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Cross-cultural Online Game Jams: Fostering cultural competencies through jams in game education setting

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ABSTRACT
This paper discusses cross-cultural online game jams in a game educational setting, drawing on the experience gained from the project “Games Now! Online Jam” (henceforth "GNOJ") conducted by Aalto University in Finland during the Covid-19 pandemic in 2021-2022. Each GNOJ lasted a week, and jammers utilized various online tools, cloud services, communication platforms, and open-source software. Ninety jammers from Finland, Sweden, South Korea, and Japan participated virtually from their home countries. Through post-survey and observation data, we found that jammers highly valued the cultural learning experience offered by jamming. Notably, they encountered unexpected surprises stemming from the diverse local game development practices and different conceptual and terminological connotations across countries during the jam. But jammers displayed proactive engagement in overcoming such cultural differences, with a heightened motivation to learn other languages, cultures, and local game development practices across the world. These findings highlight the pedagogical benefits that cross-cultural online jams can bring to game education. By fostering cultural awareness and competencies in understanding local nuances in game development and communication styles, such initiatives can help future (and current) game developers to effectively prepare multinational work environments and cooperative workflow with remote teams spanning multiple time zones.

CCS CONCEPTS
• Applied computing → Computer games; Collaborative learning; Distance learning.

KEYWORDS
Game Education, Game Jams, Online Jams, Cultural Awareness, Competences

ACM Reference Format:

1 INTRODUCTION
Game jam refers to events that are “similar to a hackathon where people come together for a short period of time to create games” [19], often with a central theme that is revealed at the start of the jam. Scholars have found that game jams are a useful platform for both formal and informal learning [2, 16, 33]. They allow individuals to learn game development skills — including STEM/STEAM, digital competence, and personal and interpersonal skills. As such, game jams are widely acclaimed for game design education and shared entry points for future game developers [26], fostering experiential and constructivist learning and learning-by-doing attitudes, making them an engaging social site for learning (see also [12, 23, 44, 48]). Furthermore, learning has been reported as one of the main motivations for participating in game jams [28, 29, 45].

The global Covid-19 pandemic has permanently affected game jams worldwide. Numerous physical game jams were either canceled or forced to convert temporarily online during the pandemic, including Global Game Jam — one of the biggest game jam events worldwide [17]. Of course, this was not an isolated phenomenon of jams. The world has also witnessed a pivotal shift in physical classrooms, with surging demand for online access to all aspects of learning environments [1, 21, 38, 49, 50]. While online settings in learning environments were already prevalent before the Covid-19 pandemic [6], such a rapid shift from offline to online game jam caused worries of alienation of participants with relatively low activity and interaction levels (cases like [14, 25]). The sudden transition to online also surprised many game jam organizers and jammers who were more familiar with physical interactions in jamming. However, such challenges also presented an opportunity to develop further the sub-culture of ‘online game jams,’ which existed even prior to the Covid-19 pandemic (e.g., Ludum Dare game jam1) but have received lesser attention until recently [15].

1https://ldjam.com/
Coming from this context, the paper reflects on our experience organizing cross-cultural online game jams in a game education setting during the Covid-19 pandemic. Led by Aalto University in Finland, we conducted a series of cross-cultural online jams with the collaboration between game education institutions around the world: "GNOJ #5 - Finland x South Korea Jam" in Autumn 2021 and then "GNOJ #6 - Neighbours Game Jam" on Spring 2022. These jams were entirely organized online, with participants from significant geographical distances creating games together. Each GNOJ event was a week-long (7 days) and attracted 90 participants from Finland, Sweden, South Korea, and Japan — spanning three different time zones. The GNOJ later expanded to a longer (30 days) format the following academic year 2022-2023, with more game education institutes joining from the USA, UK, and Ireland.

