

# GGJ-Next: The Global Game Jam for Youth

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## ABSTRACT

The Global Game Jam is the world's largest game jam and until recently was targeting only adults. Considering the potentially significant role of games and game development as educational platforms, the GGJ introduced GGJ-Next for youth in 2018. The report discusses the background, curriculum development, event organization, and lessons learned from the inaugural GGJ-Next and plans for its second year in 2019.

## CCS CONCEPTS

- Social and professional topics~K-12 education
- Social and professional topics~Computing education
- Applied computing~Computer games

## KEYWORDS

Global Game Jam, Youth, Learning, STEAM

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## 1 INTRODUCTION

The Global Game Jam (GGJ) is an international event organized by the Global Game Jam® Inc. and hosted by partner sites worldwide. During the GGJ, participants have 48 hours to create a game based on a given theme (<http://globalgamejam.org>). The first GGJ in 2009 was held in 53 locations with 1650 participants. In 2018, these numbers increased to 803 and 42,811 respectively, in 108 countries creating 8,606 games. The significant increase in the popularity of the GGJ is due to various positive outcomes of this event and the diverse group of participants who can enjoy these outcomes [2][7].

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Research has shown that programmers, artists, designers, writers, and others interested in games and creative design at all skill levels attend the GGJ [2][7][5] for reasons such as fun, learning, networking, and challenge [2].

Game jams are shown to be effective learning venues [2][6][16]; they can help increase social engagement [8], and inspire design and innovation [11].

While the GGJ has been successful in providing many benefits to its participants [7], it has been generally targeted toward an adult audience. With the increased attention to both game-based learning [10][13][17] and STEAM (Science, Technology, Engineering, Art, Math) education [9], and also inspired by initiatives such as Code.org that aim at computer literacy for children (and adults), the Global Game Jam®, Inc. organized the GGJ-Next-2018 – the first game creation challenges for young creators worldwide, ages 12-17. The authors were among the members of the Curriculum Committee for GGJ-Next.

Experiential learning for youth to prepare them for the demands of the 21<sup>st</sup>-century living, and attract them STEAM education, has been discussed by researchers and practitioners over the last few years [14]. The educational use of technology, and particularly computer games is an active area of research and practice due to the familiarity of the younger generations with modern technologies [1][3]. While playing and making games have been used for educational purposes, and the GGJ and other game creation events have been studied as effective means of education, the GGJ-Next aims to be the first globally organized event that brings all these features together for a younger generation.

The aim for GGJ-Next was to establish a model and curriculum for students anywhere to learn basic game development skills (programming, art and design, storytelling, in combination with communication, collaboration, and planning), as a basis for STEAM education and within the context of an exciting global effort that can bring youth together from different countries and continents. Considering the younger target group, our high-level criteria distinguishing GGJ-Next from regular GGJ were: (1) providing free and rich yet flexible educational content, (2) flexibility in event organization to match the needs and constraints of various schools and organizations.

Partnering with schools and skilled facilitators to deliver the content, we developed a scalable program that can be integrated at large or small levels both in terms of duration and difficulty level. The expected learning outcomes that are the basis of our curriculum development included:

- Cognitive Outcomes (such as logical thinking, problem-solving, creativity, and vocabulary)
- Skill-based Outcomes (STEAM skills including programming, math, physics, art, and design, and other skills such as research, planning, communication, and organization)
- Affective Outcomes (motivation, exploration, confidence, friendship, fun, etc.)

In addition to the educational content that was available ahead of time for months, the GGJ-Next site organizers could set up their local event any time during the month of July, from a single day to a week-long format, with or without the use of provided content but all sharing the same theme and keynote video, to provide maximum flexibility.

We think that all children around the world should have the opportunity to receive digital literacy lessons, including the skills and tools that game development employs, (STEAM, leadership, collaboration, and exploration). Although based on games, we do not expect to turn everyone into game developers. We see game development and game jams as a context to learn a wide range of skills and benefit from a diverse set of outcomes that are valuable even for participants who are not moving to the game industry. These outcomes and our game-based learning philosophy are described briefly in the next sections and followed by the resulting GGJ-Next curriculum, structure, plan, and achievements. We conclude this report with some lessons learnt from GGJ-Next 2018 and our future directions.

## 2 GAME-BASED LEARNING & GAME JAMS

The human brain is hard-wired to enjoy learning. Fun and learning are not contradictory but in fact interconnected if the learning is done right [15]. We learn from games all the time; good games are always “learning games” [15] and learning can be done through playing games [17].

