 11
- Coding System = created via an iterative process
 - Bottom-up (non-systematic reading of all the grids)
 - Top-down (theoretical framework)

Results

MIL promotion

- Editorial skills were mainly promoted by gaming remix (32%) and by story creation (59%), both using Scratch
- Operational Skills were mainly promoted by the Algorithm Game (32%)
- Using Scratch was the most MIL-intensive activity

Results

Autonomy vs Difficulties

- Digital identity management skills were the ones where students demonstrated more autonomy (71%)
- Editorial skills (59% of the observations coded as autonomous work)
- Operational skills (54% of the observations coded as autonomous work).

Results

Pedagogical Strategies

- Editorial and operational skills were derived mainly through PBL (accounting for 69% and 88%)
- Digital identity management was encouraged mainly via guided reflection (77%)
- Expository lecture was not observed as relevant in the development of MIL skills

Results

Engagement

- Higher in tasks that aim the promotion of digital identity management skills
- Very frequently coincides with peer cooperation
- Peer cooperation promotes more simultaneous types of skills than student-teacher interaction

Results

Constraints

Design of the learning space

- Lack of computers (each computer had to be shared by two or more students)
- All the computers were “fixed place” desktops
- Rooms were small and full of tables
- Access issues (wi-fi frequently unavailable)

Platform Usability

- Login issues

Conclusions

- Digital game creation can be understood as a relevant pedagogical strategy in the promotion of MIL
 - MIL requires the development of reflexive knowledge: a child needs to know a topic very well to be able to produce a related game
 - Promotes engagement in collaboration and peer-learning, which has been shown to support critical literacy and learning across the curriculum
 - Game design and content creation provides opportunities to integrate and reflect on the everyday media experience

Conclusions

Digital Game Creation

Goal-driven and student centered pedagogy, to empower students in constructing their knowledge in a collaborative environment

Conclusions

- Constraints with the design of the learning space are aligned with previous studies (Madill and Sanford, 2007)
 - Change of pedagogical approaches must be accompanied by changes on the physical space, to better incorporate innovation.

Thank you

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