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VISUAL RESOURCE ANALYSIS AND MANAGEMENT PEDAGOGY EVALUATION

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ABSTRACT
The inventory, evaluation, and planning for the management of visual resources is within the domain of professional knowledge, skills, and abilities required of professional landscape architects. The characterization and treatment of scenery has been a core skill from the early eras of the profession (Bloom et al 1956, McHarg 1969) Significant advancements in the theory, practice, and policies related to Visual Resource Management (VRM) were stimulated by the environmental movement of the late 1960s culminating with the passage of the National Environmental Policy Act (NEPA) in 1970. Although views and scenery were considered important and visual resource management became a significant aspect of practice, there has been inadequate development of appropriate visual assessment pedagogy. This situation seems to exist despite the fact that visual assessment is a topic frequently referenced as a specialization and is widely covered in celebrated textbooks in landscape architecture education (Hubbard & Kimball 1917,LaGro 1913, Newton 1971, Steiner 2000). Previous standards set by the Landscape Architectural Accreditation Board (LAAB) before 2016 did not explicitly reference visual and scenic assessment as an identified component of an accredited curriculum (LAAB 2016) However, in 2016 as part of LAAB’s systematic updating of standards, visual and scenic assessment was explicitly identified as a component expected in professional curricula (LAAB 2016) This paper explores the current state of visual analysis and management by 1) reviewing how LAAB address visual analysis, 2) reviewing the educational offerings of visual analysis at various educational institutions, 3) evaluating the implementation and efficacy of visual resource management instruction in a recent landscape architecture studio, and 4) proposing suggestions for future visual analysis pedagogy that closes the gap between education and practice.

INTRODUCTION

Paper Outline and Methodology
The purpose of this research was to explore the current state of visual resource analysis and management (VRM) pedagogy currently in practice in university landscape architecture programs. The methodology includes 1) a review of current accreditation standards relative to VRM, 2) a cursory review of landscape architecture programs in the United States to determine the extent of current VRM instruction, and 3) a brief synopsis and assessment of the integration of VRM in a recent site planning studio from an accredited landscape architecture undergraduate program. After identifying current accreditation standards relating to VRM in higher education, the research team reviewed ten universities to determine the presence or absence of visual assessment courses or projects in their design curriculum. Once the qualitative data was gathered, the results were summarized, which anecdotally suggests the degree of integration of VRM pedagogy practices in contemporary design programs in the United States and helps identify opportunities for successful integration of visual resource analysis and management into the classroom and design studio.
VISUAL RESOURCE ANALYSIS AND MANAGEMENT REVIEW

Current Standards for Visual Resource Analysis and Management

The field of landscape architecture is often misunderstood as a profession solely concerned with small-scale site design, limited to the use of plants, hardscape, site furnishings, lighting, and other tangible design elements. Abstract and conceptual elements of “space” and “views” are commonly overlooked as part of the realm of landscape architecture. Yet, even in the early stages of landscape architectural education, students are taught to consider the importance of visual reference and visual connection to the landscape as a critical component of landscape perception, experience, and meaning. The consideration of the visual experience is integral to the process, as well as the product, of landscape design. However, dedicated coursework on design and planning for the visual environment has often been omitted from the professional curriculum.

All accredited landscape architecture programs, within the United States, organize their curricula with guidance from the Landscape Architectural Accreditation Board (LAAB 2016). Standards for Accreditation

The LAAB reviews these standards on a five-year cycle. The most recent review cycle was begun in 2014, which led to the publication of updated standards in 2016. As a part of that review, landscape architectural educators, practitioners, and the public were invited to make comments and recommendations relative to the standards update. The comments included multiple observations that the assessment of visual quality was not adequately addressed in the previous standard on curriculum. The board subsequently agreed and a reference to “visual and scenic assessment” was added to the framework for curriculum development (see Figure 1). With the revised 2016 standards, “visual and scenic assessment” became an explicit component of the curriculum framework for the professional education of landscape architects.

**Figure 1. Excerpt from LAAB Accreditation Standard 3: Curriculum**

With the addition of “visual and scenic assessment” to the “Assessment and Evaluation” section of the revised accreditation standards, the co-authors and instructors of a site planning studio in the Landscape Architecture Program at Arizona State University (ASU) determined that it was timely and appropriate to develop a learning module on visual analysis as a part of a broader ecological inventory and analysis within the course. Much of this paper includes a discussion of the visual analysis component of the
studio, the students’ efforts to apply VRM principles to their planning and design project, ending with a reflective assessment of the teaching method and learning outcomes.

**Instructional Practices of Visual Resource Analysis and Management**

Upon recognizing the necessity of teaching visual and scenic assessment methods, as recommended by the LAAB (2016), the team conducted a search of ten highly acclaimed universities that offer a bachelor’s degree in landscape architecture. All of the schools researched are accredited by the LAAB. The search criteria included on-campus, studio-based programs in landscape architecture. The schools that were reviewed in this study are Louisiana State University, University of Georgia, University of Pennsylvania, Kansas State University, University of Washington, University of Oregon, University of California Berkeley, Utah State University, Harvard University, and Virginia Tech. Each school was selected specifically to gather a varied sample in both location and ranking of their individual landscape architecture programs.