Not only we can learn through playing games, but also we can learn through making games. Game design and development is a highly cross-disciplinary process, involving various skills. Being part of a game development project, provides valuable outcomes for game enthusiasts, and includes many transferable skills that can be used in other contexts [2][5].

Game development is social activity; it is challenging and yet rewarding for children as they build things that they are highly interested in [1]. Game jams are the ideal venue for taking advantage of the learning benefits of game development [7]. They are relatively short, performed in groups, and at the presence of mentors. When coordinated with schools, parents, and partner organizations, game jams can be a suitable venue for providing accessibility and equal opportunities to children belonging to groups, such as ethnic minorities and women, that are under-represented in the game and other STEAM-related industries [8].

The hands-on experience of a game jam, while entertaining for children, gives them the confidence that they can build real products and encourages them to pursue STEAM-related education and career [4][8].

The Global Game Jam, on the other hand, offers all the advantages of game jams and learning through making games in the context of a worldwide event that brings together different people from different countries and continents, under the same goal, theme, and within the same timeframe [7]. This can be very exciting and encouraging for participants as they feel part of a global community and can exchange ideas and skills at a very large scale.

Despite all these known advantages, there have been very few examples of running game jams for youth at a distributed multi-location level. Examples such as Moveable Game Jams [12] have been mostly a combination of multiple game jams in the same area and with a similar format, as opposed to a centrally organized and globally facilitated event. Also, providing educational content has not been the focus of the game jams in most cases.

## 3 EXPECTED LEARNING OUTCOMES

As mentioned in Section 2, while many game jams have been organized for youth, none has been at a world-wide scale, as in the case of the GGJ, to take advantage of the global community. This was the initial motivation for a group from within the GGJ community to get together and form the basis of the GGJ-Next to target the younger “next” generation.

One of the first realization made by the GGJ-Next steering committee was that a game jam targeting youth should have a stronger focus on education and define more explicit learning outcomes. This could help (1) attract partners from schools and governments, and (2) be used as the basis for developing a curriculum and related educational content.

The GGJ-Next learning outcomes were defined in three major categories in the GGJ-Next Curriculum Guide:

- Cognitive Outcomes
  - Logical thinking and problem-solving
  - Meta-cognitive skills and learning to learn
  - Creativity and innovation
  - Vocabulary acquisition
- Skill-Based Outcomes
  - STEAM-related skills
    - Programming
    - Math and Physics
    - Art (audio, visual, narrative)
    - Design (game, interaction, interface, story, character, etc)
  - Research
  - Design Process: Critique, Reflection, and Iteration
  - Planning and Organization
  - Leadership and Teamwork
  - Communication and Collaboration
  - Documentation and Knowledge Organization
- Affective Outcomes
  - Motivation (success stories and possibilities)
  - Exploration (Safe place to fail)

- Confidence
- Friendship and Networking
- Fun and Recreation

These learning outcomes were then used as the basis of design and development of GGJ-Next educational content and activities.

#### 4 EVENT ROADMAP

After selecting the learning outcomes in early Fall 2017, the organizers planned the following roadmap:

1. Curriculum design. This is done by the GGJ-Next Curriculum Committee in collaboration with other stakeholders.
2. Development of educational material. The GGJ-Next material would primarily target Teachers, Students, and Parents. There would also be some content for partners, sponsors, etc. It was expected that teachers will be the initial target group for content, so they could plan for workshops before and during the actual event. Content suitable for other groups was planned to be added gradually. The educational material would be developed by the worldwide GGJ-Next community and partners such as Code.org. This development was planned to happen during Fall 2017 and Winter 2018.
3. Workshops and other educational activities by teachers and partners prior to the event. Using the provided free educational material, and other sources, the partner schools were encouraged to set up pre-event workshops, generally in the weeks prior to the Jam.
4. Distribution of theme and keynote video in late June 2018. These would be provided to jammers at the start of each local event. Considering the flexible timing of events, secrecy was less strict than the regular GGJ but still recommended.
5. GGJ-Next main event. The main event was scheduled for the month of July 2018, to happen during a week to be decided by the site organizers. Local sites could also use a shorter format such as single-day.

