TOOLS FOR RESEARCH
AND EDUCATION

MC SERVER WORKSHOP

How to create a Minecraft Java Edition server

Versions and Names

Server Platforms and Types

Full computers with Windows and OSX only

Unified version for Windows 10 (mobile), iOS, Android, Playstation and xBox, based on C#

BUKKIT

PAPERMC

Spigot

FORGE

GeyserMC

NUKKIT 2.0 ALPHA

PMMP, MiNET, Altay, etc...

A History of Minecraft

Over a decade of development

2009-11
Alpha

Developed as a largely open project by Notch and friends in Europe, the independent game caught the attention of many adult geeks.

2011-14
Community Growth

Starting with version 1.0 and going all the way up through 1.8 Minecraft for Java was exceptionally open, updated frequently and spawned hundreds of development forks.

The first serious modding and custom servers start at this time, kids get into the game.

Pocket Edition for mobile is experimental and very limited.

2015-17
Mainstream

Version 1.9 through 1.12 introduced major alterations to the block model and entity interaction behaviors. Updates slowed to once a year.

Many custom code projects could not make the leap, developers got more organized or dissolved.

At the end of this period Bedrock Edition is introduced.

2018-present
Microsoft

In order to capture a wider market of players on mobile devices Microsoft begins to push the Bedrock platform. The professional development team pushes out updates at a rapid pace.

Massive alterations to code base happen regularly, making it very difficult to develop mods and plugins.

More support for education and code built into the game.

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Player Base
Over 112 million!

30%

PLAY ON JAVA

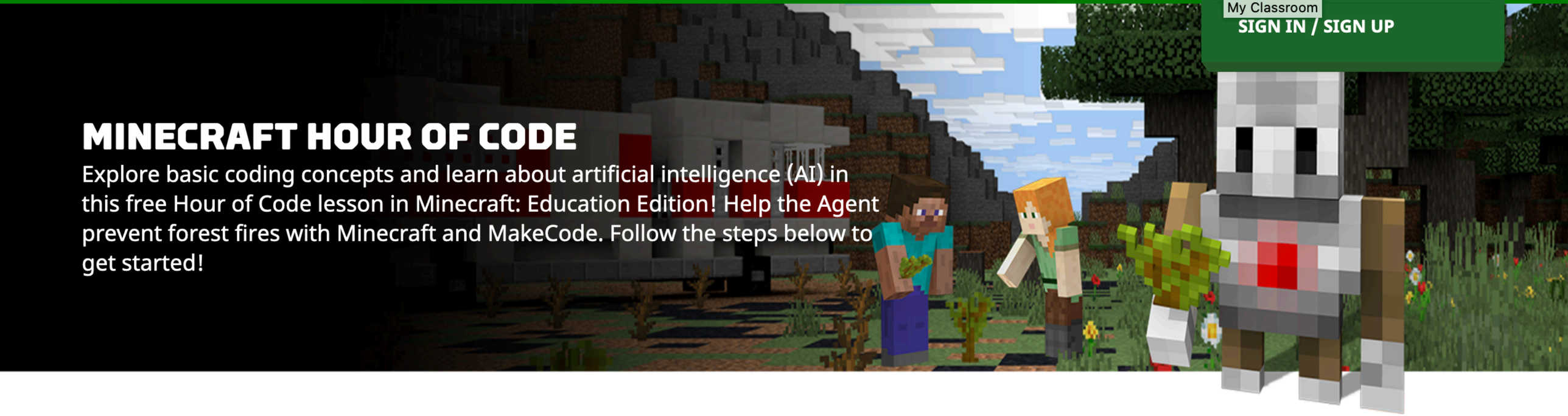
Typically older

Average age is 24
[source]

70%

PLAY ON BEDROCK

Typically younger



MINECRAFT HOUR OF CODE

Explore basic coding concepts and learn about artificial intelligence (AI) in this free Hour of Code lesson in Minecraft: Education Edition! Help the Agent prevent forest fires with Minecraft and MakeCode. Follow the steps below to get started!