Programs were briefly reviewed, looking at curriculum information posted on the school’s website, including a search for general statements on visual and scenic analysis. Additionally, all required courses and their specific descriptions were reviewed for explicit language as well as anecdotal references to visual assessment. The results indicate that visual resource analysis and management was referenced directly on a program’s website or in a course description twice. Anecdotal evidence that visual and scenic assessment is part of the curriculum occurred two times, while two additional university programs indicated vague evidence that there was a curricular focus on the subject. Two university programs lacked any reference to the subject at all. With the recent update of the LAAB standards and the shift towards the acknowledgment that landscape architects play a key role in large-scale projects with visual impacts, these results suggest that there is both necessity and opportunity for a greater emphasis on visual resource management in the landscape architecture curriculum.

**Integration of Visual Resource Analysis and Management in a Design Studio**

The landscape architecture program at Arizona State University (ASU) requires a site planning studio in the spring of the students’ third year. The studio, LDE 362, focused on site planning, the analysis of natural and cultural features, site systems, and the implications for plan-making and design. The 2019 studio specifically focused on the fundamentals of site planning and design in a real-world project setting. The course was intended to help develop students’ skills and understanding relevant to planning and design processes. Students were instructed in the McHargian overlay method, or “layer cake” analysis using advanced computer applications such as Geographic Information Systems (GIS) and Computer Aided Drafting (CAD).

Nine explicit course objectives, or learning outcomes, were articulated in the course syllabus. Of the learning outcomes listed, one specifically addressed “visual assessment methods including viewshed analysis and objective methods of assessing visual quality.” See figure 2 below for a complete list of the course learning outcomes.
Figure 2. LDE 362 Learning Outcomes

The semester was organized into four distinct phases, each with a requirement for deliverables and an accompanying verbal presentation. The intent was for each of the phases to serve as a foundation for subsequent phases. The first of the four phases was the study of indigenous cultures to gain insight into pre-industrial cultures and their various adaptations to the landscape. The remaining three phases were all sub-components of one larger project that the students worked on for the remainder of the semester. The study area was a 3900-acre site in southwest Phoenix; an area that is bisected by the construction of a new freeway that will inevitably usher in new development at the edge of a 16000-acre mountain preserve. The three phases of the project included 1) inventory and analysis, 2) community master planning, and 3) detailed site planning.

The inventory and analysis phase included instruction in VRM methods as a tool for understanding the potential impacts of development within the study area. The study area posed the ideal opportunity to understand a site with complex issues and competing values and priorities, including a significant visual resource (mountain preserve), development, and a freeway corridor. The site inventory consisted of field observation, historic research, and spatial data including physical, biological, and cultural factors. A portion of the spatial data was collected and analyzed using an existing GIS database, in coordination with the students’ GIS course, offered concurrently with studio. The analysis was intended to critically inform planning and design decisions for a proposed sustainable community design of approximately one square mile in size, which the students initially developed at the master plan scale (phase 3), and then refined in a selected site design (phase 4).

Since the students were concurrently enrolled in a GIS course, this also presented the opportunity to coordinate their GIS project work with the studio project. Students were introduced to the fundamentals and methods in the GIS computer lab prior to the initial studio field visit, where students were expected to explore and document the area firsthand. As part of the field visit, students were instructed in the fundamentals of the visual inventory process, in addition to general site inventory and documentation of existing conditions. After the field visit, students were instructed to conduct the remainder of the inventory by means of additional site visits, available geospatial data, and other local and regional resources.

While certainly not the first time that VRM instruction has been integrated into design studios in the landscape architecture undergraduate degree program at ASU, it represents one of the first attempts to
utilize GIS as a tool for visual and scenic assessment. In this site planning course, the instructors introduced concepts and examples of VRM methodology, shared examples of past visual assessment projects, and required students to read the BLM Visual Resource Management Manual H-8410-1, Visual Resource Inventory. This served as the knowledge base for their visual assessment portion of the project.

The range of success of the students’ final visual analysis submission was varied. The Visual Resource Management methodology was a challenge to understand and execute within the short time-frame that the students were given. The visual analysis was just one component of a much larger site analysis, and the time allowed for a thorough understanding of the VRM process was inadequate. However, the instructors recognize and acknowledge the value in introducing the concepts and methodology of visual analysis, despite the limited and varied success of the execution of the analysis itself. As part of this project, students were asked to develop map graphics that illustrate, 1) scenic quality, 2) visual sensitivity levels, 3) distance zones, 4) visual inventory classes, and 5) visual management classes. The following discussion includes a brief description and examples from each of the five exercises:

**Scenic Quality:** The evaluation of scenic quality was the most straightforward and understandable component of the VRM process for most of the students. Each group had a slightly varied approach, with some adhering closely to the established the BLM methods while others simplified the rating system. Figure 3 illustrates examples of student work that demonstrate the variability in assessment of scenic quality.

