

# Experiences with Summer Camp Communication via Discord

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## ABSTRACT

Teamwork and communication skills are essential for those entering the workforce, especially for software development positions. For remote development positions, the ability to work with a team and communicate remotely through a communication tool are important skills that are generally not taught in standard university courses. In this experience report, we discuss our experience using Discord for communication and collaboration during our virtual summer camp focused on teaching teamwork and game design to 27 autistic high school students. Overall, we found using Discord beneficial in many ways that we did not anticipate, including quicker instructor coordination, improved socialization, and more. Additionally, we provide recommendations for those who may want to use Discord in a similar virtual environment.

## CCS CONCEPTS

• **Software and its engineering** → **Programming teams**; • **Human-centered computing** → **Social networking sites**; • **Applied computing** → **Collaborative learning**; **Interactive learning environments**.

## KEYWORDS

remote, autism, game coding camp, Discord

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## 1 INTRODUCTION

For software development positions, soft skills such as teamwork and communication are incredibly important for developers to have, especially in remote work situations [12, 16, 20]. To help prepare these soft skills, universities have courses dedicated to semester-long group projects, e.g., capstone courses,

in addition to scattering group projects throughout their degree programs [27, 28]. Through these group projects, students work together to complete a small software development project where the intentions are to help them form soft skills such as communication, collaboration, presenting, and more before they begin their careers.

For many autistic learners, learning social norms and collaborating are not easy tasks [25, 33]. Many spend their formative years learning practical social skills by spending time with therapists [5, 9]. Recently, it has been shown that videogames have a positive impact on their social skills by providing a community for them to build their friendships upon [3, 26, 30]. With that, we combine a learning environment centered around building video games to help teach autistic youths how to navigate new social situations, working with others in a group, and how to build a videogame from start to finish.

We designed and implemented a virtual, three-week long summer game coding camp for 27 autistic high school students. Similar to our previous camps, our goals were to expose the campers to programming while also working on their teamwork, communication, and collaboration skills [4, 23]. To help encourage and facilitate teamwork and communication inside and outside of camp hours, we also introduced Discord<sup>1</sup>, a popular online communication tool.

For autistic young adults, Discord and other computer-mediated communication tools have been studied to further understand how these tools support neurodiversity in online communication settings [31]. Additionally, Discord and other online tools have been investigated to discover how well they support autistic adolescents' synchronous and asynchronous learning [32]. Recently in computing education as a whole, Discord has been used to moderate group collaboration [17], support student software engineering projects with a Discord-based 24/7 helpline [6], as an online tutoring platform that transformed into a computing community [22], and as a tool to better understand group project dynamics [28].

In this paper, we give motivation for presenting a virtual coding camp and background in remote learning for students with Autism Spectrum Disorder (ASD), coding camps, Discord, and teamwork. Then we briefly discuss an overview of our camp and camp design and the decisions surrounding using Discord for outside camp communication. We provide a daily schedule of our camp and a full breakdown of our Discord server setup. Finally, we reflect and discuss what we

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<sup>1</sup> <https://discord.com/>

learned from our camp this year and provide recommendations for using Discord in future camp implementations.

## 2 BACKGROUND

In this section, we discuss teamwork, remote teams, how Discord is used in education, and two of our previous game coding camps for autistic students.

### 2.1 Teamwork in Software Engineering

Teamwork is an important aspect of software development that is seen within college courses and beyond within industry. Most software engineering curriculums require students to take at least one course where there is a semester-long team development project. Courses like these teach students about industry standards and expectations, collaboration, teamwork, and soft skills such as communication [29, 34]. Recently there has been a significant increase in hybrid and fully remote software development positions.

**2.1.1 Remote Teams.** Remote teams, also known as distributed teams, are not new to the software development industry. Distributed teams are teams in which the members may reside in different geographical areas and timezones. There is plenty of research surrounding distributed teams, such as how to support collaboration [7, 18, 19], resolve conflicts [14, 39], trusting teammates [10, 35], and much more. However, due to the effects of the COVID-19 pandemic, many companies have continued to allow employees to work remotely part time, leading to more distributed teams in the workforce.

Remote teams can be more accessible for disabled and neurodiverse workers since they are generally more accommodating and inclusive due to their flexibility [13, 21]. Increasingly, tech companies are becoming more aware of the talents and benefits of employing autistic individuals [8]. Although autistic individuals have the necessary technical skills to succeed in software development positions, they may have challenges with communication and socialization [2, 8]. Our three-week virtual camp allows campers to practice and improve their communication, socialization, and teamwork skills in a controlled environment. We hope that by providing our teamwork-focused, virtual game development camp to autistic high school students, we can help encourage them to pursue careers in software development and reduce the stress of communicating and socializing in their future careers.