In this paper, we will report our learning from the two cross-cultural online jam GNOJ held in 2021-2022 that initially demonstrated the usage of online jam in education settings by asking: (1) How can an online game jam be devised for cross-cultural game education?, and (2) What are the benefits of cross-cultural online game jams in the context of game education? To answer these questions, we first explore the background behind the cross-cultural settings for game education. Then, the details about GNOJ #5 and #6 settings and our collected data sets (i.e., post-survey and observation notes) will be detailed in the following chapter. Lastly, we open up a discussion on the pedagogical potential of cross-cultural online game jam setting and what it could bring to the future of game education — and how the initiatives like GNOJ can be expanded into a broader network of game education.

2 CONTEXT

The practice of game development requires highly creative and specialized skills (see also [3, 24]) as game development practices heritage unique local culture, context, and social norms [27, 31, 56] alongside each game developer’s design values and motivations [27]. As such, the game development practices worldwide are intrinsically cross-cultural, hybrid, and pluralistic [43, 57, 58]. Furthermore, with the growth of the global industry, various regional game development studios and publishers are now actively working together on a daily basis [20, 22] followed by the normalization of remote work and globally distributed projects that span across multiple-time zones [42] — similar to that is in the software industry [7]. Consequently, the game development work environment is becoming more multicultural. For example, the survey from the International Game Developers Association (IGDA) in 2019 indicated that roughly 17% of global game industry working respondents “considered themselves to be immigrants Weststar et al. [51].” In Finland, where this study was conducted, nearly one-third of its game developers are coming from abroad [34].

However, the discussion about cultural diversity and inclusivity within the global game industry is still lagging behind its ever-diversifying reality. It is crucial to acknowledge the mounting criticisms of the game industry’s homogeneous work culture, particularly regarding gender inequality [11, 32], industrial hierarchies, and class stratification [39, 42, 59], as well as the individualization of game labor [10, 46, 47]. Additionally, while one side of the game industry acknowledges the local context of game development practices and actively envisions ground-up and grassroots game-making [28, 58], the industry’s discourse is still framed with the “ideal model” of multinational game corporations and their products (known as game development and publishing platforms) [9, 18, 36, 53, 55]. This perpetuates the homogenous perception of game development practices, influencing game developers’ decisions on what is (or should be) deemed logical or a compelling method to make a game [8, 35], which burdens the reality of the ever-diversifying game development workspace.

For example, Park’s case studies on migrant game developers indicate that international game developers are pushed to internalize their country-to-country transition stress due to homogeneous attitudes within the workplace, while assimilating their unique game development practices and values brought from other parts of the world over job stability [40, 41]. This reality underscores the importance of cross-cultural game education, educating future game developers about the various local interpretations of game-making and diversifying their views. Perhaps, international collaborations between game education institutions could offer students safe exposure to diverse game development practices and social values around the world before they actually start working in game studios, enhancing the individuals’ cultural competencies and reducing the potential risk of marginalization for a culturally sustainable multinational and pluralistic game workspace (e.g., cultural awareness, tolerance of differences, and stress-inoculation) (see also [4, 13]).

3 SETTINGS AND METHOD

3.1 Project GNOJ

In this paper, we present the case of two online jams held during the Covid-19 pandemic, organized in a cross-cultural setting by Games Now! at Aalto University 2021-2022. Aalto University, located in Finland, has been offering the “Games Now!” open lecture program since 2017, where students could earn study credits by attending lectures and a two-day game jam on the university’s campus. However, in Spring 2020, due to Covid-19 social distancing regulations in Finland, Aalto University’s game lectures and jams were forced to transition fully online. At this point, the Games Now! jam events were re-branded as “Games Now! Online Jam” (GNOJ) and transformed into a week-long online event instead of the usual two days in a physical space. This adjustment aimed to accommodate remote learning requirements while reducing the workload for students and teachers, who were already facing overwhelming amounts of information and reduced classroom interactions during the pandemic. Given the urgency of the pandemic situation, the development of GNOJ involved multiple tryouts and design iterations rather than following a concrete pre-set plan and project aims. The first four GNOJ events (GNOJ #1 until #4), from March 2020 until April 2021, were initially remained domestic, focused on jammers in Finland in fully remote study or work conditions.

