

Instructional Design for Augmented Reality Min

Topic: Interior design floor plan visualization journey for novice interior designers

1. Analysis

- Context and learners

This instruction unit is designed for an introductory class for novice interior designers (adult learners) in a continuing education program at a university located in the central Florida region. The continuing education program provides a variety of professional development and professional training programs for adult learners. In this specific instruction unit, the students will learn how to use an AR 3d modeling software tool to visualize their designed building floor plan.

The class consists of a total of 10 students who are recent college graduates, each with an iPhone or Android device.

- Need assessment

According to Hill et al. (2014), many interior designers experience a large amount of burnout due to heavy workload and a lot of hands-on projects that require overtime working hours which leads to an unhealthy work-life balance. This instructional unit will allow the learners to learn how to use an advanced design tool to effectively showcase their interior design floor plan (2d format on paper) to present to future clients. Using an augmented reality 3d modeling software tool will allow the learners to see exactly how their building floor plan will look like in a 3d format.

2. Purpose and instructional goals

- Significance and rationale for using AR

The purpose of this instructional unit is to introduce novice interior designers that there are advanced tools that they can utilize to visualize their design building floor plans in a more visually appealing way to get a better idea of their artifact not just for themselves but for their future clients as well. Using AR technology (using Grib) allows the learners to create their own 3D model version of their 2d formatted building floor plan.

- Measurable instructional objectives

At the end of the lesson, students will be able to:

1. Describe what each of the gestures in the AR tool (Grib) are.
2. Explain on how to recognize surfaces, add objects and materials, and complete their designed scene as a 3d model.

3. Content

1. Introduction Activity

The lesson will begin with the instructor showing tutorial videos of the AR software tool, Grib. Students will ask questions about the functions and features presented in the tool to gain clarity of the tool itself before utilizing it. The instructor will demonstrate in front of the class using the Grib tool using an iPhone. The instructor will draw a circle on a piece of paper and scan the

paper using the downloaded AR Grib application for the students and show how it turns 2d format turns into a 3d object inside the application.

2. Individual Activity using AR tool

After the instructor's demonstration and introduction of the tool, the instructor will allow the students to draw their own building floor plan on a piece of paper and will give them 15 minutes each to come up with a rough draft of their design. Additional information (including the tool's website) regarding the tool has already been provided via email before class for the students to refer to while doing this activity. After each of the students finishes drawing their floor plan, each student will use their phone device (Android or iPhone) to scan their floor plan sketched on the paper. The instructor will also go around the classroom for any technical assistance.

Using Grib, after the scanning process is completed, each student will create, observe, and manipulate their 2d drawing turned 3d floor plan model by using all the gestures/functions provided in the tutorial video that was presented at the beginning of the class session which is the following: create, move, scale, rotate, edit mode, delete, undo, duplicate, group/ungroup functions. The below video shows how the AR application will be used in the class session.

- <https://www.youtube.com/watch?v=rxFykLmUvOg>

3. Group Discussion Activity

After each student were able to demonstrate their final product using the AR tool, the instructor will ask the following questions to facilitate a group discussion as the last part of the class session:

- What did you think about this AR tool? (likes/dislikes)
- Do you think this tool will be useful for you in your interior design projects? If so, why?

4. Instructional Strategies

- Delivery format
The delivery format of this lesson will be face-to-face in the classroom utilizing Youtube videos, and PowerPoint slides along with verbal and written instructions (PDF format) and also using personal phone devices amongst the students with the Grib application downloaded.
- Teaching methods
A combination of media-based instruction and individual/group activities will be used as a teaching method in this specific instructional unit while using the Grib application.

5. Assessment of learning outcomes

- Formative Evaluation
After each activity, each student will verbally/present what they need further explanation on throughout the class period. In addition, the students will be asked general questions based on their thoughts based on the AR content they are encountering throughout the activities.

- **Summative Evaluation**

At the end of the lesson, students will write a 2-3 page reflection paper on their experience using all of the functions of the AR tool while creating their own 3d model version of their floor plan drawing. The reflection paper instructions will be provided via email to each of the students after class.

6. Follow-up Research

Further research will be conducted on the impact this AR application has on the user's level of comfort. To collect useful data from the user, will adapt the System Usability Scale (SUS; Kaya et al., 2019) to investigate the user experience of the Grib application.

References

Hill, C., Hegde, A. L., & Matthews, C. (2014). Throwing in the towel: Burnout among practicing interior designers. *Journal of Interior Design*, 39(3), 41-60.

Kaya, A., Ozturk, R., & Altin Gumussoy, C. (2019). Usability measurement of mobile applications with system usability scale (SUS). In *Industrial engineering in the big data era* (pp. 389-400). Springer, Cham.