



Adaptation of learning content for students with SLDs
What are Specific Learning Disorders (SLDs)?

What device for your ESL game?

Introduction

Choosing the device to create or use games on is important. Each device has strengths and drawbacks. By knowing your audience and the devices' specificities, you will be more able to choose which one to use.

Aspects to take into consideration

Devices specificities

PC console, local and online platforms

PC and console gaming's advantages are comfort (gaming on a mobile can be difficult for the hands, and VR usually makes the gamers dizzy or tired).

There is also a better graphics capacity.

For some mechanics, controls are better on the PC: the mouse is nice for aiming at and moving the camera around, and it also works great for interaction games like point-and-clicks. The keyboard offers buttons that can be remapped. PC also lets the user plug a gamepad to get a similar experience that on a console (better ergonomics).

PC/console games are the easiest to create because the game engines have inherited from years of experience with this media and basic functionalities will be fit for PC gaming.

One noticeable thing on PC is [Core](#). It is a game creation engine / social network that aims to become the “youtube of gaming”. Users can play other people’s games and create their own by modifying existing resources. It can permit the creation of very attractive games for students (3D FPS/TPS...). The basics take 2 clicks to set up but adding more educational gameplay will require coding.

Mobile

The strength of the mobile is its availability and engagement. A study (Huang, 2017) showed that using game-based learning on phone is efficient on several students’ profiles (tech, humanities, male/female...).

The young generation is used to having a phone at any time. and a plethora of apps (social media, videos...), where competitors thrive to get the users’ attention.

Thus, it is a two-edged sword to use game-based learning on the phone. It has the opportunity to be more available and become a reflex, or to call for attention using notifications. However, the temptation to do something else is close.

Another advantage is that smartphones are the leading device in terms of gaming, as attested by a 2021 survey. The new generation is used to playing on phones and companies have realized that.

This means that a learning game on a smartphone might appeal to more students because, acquainted with them already, the usability friction is reduced.

Mobile devices provide sensors (accelerometers...) that permit the creation of gameplay elements centred around them (shaking the device, looking around...).

However, it requires implementing the expected user experience (swipes, two-finger zoom...). Which can be a surplus of work during development. Moreover, there are no buttons on a phone, and game controls have to be well thought. Lastly, mobile screens are much smaller which must be taken into account during development.

The most suited games are the ones with touch interactions (point-and-clicks), and without the need to move the camera in 3D.

Some games are terrible on phone and require a lot of work to be adapted (first and third person).

Virtual Reality

Virtual reality most of the time features games where interactions are similar to reality (using your hands to grab and move objects etc.). This has the benefit of onboarding non-experienced gamers more easily.

The immersive aspect of VR (virtual reality) is unmatched, it inhibits the interaction with the surrounding environment. Students playing a VR game are fully immersed and cannot be tempted to check their phones.

VR hardware is expensive, though. The technicality is also higher, the controls and handling of player position in space can make them a bit more complex to code than traditional games. Moreover, low-code or no-code, accessible game engines usually don't provide ways to create VR games. So it means using industry-grade engines.

Game engines you can use for each device

A game engine is software that helps integrate all elements required to make a game (visuals, sounds, game objects...) and orchestrate them using code. The following game engines are the easiest to use. They feature low-code or no-code. The logic of programming is present but there is no need to write actual code.

Engine	PC	MacOs	Web	Ios	Android	VR
Construct3	yes	yes	yes	yes	yes	no
Gdevelop	yes	yes	yes	yes	yes	no
Core	no	no	yes	no	no	no
Stencyl	yes	yes	yes	yes	yes	no
FlowLab	yes	yes	No	yes	yes	no
Minetest	yes	No	No	No	No	No

Conclusion

Each gaming device has strengths and weaknesses. PC is the more stable, powerful, and adaptable. Mobile devices are great for easier access and notifications but can be a little harder to develop for and have manoeuvrability issues, especially when we have SLD students in mind. Virtual reality shines in immersion and keeps the players engaged but is technically challenging and expensive.

Resources and references

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