Then, in the summer of 2021, Games Now! teachers and one of the collaborating institutions, Chungkang College of Cultural Industries in South Korea, mutually agreed to open the GNOJ registration to South Korean jammers as they found the idea of people
jamming simultaneously between two countries — while traveling between them is nearly impossible due to Covid-19 restrictions — interesting. Soon, their curiosity turned into reality in the following months. Considering the time-limited resources and the difference in the academic calendar between Europe and East Asia, the cross-cultural setting GNOJ 2021-2022 was scheduled twice for the year instead of the previous year’s four times of domestic jams. From there, the first cross-cultural GNOJ was hosted in November 2021, titled “GNOJ #5 - Finland x South Korea Jam” (GNOJ #5) with Aalto University in Finland and Chungkang College of Cultural Industries in Korea. Then the next cross-cultural online jam took place in March 2022, titled “GNOJ #6 - Neighbours Game Jam” (GNOJ #6) together with institutions in Finland (Aalto University), South Korea (Chungkang College of Cultural Industries), Sweden (Södertörn University), and Japan (Ritsumeikan University). The official language of GNOJ was English, while multilingual teachers were also present during the event to assist jammers. Furthermore, all authors of this paper were involved in organizing the event.

GNOJ #5 and #6 were held fully online, each lasting for a week (see table 1) starting with a Kick-off lecture live streamed online via Twitch4 on the first day of the event. There, we invited game development experts knowledgeable with game jamming to share his/her game design gambit [29, 30] to the GNOJ jammers online. The jam theme was announced at the end of the Kick-off lecture, which the teachers explained further during the Brainstorming and Teaming session using Discord’s voice chat channel, in the dedicated Discord server, to communicate with jammers. While doing so, the teachers also advised the jammers to post their game ideas, if they have them already, on a dedicated Google Jam board5. If any jammers find someone’s game idea on the Jamboard interesting, they could communicate to form or join a team. The team would then self-report their team members on a designated Google server channel where they could communicate together or share their data (i.e., game design documents, code files, and screenshots). Finally, on the 6th day of the event, the jammers were encouraged to submit their game build file and gameplay record video to the event’s dedicated itch.io page. This allows at least one day for the lecturer and invited external mentors to play the game prior to the Review lecture live-streamed on the last day of the online jam.

We let both GNOJ #5 and GNOJ #6 open for all participants without limiting nationality, country of residence, affiliation, or language proficiency. We had four multilingual teachers and one volunteer (fluent in English and either Finnish, Korean, or Japanese) on standby throughout the event on the Discord server, in case the jammers needed language and/or moral support. They also moderated the jammers’ Discord-based communication based on the institutions’ code of conduct while encouraging jammers to share their screenshots at least once daily to report their progress. Language support channels, both text and voice chat, were available on the Discord server, where the jammers could ask for language support and cultural advice from the teachers if they encountered difficulties communicating with their international peers. The teachers allowed jammers to form their team freely while encouraging the participants to form multicultural teams throughout the Brainstorming and Teaming session. Jammers were also able to do solo jamming (meaning, to participate in a jam alone) if they preferred to do so. Games Now!’ teachers also organized social activities online for jammers, such as playing game soundtracks over the Discord server or posting interesting news or articles about the participating countries’ geography, culture, and customs. Furthermore, all jammers could see and write feedback in other team’s group chats and freely comment or respond with emojis on each other’s game-in-development.

In total, 90 jammers have signed up: 32 on GNOJ #5 and 58 on GNOJ #6. Among those, 83.3% (n=75) formed multicultural teams, with a prevalence of intercontinental teams comprising members from at least two different time zones. Specifically, in GNOJ #5, there were 7 self-reported teams, 5 of which were intercontinental and 2 domestic teams between Finnish participants. In GNOJ #6, there were 11 teams in total, with 8 intercontinental, 1 within Nordics (Finland and Sweden), and 2 comprising participants within Finland but including individuals from other countries residing in the country.