#### 5 EDUCATIONAL MATERIAL

GGJ-Next educational material was created based on our learning objectives and the tasks expected to be performed during the Jam. The curriculum was defined as a series of small modules grouped into the following categories (see Figure 1):

- Introduction to Jamming
- Game Design
- Analog Game Making
- Visual Arts
- Making Digital Games with Visual Tools
- Making Digital Games with Coding/Scripting
- Audio in Games
- Production

Since the inaugural year was primarily aimed at a Minimum Viable Product (MVP), the curriculum topics were the minimum required to cover major topics and allow the learning outcomes to be achieved through collaboration and teamwork. Curriculum content modules were made by a global group of volunteers in fall 2017 and winter 2018. Each module included a video plus optional supplementary material such as lesson plans. In almost all cases, multiple versions of videos were created by volunteers. They were then edited and made available to interested teachers in spring 2018 to prepare for the GGJ-Next event. While many modules used a particular technology, the overall curriculum was hardware and software agnostic and did not promote any particular platform. For example, Unity, C/C++, and GameMaker were presented as examples of game development tools, and participants were encouraged to use others such as Scratch and Java.

The MVP curriculum was meant to not only offer material but propose a new framework for delivery of such educational content. This framework included categories, modules, multimedia material, and versions.

<p><b>Jamming</b></p> <p>JM0: What Does it Mean to Jam?</p> <p>JM1: The Game Jam Process</p> <p>JM2: Improvisation &amp; Icebreakers</p> <p>JM3: Getting Ready for Your First Game Jam</p>	<p><b>Game Design</b></p> <p>GD0: So you want to be a Game Designer?</p> <p>GD12: Player Psychology</p> <p>GD1: How to play as a designer rather than a player.</p> <p>GD2: Iterative design and rapid prototyping.</p> <p>GD3: The role of playtesting</p> <p>GD4: A five-part game design framework</p> <p>GD5: The goal of a game and game genres.</p> <p>GD6: Game mechanics and rules</p> <p>GD7: Space and components</p> <p>GD8: Scope, or keeping game plans under control</p> <p>GD9: Games as complex systems</p>	<p><b>Analog Game Making</b></p> <p>AG0: Paper Prototyping</p> <p>AG1: Creative Designs and Diverse Materials</p> <p>AG2: Getting Past Candyland Mechanics</p> <p>AG3: Writing Rulebooks</p>	<p><b>Visual Arts</b></p> <p>VA0: What is Visual Art in Games?</p> <p>VA1: Using found art in your game</p> <p>VA2: Tracing images and cartoon art</p> <p>VA3: Cutting and repurposing pieces of art</p> <p>VA4: Tile sets and sprite sheets</p> <p>VA5: Exporting and Importing</p> <p>VA6: Art Tricks (MISC)</p>
<p><b>Making Digital Games with Visual Tools</b></p> <p>PG0: What is Game Programming?</p> <p>PG1.0: Making Your First Game</p> <p>PG2: Creating Background and Scrolling</p> <p>PG3: Paths and Timelines</p> <p>PG4: Advanced Features and Scripting</p>	<p><b>Making Digital Games with Coding and Scripting</b></p> <p>CP1: Variables, basic arithmetic, basic text input/output.</p> <p>CP2: Flow control - if, for, while.</p> <p>CP3: Functions and Parameters</p> <p>CP4: Arrays</p> <p>CP5: Objects and Classes</p> <p>CP6: Game loops and Game Libraries.</p> <p>CP7: Dealing with 2D Graphics in Libraries</p> <p>CP8: Implementing a game with basic physics</p>	<p><b>Audio in Games</b></p> <p>AU0: What is Audio in Games?</p> <p>AU1: Audacity demo</p> <p>AU2: Found sound and audio libraries</p> <p>AU3: Recording audio</p> <p>AU4: Processing Audio with Filters and Special Effects.</p>	<p><b>Production</b></p> <p>PD0: What is Production?</p> <p>PD1: How-to guide</p> <p>PD2: Primer for Trello</p> <p>PD3: Roles of a Game Team (MISC)</p>

Figure 1: Curriculum categories and related modules

## 6 THE GAME JAM

Running through the month of July, with a flexible schedule for different sites, the GGJ-Next generally included a week of activities by children, mentors, parents, and facilitators, although some sites only had a one-day jam. 39 location in 20 countries joined the first GGJ-Next with over 800 participants (see Figure 2).

All jam site applications were reviewed for experience and ability to work with children, and were required to have proper consent procedure for parents.

