

2025

volume 22 | issue 2

ENQ

The ARCC Journal for Architectural Research

The Reductionist Implications of Outcome-Based Education in Malaysian Architectural Education

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Abstract

Architecture is a discipline that requires the integration of a wide spectrum of knowledge. This holistic nature of architecture was reflected in earlier models of architectural education. However, recent trends in educational pedagogy have been characterized by the admiration of a positivist outlook, particularly in the 1990s, which favoured a reductionist approach in education, specifically through the introduction of Outcome Based Education (OBE). In Malaysia, the need for architectural education providers to maintain higher education status requires adherence to the standards stipulated by the public higher education authority and the Malaysian Quality Agency (MQA). The objective of this study is to investigate the effects of the reductionistic tendencies of OBE and its mapping mechanisms on architectural education in Malaysia. The study adopts an integrative literature synthesis and critical policy analysis to examine how reductionist tendencies embedded in Outcome-Based Education shape architectural pedagogy in Malaysia. This paper argues that a reductionist tendency exists within regulatory standards, particularly in their stipulations on the use of OBE and its mapping process. This reductionist undertone affects the quality of architectural education, resulting in undesirable outcomes. The most pressing concern is the effect of a reductionist mindset on creativity and holistic thinking.

Keywords: reductionism; outcome-based education; Malaysian architectural education; creativity.

Stable URL: <https://arcc-journal.org/index.php/arccjournal/article/view/1290>

DOI 10.17831/enq:arcc.v22i2.1290

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1. INTRODUCTION

This paper investigates the reductionist effects of the outcome-based education model on architectural education in Malaysia. Since the early 2000s, there has been a policy shift toward this approach in Malaysian higher education.

Reductionism, a fundamental philosophical approach, has profoundly shaped scientific inquiry, technological advancement, and educational paradigms. Its influence on modern education has been both transformative and controversial, affecting how knowledge is transmitted and understood in contemporary society. This essay explores the origins of reductionism, its impact on civilization, and its integration into modern educational systems.

Architectural education in Malaysia is not exempt from this requirement. In Malaysia, the Council of Architectural Accreditation and Education Malaysia (MAPS) collaborates with the Malaysian Qualifications Agency (MQA) to ensure the quality and promote excellence in architectural programs. The Board of Architects Malaysia (LAM) has a role in ensuring the reliability and credibility of architectural programs and maintains competency standards that are comparable to other universities worldwide. Syllabi are reviewed by the Board of Architects and then submitted to MQA for approval. Under the broad directive of MQA, all architectural curricula must also adhere to the Programme Learning Outcome (PLO) and Course Learning Outcome (CLO). This is the mechanism used to implement OBE. All course formulations, subject contents, activities, and assessments must be mapped to both PLO and CLO. A matrix is used to check whether the objectives laid out by the faculty are achieved, with the intention of being accredited.

A rising concern with this development is the impact of reductionism, inherent in OBE and its mapping practice, on architectural education. Reductionism has been identified as a key ingredient in the modern world. However, there is growing evidence of negative consequences. Outcome Based Education (OBE) This article will explore the tension between the objectives of OBE and those of architectural education.

This study will use interpretive analysis of existing literature and critical policy analysis to draw a coherent argument for the need to revisit the practice of OBE in Malaysia. Finally, some suggestions to mitigate the issues are drawn from the literature.

2. LITERATURE REVIEW

Reductionism in the modern era

Reductionism's philosophical roots can be traced back to ancient thought, but it gained prominence during the Scientific Revolution of the sixteenth and seventeenth centuries. This approach posits that complex phenomena can be understood by breaking them down into their simplest parts, asserting that understanding the parts is sufficient to understand the whole (Giere 2004). The paradigm was heavily influenced by the successes of classical physics, exemplified by Isaac Newton's laws, which explained planetary motion mathematically (Newton 1687). This success suggested that the universe could be comprehended entirely through reduction to fundamental components—atoms, particles, or laws—thus fostering an optimistic belief in the power of scientific analysis (Blaikie 2007).

However, reductionism has also attracted criticism for neglecting the complexity of systems and the emergent properties that arise when parts interact. Systems biology, for example, emphasizes understanding biological phenomena at multiple levels, criticizing the reductionist tendency to oversimplify (Kitano 2002). Moreover, reductionist approaches have been accused of diminishing the understanding of cultural, social, and environmental contexts—elements essential for holistic comprehension (Fuller 2005). Thus, while reductionism contributed to technological progress, it also prompted debates about its suitability as the sole approach to understanding complex systems.