### 3.2 Data and Analysis

We conducted a post-survey after each GNOJ, collecting responses anonymously in English, Korean, and Japanese. The survey consisted of 17 quantitative questions and 12 open-ended questions, asking about the jam experience while attending GNOJ #5 or GNOJ #6, their experience of previous jams, and their overall game-making experience. Respondents were offered the GNOJ stickers for their survey participation. In total, we received 47 survey respondents (see table 2). Demographically, out of the 47 respondents, 53% (n=25) identified as male, 36% (n=17) as female, 6% (n=3) selected “others,” and 4% (n=2) preferred not to disclose their gender. The average age of the respondents was 25.8 at the time of the survey, with the youngest was 19 years old and the oldest being 45 years old. There were 49% (n=23) respondents located in Finland at the time of the survey, 40% (n=19) in South Korea, with the rest in Sweden (n=3), Japan (n=1), and the USA (n=1) — with a higher number of respondents from Finland and South Korea as institutions from these two countries attended both GNOJ events, while others participated only once. Furthermore, 51% (n=24) jammers answered that they are affiliated with a game degree program as a student, which was not surprising given that the project GNOJ was facilitated by the

<table>
<thead>
<tr>
<th>Day</th>
<th>Activity</th>
</tr>
</thead>
</table>
| Day 1 | Kick-off lecture (Twitch)  
Brainstorming and Teaming session (Discord, Jamboard) |
| Day 2-6 | Team communication and screenshot sharing (Discord)  
Game music podcast by the teacher (Discord) |
| Day 6 | Game submission (itch.io) |
| Day 7 | Review-lecture (Twitch) |

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https://www.twitch.tv/gamesnowaaltofi
https://discord.com/
https://jamboard.google.com/
https://www.google.com/sheets
https://itch.io/

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Table 1: The schedule of GNOJ #5 and #6.

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https://www.google.com/sheets
collaboration between game design education programs in higher education institutions. There were 7 respondents answered that GNOJ was their first game jam, while a significant portion of the participants (n=15) stated that they had attended jam events 2-5 times. We also had one survey respondent who claimed to have attended the game jam more than 20 times.

Table 2: Number of jam participants and survey respondents.

<table>
<thead>
<tr>
<th>Jam</th>
<th>Time</th>
<th>Participants</th>
<th>Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>GNOJ #5</td>
<td>November 2021</td>
<td>32</td>
<td>24</td>
</tr>
<tr>
<td>GNOJ #6</td>
<td>March 2022</td>
<td>58</td>
<td>23</td>
</tr>
</tbody>
</table>

We also had the lead author take observation notes in Korean while attending both GNOJ #5 and GNOJ #6 as one of the teachers. The notes were based on observing the jammers communicating on Discord, focusing on the communication patterns, tools, and language in use. Multinational teams’ linguistic connotations and attitudes toward each other’s game development progress were particularly monitored. The teacher also tried to document any potential miscommunication or re-phrasing happening during the GNOJ and how jammers resolved the issues (see figure 1).

Figure 1: A sample of observation notes taken by the lead author during GNOJ

![Observation notes](image)

Lastly, the data were analyzed using thematic analysis [5, 54]. Atlas.ti 21 software was used in the initial coding process and when formulating the themes. First, survey responses were closely read by the lead author capable of reading English, Korean, and Japanese. The codes were marked in English, and from there, the data were then translated into English by the lead author for the report. The codes were then translated into English by the lead author for the report.

4 RESULTS

4.1 Cultural learnings through jamming

Our data indicate that jammers highly valued the cross-cultural setting of GNOJ, considering it as a distinctive and noteworthy feature of the event. Factors associated with cultural learning experiences, such as “learning new culture” and “meeting people from another country,” were frequently mentioned in the survey answers as the benefit of joining GNOJ. The action of game-making was perceived as a gateway of cultural exchange—a mediating tool to start the conversation with other jammers across the earth, even more so than making a functional game. One of the respondents even answered, “…not being able to finish the project (was the worst part of the jam), but that is not the most important thing” (GNOJ #5 participant, Finnish). Jammers also perceived Kick-off and Review lectures offered valuable introductory insights to understand their international peers and their surrounding game culture. However, the Kick-off and Review lectures being hosted in English was a major hurdle for jammers who were not fluent in spoken English.