### 2.2 Discord

Due to the prevalence of hybrid and remote positions within industry, teams must learn how to communicate effectively through software such as Slack, Microsoft (MS) Teams, and Discord. The use of communication software such as Zoom, Slack, and MS Teams has become more common in both academic [24, 28, 34] and industry [11, 15, 21, 37] settings.

Zoom, a videoconferencing tool, is used for scheduled video calls. Slack and MS Teams, however, are similar since they are communication and collaboration tools. Both have collections of people that are gathered in a group called a Slack 'workspace' or a MS Teams 'team.' These workspaces can have

multiple text channels organized by topic and users are able to direct and group message (DM and GM, respectively) other users in addition to starting video calls. Slack and MS Teams are similar to Discord, a communication and collaboration tool generally used to maintain relationships and interest groups outside of the workplace. Discord, a tool designed originally for gamers [1], has been increasingly used in educational settings due to the effects of the COVID-19 pandemic.

For example, Discord was used in a biology classroom and labs to maintain student involvement in the course [38]. One computer science department has been using Discord to keep in touch with their current students and alumni to create a sense of community during the pandemic lockdowns [36]. Additionally in computing, Discord has been used as a group project moderation tool [17], a 24/7 helpdesk for software engineering students [6], an online tutoring platform [22], and a tool to further understand group project dynamics [28].

### 2.3 Game Coding Camps for Autistic Students

During the summer of 2020, a fully online game coding camp for seven autistic students heading to college was conducted by Begel *et al.* [4]. The goals of the camp were to practice and improve the communication skills of their autistic campers in addition to building their teamwork skills. They used Microsoft's MakeCode Arcade as their programming language. Their findings included increased communication between team members and positive collaboration experience within their teams [4]. Additionally, since this was our first camp, the instructor team learned more about educating students with autism, including allowing students to toggle their camera and microphone on or off, piloting teaching material before camp, and scaffolding their students' assignments [4].

Additionally, during the summer of 2021, a hybrid game coding camp for autistic students was conducted by Moster *et al.* [23]. This camp allowed for students to attend in-person on Clemson University's campus, fully remote, or a mixture of the two. They also focused on teaching their students communication and teamwork and used an industry-level programming language and industry-level tools, including GoDot game engine, GitHub, and Visual Studio Code. They provide recommendations on how to further improve their camp, including implementing a universal design, providing scaffolded instructions to their students, taking breaks during the camp day, and having overall flexibility [23]. Additionally, they provide a recommendation to incorporate time outside of camp hours for students to work together [23], which is the basis of our decision to use Discord in our camp.

The feedback from running these two camps has informed our implementation of the camp discussed in this paper. Although this paper focuses on our experiences with Discord during our camp this year, we think it is important to reflect on our previous camps to make improvements for future ones.

## 3 OVERALL CAMP DESIGN

In this section, we describe our camp's structure including our camp design, instructors, campers, and a timeline of our

camp activities. Additionally, we discuss our motivations for choosing to use Discord, our server’s organization, and describe our custom bot’s functionality.

### 3.1 Camp Design

Our camp ran for 3 weeks, Monday through Friday, in July 2023, where each camp day was 2 hours long. To be as inclusive as possible and accommodate campers outside of our timezone, our camp was conducted fully online. The overall goals of our camp were to teach basic programming and game design skills using Scratch<sup>2</sup> as well as encourage and facilitate camper communication and teamwork. To do this, we chose to implement learning in small groups via Zoom’s breakout room feature. Each small group consisted of at least 2 instructors and 4 to 5 campers to comply with institutional requirements for student-to-instructor ratios while teaching minors (students under 18 years old). To help promote communication and teamwork outside of camp hours, we set up a Discord server that was available to all campers and instructors during camp. The first week of camp was focused on teaching programming in Scratch and game design basics. The second and third weeks of camp were devoted to the campers working together in teams to design and build a videogame. An overview of our camp is shown in Table 1.

**3.1.1 Camp Instructors.** A total of 13 instructors conducted the camp. Eight instructors have helped with at least one of our previous camps. Two instructors are professors at Clemson University, one is a professor at Carnegie Mellon University, five are Ph.D. students, 3 are undergraduate students, and two of our instructors are working professionals. The majority of instructors are from Clemson University, with some coming from Carnegie Mellon University, DePaul University, and University of California Irvine. The majority of instructors were located within the Eastern timezone with others in the Central and Pacific timezones.