Reductionism in modern education

Modern education has extensively incorporated reductionist principles, especially within the sciences. Educational curricula often emphasize breaking down complex concepts into simpler units—teaching subjects through discrete disciplines such as physics, chemistry, and biology. This approach aligns with the traditional scientific method, which involves hypothesis formation, experimentation, and analysis of parts (Mazur 1997). For instance, biology classes may focus on molecular mechanisms, while physics courses emphasize atomic particles. This segmentation allows for structured learning and in-depth exploration of specific domains, making subjects more accessible to students (Linder 2020)

Furthermore, the prevalent testing and assessment methods in education also reflect reductionist tendencies. Standardized testing evaluates students' mastery of specific facts and skills, often isolating individual concepts rather than assessing integrated understanding (Gipps 2005). This focus on discrete learning outcomes supports a reductionist model of knowledge transmission—viewing education as the accumulation of atomic units of information.

Lewin (2020) in *Religion, Reductionism and Pedagogical Reduction* Lewin introduced the idea of pedagogical reduction: the notion that some simplification is necessary for teaching, but it must be ethically and pedagogically informed. He argued that a reduction in education is inevitable, yet it must not reduce learners to test scores or teaching to instruction manuals.

Despite its successes, this reductionist approach has limitations. Critics argue that it leads to fragmented knowledge, reducing the ability of students to see the connections across disciplines and to apply knowledge holistically (Bransford, Cocking, and Brown 2000). The education system's emphasis on rote memorization and compartmentalized subjects can hinder critical thinking and creativity, essential skills in a complex, interconnected world. Recently, there has been a rise in interdisciplinary and systems-based pedagogies aiming to address these issues, emphasizing holistic understanding over reductionist fragmentation (Norris and Phillios 2003)

The article will now examine how reductionism affects architectural education, particularly through outcome-based education and its mapping practices.

The holistic nature of architectural education and the reductionist crises.

Architecture is a discipline in which knowledge from diverse fields must be harmonized into holistic solutions. Schön (1983) argues that architectural practice—and the education that prepares students for it—is fundamentally distinct from purely technical or scientific fields because it requires integrating multiple, often conflicting, demands into a coherent whole.

The antithesis of this holistic approach in architectural education is a reductionist mindset, which appears to be the favored mode of instruction in modern universities. Ward (1990) highlighted how architectural education often fragments holistic design into isolated technical domains, a hallmark of reductionism. He argues that curricula frequently break architecture into disconnected subjects: structures, environmental systems, history, and studio. This fragmentation prevents students from synthesizing social, cultural, and ethical dimensions into design solutions.

Ward identified three key issues. First is the fragmentation of Knowledge. Ward argues that curricula often break down architecture into disconnected subjects (structures, environmental systems, history, studio). This prevents students from synthesizing social, cultural, and ethical dimensions into design solutions. He commented:

Here, he also criticizes the artificial divide between lecture-based courses (theory and history) and studio work (practice), which treats social and contextual understanding as secondary to formal or technical skills.

Thirdly, he identified the depoliticization of design. Reductionism suppresses architecture's role in addressing social inequality, power structures, and community needs. Education becomes a "sausage factory" (p. 18) producing technocrats rather than critically engaged designers.

Origin of Outcome-Based Education (OBE)

Outcome-Based Education (OBE) emerged in the late twentieth century as a response to dissatisfaction with traditional education systems that emphasized inputs—such as curriculum coverage and instructional time—over actual student learning. The movement gained prominence in the United States during the 1980s and 1990s, largely through the work of William Spady, who is often regarded as the "father" of OBE (Spady, 1994). He defined OBE as a "clearly focused and organized educational process that is directed at achieving clearly defined outcomes" (Spady 1994).

The roots of OBE can be traced to earlier education reforms, such as the behavioral objectives movement in the 1950s and 1960s, and mastery learning theories by Benjamin Bloom, which emphasized structured progression toward competency (Bloom 1968). Unlike traditional models, OBE prioritizes what learners can demonstrate at the end of instruction—skills, knowledge, values, and attitudes—over how they got there.

OBE gained international traction as governments sought to align education with the needs of the modern economy and global competitiveness. Countries like Australia, South Africa, and Malaysia adopted OBE frameworks to improve accountability, student-centred learning, and workforce relevance (Killen 2000; Mohd Yusof 2005).