“I think the best part of this jam was communicating with people outside (the comfort zone), as I can’t imagine myself communicating in English in daily life. So this jam felt very special to me. Of course, there’s important stuff like game development experience, teaming experience, making a game within a short period of time but I think being able to talk with foreigners was the best takeaway for me.” (GNOJ #5 participant, Korean)

“I learned how to communicate with people in different parts of the world.” (GNOJ #6 participant, Japanese)

“Being able to work with people from other countries and try to make something together was the best part of the jam. It was a lot of fun.” (GNOJ #6 participant, Swedish)

In terms of learning game development techniques, we noticed that our jammers were already quite familiar with using various online communication platforms (e.g., Discord, Twitch) and had access to game development software (e.g., Unity game engine, Adobe Creative tools). The data also indicated that our jammers often choose the game development tools that they are already familiar with or eager to learn more rather than trying out new tools or techniques just for this week-long jam. A few respondents claimed that they used new techniques or tools during the GNOJ, but it was limited to the occasions when they had to do so (e.g., a programmer in the team) or a limited amount of time. From there, we could speculate that the jammers tend to be more motivated in polishing their game development techniques through the jam.
4.2 Teaming and cooperative game development

The time difference between Finland and Sweden to Korea and Japan was 6 to 7 hours, depending on the season of the year. Some of our jammers often either had to stay up late or wake up early to communicate synchronously with their international peers across the earth. We noticed this was especially the case amongst Korean and Japanese jammers, who answered in the post-survey that they often worked on this game jam at night after work or study. But their response to late-hour jamming was not harmful but more neutral, and most of our multinational jam team managed to find a mutual time slot to collaborate.

"I did jam between 16:00 - 17:00 (in the evening) after school, and then 04:00 05:00 (in the morning) before school. I think I also jammed here and there in between my school assignments and lunch/dinner time. Overall I think I spent like 7-8 hours per day during the jam. A bit longer than expected, but I think that was mainly because I was trying out some new methods of coding during this jam. I was recently introduced to a new way of coding and I wanted to try it out this week." (GNOJ #5 participant, Korean)

"Once I do my tasks starting from around 8 p.m. (in Korean time) and then go to sleep, then the Swedish programmer in our team could able to follow up with the codes and assets." (GNOJ #6 participant, Korean)

As it was challenging to arrange all-team-together meetings and discussions, the jammers used distance communication and a cooperative work style — similar to the game production pipeline where game companies source their work from various countries around the world. Rather than trying to arrange all-together meetings and developing ideas collaboratively, our jammers tend to divide their roles and work hours to develop a game across multiple time zones efficiently. They assigned clear roles to each other with specific tasks and turned around, building their own cooperative (rather than collaborative) workflow per se. For example, we noticed several GNOJ teams favoring concrete game design documents made by one or two game designers in the team that details the game’s system that could allow other team members to immediately work on developing in-game assets once they wake up. We also had one multinational team that made a game in turn, with one jammer handing over the source file (made in the Unity game engine) to the next person according to promised work hours. However, the downside of such cooperative game development resulted in a less team-bonding atmosphere during the jam, forcing many multinational team jammers to work alone, without much team engagement, throughout the week.

"Time zone differences were a challenge but we had a few hours when we all were awake at the same time. We also worked while others were sleeping." (GNOJ #5 participant, Finnish)

The variation in time zone differences between summer and winter arises from the implementation of daylight saving time in Europe, a practice not observed in East Asia.

9

4.3 Becoming aware of the different local interpretations

Our observation and survey results indicate different interpretations of practices in each region, despite the teachers providing uniform jam rules and the jammers using universally similar game development software and platforms. One of the noticeable differences observed was in the interpretations of game development practices, communication styles, and cultural nuances in how jammers deemed logical and preferred methods of engaging with jam.