STEP 1: SET UP MINECRAFT: EDUCATION EDITION

First, confirm your device is ready to run Minecraft: Education Edition.

JAVA EDITION ADVANTAGES

ROBUST

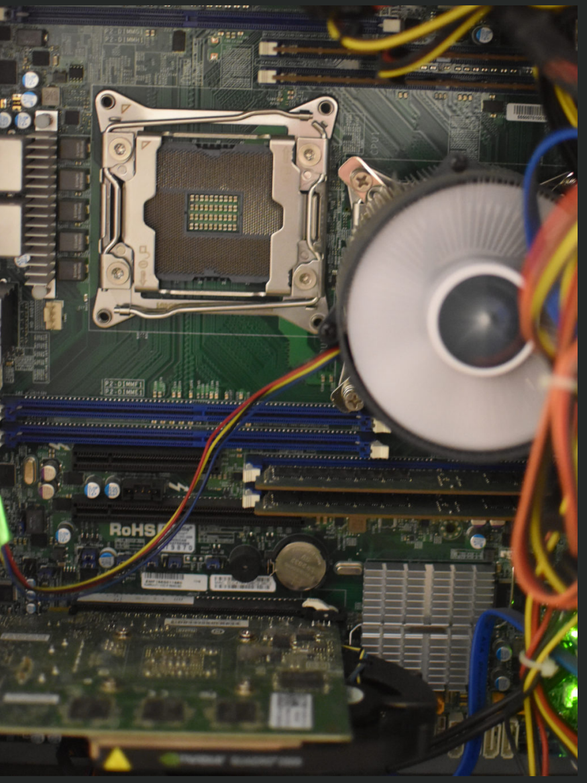
Mods, server plugins, high-definition textures and shaders allow for better and more complex simulations and interactions, including curated user experience..

DATA

Custom server databases allow for mining of participant behavior information to monitor engagement, learning and collaboration.

COMMUNITY

The Minecraft developer community spans a decade of ages and multiple continents. Learning in this context is similar to professional open source projects.



Server Requirements

Getting ready to host 30+ players

Hardware

Multi-core processors preferred – cache does not appear to impact significantly
RAM – reserve 16 for game server, 4 for OS, more for RAM cache
SSD – enterprise hardware preferred, significant write burden

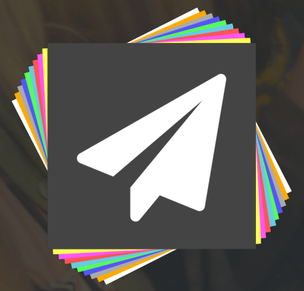
Software

Linux or Windows Server – stability is key
Use RAM cache to offload – we use RAMDisk

Internet

Domain Name Server (DNS) – could be dynamic we use no-ip.org
or get a dedicated IP address
Backup and cloud sync are helpful – we use Google Drive and Bvckup
Beware of wireless density and access points!!

Today we will install



PAPERMC

On your local machine

Why this one? It's easy and anyone can connect without prerequisites

Our learning style today

HELP YOUR NEIGHBORS!

There are only two of us you are many

This is also a standard teaching technique for me – ask your neighbors questions too