While OBE was praised for its focus on results and accountability, critics noted that overemphasis on measurable outcomes risked narrowing education to technical competencies and ignoring broader humanistic and critical dimensions (Jansen 1998). Still, its fundamental principle—that the success of education should be evaluated based on what students learn—remains influential in educational policy and practice.

The appeal of OBE

The promise of clarity, objectivity, and efficiency of Outcome-Based Education can be found in the literature. Outcome-Based Education (OBE) prioritizes clear

learning outcomes, shifting the focus from teaching to what students achieve (Spady 1994). It enhances student competency through aligned curricula and objective, criterion-referenced assessment (Killen 2000; Tang and Biggs 2011), fostering active learning and continuous improvement. OBE promotes accountability for institutions and educators (Harden 2012), ensuring graduates gain required skills, and enabling coherence by connecting subjects for interdisciplinary understanding (Wiggins and McTighe 2005). While critics fear curriculum narrowing and overemphasis on assessment, these can be mitigated with higher-order thinking outcomes and balanced assessment systems.

In architectural education, proponents posited that OBE could support innovation by emphasizing problem-solving and creative exploration. Successful implementation requires teacher training and investment. Among important benefits highlighted by proponents is that OBE offers a framework for relevant educational experiences that equip students for a changing world. While some acknowledge the problems arising out of the OBE approach, they are convinced that the key lies in moving beyond rigid adherence to outcomes and embracing a more dynamic, student-centred approach that values creativity and lifelong learning.

3. METHODOLOGY

This study employs interpretive literature analysis and critical policy analysis to examine the reductionist tendencies embedded within Outcome-Based Education (OBE) and its mapping mechanisms in Malaysian architectural education. These methods are appropriate because the issue is conceptual and policy-driven, requiring close examination of theoretical writings and accreditation frameworks rather than empirical measurement. The analysis synthesises global and local critiques to reveal how reductionist policy structures shape pedagogical practice and creativity in architecture.

The approach draws together international scholarship on reductionism, educational theory, and Outcome-Based Education (OBE), alongside Malaysian policy documents such as the Malaysian Qualifications Framework (MQF), accreditation guidelines, and architectural education standards. Rather than generating primary empirical data, the study systematically reviews and interprets existing knowledge to identify patterns, assumptions, and consequences embedded within OBE as implemented in Malaysia. The integrative synthesis allows diverse theoretical perspectives—ranging from reductionism and holistic education to architectural pedagogy—to be analysed in relation to one another. The critical policy

analysis component examines how national directives, accreditation requirements, and institutional practices translate OBE principles into curriculum design, mapping mechanisms, and assessment structures. This combined methodology is appropriate for uncovering conceptual tensions and reductionist tendencies that shape architectural education within a policy-driven environment.

The timeframe of the references in this study are appropriate because the investigation concerns both the origins and the ongoing impact of OBE. Seminal works from the 1990s–2000s (e.g., Spady, Barnett, Biggs) are essential for understanding the philosophical foundations and reductionistic logic embedded in OBE from its inception. Meanwhile, more recent Malaysian studies from 2012–2023 capture how these frameworks have been implemented and experienced within architectural education. Using both historical and contemporary sources provide continuity, depth, and relevance, enabling a comprehensive analysis of OBE's long-term effects on Malaysian architectural education.

4. FINDINGS AND DISCUSSION

Having established the philosophical roots of reductionism and its embedded presence within modern educational frameworks, the analysis now turns to its concrete implications for architectural education. In this section, the causal relationship between reductionistic tendencies in OBE and the pedagogical realities of architectural training—particularly in Malaysia—will be examined in depth. Drawing together policy analysis and critical literature, the discussion demonstrates how OBE's mapping mechanisms translate abstract reductionist logic into everyday teaching practices, shaping curriculum structure, assessment culture, and the studio environment. Through this synthesis, the section advances the central argument of the paper by showing how rigid outcome alignment can erode the holistic and creative foundations essential to architectural education.

Reductionism of outcome-based education

This paper will now examine the relationship between reductionism and OBE. It is argued here that OBE pushes the reductionistic tendency into architectural education. Today, OBE and its mapping mechanism have been adopted by educational entities en masse.

