ZapWorks (Augmented Reality) Workshop

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ABSTRACT
With the emergence of Augmented Reality (AR) and the impending release of 5G, cloud-based software offering easy to create and release Augmented Reality solutions will soon be common. At present, there are only a handful of companies with functioning cloud-based AR capabilities. The most prominent, ZapWorks (https://zap.works/), has varying levels of AR application options, from a simple drag-and-drop development to a downloadable application that allows fully customizable 3D and scriptable development. Designing and developing AR experiences can be intimidating and expensive, properly understanding ZapWorks and its capabilities can make AR experiences an option for all.

Tools, Skills and Materials
Tool→ZapWorks • Skill→Development • Material→Laptop.

Keywords
ZapWorks; Augmented Reality; AR; Experience.

1. DEMO DESCRIPTION

1.1 Description of the Product
ZapWorks (https://zap.works/) offers levels of AR application options. The ***Designer*** application (Figure 1), which allows simple drag-and-drop development and the ***Studio*** application (Figure 2), which allows fully customizable 3D and scriptable development for animation and interactions. In both cases, ZapWorks uses '*zapcodes'* to access developed content that is housed on the ZapWorks server. The *zapcode* can function on its own or be incorporated with an uploaded trained image, ideal for customizing the AR experience. Due to the uniqueness of each *zapcode*, in conjunction with the cloud-based nature of this software, accessing content is as simple as launching the Zappar app (https://www.zappar.com/getzappar/) and scanning the *zapcode*.

This demo will showcase the development process for the ***Studio*** application. Attendees will be able to observe and/or participate in the entire process of developing simple AR experiences. The design logic of AR development will be initially discussed and established, then the ***Studio*** application will be used to build on the design logic in order to create a custom interactive AR experience.

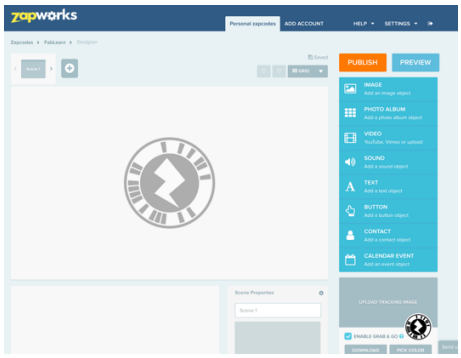

Figure 1. ZapWorks Designer

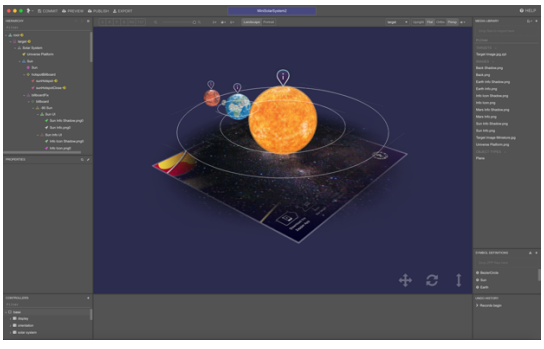

Figure 2. ZapWorks Studio

1.2 Target Audience

This demo will showcase the ***Studio*** application. Although the ***Designer*** application can be used to exhibit and establish AR applications and the design logic of AR development, the ***Studio*** application will be demoed to showcase and create more interactive AR experience. Skills necessary for success with ***Studio,*** basic object-oriented development structure with focus on states and timelines will be helpful, but not necessary. For those looking to participate by following along, download the ZapWorks 30-day free trial (supported on Mac and PC).

2. CONCLUSION

2.1 Results and Benefits

Throughout academia, technology-enhanced learning environments have become a familiar and effective design option. Technology-enhanced learning environments are simply technology-based learning and instructional systems through which students acquire skills or knowledge, usually with the help of teachers or facilitators, learning support tools, and technological resources (Ifenthaler, Adcock, Erlandson, Gosper, Greiff & Pirnay-Dummer, 2014; Wolfson, Cavanagh & Kraiger, 2014). With emerging technology, complemented with the attrition of mobile operating systems, mobile learning and wearable technology implementation can become common within the traditional classroom setting (Barfield, 2015; Kim & Shin, 2015).

One such emergent technology being used in conjunction with mobile technologies is Augmented Reality (AR), which is used to create environments where virtual and real objects can exist in the same space. This allows for the observation of unnatural objects or scenes in a common environment to occur, an impossible feat prior to the advent of AR technology. Creating such an interactive and visual environment promotes social interaction among groups of users within the classroom. When used collaboratively via mobile or wearable devices, AR allows multiple users access to a shared space populated by 3D objects and animations, all while remaining grounded in the real world (Martín-Gutiérrez, Fabiani, Benesova, Meneses & Mora, 2015, Ifenthaler *et. al*., 2014).

A further advantage when using AR, students actually observe three-dimensional objects, which until now had to be calculated and constructed via traditional (mostly pen and paper) methods (Chiang, Yang & Hwang, 2014; Kaufman, 2003). AR created objects and interactions will enable new forms of knowledge interaction previously unavailable within the normal curricula, creating an immersive learning experience where skills, process, and scenarios can all be enhanced in a manner reality cannot replicate.

In summation, the implementation of Augmented Reality can be used to great effect in educating young learners with the ability to be repurposed to more complex concepts. This demo of ZapWorks can allow educators the opportunity to effortlessly begin implementing AR experiences into their teaching and learning efforts.

2.3 Broader Value

This experience will allow those interested and willing the opportunity to incorporate innovative AR experiences into their teaching and learning practices. ZapWorks AR development will enhance best practices and research opportunities for educators who recognize the value of this medium for learning success. As AR becomes more ubiquitous, the more it can be researched with rigor, advancing the field of technology and learning.

The key learning with understanding ZapWorks is that of the created activities and environment this software makes possible. Through development of AR experiences, learners are engaged in handheld or wearable technology driven activities where the emphasis is on learners interpreting and constructing meaning of actual observed 3D objects and interactions. These interpretations come from their own experiences within the group and through interactions with the technology. The social constructivist view of learning is an active, constructive process where new information is linked to prior knowledge. This view identifies learning as a process of constructing knowledge rather than a simple, singular and passive acquisition (Amineh & Asl, 2015). Through active learning, the learners assume responsibility of the learning process and realize a deeper understanding of the content. Within the activity itself, learning takes the form of distributive cognition where it is not limited to the individual learner, but distributed across the objects, peers, and created artifacts encountered within the learning environment.

ZapWorks unleashes capabilities that align with foundational learning theories, enhancing teaching and the learning process. The value of being able to seamlessly implement AR experiences will be a priceless feat for academia.

2.4 Relevance to Theme

ZapWorks AR experiences parallel the maker movement as the opportunity to design and develop abstract concepts enhance understanding. ZapWorks is easy enough for educators to implement aspects of developed experiences into their lessons, but also allow for learners to design and develop their own experiences. The level of developing an interaction in a 3D space can enhance learner perception and understanding.

3. REQUIREMENTS

There are no special requirements outside of the traditional demo software needs (e.g., large screen, clear audio, appropriate lighting, etc.)

5. REFERENCES

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