Visual Effects Pedagogy:

Diversity, Equity, and Inclusion as Visible and Invisible Attributes

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ABSTRACT

Due to our proximity to industry pathways, VFX curriculums are good at mapping visible graduate attributes to core skills. Visible attributes are skills that can be measured via portfolio work and are reflected on student transcripts. Examples of such attributes may be building digital humans, creating physically accurate shaders, and designing story worlds. However, in order for the discipline of VFX to reflect our dynamic global culture and ensure equitable workplaces, we must also find ways to map graduate attributes to the values that drive technical and cultural diversity. Such attributes are harder to measure and can be understood as invisible attributes.

1 INTRODUCTION

Our program, The Master of Design Technology (MDT), trains technical artists. In 2021 a student assignment produced contentious results that caused us to question whether MDT's core values of diversity, equity, and inclusion were effectively surfaced in student outcomes.Student work portrayed aliving Black male recording artist as a Caucasian man and as a grey androgynous figure. The results conflicted with our values.

To address this problem, we used the SEEN framework to recontextualize the concept of invisible graduate attributes for a VFX curriculum [Kensington-Miller et al., 2018]. We hoped that bySpecifying, Explaining, Embedding, and Nudging these Invisible Attributes(IA's) across learning outcomes and coursework, our values would surface in student work and behavior.

Our existing VFX curriculum used the following Visible Attributes (skills):

- Critically analyze a problem, develop, and select the most appropriate solution
- Design alternative approaches based on cinematography principles
- Critique visual effects images for storytelling applications

We generated a new VFX curriculum to specifically target IA's, and propose an additional VFX specific capability to the SEEN framework. This approach embedded our core values in student outcomes andraised the technical quality of the student work. Invisible Attributes (values) enabled us to map underassessed or evenunassessableattributes across specific assignments:

- Diversity
- Equity
- Inclusion

Here we look at two assignments from our Creative Coding, and Lighting & Rendering courses that do not and do make use of the SEEN framework to address the complexity of character design. We look at how the absence of invisible attributes results in ambiguous outcomes and how the use of invisible attributes allows us to accurately evaluate success in VFX education.

2 IDENTIFYING THE COMPLEXITY OF DIVERSE CHARACTER DESIGN

In partnership with Universal Music, Creative Coding students undertook a brief to visualize the music of Auckland-based rapper Gino October. Exploring visible attributes such as procedural animation, layout, and lighting skills, students learned to work

Table 1: SEEN with additional VFX (E: Embody) capability

IA Name: Diversity	Learning Objective	Teaching & Learning Activities	Observable Behavior
Specify: Diversity of Character design.	Design culturally diverse characters.	Create coursework highlighting qualities of diverse characters.	Develop and write characters for different narrative contexts.
Explain: Truthful representation of our global culture.	Create technical implementation of diverse hair and skin types.	Demonstrate examples from CG film history.	Reflect and describe the values of visual culture screened in class.
Embed: Digital self-portrait assignment.	Match PBR skin shaders to real life reference.	Analyze specular and subsurface models for Black and Brown skin.	Critique and revise documentation and learning tools for existing rendering tools.
Embody*: Self-portraiture is an autobiographical approach to storytelling.	The designer is the subject.	Foreground the self-portrait across visual and literary disciplines.	Adopt the professional stance of the designer as author.
Nudge: Awareness improves an artist's observation skills.	Co-creating characters with diverse communities.	Discuss cultural sensitivity v. appropriation in character design.	Adapt character design methods for different mediums and rendering technologies.

* modified SEEEN Framework

collaboratively by incorporating feedback from October and the Universal team.

The students decided to represent October's likeness using a digital human. October is a Black South African-New Zealand male identifying artist, butthe first iteration was visualized as a Caucasian digital human. October articulated this incongruity in his feedback and the students' solution was to make the digital human appear androgynous and sculptural instead of realistic. They swapped the skin shader with agray concrete shader,resulting in what they believed to be a non-racialized,stylized character.

Fulfilling the visible attributes of an assignment did not result in success. The problem was that our values were implied instead of being made explicit in the assignment. In a post-mortem discussion students said they weren't aware of our expectations. Upon reflection, we decided to implement invisible attributes up front in theLighting & Rendering course.

3 USING THE SEEN FRAMEWORK TO MAP INVISIBLE ATTRIBUTES (IA)

Using the SEEN framework,the students first constructed digital humans in their own likeness and then designed a personal story world, embodying their own lived experiences in their work. Often these explorations took a speculative turn. For example, a student placed themselves in the world of Bladerunner 2049, but using motion capture, performed a scene that portrayed an emotion or memory from their own life. The documentation and default values of most renderers are still focused on Caucasian skin samples. Students of color find it challenging to achieve realistic results. By studying their own likeness, they critiqued and resolved PBR skin issues involving subsurface, specularity, and sheen.

This assignment allows us to map the skills required to create accurate and narratively focused VFX. The construction of "self" and "subject" viewed through the lens of narrative enables us to evaluate from the inside out [Tunstall, 2011].And finally, by specifically contextualizing diversity in the representation of skin shading, the human experience of the student as tech artist is validated.

4 CONCLUSION

We propose a modification to the SEE(E)N framework for VFX. The addition of "Embody" enables us to identify the student designer as the locus of the IAs which translates to their professional stance. The combination of visible and invisible attributes centers diverse, equitable, and inclusive(DEI) pedagogical practices and outcomes. It is not enough to imply our values—invisible attributes allow educators to impart a duty of care and ensure student work reflects our social values. DEI in visual effects must be embraced as essential attributes of our discipline. Moreover, observation is a core skill. Byembedding our values through IA's in our program, the students' observation skills and therefore technical quality of the work was improved.

REFERENCES

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