**3.1.2 Campers.** A total of 27 campers participated in the camp with, on average, about 20 campers attending each camp day. The ages of the campers ranged from 14 to 17 years old. The majority of our campers were male, with only three females. Five of our campers attended only the first week of camp. All campers resided in the United States and attended our camp from all over the country. The majority of our campers had at least some programming experience, while 11 campers had no programming experience before attending our camp.

### 3.2 Designing our Discord Server

We chose to use Discord as a tool for campers to use to communicate with one another and the instructors outside of camp hours. In this section, we describe why we chose Discord, how our server was setup for the campers and instructors, and how we created and used a custom Discord bot.

**3.2.1 Why We Chose Discord.** We have run our camp for four years now, and our main focus has been on ensuring that our campers are working together on their final project. For

<sup>2</sup> <https://scratch.mit.edu/>

TABLE 1 **Camp Activities: A Chronological Overview**

Day 1	Welcome session
	Meet instructors and campers
	Install and check required software
Day 2	Technology check for campers
	Introduction to game story types
	Group brainstorm: Game types
	Building first example game
Day 3	First example game continued
Day 4	Building second example game
Day 5	Creating music and sound effects
	Group brainstorm: Game ideas
Day 6	Meet assigned teammates
	Team brainstorm: Game aspects
Day 7-12	Team: Game development
Day 13	Team: Game development
	Team: Practice final presentation
Day 14	Team: Final touches on game
	Team: Practice final presentation
Day 15	Team: Presentation of final games to guardians and guests

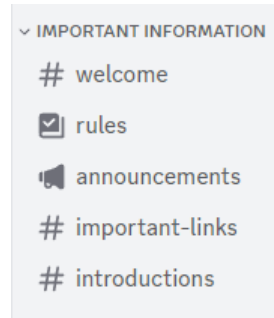
the past three years, we have not provided a tool for campers to communicate with one another outside of camp hours, instead we encouraged them to converse via email or text messaging [23]. This year, we decided that there should be a way for campers to communicate with one another without having to share their personal contact information.

For our criteria, we wanted to make sure that the tool was easy to set up, and campers could join video calls and text each other within one tool. The two tools we considered for this role were MS Teams and Discord. We decided against using MS Teams due to it being a professional software that may dissuade our campers from conversing. Additionally, MS Teams only uses threaded messaging, which could be confusing and cumbersome to navigate for our campers. We chose to use Discord due to its status as a ‘gaming communication’ platform, we thought many campers would already have an account and be familiar with the interface.

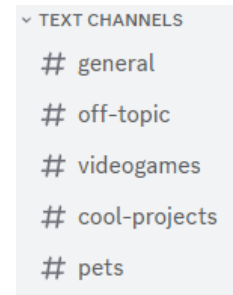
**3.2.2 Discord Server Setup.** Within our server, we had multiple groupings of different text and voice channels that could be accessed by different groups of people as shown in Figure 1. Instructors had access to every channel grouping, while campers had access to Important Information, Text Channels,

Office Hours, and their Team # channels. Figures 2 – 6 show the channels names for each section of our Discord server.

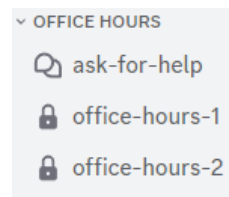
The Important Information section of channels (Fig. 2) contained our camp and Discord rules, camp-wide announcements, important links for camp such as the daily zoom link, and an introductions channel for all instructors and campers to introduce themselves. Next, Text Channels (Fig. 3) contained text channels for general conversation, off topic conversations happening during instructional periods, videogame conversations, a channel for showing off cool projects, and a channel for everyone to show off the cute things their pets were doing. Office Hours (Fig. 4) contained a forum-channel for asking questions and two voice-channels so campers could get help from instructors. The Team # channels (Fig. 5) all contained a general team chat and a voice channel that was only accessible to the instructors and the campers on that team. Lastly, the Instructor Only channel (Fig. 6) contained text channels that were relevant to running the camp. Within the Instructor Only channels, there was a channel to forward DMs sent to the bot, a channel for important instructor-only announcements, a backchannel for instructors to converse with one another while camp was running, a channel for our instructor in charge of breakout rooms to send updates on room status, a channel for instructors who need immediate help, a channel for reporting concerning messages from campers, and a voice channel for instructors.



