

Curricular Assessment of NAAB Programs

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Abstract

Through a deductive analysis, this study reveals the curricular problems within architecture accreditation standards in the US. Since its inception, architecture licensing exam and degree accreditation is written by closely affiliated private corporations. Together these corporations serve as sole contractors recognized by the state boards of examiners. A majority of the members in all fifty US state boards actively serve as agents of the licensing exam vendor and the accreditation body. This lack of oversight has led to easing of curricular objectives leading to degradation of the professional degree programs of architecture in the US.

Keywords: cognitive domains, transfer of learning, NCARB, and NAAB.

Introduction

This paper serves as an assessment of architecture school curriculum in the US. The first part of this study examines the professional practice areas set forth by the National Council of Architecture Registration Boards (NCARB). For this analysis, these practice areas and Architecture Registration Examination (A.R.E.) administered by NCARB will serve as intended curricular objectives for architecture degree programs accredited by National Architecture Accreditation Board (NAAB), an accreditation system founded by NCARB. The second part of this study includes a quantitative analysis as empirical evidence for the actual curriculum taught at NAAB schools throughout the US. The intent of the quantitative analysis is to support the following statement: **NAAB accredited professional degree programs do not sufficiently prepare graduates for licensure to practice as an architect.** Several educational theories are correlated to NAAB's intended curriculum. These theories are addressed through original and peer reviewed literature to further support this case study.

Part I: Intended Curriculum

Licensure is a requirement to practice as an architect in the US. Passage of licensure exam attests to the candidates' ability to ensure health, safety, and welfare of the public as stated by the state board of examiners; thus the A.R.E. is considered a high-stakes exam. NCARB, the sole licensing exam vendor in the US, writes the A.R.E. This exam has been in transition during 2017 from a seven part exam to a new six part exam. Each division of the A.R.E. represents various areas of practice designated by NCARB. These practice areas are enumerated in Table 1. Upon graduation from NAAB programs, graduates must demonstrate competency in each practice area in order to obtain licensure to practice. NCARB is the founder for NAAB, the sole architecture accreditation body in the US. NCARB's leadership sits on the controlling board for NAAB; therefore it is reasonable to assess that the practice areas outlined by NCARB are the intended curricular objectives for NAAB accredited programs. Therefore, NAAB professional degrees must provide sufficient knowledge to pass the various parts of the A.R.E. thus qualify for licensure to practice as an architect.

Table 1

2017 NCARB Practice Areas & A.R.E. Divisions

2017 A.R.E. Version 4.0	2017 A.R.E. Version 5.0
7,657 Candidates	15,393 Candidates
Construction Documents	Construction & Evaluation
Programming, Planning & Practice	Practice Management
Site Planning & Design	Project Management
Schematic Design	Programming & Analysis
Building Design & Construction Systems	Project Planning & Design
Structural Systems	Project Development & Documentation
Building Systems	

A.R.E. tests graduates on four out of six cognitive domains of Bloom's taxonomy as presented in Table 2: (a) Understand; (b) Apply; (c) Analyze; and (d) Evaluate. NCARB purposely removes Bloom's highest domain, Synthesis, and the lowest domain, Knowledge. NCARB expects graduates of NAAB programs to have acquired sufficient knowledge of facts, formulas, theories, and procedures in order to recall them throughout the A.R.E. NCARB groups Bloom's cognitive domains into two categories; thus questions presented to the exam candidates are categorized as: (a) Understand and Apply (U/A); and (b) Analyze and Evaluate (A/E). A summary of NCARB's alignment to Bloom's taxonomy is presented in Table 2.

Table 2

NCARB's Cognitive Domains

Bloom's Taxonomy	NCARB		Theories
Understand	U/A	Candidate must recall facts, formulas, theories, and procedures.	Transfer of Learning, Bransford
Apply		Candidate must apply knowledge to: (a) Presorted information (b) Address ordinary situations	
Analyze	A/E	Candidate must identify relevant data, then sort, compare, contrast, and prioritize that data.	Intuitive Thinking, Bruner
Evaluate		Candidate must evaluate data to: (a) Identify errors (b) Address rare or unique situations (c) Relate parts to a whole (d) Adaptively reuse existing buildings	

Exam questions are formatted predominantly as discrete items. These are isolated questions that differ in context from one another. Although the new 5.0 version of the exams group a handful of questions under specific scenarios or ‘case studies’, this paper will focus on the discrete items as the dominating exam format. Two themes to NCARB discrete questions will now be analyzed and correlated with established educational theories: transfer and reasoning.