The GGJ-Next 2018 theme was Fractals which was provided to site organizers at the beginning of July.



Figure 2: Jam Map

Out of 38 site organizers who responded to our survey, 25 used the curriculum material and 34 consider using it in future, which shows strong support for our MVP. The total of 84 participants who responded to the survey showed an optimistic point of view towards the learning potentials of the GGJ-Next, with the percentage of positive responses about improvement in skills as shown in Table 1.

Table 1: Skill Improvement

Skill	% who responded Yes to improvement question
Planning	73
Programming	60
Visual Art	41
Problem-solving	25
Storytelling	23
Audio	18

## 7 CONCLUSION

This report describes the ideas, process, curriculum, and some results of the inaugural GGJ-Next event. As the first Global Game Jam for youth, GGJ-Next aimed at providing an educational framework for youth in the context of making games. Our goal was to create not just a global event but a comprehensive framework including a free and flexible curriculum aimed primarily at

teachers, and an efficient content generation and distribution system.

Early results show that GGJ-Next was successful and has potential in bringing the advantages of the GGJ to the younger generations while offering a more practical learning environment through material specially designed for this purpose.

A review of our process offers the following directions for improvement in 2019:

- Revising videos and making new versions that are shorter and more appropriate for the target audience
- Coordinating the content generation so different versions/platforms have a compatible approach
- Including more supplementary material such as code/asset files, lesson plans, readings, etc.
- Promoting the event earlier on to encourage more sites and participants
- Performing more comprehensive and scientifically designed surveys to allow research on various aspects of the event

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## REFERENCES

- [1] Abdul Jabbar, A. I., & Felicia, P. (2015). Gameplay engagement and learning in game-based learning: A systematic review. *Review of Educational Research*, 85(4), 740-779.
- [2] Arya, A., Chastine, J., Preston, J. A., Fowler, A. (2013). An international study on learning and process choices in the global game jam. *International Journal of Game-Based Learning (IJGBL)*, 3(4), 27-46.
- [3] Becker, K. (2007). Digital game-based learning once removed: Teaching teachers. *British Journal of Educational Technology*, 38(3), 478-488.
- [4] Ford, A., & Kelly, S. (2016, October). Using Game Jams as a School Transition Event. In *European Conference on Games Based Learning* (p. 202). Academic Conferences International Limited.
- [5] Fowler, A. (2013). Measuring learning and fun in video games for young children: a proposed method. *Proceedings of the 12th International Conference on Interaction Design and Children* (pp. 639-642).
- [6] Fowler, A. (2016). Informal STEM Learning in Game Jams, Hackathons and Game Creation Events. *International Conference on Game Jams, Hackathons, and Game Creation Events* (pp. 38-41). NY: ACM.
- [7] Fowler, A., Khosmood, F., Arya, A. (2013). The Evolution and Significance of the Global Game Jam. *Foundations of Digital Games Conference*.
- [8] Fowler, A., Schreiber, I. (2017). Engaging under-represented minorities in STEM through game jams (pp. 5). New York: International Conference on Game Jams, Hackathons, and Game Creation Events, ACM.
- [9] Gee, J. (2016). *Gaming lives in the twenty-first century: Literate connections*. Eds. Gail Hawisher, and C. Selfe. Springer.
- [10] Hamari, J. et al. (2016). Challenging games help students learn: An empirical study on engagement, flow and immersion in game-based learning. *Computers in Human Behavior* 54: 170-179.
- [11] Ho, X., et al. (2014). Game Design Inspiration in Global Game Jam. *Proceedings of DiGRA 2014: What is Game Studies in Australia*
- [12] <http://www.gamesforchange.org/studentchallenge/tag/moveable-game-jams/>
- [13] Kapp, K. (2012). *The gamification of learning and instruction: game-based methods and strategies for training and education*. John Wiley & Sons.
- [14] Kolb, D. A. (2014). *Experiential learning: Experience as the source of learning and development*. FT press.
- [15] Koster, Raph. *Theory of fun for game design*. O'Reilly Media, Inc., 2013.
- [16] Olson, C., Kauffman, D., Fowler, A., Khosmood, F. (2015). *Kanakatana: Teaching Japanese through Game Mechanics*. Foundations of Digital Games.
- [17] Prensky, M. (2007). *Digital game-based learning*. Vol. 1. St. Paul, MN: Paragon house, 2007.