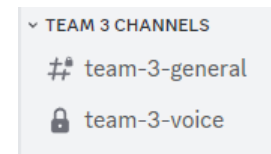
**Figure 2: The Important Information channels.**



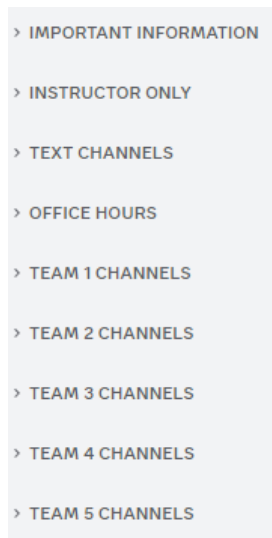
**Figure 3: Our general Text Channels.**



**Figure 4: The Office Hours channels.**

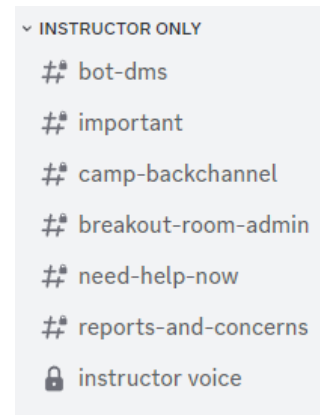


**Figure 5: A general set of Team # Channels.**



**Figure 1: An overview of the channel groupings in our camp Discord server.**

3.2.3 *Our Custom Discord Bot.* We created a custom Discord bot to help better understand the material campers needed help with and if our instructors were able to help them. The Discord bot was always listening to the voice channels within Office Hours and all of the Team # channels to see if campers or instructors joined. If they did, when they left the voice channel, the bot would DM everyone in the voice channel with a



**Figure 6: The Instructor Only channels.**

survey to take. Campers would receive a survey asking about the issue they were having and if it was resolved in the voice channel. Instructors would receive a similar survey that asked for a description of the problem, whether the camper was able to resolve the problem in the call, and if the camper appeared to have tried doing different things before coming into the voice call. Additionally, if a camper or instructor sent a DM to the bot, it would forward the message into the #bot-dms channel in the Instructor Only channel group so the instructors could know what was going on. Since we chose to use a new programming language for camp this year, our intentions with this bot were to further understand if our curriculum

was detailed enough for the campers or if we needed to revise it in future camp iterations for clarity.

## 4 OUR DISCORD SERVER'S IMPACT ON CAMP

Our camp Discord server was available to campers and instructors one week before camp began, during camp, and one week after camp ended. This section details what the instructors saw and experienced during that five-week timeframe.

### 4.1 Camper Communication Observations

During camp, our campers used Discord to communicate with other campers and instructors. Unfortunately, we were unable to interview each camper about their experiences using Discord during camp, however, we have provided our observations about how they communicated through Discord in the following sections.

**4.1.1 Familiarity with Discord.** We allowed the campers to join our camp Discord server one week before the actual camp began to allow them to become familiar with our server setup and the Discord interface if they were new to Discord. During this timeframe, many campers introduced themselves in our #introductions channel, however not many campers started conversations in other channels.

Once camp started, it was clear to most of our instructors that many of the campers were very comfortable chatting via Discord and our Zoom chat. Our #general channel during camp hours was vibrant and had many campers contributing to the conversations happening. The two instructor quotes below expand more on how comfortable the campers were when conversing via our Discord server.

☛ *“I feel like the campers were a lot more used to Discord than some of us instructors. It felt more natural to them. So I think it was the, I mean the my impression is that they were comfortable using it. And they did talk a decent bit on there. Sometimes it did feel like they were talking too much, like, you know, spending too much attention on Discord rather than the camp itself. But we were able to control that with instruction so I would call that a win.”*

☛ *“Obviously the campers do enjoy using Discord, but some who got too comfortable to where they feel, just like the environment is kind of like driven by them. So sometimes they can kind of like forget that we are instructors or we are, uh, like we set a certain rules. Because it's Discord, and because they usually use Discord for something else, probably having fun and not following [our camp's] rules, it can be hard for them to like realize, like, oh, like even though this is Discord, we still have to follow these rules and they are still our instructors.”*

However, once camp concluded for the day, very few Discord conversations occurred outside of our instructional time. During the last two weeks of our camp, while campers were working in teams on their final projects, more conversations outside of instructional time occurred. These conversations

were generally directed at the camper's team where their instructors and teammates could help them.

