Technical Guidelines for Setting Up a Virtual Classroom

This document provides a clear guide for setting up and running an effective virtual classroom. These recommendations help schools use the best technology for online and hybrid learning. By following these guidelines, teachers and students can experience smooth, high-quality interactions with minimal disruptions.

To make sure online classes run well, schools should use wired internet connections instead of Wi-Fi. Wired connections are more stable and allow for higher-quality video and audio. Wireless networks, while useful, can be unreliable because of interference and slower speeds. If schools need help with setting up or fixing technical issues, they should contact Melvin Robinson, the lead IT specialist.

1. Display Solutions: at least 65-inch Televisions or Interactive Boards with Integrated PC

Best Viewing Setup:
- The screen should be **8 to 12 feet (2.5 to 3.7 meters)** away from students to ensure they can see everything clearly.

- Displays should have **anti-glare coatings and blue-light filters** to reduce eye strain.

- The screen should be mounted so it's at **eye level** for students to avoid discomfort.

Technical Requirements:
- **Resolution:** At least **1080p (Full HD),** but **4K UHD or 8K** is better for sharp images.

- **Color and Brightness:** Screens with **HDR10 or Dolby Vision** show better contrast and colors.

- **Built-in Features:** Some screens come with **Android OS or Windows computing modules** to function like smartboards.

- **Connections:** At least **three HDMI ports, DisplayPort inputs, and USB-C support** for modern devices.

2. Camera Systems for Online Learning

Best Placement for Cameras:
- The camera should be **6 to 15 feet (1.8 to 4.5 meters)** away from students for clear visibility.

- **Mounted on TV ** work best for capturing the entire classroom.

- Large classrooms may need **multiple cameras** for full coverage.

Camera Features:
- **Resolution:** At least **1080p Full HD**, but **4K UHD** provides sharper detail.

- **Frame Rate:** At least **30fps** (preferably **60fps** for smoother video).

- **Auto-Tracking:** Some cameras use **AI to follow the speaker's movements**.

- **Zoom Capability:** A **5x zoom is good, but 12x or higher** is better for detailed views.

- **Low-Light Support:** Cameras should adjust automatically to **different lighting conditions**.

3. Microphone and Sound Setup

Choosing the Right Microphone:
- **Ceiling microphones, desk microphones, and wireless lapel microphones** work best for different classroom sizes.

- **Noise Reduction & Echo Control:** Advanced microphones filter out background noise and prevent echoing.

- **Audio Zoning:** Some microphones can pick up sound from specific areas and reduce unwanted noise.

4. Classroom Speaker and Sound System

Best Speaker Setup:
- ** USB or AC-powered speakers connected to the laptop**.

- **Smart Sound Processing:** Speakers should have **automatic volume adjustment and noise reduction**.

- **Power Requirements: ** speaker should have at least **40W RMS power** for clear audio in large classrooms.

5. Choosing the Right Computer for Virtual Classes (If the PC is not integrated)

Computer Performance Needs:
- **Processor:** At least an **Intel Core i9 or AMD Ryzen 9** for smooth performance.

- **Memory (RAM):** At least **32GB RAM** (64GB is better for demanding tasks).

- **Graphics Card:** **NVIDIA RTX 3060 or AMD Radeon RX 6700** for handling high-quality video.

- **Internet Connection:** LAN Ethernet and **Wi-Fi 6E, Ethernet, and Bluetooth 5.2+** for fast and stable connectivity.

- **Multi-Screen Support:** Computers should connect to **multiple displays** using HDMI, DisplayPort, or Thunderbolt.

6. Classroom Setup and Organization

Managing Cables and Power:
- **Backup Power:** Use an **Uninterruptible Power Supply (UPS)** to keep devices running if the power goes out.

- **Protecting Equipment:** Use **voltage regulators and surge protectors** to prevent damage from power spikes.

Room Design for Better Sound and Video:
- Arrange desks so that **students can see the screen and be heard by the microphone**.

By following these updated guidelines, schools can create a reliable, high-quality virtual learning environment that supports both teachers and students.