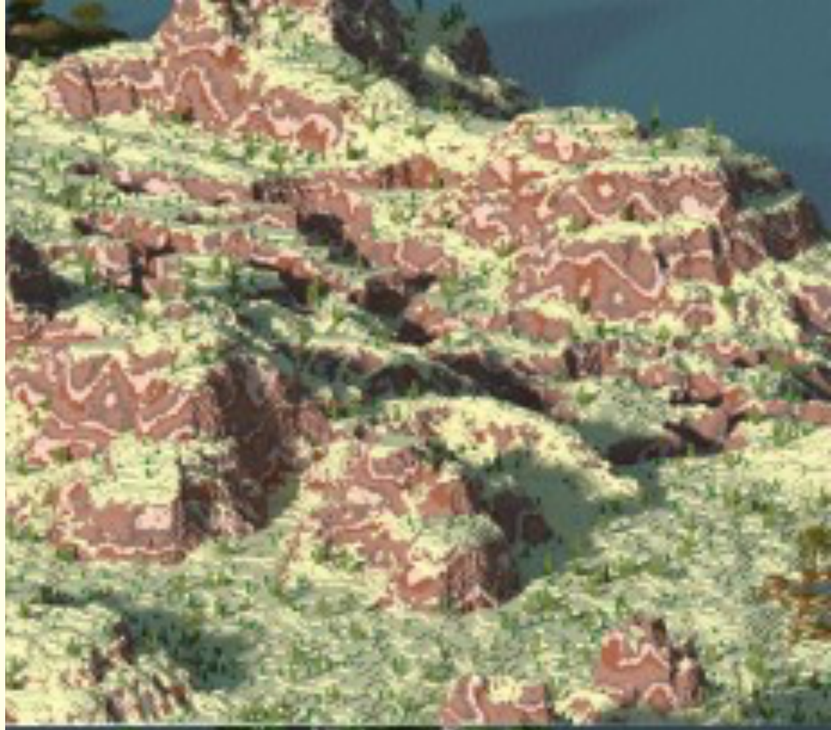
Our Install Process

What to review

Show Fab Lab server
Explain Buildtools and Bukkit/Spigot
Make your world
Config file
Database options
Resource packs
Plugins
Documentation

Generate a World!

With Worldpainter, for example



Choose Your Game Mode

SURVIVAL

The base game

Collect resources to survive hunger and monster attacks. Later explore the world to unlock greater challenges, magic items and special building materials.

CREATIVE

Fab Lab 3D Printing Camp uses this

Unlock every block imaginable and fly around the world to build enormous creations of any kind.

There is also spectator mode, where participants can view the world from any angle – even from within another character, great for teaching!

ADVENTURE

WHIMC uses this most of the time

Participants are locked into survival mode but unable to affect blocks without the correct permissions or tools. Interactions are scripted by special Command Blocks.