The most used channel by campers in our Discord server was our #general channel. In total there were 649 distinct messages sent in our #general channel between campers and instructors over the course of our 3-week camp. The majority of these messages were sent while camp was in session. Additionally, the Team # channels were not used extensively for team conversations as originally intended, instead these channels became a way for campers to share the files they were working on with the rest of their team and instructors.

### 4.2 Instructor Experiences & Feedback

After camp concluded, we interviewed 10 out of 13 of our camp instructors to obtain their experiences and thoughts on how well Discord was used during the camp. We have compiled their experiences in the sections below.

**4.2.1 Camp Technology Setups.** Since our camp is fully online, instructors and campers are required to have many different programs open on their computers. These include a web browser to work on Scratch coding, the Zoom meeting where camp is being held, Discord for file-sharing and conversations, and any additional programs they may have running.

Almost all instructors said that setting up their Discord accounts and joining the camp Discord server were fairly simple. Additionally, during camp most instructors had computer setups that included multiple monitors so that they could keep up with everything in multiple windows. However, some instructors only had one monitor which made paying attention to Zoom and Discord simultaneously difficult for them, as noted by the below quotes:

☛ *“I think it was challenging for me to be able to keep so many things open that being, Zoom and Discord and the coding thing, Scratch. And if I needed to like sometimes I was like trying to look up things myself. ... For me, I was only using a laptop, I don't have a desktop setup right now, so that definitely made it more challenging.”*

☛ *“It was the cumbersome nature of having to jump between windows to be able to stick with the Discord conversation that was problematic for me, so if it's on its own window sitting there, just glance at it. ... To be able to quickly look over, glance over and look, return to focus quickly. I think it's important that you have a setup that allows for you to do that, and I didn't at that point, so.”*

**4.2.2 Discord Server Moderation.** The moderator role is common on many online platforms such as Reddit, Twitch, and Discord. Moderators are people who keep the server or forum discussion orderly. Moderation for the camp Discord server fell to the instructors and many expressed in their interviews that this was their first time being in a moderation role.

☛ *“I've never been a moderator before. I've never even. I've never like, I know that there's, like Twitch or something like that.”*

*And there's Reddit. I think they have moderators, but either way, so and there are all these other online platforms that use moderators, and I've never even used those online platforms to begin with. So I know what a moderator's supposed to do and I have some idea of it, but I have very little experience of all this stuff. So it was a little bit of a surprise for me."*

Unfortunately, we quickly found out that running a camp and moderating the Discord server did not allow for both to happen at the same time. Campers were continually posting in our general channel during camp and the instructors were busy teaching and helping their campers so it was not always possible to have an instructor moderate the Discord chat. As one instructor said in their interview, "[The campers] seemed to use Discord the same way they used the Zoom chat, which is like just spewing things constantly, just really communicating and just putting stuff out, publishing content, you know, entertaining us with their posts." To combat this, we enabled an auto-moderation tool to remove messages with certain phrases (i.e., expletives) that we felt were not appropriate for our summer camp. Additionally, we turned on Discord's slow-mode feature in the general chat to discourage campers from posting multiple messages in succession.

● *"Initially, I thought the moderation would be manual, but then it was like clear that we didn't have enough people to monitor the students and the Discord at the same time even when there was somebody who was assigned to monitor [the Discord]. This camp was like, well, your students are in front of you [on Zoom] and they kind of need you right now, so deal with Discord later. Normally you could handle the asynchronous nature of the Discord while you're still working with the campers because you know, there's a lot of downtime. But I think that the auto moderation was really fascinating because the students quickly figured out they couldn't write certain words."*

**4.2.3 Discord VS. Other Tools.** In the past, instructors communicated during camp via MS Teams. However, since we were using Discord for camper communication with instructors and campers, the decision was made to switch from MS Teams to Discord for our instructor-to-instructor communication needs. Many instructors felt that the switch to Discord from MS Teams posed less technical problems such as file sharing incompatibilities due to different institutional sharing policies.

● *"Yeah, I prefer Discord because I think Teams is a little too rigid when we involve people from outside [our academic institution]."*

● *"The other thing that I liked about [Discord] was that it seemed easier for other instructors to join that weren't at [our academic institution] or in academia, right? I think it's not even the permissions. I think like using Teams when you've never used Teams or you know any type of thing like Slack even, Discord seems to be more intuitive because we had people that*

*were – we had [instructors] who were older were able to like figure out stuff that and they don't work [in tech areas]."*

For camper-to-camper communication, in the past we have not provided an outlet for campers to communicate with one another outside of camp hours. In previous years we have observed campers working together on their final projects outside of camp hours [23], which inspired us to provide a space for our campers to work together and ask for help from other campers or instructors when needed.