For instance, during GNOJ, we noticed that Japanese jammers expected that the teachers would assign a team for them, which the teachers were not aware of. Only after GNOJ #6’s brainstorming session did our co-author in Japan verify that team assignment is common in some Japanese game jam events, as it is deemed more efficient and comfortable in the local culture. Some of our Japanese jammers, therefore, seemed baffled at first that they had to find the teammates themselves and pitch their own game ideas. Our jammers from Finland tend to associate the game jam experience more with a social activity, with a higher number of those who answered "(I attended this jam because) my friends participated too" and "I wanted to meet new people" in the post-survey, more so than jammers from other countries. They also tend to value the social aspects of the jam event, prioritizing their positive social experience with teammates over making a functional game at the end of the jam, which could correspond with the Finnish game jam scenes’ portrayal of game jams as social events for game developers and students. Meanwhile, Korean jammers were relatively more goal-oriented, with a strong motivation for delivering functional and visually appealing games by the end of the GNOJ. They were highly active in the early stages of the teaming process, hoping to find teammates as quickly as possible while pitching their game ideas actively on the first and second days of the event. The post-survey data indicates that Korean jammers generally appreciated prompt and seamless game design decision-making while prioritize to spend more time making and polishing in-game codes and assets.

"I'd say first brainstorming was difficult — collecting each other’s opinions and to make decisions. Gaining mutual understanding between teams was challenging." (GNOJ #6 participant, Japanese)

"It felt like some (of my teammates) didn’t much care about (discussing) the entirety of the game that we were building. But just interested in doing their own part and that’s it. So that was a bit of a shame." (GNOJ #6 participant, Korean)

There were also differences in terminological interpretations between the roles. During the Brainstorming and Teaming session, using the Discord voice channel, we noticed that some Korean jammers tend to introduce themselves in English as "(I) do design game(s)" to express their interest in creating 2D and 3D graphic artwork during this jam event. This was because the connotation

https://unity.com
of the verb "(do) design," using the English loan word "dijain," could either refer to game design or game visual graphic design in the Korean context. Whereas jammers from Finland and Sweden generally associated the term "do design game" in English with being a game designer in the team — designing the game mechanics and levels. So jammers were asking each other questions to clarify what they meant, while some sought help from a multilingual teacher to ensure they interpreted things the same way. We later discovered that these subtle differences in the interpretations of the words were linked to the local societal and industrial context, reflecting the job titles and responsibilities of game-making professionals in local game studios. Our Korean co-author clarified that in the past in Korea, the term "game designer" ("geim gihoegja" in Korean) commonly referred to individuals involved in graphic design work for creating games. However, in recent times, many local game companies and educational institutions have redefined the term "game designer" to encompass individuals responsible for designing game mechanics, while the phrase "do design game" is used as a verb (as an action) in a more nuanced manner. In Japan and Korea, the individual responsible for designing the game mechanics and levels — those that are titled as "game designer" in Finland and Sweden — is referred to as "game planners" (geimupuran‘na in Japanese, and geim gihoeogja in Korean). We also discovered that "game planners" are often expected to undertake project management tasks such as milestone checks and planning. On the other hand, the person in charge of creating graphics for the game is known as a "game artist" or "game graficer" in Japan — a Japanese-made English term that combines the English word ‘graphics’ with the suffix ‘-er.’

"First I relied on translation tools and dictionaries when chatting with my teammates. But at some point, our programmer (who was more capable in both languages) told me that things might have been interpreted in a slightly different manner than what I originally intended to say — and asked me what I actually wanted to say there. I realized how challenging it is to deliver a message in a different language. From that onward, I tried double-checking my translation to make sure the translated phrases are actually nuance-wise closer to what I actually tried to say." (GNOJ #5 participant, Korean)

Our East Asian jammers commented more about the language barrier compared to jammers from Sweden and Finland. We speculate that this has to do with the homogeneous linguistic environment in East Asia compared to Europe, with lesser occasions to hear/talk in other languages (in this case, English) on a daily basis. This was one of the biggest concerns among the teachers. However, the observation showed how our jammers eventually come up with solutions to overcome their language barrier. One Finnish jammer answered that their team used English, while they tried to use "simple English as much as possible so that our team members wouldn’t have difficulties understanding what I mean" (GNOJ #5 participant, Finnish). We noticed many of our jammers actively supplemented visual indicators such as memes (i.e., GIF images), diagrams, image references, and emojis on top of their text chat messages to deliver their nuances to other international peers to avoid potential miscommunication hiccups from the AI-assisted translations (e.g., Google Translation, Naver Pagoda). Several jammers also have their messages written in multiple languages, one with their native language and another one AI-translated, so that other multilingual jammers or teachers can able to give comments/feedback (see figure 2). The role of multilingual teachers was also deemed as important, as jammers said:

"I was very concerned about the language barrier until the teacher actually helped us out. I think our project went quite well thanks to the teachers of the (GNOJ#6). My previous jam experience was a bit rough because they didn’t have any mentors to ask. But this time, I felt more comfortable and supported." (GNOJ #6 participant, Korean)

"I used images in combination to descriptions to visualize things." (GNOJ #5 participant, Finnish)

Figure 2: Multiple languages used by the jammers

Overall, our multinational teams in GNOJ managed to report their progress and deliver their games. This indicates that our jammers can fully self-learn, with the cross-cultural online jam setting offering a safe environment to experience cultural encounters. Several of our jammers claimed that they now feel more motivated to learn English or learn more about other countries/cultures — as they felt the importance of such knowledge for their future game career.

"My English is terrible. But after trying a bit more English during this jam (although I mostly relied on translation tools) I could say I gained a tiny bit of confidence about communicating in English!" (GNOJ #5 participant, Korean)

"It was really inspiring to see what other jammers had put up. The localisation aspect of game development interests me, as a linguist." (GNOJ #5 participant, Finnish)

5 DISCUSSION

Our data suggest that cross-cultural online game jams can function as a venue of cultural learning, as evidenced by GNOJ jammers’ positive response to learning different cultures and languages during the jam. And despite the challenges posed by the online-only format and major time differences between countries, jammers demonstrated their capacity for self-learning while acquiring multicultural competencies by immersing themselves in diverse local
cultural nuances within game development across the globe. Building on these findings, this chapter delves into the essential aspects of organizing cross-cultural online game jams within the game educational setting.

At the beginning of the jam, it was noticeable that GNOJ jammers were unaware of different cultural nuances and interpretations in game development between the countries prior to participating in the event. Jammers were surprised to know that there are various game development-related terminologies, "soft-skills" practices (e.g., communication styles, attitudes, and task prioritization, see also [27, 52]). They appeared to be aware of it in terms of knowledge, but not as fully realized or experienced in practice. Our jammers' initial reactions mirror the homogeneity and exclusivity prevalent in the game industry, which tends to categorize game development procedures and processes according to the dominant Western narrative of the 'ideal model' of game production [9, 18, 53, 55]. This exclusivity overlooks the diverse local interpretations within actual game development, where professionals' tasks, roles, and responsibilities vary between countries and evolve over time within the industry [31, 37, 43], while also neglecting practitioners operating outside the multinational game corporate value chain [47, 58, 59]. Additionally, it worryingly resembled the presumptuous attitude in the workplace faced by migrant game developers, who are pushed to internalize the lengthy cultural transitional process — due to highly capitalized market logic that prioritizes immediate productivity and stateless platforms [9, 41].

Fortunately, our jammers managed to resolve such new encounters fairly quickly, which demonstrates the positive pedagogical benefit that the cross-cultural online game jams could offer to game education: exposing game students the chance to try out various interpretations and connotations of game development practices, terminologies, and attitudes, helping them to prepare their international game career. This will help jammers to enhance their cultural competencies, a stress-inoculation [4, 15], an ability to tolerate and accommodate multiple interpretations of practices for diverse and inclusive attitude. Our experiment showed that jammers are capable of learning by themselves, supporting the previous studies on the pedagogical benefit of game jams [2, 33] and self-learning-oriented manner of game jams [28, 45]. For instance, we were especially surprised by how well the jammers naturally mediated the differences in time zone, language barrier, and terminological and conceptual differences. This demonstrated the pedagogical benefits of cross-cultural online jam as an environment where jammers — game students and thus future game developers — can exchange their unique local nuances and interpretations [31, 56]. And thanks to its online accessibility, GNOJ provided a virtual environment where jammers could seamlessly engage in their game development practices from the comfort of their own spaces, without the burden of physical travel or migration abroad.