Setup a database

MySQL with phpMyAdmin

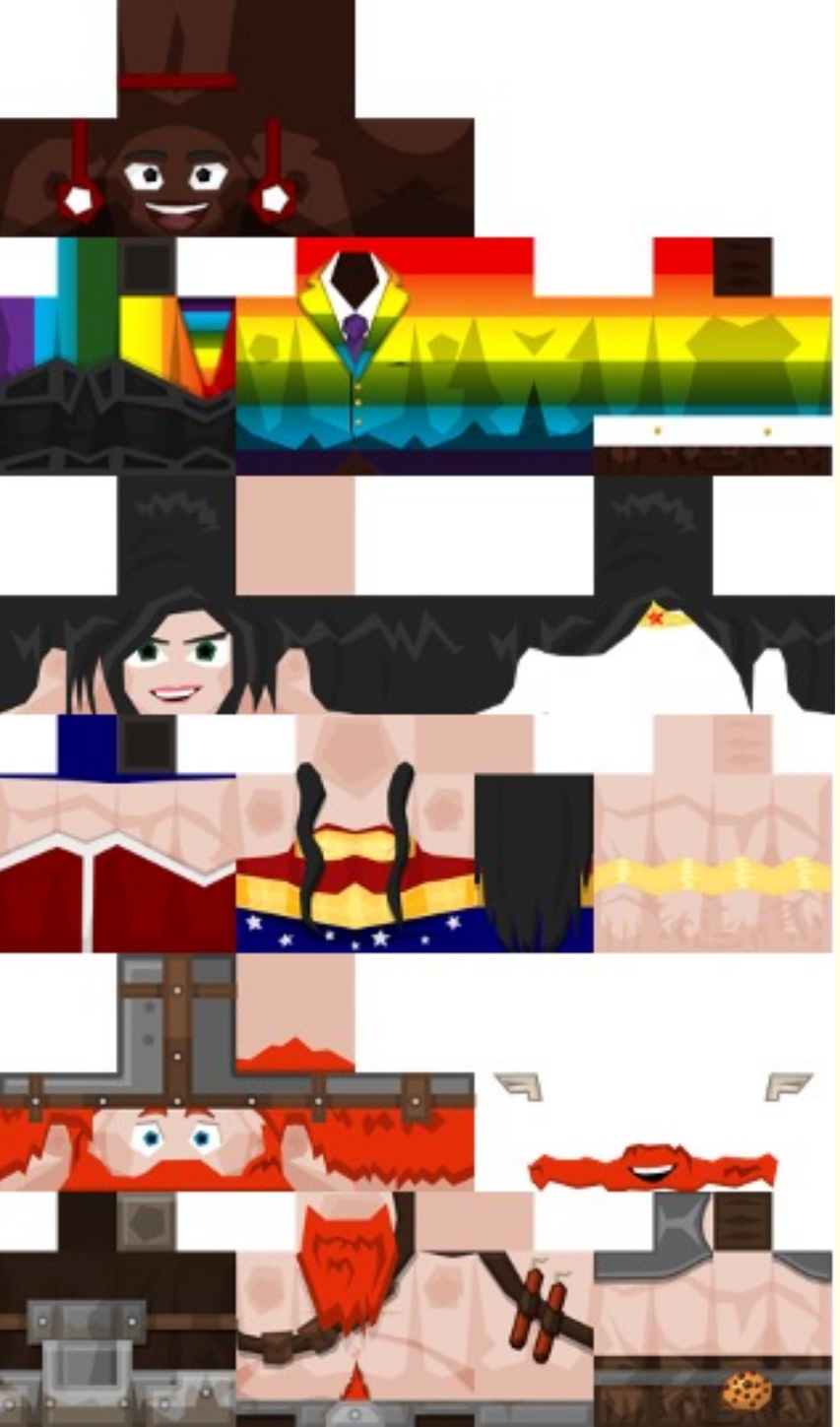
A good option if you want to centralize all data and/or read/write in and out of the database with 3rd party programs or server plugins.

SQL Lite

Single compact file – easy, but created on a case-by-case basis by plugin or mod.

None

There are other ways to capture participant data – screen capture, artifact interviews or old-fashioned observation can be just as effective, if time consuming.