● *"I think it was the right tool with the right audience. Many of the students, or it seemed like many students, who at least knew Discord. Whether they use it a ton or they use it as their primary means of communication – that's which some of them seem to – they all seem to have an awareness of it. Also, I think as the tool, I think there is thing to be said or the brand of it too, because you could make a lot of the same functionality or get a lot of the same functionality from Slack or there you know, there's things you can do in in other project tools like Basecamp or Asana that are, you know, some of the functionality of what you get with Discord, but I would say that the brand also is meaningful that you know they know the brand, it's familiar to gamers or computer scientists."*

**4.2.4 Our Favorite Discord Features.** Since this was our first time using Discord for camp communication, during our instructor interviews, we asked about their favorite features of Discord. Many instructors mentioned that their favorite features were useful in ensuring that another person received the information as shown by the two quotes below.

● *"I kind of touched on this before, but my favorite feature is the @. So if I @-ed, [or mentioned], even someone like [one of our Camp Directors] who was really busy, [they] would respond fairly quickly. So I really like that feature."*

● *"For Discord in general that was really prevalent in this use was the use of [reactions]. The, you know, the little emoji and things. We didn't use it as a check to see to make sure that everyone had seen [the message], but it was certainly useful to see if the person you were talking to had seen it and gave you a thumbs up or something like that. I think that's an under-discussed aspect of the tool, the ability to quickly do that."*

Mentioning an instructor in a Discord message was crucial to ensuring that our camp ran smoothly. Additional Discord mentioning features such as @here, @instructors, and @everyone were crucial in notifying particular channels or roles about important information. Reacting to a message to show someone that you read it became an unspoken action that most instructors used. In addition to these, other instructors enjoyed how easy it was to manage and modify the Discord server during camp.

● *"The amount of admin controls that we had and having different, you know, admin levels of access. So like yeah, having*

*the instructor section and then the student section and then specific team stuff.”*

● *“I think another feature that I really really like is that you had as the server admin – the things that you could do, things you know that removed problematic people, mute people like, whatever that that it's, there that it's possible.”*

● *“I mean, I like the idea of multiple channels and you could switch between them, so it kind of feels more like a Slack type of thing, but it somehow feels more lightweight than Slack does. I don't know why.”*

**4.2.5 Our Least Favorite Discord Features.** In addition to asking about instructors' favorite Discord features, we also asked about their least favorite features. Many instructors commented on missing notifications from Discord or not being able to find a breakdown of the messages they were mentioned in. In addition, instructors who use Discord personally felt uncomfortable with the lack of separation between their personal and professional Discord lives.

● *“It's hard to find the conversation that was, you know, about me unless I am on top of it. Like if I'm on top of it like I have it opened up and I'm looking at it, sure, like I see [the message] when it comes in. But like, say, I didn't look at [Discord] for 3 minutes, 4 minutes and it's the conversations going on. So it's hard to go back and look at it. That was one of my that was my least favorite features.”*

● *“One thing I do not like about using Discord is that because I use it for personal use I don't quite enjoy is that people can see my profile. It's not a deal-ender, and I know I could probably make another Discord account, but just for ease of use, having one single account in one place, it's fine. I just didn't quite enjoy having that separation barrier broken.”*

## 5 LESSONS LEARNED & OUR RECOMMENDATIONS

In this section, we discuss our lessons learned from running our fourth virtual game coding camp for autistic high school students. Additionally, we provide recommendations to further enhance how Discord can be used for communication during virtual summer camps.

### 5.1 Designing a Discord Server

Our original idea for the camp Discord server spawned from the idea of traditional “Office Hours,” where campers can come outside of camp to get help on their projects from their fellow campers or instructors. However, leading up to camp and during camp, the Discord server morphed, becoming the de facto means of camper-to-camper, camper-to-instructor, and instructor-to-instructor communication inside and outside of our summer camp. Below we detail the lessons we

learned and provide recommendations for designing and improving a Discord server for virtual summer camps.

**5.1.1 Channel Grouping & Role-locked Channels.** Figures 1 – 6 depict how our camp channels were grouped. The Important Information (Fig. 2), Text Channels (Fig. 3), and Office Hours (Fig. 4) channel groups were visible by everyone within our Discord server. We chose to lock the Instructor Only (Fig. 6) and Team # Channels (Fig. 5) channel groups so that they could only be seen by specific roles – only the instructors could see the Instructor Only channels and only the campers assigned to a specific team could see their Team # Channels.