Barnett (1994) and Forest (2004) both offer influential critiques of Outcome-Based Education (OBE), highlighting its fundamentally reductionist tendencies. They argue that OBE's prioritization of clearly defined, measurable outcomes risks oversimplifying the complexity of learning by reducing it to easily

quantifiable skills and competencies. Such an emphasis marginalizes richer educational dimensions—such as critical thinking, creativity, ethical reasoning, and moral development—that are essential to holistic human formation but difficult to measure. Both scholars warn that this outcome-driven focus fosters a mechanistic, checklist-oriented approach to education, encouraging teaching to the test and narrowing curricular scope. While OBE seeks to enhance clarity, accountability, and standardization, Barnett and Forest caution that its reductive logic can undermine the transformative, humanistic purposes of education by privileging outcome coverage over meaningful intellectual and personal development.

Biesta (2010), offers a critical perspective on reductionist approaches in education, including OBE, highlighting their limitations in addressing the full complexity of educational processes. He argues that such approaches tend to reduce education to measurable outputs and skills, thereby neglecting the importance of fostering broader qualities like critical citizenship, moral sensibility, and the transformative potential of education. Biesta emphasizes that focusing solely on outcomes risks instrumentalizing education, turning it into a box-ticking exercise that prioritizes efficiency over meaning, purpose, and human development. He advocates for broader educational paradigms that emphasize the importance of dialogic, ambiguous, and contextually driven learning experiences, where the purpose of education extends beyond simply achieving predefined outcomes. According to Biesta, these paradigms are essential for cultivating autonomous, responsible individuals capable of contributing thoughtfully to society, thus highlighting the limitations of reductionist models like OBE.

This potentially results in undesirable consequences, particularly for higher-order learning and the intrinsic value of education. The characterization of OBE mapping as reductionistic stems from its core methodology of breaking down complex educational experiences into discrete, measurable components.

OBE and its mapping mechanism In Malaysia

OBE was formally introduced into Malaysia's higher education system in the early 2000s, as part of broader reforms aimed at aligning education with international standards and national development goals. Since early 2000, there has been a policy shift toward outcome-based approaches. The Malaysian Qualifications Framework (MQF) was proposed to standardize learning outcomes across higher education institutions. The Ministry of Higher Education (MOHE) began encouraging universities to shift from content-based to outcome-based education to produce more competent,

globally competitive graduates.

The MQF was launched in 2007, although groundwork on OBE began earlier. It required all higher education programs to be based on Program Learning Outcomes (PLOs) and Course Learning Outcomes (CLOs). OBE mapping became an institutional requirement: CLOs had to be mapped to PLOs, which in turn aligned with national education goals, such as the Learning Domains outlined by the Malaysian Qualifications Agency (MQA) 2009). In 2009, The Board of Engineers Malaysia (BEM) made OBE mandatory for engineering accreditation under the Washington Accord. (Guidelines on Engineering Accreditation and OBE 2009; Mohd., Helmi, and Adnan 2005) From that point on, universities offering engineering programs had to show evidence of OBE mapping in curriculum design, delivery, and assessment.

OBE mapping was introduced beyond the engineering discipline in Malaysia around 2010-2012. The OBE mapping refers to the systematic alignment of course-level learning outcomes (CLOs) with programme-level learning outcomes (PLOs) to demonstrate how individual courses collectively contribute to the attainment of prescribed graduate attributes, competencies, and national qualification standards under the Malaysian Qualifications Framework (MQF). This shift occurred as part of Malaysia's broader higher education reform under the MQF, which emphasizes graduate attributes and competency-based education across various disciplines. The MQA initiated these reforms to enhance transparency, accountability, and quality assurance in all academic programs, expanding OBE practices beyond engineering to include fields like business, arts, health sciences, and social sciences during this period (Malaysian Qualification Agency, 2011; Malaysian Qualification Agency, 2012).

From 2011 to 2015, MOHE and MQA conducted academic performance audits focusing heavily on outcome-based elements, including the effectiveness of CLO–PLO mapping. This led to widespread adoption of OBE mapping matrices in university course files and program specifications. Architectural education offered by MQA-accredited institutions is not exempt from this requirement.

Criticism of OBE in Malaysia

This expansion of OBE practice beyond engineering disciplines is not without its criticisms. First the criticism directed specifically against this move in Malaysian context is investigated. Thereafter, the parallel between these criticisms and those of international studies will be discussed.