Exam questions are set in both typical and unfamiliar settings. The intent is for graduates from NAAB programs to deduce an answer based on academic knowledge. Bransford refers to this as Transfer of Learning. In this case, the transfer must happen from academic coursework to licensing exams then onward to practice as a licensed architect. For successful transfer, Bransford states that comprehension of core principles is necessary for knowledge to be applied to a variety of settings. For instance, if graduates from NAAB programs are able recall a basic principle; such as, the width of an exit path is calculated by the number of occupants on the floor served, then the graduates can tabulate the exit path for any occupancy or setting. However transfer of such knowledge cannot happen if the graduates of NAAB programs were not introduced to this basic criteria for sizing of an exit path during schooling.

Another theme in NCARB’s discrete questions is deductive reasoning. In most cases, NCARB presents a volume of information in a single question. The candidates must first identify relevant data within this set of information provided; then sort, compare, contrast, and prioritize the relevant data. As exam time is limited, candidates must possess academic training for logic assessment or data analysis within an average of two minutes. Bruner describes analytical thinking as a process of check and balances in order to solve a problem. He contrasts this to intuitive thinking in which hypothesis is formed without consideration of a detailed process.

Bruner emphasizes the relationship between intuition and analytical thinking, in that intuition developed through schooling must have the foundation of analytical reasoning. Such learning will bring students closer to the correct hypothesis; in terms of the licensing exams, this means arrival at the correct answer to a discrete question. The ability to analytically assess information for both rare and ordinary settings within two minutes must therefore be intended curricular goal for NAAB graduates.

This concludes the analysis of the intended NAAB curriculum. The next section will address the actual curriculum taught in NAAB schools.

Part II: Actual Curriculum

This part of the study includes a quantitative analysis of surveys completed from 2015 through 2018 by 215 graduates of NAAB accredited programs, as well as, active A.R.E. candidates. These surveys along with NCARB 2017 pass rates will serve as empirical evidence for the actual curriculum taught at NAAB schools throughout the US. This data is presented in Table 3. The candidates reported an average of 30% of NCARB practice areas were learned in school. Based on these surveys, the findings show that NAAB professional degree programs are insufficiently preparing graduates for licensure to practice. To further support this statement, NCARB 2017 exam results indicate an average pass rate of 58%. Table 4 includes data that places A.R.E. passrates among the lowest in comparison to other professional high stakes exams.

Table 3

Quantitative Data for NCARB Practice Areas

A.R.E. Divisions & NCARB Practice Areas	Survey of NAAB graduates conducted from 2015-2018			A.R.E. 2017 Passrates
	Responder Percentage Totals	Number of Responders	Content Taught in NAAB Schools	
Construction Documents	1420	56	25%	52%
Programming, Planning & Practice	880	35	25%	52%
Site Planning & Design	540	21	26%	64%
Building Design & Construction Systems	540	16	34%	62%
Schematic Design	30	1	30%	81%
Structural Systems	40	1	40%	59%
Building Systems	410	13	32%	59%
Construction & Evaluation	645	16	40%	61%
Practice Management	90	16	6%	50%
Project Management	235	18	13%	59%
Programming & Analysis	40	13	3%	53%
Project Planning & Design	300	5	60%	50%
Project Development & Documentation	240	4	60%	56%
Cumulative Numbers	5410	215	25%	58%

Table 4

High Stakes Exam Passrates

Professional Exam	Exam Fees	Test Takers	2017 Pass Rates
Uniform CPA Exam	\$775	27,949	48%
Architect Registration Exam	\$1,260	23,050	58%
Nursing Licensure Exam	\$200	230,569	72%
Uniform Bar Exam	\$800	37,021	75%
US Medical Licensing Exam	\$2,505	20,107	97%

Part III: Meta-Curriculum

Surveys indicate that actual curriculum taught in NAAB schools places a large emphasis on creative design as the primary aspect of professional practice. The remaining practice areas are largely abandoned leaving the graduates ill-prepared for licensure even upon graduating from a 5-year professional degree program accredited by NAAB. Although school curricula offer coursework beyond architecture design studio, transfer of knowledge from such coursework is either lost upon graduation or the information is missing from instruction all together.

Recommendation for furtherance of this study is to assess architecture school professional development to determine the methods of learning being utilized in the classrooms and to examine course content alignment to professional practice areas.

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