The setup of our Instructors Only channels allowed the instructors to seamlessly coordinate Zoom breakout rooms, get questions answered quickly, ask for help from other instructors, and more without needing to open an additional application. For the Team # channel groupings, all instructors were able to see all team channels while campers could only see the channels for the team they were assigned to. This setup allowed for each final project team to have a log of links, assets, and previous conversations that could help inform instructors outside of their team about their final project status.

**Our Recommendation:** Group similar channels together and use Discord roles to allow only specific users to view certain channel groupings.

**5.1.2 Instructor Only Channels.** Within our Instructor Only channel grouping (Fig. 6), we had seven text channels and one voice channel. One of the seven text channels (#bot-dms) was read-only and another (#reports-and-concerns) was for Discord AutoModerator to inform instructors of any blocked messages, leaving five different channels for instructors to coordinate and ask for help from other instructors.

Unfortunately, since how we planned to use Discord morphed right before camp, we were unable to have a training session about what messages to send in which text channel. In their interviews, many instructors brought up not knowing where exactly to put a message so that it was seen by the person it needed to be seen by, as shown in the quotes below.

● *“Sometimes I think we got mixed up on certain things, like if you're in a certain channels and we like, send stuff at times just because if there's a situation going on, we just type in whatever instructor only channel we had open at that point, but overall it wasn't too bad.”*

● *“One thing it was kind of confusing because there was like different channels and the one of them was like, oh, this is the important stuff channel. But then the other channels are regular channels and I feel like those two kind of got like used interchangeably and I feel like if there could be like more clear boundaries on saying that only for really important messages use the important one and then everything else can be just in the general channel because there were times when I wasn't sure if my message was considered important or not. And so I*

*wasn't sure like what channel to put it in. So I would just put it into whatever channel more people were responding to."*

**Our Recommendation:** Incorporate a pre-event instructor training session or ensure there is a discussion surrounding what types of messages go into which channel.

**5.1.3 Chat Slowmode.** Our Discord server morphed into the main means of communication between campers and instructors right before our three-week virtual camp started, which led to many Discord features being enabled on the fly, such as Discord's slowmode feature. When enabled, this feature reduces how often a user can send a message in a specific channel, removing the ability for a user to spam messages.

By the second day of camp, our campers were continually chatting in our #general channel. In order to be able to effectively moderate their conversations, we chose to enable a 15 second slow mode in our #general and #off-topic channels to help reduce message spamming and encourage campers to pay attention to their instructors and teammates. Students initially reacted negatively to this change, but as camp progressed, they became acclimated to the slowmode and having to wait 15 seconds before sending another message.

**Our Recommendation:** Utilize the slowmode feature Discord provides to reduce message spamming and to help maintain campers' focus during instructional time.

**5.1.4 Incorporating Discord into the Curriculum.** One aspect of camp that we were unable to incorporate into our curriculum was our Discord server. It was not a required portion of camp, although all of our campers joined and most conversed within the server. However, we had campers who did not talk very much, verbally or through text, in both Zoom and Discord.

Through our interviews with the instructor team, many instructors wanted to see the Discord used in a more interactive fashion. Below are a few quotes from instructors about how they would like to see Discord more integrated into our camp's curriculum in the future.

☛ *"Possibly having guest speakers hang around [by] giving them a generic speaker [Discord] account. We would provide access to [the Discord account] for the speaker so that they could then reply to a few things. Just making [our guest speaker days] more appealing for students that wanted to [learn more]. Uh, trying to foster that in our own channels, but then making sure that the speakers are comfortable and are not giving away their own private information to a camper."*

☛ *"I don't know if Discord can do this or not, but we could have like a main session. And then everyone's like, OK, break to your teams and you can all then go get in your little team huddles and your team chats and then share screens from there. But I think I would have rather just had one place to go and had back channels there. And I would have felt more connected to my team if I didn't have to hop between Zoom and Discord."*

☛ *"We definitely needed something for the first week where they have the instruction where the students were kind of moving between rooms and stuff that got chaotic. It would be awesome if as you move between videos, you also got moved between Discord rooms."*

**Our Recommendation:** Incorporate interactive Discord sessions for campers into the curriculum.

## 5.2 Discord Bots

Discord allows for users to use their integrated bot (AutoMod) or allows users to create their own automated bots to add to their server. Below we discuss using both in our virtual summer camp and provide recommendations for their use.