From there, we also consider cross-cultural online jams may also play a huge role in further developing the sub-culture of 'online game jams.' With the added cross-cultural elements, online game jams can complement traditional physical game jam experiences by positioning multicultural interaction as one of its major motivators for jamming. It also offers opportunities to democratize international game jams for education by allowing even the lesser-resourced game schools and grass-root organizations to provide pedagogically rich international experiences to their participants. From there, online game jams with cross-cultural elements can be used for creating a quick and iterative multicultural education setting that can best resembles the pluralistic [22, 41, 43, 58] and globally distributed projects that span across the multiple-time zones and cooperative workflow [7, 42] without burdening the institutions in physical resources and travel budgets. Instead, game education institutions and organizations could allocate those valuable resources to securing multilingual staff/teachers/mentors to facilitate and plan cross-cultural online game jams to provide a richer environment for cultural learning amongst the jammers. It could also function as a stepping stone to furthering the international collaborations between game education institutions, which are regionally distributed and isolated at the moment, enabling a stronger and more cohesive pedagogical network for game educators and scholars.

Lastly, the various interpretations of game-making practices observed in GNOJ inspire methodological aspects on documenting and analyzing the local game development cultures, offering closer looks at how game developers create games [27, 37, 52] — rich empirical data to broaden our academic knowledge of game-making practices around the world. For example, a comparative analysis that compares data from cross-cultural online jams and physical game jams held on a global scale (e.g., Global Game Jam) may enable scholars to dive deeper into how game development tools and techniques are being practiced and interpreted differently (or similarly) across country-to-country, company-to-company, or even team-by-team (see also [17, 27]). Such experiments could offer vital knowledge to improve the localization and diversification of grass- root game production software, tools, and teamwork tactics.

6 LIMITATIONS AND FUTURE STUDY
One of the primary limitations of this paper is a remote source of data only through survey and observation — due to a lack of physical access to our jammers. Deeper qualitative data, such as follow-up interviews and design notes, should be considered for consecutive studies. It is also important to note that our research participants (the jammers) were limited to four specific game education institutions. Thus, they cannot be generalized nor represent the whole population of jammers in various parts of the world. Furthermore, we do consider the demands for (and thus the positive response towards) cross-cultural online game jams might have been higher than usual during the Covid-19 pandemic when this research was conducted. Thus, the consecutive study could explore changes (or maintains) in participants' interest, engagement, and motivation for cross-cultural online game jams even after the pandemic, inquiring about its long-term viability and relevance beyond exceptional circumstances. Since the GNOJ continued even after the Covid-19 global pandemic — in the academic year 2022-2023 with more countries (e.g., USA, UK, and Ireland) involved — perhaps our future report can reflect some of those new findings. We believe cross-cultural online game jam initiatives, even after the Covid-19 pandemic, may help further develop and solidify the sub-culture of 'online game jams' that can complement physical game jams.
7 CONCLUSION

In this paper, we reported the achievements and findings from GNOJ #5 and #6 in 2021–2022 — two cross-cultural online game jams, which involved 90 jammers from four different countries (i.e., Finland, Sweden, South Korea, and Japan). Our qualitative data gathered from post-survey and observation notes evidently shows the pedagogical benefits of cross-cultural online game jams: (a) a venue for cultural learning, with jammers’ positive response to learning new culture and language, (b) challenges in time differences that tend to push for distance communication and cooperative work style, (c) a safe environment that enables jammers’ self-learning how to overcome cultural encounters and surprises. We noticed such findings resemble the reality of global game production, which is becoming increasingly globally distributed and multicultural and yet remains homogeneous and stratified. Therefore, we believe that cross-cultural online game jams can serve as accessible, safe, and affordable pedagogical tools to foster cultural competence among future (and current) game developers, while also promoting international collaboration between game education institutions. Consequently, we want to encourage and more game institutions to participate in this initiative.

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