![Scenic Quality Examples](image)

**Sensitivity Levels:** The concept of visual sensitivity was more challenging for students to grasp. Of the eight groups in the studio, only two presented graphics documenting their analysis of visual sensitivity, and of those two, just one group was considered to have completed it successfully. The difference between visual sensitivity and scenic quality was not clear to the students, with many groups misinterpreting the meaning of sensitivity as a measure of ecological sensitivity rather than as a measure of public concern and exposure to the visual elements of the landscape. Figure 4 illustrates two examples of visual sensitivity analysis conducted by students.
Distance Zones: Most students had a solid understanding of the concept and method of determining distance zones. Several groups altered the criteria to better suit the study area with a varying range of distances, but most failed to incorporate topography in their analysis of foreground, middle ground, background, and seldomly seen. Most distance zone analysis was taken from the proposed freeway corridor. While not technically a distance zone analysis, one group chose to conduct two separate viewshed analyses; from three pedestrian viewpoints on trails within the mountain preserve and from three vehicular viewpoints centered on the freeway (Figure 5).

Visual Inventory Class: The visual inventory classification was most often confused with visual sensitivity levels, and the lack of understanding that visual inventory class is a composite analysis that includes scenic quality, sensitivity, and distance zones. Two groups understood the concepts and successfully distilled them into Visual Inventory Class maps, shown in Figure 6.
Visual Resource Management: The most challenging portion of the VRM methodology for the students to understand and synthesize was the final output of a Visual Resource Management Class Map with associated definitions. Three of the eight groups successfully completed the mapping of VRM Classifications. The remaining five groups struggled with understanding the methodology and/or synthesis of the previous components of the VRI. Figure 7 illustrates the most successful attempt at identifying VRM classes.

RESULTS AND DISCUSSION

Limitations of the Study
The chief limitations of the study were the anecdotal and qualitative nature of the research, method of inquiry, and the limited number of programs that were examined. The validity of the results is dependent on the reliability and availability of complete course descriptions and online content, and the limited anecdotal evidence does not necessarily represent the full truth of the programs. A more thorough review would be necessary to obtain more authoritative data. The second limitation that was identified was the limited time allocated on the focus of visual assessment in the studio. Because of the complexity of the subject, it was determined that students need more time to comprehend the concept. However, the findings of this study are sufficient to make the case for a more concerted effort to
integrate visual assessment in the professional curriculum of accredited landscape architecture programs in the United States.

Findings, Implications and Future Recommendations
It was found that while standards maintain visual and scenic assessments are a critical part of the landscape architecture profession, it appears that it is under represented and difficult to teach. While some university programs mention VRM in their educational pedagogy specifically, many barely mention it or do not mention it at all. This possibly implies two things 1) that universities are still updating their classes and programs to match the new LAAB standards or 2) that the topic is not valued as highly as other related subjects. Additionally, after incorporating innovative technologies to try and explicitly teach the subject in a site planning studio it was determined that the subject was more challenging than expected to convey. With the narrow time allotment, the robustness and general ambiguity surrounding the subject added to its complexity.

As instructors, it is important to reflect not only on student performance and outcomes, but also in the efficacy of the instructional method and how successfully the VRM component is conceptualized and integrated within a course project. Often, students are experiencing a steep learning curve, simultaneously developing technical, graphic, and presentation skills; studying history, theory, and methods; while developing necessary critical and design thinking skills. Visual assessment is a complex methodology that may be a challenge to integrate into an already full studio curriculum. Yet it is important to expose students to the concepts, principles, and practices of VRM as prescribed in the LAAB accreditation standards.4

The value of self-reflection on the instructor’s part is to properly position expectations within recognized pedagogical frameworks related to learning objectives and student achievement. One of the most common frameworks is Bloom’s Taxonomy of Educational Objectives. In Bloom’s framework, the mastery of a subject to be learned (in this case, visual and scenic assessment) is cultivated in layers of achievement (Bloom et al 1956) These layers can be described, from lower-level to higher-level learning, as remembering, understanding, applying, analyzing, evaluating, and creating. A student must successfully perform at each level in order to attempt to perform at the next higher level. At each level of learning, the student calls upon higher and higher cognitive skills and experience to execute their work.

The complexities of the field of landscape architecture necessitates a similar layered and iterative pedagogical approach. Design studios play a key role in helping students develop KSAs at ever-higher levels of achievement as they progress through the program. The recent experience in teaching VRM concepts and methodology in a third year design studio suggests that the initial introduction of VRM has resulted in a rudimentary level of “remembering, understanding, and applying”. Students require several cycles of doing and making, followed by evaluation and reflection in order to advance their expertise and achievement to higher levels of integration and application. Educators are recommended to give adequate time for students to digest these complex subjects.

Landscape architecture design studios focus on projects at a wide range of scales and not all studio projects present the appropriate opportunity to integrate VRM concepts, but where possible, it is worthwhile to consider ways that visual resource analysis and management concepts can be introduced into early studio courses and then revisited with greater complexity. This should also be supported by the advancement of skills in technological applications, such as geographic information systems. It is
through this iterative and layered process that students will gain the knowledge, skills, and abilities necessary for professional readiness.

REFERENCES