Server-based resource packs

For simulations appearances matter, especially if observations are important

Let’s open up an example resource pack together and make Steve an Astronaut

Finally, let’s add some plugins

Lessons from Usability research

CONVEY SYSTEM STATUS + NAVIGATION

Welcome message
Return to spawn
Minimap
TPA
Multiverse Portals

PREVENT ERRORS ALLOW REVERSAL

Worldguard
Coreprotect
PermissionsEx

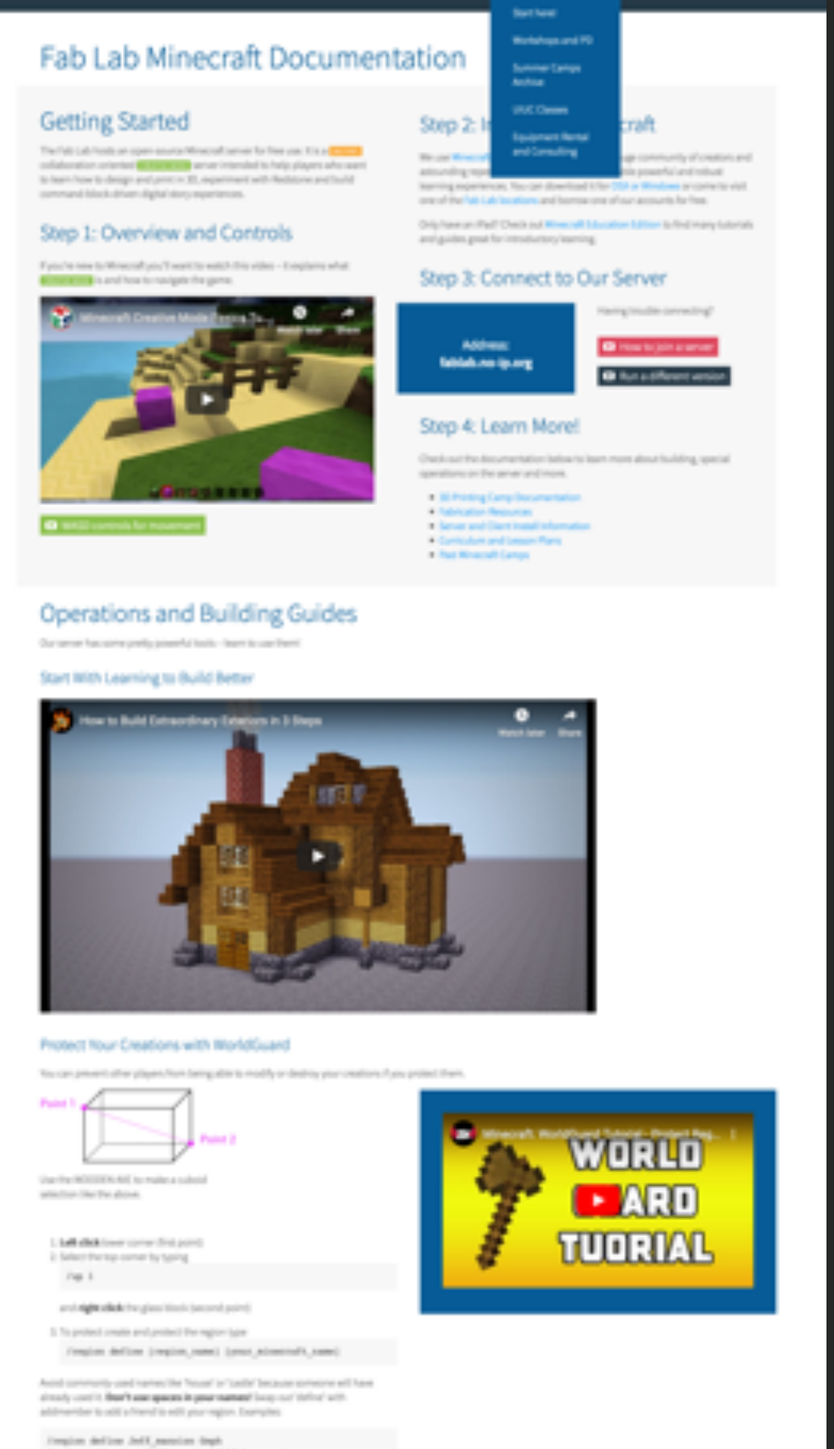
ALGORITHMICALLY ASSISTED WORK

Multiverse Core
WorldEdit
Schematica
Mythic Mobs
Zombie Apocalypse

PLATFORMS AND CUSTOMIZATION

Holographic Signs
Vault

Our plugins!



And, finally, make sure to provide

DOCUMENTATION

Go through the steps for successful participation. Provide information and aids along the way to create scaffolding for leaners

Example at http://www.jeffginger.com/fablab/minecraft/

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PLAY TIME

This entire process is iterative – you need to playtest to make sure it works!

Bonus time – Forge server for CC:Tweaked

Database Options

SQL Lite

Presentations are communication tools that can be used as demonstrations, lectures, speeches, reports, and more. It is mostly presented before an audience. It serves a variety of purposes, making presentations powerful tools for convincing and teaching.