Goh and Yeo (2012) argue that OBE's focus on measurable outcomes may lead to a rigid educational system that stifles creativity and flexibility, especially in disciplines that benefit from exploratory and interpretive approaches.

Rahayu et al. (2015) raised the issue of complexity in developing valid and reliable assessments for qualitative outcomes. They highlight that accurately measuring soft skills, critical thinking, and attitudes remains challenging, risking superficial compliance rather than genuine learning.

Ismail et al. (2013) raises the issue of implementation variability. Resistance from institutions and educators, coupled with uneven resource allocation, raises concerns about the consistency and effectiveness of OBE implementation across disciplines.

Kamaruddin and Ching (2014) contend that OBE's emphasis on quantifiable outcomes may undermine holistic education by reducing learning to measurable competencies, neglecting broader educational goals like moral or cultural development.

These criticisms against the move to expand OBE and outcome mapping in Malaysia is reflected in studies elsewhere. The problem with OBE mapping will now be discussed.

The primary critique of OBE mapping is its tendency to oversimplify complex learning processes. Skills such as critical thinking, creativity, wisdom, ethical reasoning, and lifelong learning are inherently difficult to reduce into discrete, measurable outcomes. This reduction often results in the loss of the richness, ambiguity, and interconnectedness of deep learning, as learning becomes focused on what is easiest to measure rather than what is most valuable. Research by Biggs (2003) and Entwistle (2009) supports this view, highlighting the limitations of outcome-based approaches in capturing the full scope of learning experiences.

Spady (1994) cautions that rigid implementation of OBE and its mapping processes can foster a "checklist mentality," where complex learning is reduced to ticking off predefined competencies rather than cultivating meaningful educational experiences. Explicit mapping matrices can foster a mechanistic, box-ticking approach. The focus shifts from the integrative experience of learning and the development of the whole person to merely ensuring each outcome is "covered" and "assessed." Thus, learning can become fragmented. Students (and sometimes faculty) may perceive education as a series of disconnected tasks to complete rather than a transformative journey.

Mapping tightly links learning to predefined, often employment-oriented outcomes. This can reduce education's primary purpose to workforce preparation and measurable economic utility, thereby undermining intrinsic values such as intellectual curiosity, personal growth, civic engagement, and the cultivation of broad critical consciousness—elements central to liberal education and the idea of the university (Barnett 1994; Biesta 2010; Jansen 1998).

Another criticism is the resulting constriction of teaching and learning. Faculty may feel pressured to narrowly "teach to the outcomes" listed on the map, potentially stifling pedagogical creativity, responsiveness to student needs in the moment, and exploration of unexpected but valuable tangents. Inevitably curriculum and pedagogy often becomes rigid and predictable, discouraging intellectual risk-taking and emergent learning opportunities. (Harden 2012; Spady 1994)

The demand for direct, measurable evidence for each mapped outcome heavily favours quantifiable assessments (exams, specific tasks) over richer, more holistic, but harder-to-measure methods (essays, complex projects, reflective portfolios, discussions). Outcomes are often defined by what can be easily assessed. Assessment can drive curriculum design in reductive ways, potentially neglecting the assessment of higher-order, integrative, or dispositional learning. "Teaching to the test" becomes "designing to the measurable outcome" (Tang and Biggs 2011).

Mapping focuses on the explicit, declarative, and procedural knowledge and skills stated upfront. It struggles to capture the vital role of tacit knowledge, intuition, disciplinary habits of mind, and the often-implicit socialization into academic and professional communities that occurs through immersion. The "hidden curriculum" and crucial aspects of professional and academic identity formation are marginalized in the formal quality assurance process (Jarvis 2009).

Mapping can become an exercise in bureaucratic compliance for institutions seeking accreditation, rather than a genuine tool for enhancing learning. The focus becomes the generation of documentation that satisfies auditors. The original pedagogical intent of OBE (improving student learning) can be overshadowed by administrative burden and performativity (Spady 1994).

Architectural education in Malaysia

In Malaysia, the governance of architectural education is embedded within a tiered quality assurance structure that links national policy mandates to disciplinary accreditation processes and institutional practice.

