Smart phone/tablet AR:

+ Smart phone/tablet AR enhances the actual environment by overlapping a layer of virtual information on top of it – we can use contextual data such as location and orientation to provide even richer experience in real time.
+ Since smart phones and tablets are already embedded in our everyday lives, the user will not need any additional equipment for the experience.

- Since handheld devices such as smart phones/tablets are usually small, the experience is limited by the screen size of the device. The user can only view the virtual information via the device screen and he/she has to point the device camera at a position or object to view the information.

★ Smart phone/tablet AR is well suited for applications that make use of location data/computer vision to provide context based information. A good example would be an application which uses location data to annotate surrounding historically significant/prominent buildings around the user.

360° video:

+ In 360° video, the user can look in all directions at a given point of time in the video; this means the user will have a more immersive experience when compared to traditional video where he/she can only see one direction at a given point of time.

- The user is limited by the viewpoint of the camera; he/she can only see what the camera sees and hence the experience is not interactive/exploratory.
- 360° video is monoscopic, this means that it's just a 2D video taken in all directions: the user will not have perception of depth from the video.

★ 360° video is ideal for recording videos of special events like sports/celebrations where the action is not limited a single direction but things are happening in multiple directions at the same time.

Google Cardboard:

+ Google Cardboard is stereoscopic, this means that the user will have a perception of depth – the two eyes of the user are shown two different images giving him/her the illusion of seeing the real object.
+ Inexpensive: accessible to everyone.

- The users will experience discomfort and eye strain due to prolonged use; they might also suffer from disorientation for a short period of time after the experience.
- Very small field of vision: around 90°.

★ Cardboard is best suited for applications that require demonstrating ideas/models: for example, in civil engineering or architecture. Another surprising application is in the field of journalism where we can narrate news stories realistically:
https://www.ted.com/talks/chris_milk_how_virtual_reality_can_create_the_ultimate_empathy_machine

VIVE head mounted display:

+ VIVE can be used in immersive and interactive learning – since the environment that the user experiences is virtual, the user can make mistakes without consequences. This is particularly useful for simulative applications that are used in training such as driving or medicine (surgery).

- Since VIVE is wired, this leads to reduced mobility for the user.

- VIVE headset completely blocks the eyes, the user will have no view of real world: this would lead a lot of safety concerns.
- The skills that are learnt using a VR environment are only meant to supplement the actual training; this can be used to acquire basic skills but advanced skills should be learnt in the real world as translating the skills to the real world might be difficult.

★ Well suited for simulating training applications that have high stakes in real world such as military.

HoloLens:
Limited size – field of view
Clear, wireless
Head mouse – disabled person
Demoing car
Holograms at a certain distances – super close objects
AR nausea
Hardware limitation

CAVE2:
Stereoscopic with collaboration opportunities
Multiple people cannot control in 3D