**5.2.1 Automatic Moderation via Discord's AutoMod.** During the start of camp, we did not anticipate how quickly our campers would be chatting with one another. After enabling slowmode on the most popular channels, we quickly realized that we would also need to incorporate some sort of messaging filter, since we wanted to keep our Discord server family-friendly.

Our Discord server already had an automatic moderator for some content (i.e., blocking commonly flagged words, mention spam, and suspected spam), however, it did not stop some words from coming through. Therefore, we added an additional filter that blocked custom words (i.e., commonly used expletives) that we did not want used within our server.

With this feature, Discord also allowed us to forward the blocked message to a specific channel. In our case, we forwarded all blocked messages to our #reports-and-concerns channel within our Instructor Only channel grouping. This allowed all instructors to see what messages were being removed, enabling the instructors to have a conversation with the camper about their Discord behavior.

**Our Recommendation:** When setting up a Discord server, anticipate what level of moderation your server will need and enable features such as slowmode and custom word blocking for high-traffic channels.

**5.2.2 Going Beyond Discord's AutoMod.** In addition to Discord's AutoMod, Discord allows users to create their own bots which allows the user more granular control over the bot's actions. Our Discord bot was created to help with our camp's research and did not include any server moderation features. However, since campers could DM our bot, we decided to implement a message forwarding system. Once our bot received a DM, it would then forward that message to our #bot-dms channel within Instructors Only so that all instructors could see the message. Once the bot forwarded the message, it sent the sender a little blurb stating that it forwarded the message to the camp instructors and they would be in contact shortly. This feature was not used except for testing it.

Additionally, for content that wasn't easily blocked with Discord AutoMod, the instructor team manually removed the offending message. Some instructors commented in their



interviews that they would like to see our custom bot be able to remove messages with content (i.e., GIFs or stickers) that may not be considered family-friendly as shown below.

“I would like to do something like that again where we have a similar system where [the instructor team can] put in certain things [the bot] can respond to or moderate. ... But also I think for something that’s supposed to be, a welcoming environment, a community environment, an environment that people feel that they can participate in and feel included, like that is like a really nice tool to be able to do and to, like prevent some, like things that can happen with, you know, just like an outlier message that could be harmful because the bot could even pick up on some of these messages and delete them.”

**Our Recommendation:** When implementing a custom Discord bot, adding additional moderation features to block and forward messages will help mitigate any unwanted behavior.

### 5.3 Emergency Situations

During our camp, we had a situation where a camper was being disruptive with their Discord messages after we sent them home with a warning for inappropriate comments. However, the next day during camp their message content escalated, rapid-fire messages in our #general channel with concerning content, leading other campers to become distracted by trying to help or notify instructors. In this section, we detail the Discord tools we used to mitigate the situation and provide recommendations for their use in similar situations.

**5.3.1 Slowing Down the Conversation.** During our emergency situation, many messages were being sent in succession that needed to be removed to maintain our family-friendly Discord server. Therefore, we implemented a 15 second slow-mode in our #general and #off-topic channels. This helped the instructor team maintain control of the situation by slowing down the number of messages coming through.

Additionally, before the situation got too out of hand, we also had to use Discord’s timeout feature. Two campers got into a heated argument within our #general channel during an instructional period. After giving both campers warnings, we ultimately decided to time them both out so that they could focus on the instruction in the Zoom call.

**5.3.2 Using Discord’s Private Threads.** Another feature we used during our emergency situation in this year’s camp was Discord’s private threads. A thread in Discord is another temporary channel that can be created at any time.

For our use case, we used private threads to help diffuse our situation. When additional campers started commenting on what was happening in our #general channel, we created a private thread with them and the instructors to explain the situation and stop them from commenting further.

**Our Recommendation:** Know what moderation features are available and create a plan with your team for how to handle any emergency situations that may arise.

## 6 CONCLUSION

In this paper, we presented an experience report on how we used Discord to communicate during a three-week long, virtual summer camp for autistic high school students. We discussed how our camp was designed before discussing our camper observations and instructor experiences during camp. We then discuss our lessons learned and provide recommendations for those looking to use Discord in a similar manner. Overall, our instructors thought Discord was a good choice for our virtual summer camp and have plans to improve our Discord server and use it again for our next camp in 2024.

## 7 DATA AVAILABILITY

Due to the nature of this paper describing our experiences during a 3-week, virtual summer camp, supporting data is not available.

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