To create a stunning presentation, it's best to simplify your thoughts. Start with an outline of topics and identify highlights, which can be applied to whatever subject you plan on discussing. You can then organize them into your introduction, your main content, and your conclusion. Make sure you do enough research to support your points. It’s also a good idea to pair data with visual aids like charts, graphs, or images. Remember to keep your presentation easy-to-read. Avoid overloading a slide with too many words and choose a color palette that won't distract the audience.

If you’d like to add more content to your presentation, there are plenty of options. You can include photos of your team, descriptions of products, or your goals as a company. It all depends on the purpose of your presentation, and how you plan to arrange the details.

A Culture of Innovation

How We Work

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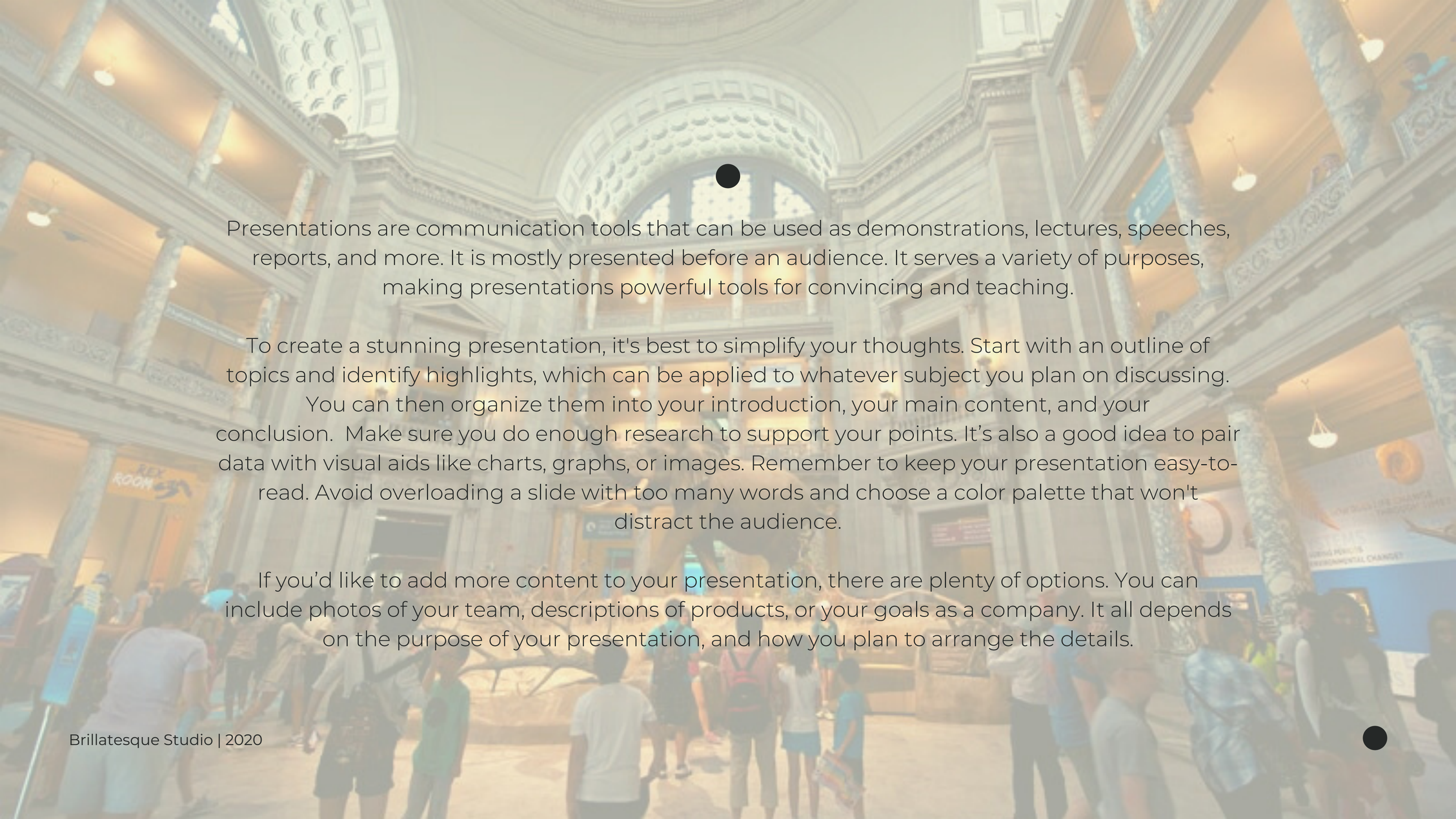

