Development of Rubric to Measure Children’s Creativity in Game Design
Children as a Game Designer

Children benefit greatly in terms of creativity and innovation when they play the designer's role.
(Kafai et al., 2012, 2015; Baytak et al., 2011)

Games can be developed as a means of enhancing collective creativity.
(Parjanen & Hyypia, 2019; Azimah & Laili farhana, 2018; Wibawo et al., 2020)

The capability in creating digital games give privileged ability towards creativity in terms of cognitive and higher order thinking skills.
Little awareness of how creativity in digital entertainment can be nurtured through the design process.

(Hall et al., 2020)

The indicators in determining the level of creativity involved in the use of technology have not yet been identified.

(Scheuermann & Pedr, 2010)

The nature of creativity in conceptual form is difficult to interpret be along with measuring creativity as a generic skill.

(Romero, & Barberà, 2015)

Creativity assessment needs to be explored not only in psychology but also in technology-integrated education.

More empirical research should be conducted to precisely and stentially measure the the children's creativity in game-based learning (GBL) practice.
To analyse the basic elements of creativity for rubric construction through library research, feasibility study and expert evaluation.
RESEARCH OBJECTIVES

To identify aspects of creativity in the game design process based on Torrance Creativity Theory.

To investigate children's creativity in the process of digital game design.

To validate creativity indicators in the rubric of children's creativity when creating games as a digital game designer.
Conceptual Framework

Phase 1: Library research

Phase 2: Feasibility study

Phase 3: Expert evaluation

Torrance Creativity Theory

Game design stages

Originality

Flexibility

Elaboration

Fluency

- Idea
- Process
- Product

Evaluated by Academic Experts

Produced Creativity Rubric of Children as Game Designer

Constructivist learning Theory

21st century skill

Game-based Learning Approach
• Learn extensively (Arnab et, al., 2015)
• Excitement to learn (Laili, 2019)
• Children involve with active learning based on constructivist learning (Pappert, 1991)
• Build and strengthen knowledge more effectively (Pappert, 1991)
• Children’s motivation for deeper and meaningful learning. (Kafai, 2015)
• Develop children's creative thinking skills (Lay & Osman, 2018)
• Develop children's critical capacity for digital literacy (dos Santos et, al., 2019)
• Multi-skill generation (ibharim et, al., 2019)
• Competent, creative, innovative and efficient (staples et, al., 2005)
FEASIBILITY STUDY:
THE INTEGRATION OF TORRANCE CREATIVITY THEORY IN GAME DESIGN PROCESS

<table>
<thead>
<tr>
<th>Torrance Creativity Elements</th>
<th>Creativity Indicator Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Originality</td>
<td>A child’s ability to generate ideas, build and create game designs that are unique, innovative and exceptional.</td>
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<tr>
<td>Fluency</td>
<td>A child’s ability to generate ideas, build and create game designs that are logical, appropriate, continuous and meaningful.</td>
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<tr>
<td>Flexibility</td>
<td>A child’s ability to generate ideas, build and create game designs based on expectation, diversity, can be modified, and can be upgrade.</td>
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<tr>
<td>Elaboration</td>
<td>A child’s ability to generate ideas, build and create a game design that is easy to translate, easy to understand and specific.</td>
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</table>
## EXPERT EVALUATION:
### VALIDITY FROM EXPERT

<table>
<thead>
<tr>
<th>Torrance Creativity Elements</th>
<th>Creativity Indicator</th>
<th>Game Design Stage</th>
<th>Level</th>
<th>Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Originality</td>
<td>Uniqueness</td>
<td>Idea</td>
<td>L3</td>
<td>This child is able to generate ideas for entirely different game designs as the existing game design.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>L2</td>
<td>This child is able to generate ideas for similar game designs as other game designs, but modified.</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>L1</td>
<td>This child is able to generate ideas for similar game designs as the existing game design.</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>L0</td>
<td>This child is unable to generate ideas for similar or different game designs as the existing game design.</td>
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<tr>
<td></td>
<td></td>
<td>Process</td>
<td>L3</td>
<td>This child is able to design games that have no similarities with the existing game.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>L2</td>
<td>This child is able to design games that have similarities with an existing game, but with modifications.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>L1</td>
<td>This child is able to design games that have similarities with the existing game design.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>L0</td>
<td>This child is unable to design games that are the same or different than the existing game design.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Product</td>
<td>L3</td>
<td>This child is able to create games that have no similarities with the existing game.</td>
</tr>
<tr>
<td></td>
<td></td>
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<td>L2</td>
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The reliability of the rubric is $\alpha = .88$ (excellent)

The rubric is found suitable to be used to measure children’s creativity during the digital games design process.
The digital games design activity may generate and stimulate creativity among children.

Each level of creative elements should be measured analytically which specifically based on game design activity.

Designing and developing games as an activity can be a fertile ground to cultivate such competencies through multi-disciplinary collaboration, and by providing an engaging, creative and innovative space for people to meet and learn how to cooperate fruitfully.
Thank you

GLOBAL RESEARCH CONFERENCE (GRACE 2020)