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TOP VIDEO TRENDS

STORYTELLING

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LIVE STREAMING

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ADVERTISING CAMPAIGNS

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VIRTUAL REALITY

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Services

GRAPHIC DESIGN

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PHOTO AND VIDEO PRODUCTION

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BRANDING

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Types of Videos

Global Popularity

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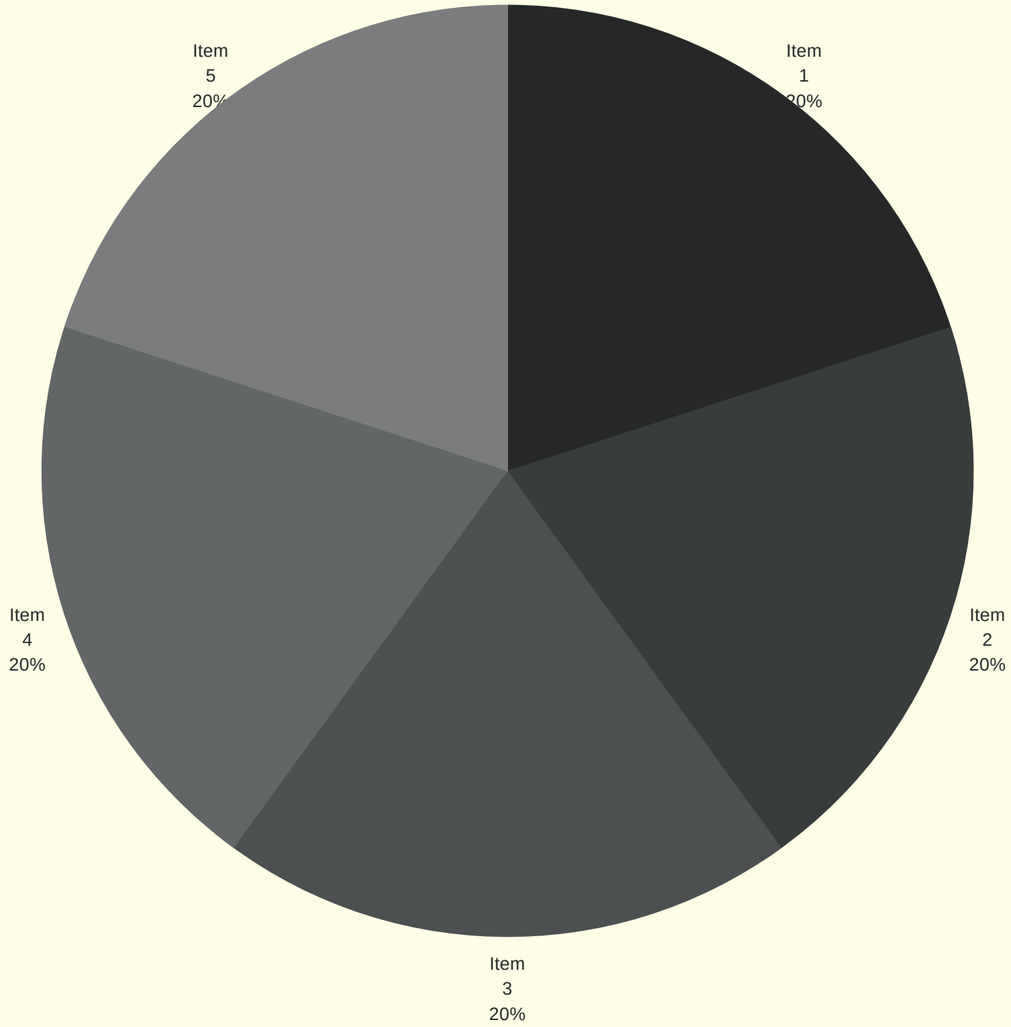
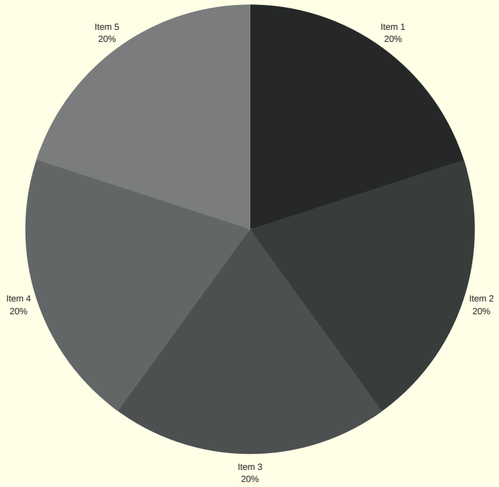


Video Platforms

An In-Depth Analysis



WEBSITES

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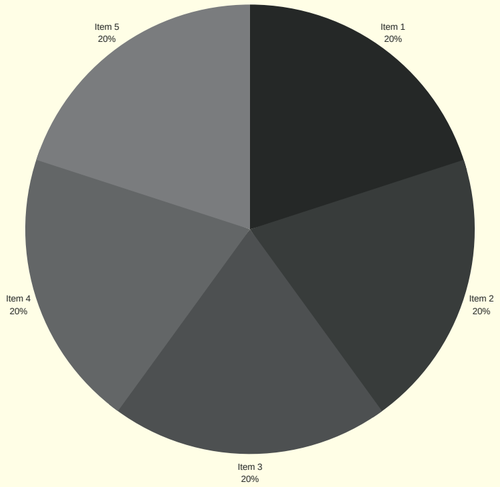

SOCIAL MEDIA

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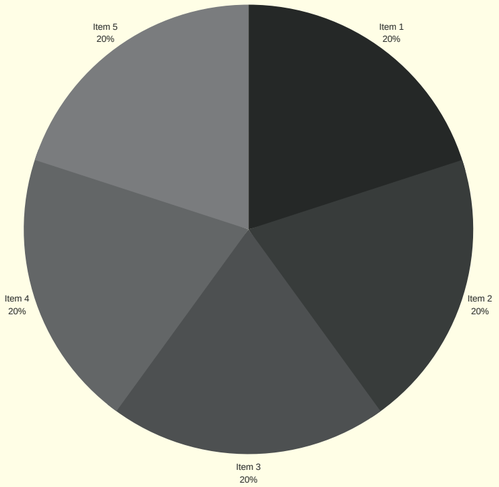

ADVERTISING

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WHAT CLIENTS SAY

BRIANNA DUNN

Digital Marketer

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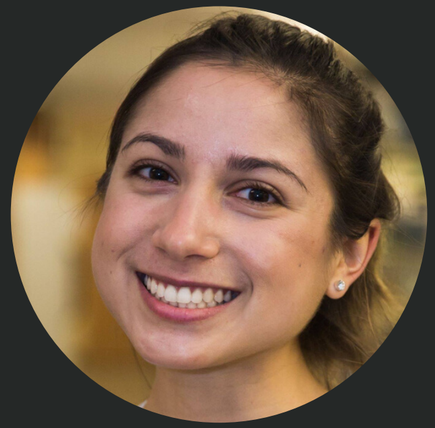

NARCISSA EDEN

Food Photographer

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THOMAS CORMACK

HR Manager

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