At the apex, the MQA, under the MQF, stipulates the compulsory use of PLOs, CLOs, and outcome-mapping mechanisms as part of national standards for accountability and comparability. These overarching requirements are subsequently operationalised within the discipline through the Council of Architectural Accreditation and Education Malaysia (MAPS) and the Board of Architects Malaysia (LAM), both of which institutionalize OBE compliance within accreditation criteria and uphold competency standards aligned

with international benchmarks. At the institutional and faculty level, architecture programmes must structure their curricula, syllabi, assessments, and studio pedagogies in accordance with these mapped outcomes. Consequently, the PLO–CLO matrix functions as a central evaluative instrument through which programmes must demonstrate the achievement of prescribed educational objectives for accreditation purposes. Figure 1 below shows the structure of the architectural education ecosystem in Malaysia.

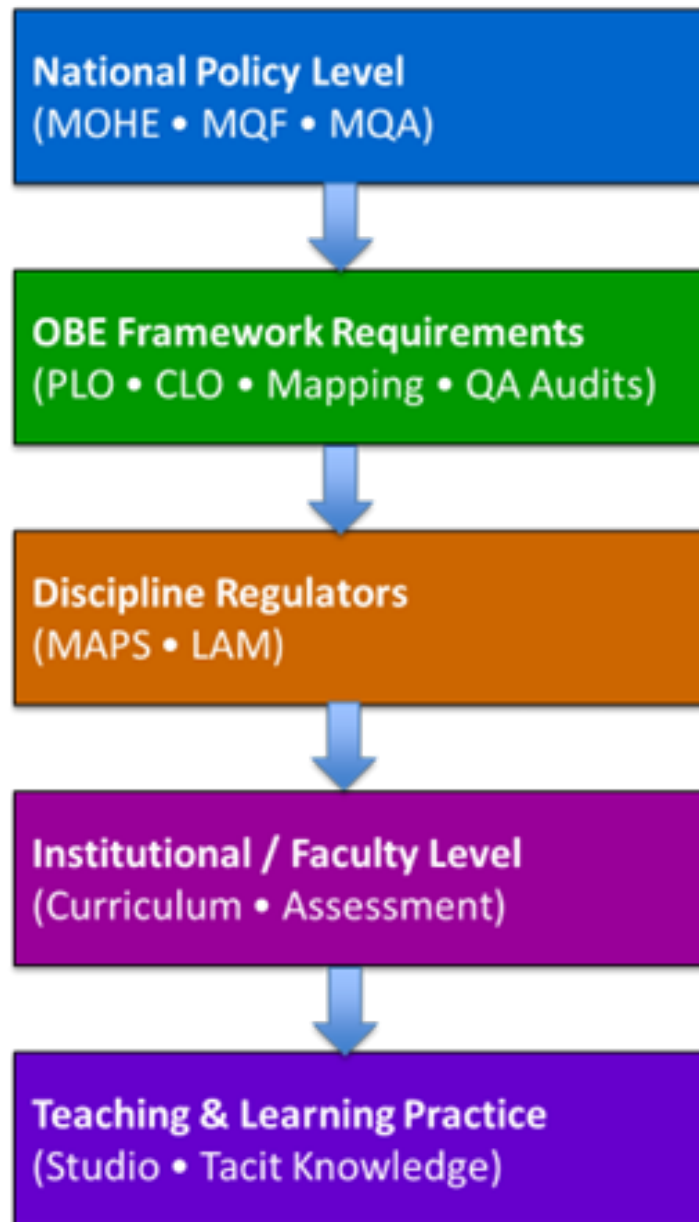


Figure 1. The structure of architectural education ecosystem in Malaysia

There is limited empirical study on the direct correlation between OBE and architectural education in Malaysia. However, some studies portray the impacts of current education policy and pedagogy on graduate quality. Some of these closely resemble the issues with the implementation of OBE as highlighted earlier in this paper.

Wahid et al (2023) stated that architectural programs seeking accreditation from bodies like the Board of Architects Malaysia (LAM) might be more inclined to adopt rigid OBE frameworks, potentially leading to the suppression of creativity and contextual sensitivity in student work.

“The structured curriculum toward accreditation goals may not develop the scholarly direction or advancement of the architecture discipline. Instead of producing scholars, we are producing technicians by spinning the old program over and over again” (Wahid, Abdullah, Koesmeri, and Awang Sulong 2023)

The study highlights the reductionistic symptoms discussed earlier. They suggested universities that heavily focus on graduate employment rates may prioritize easily measurable skills over critical thinking and design exploration, leading to a superficial understanding of architectural principles. Institutions lacking resources for faculty development may struggle to implement OBE effectively, resulting in standardized teaching practices and a neglect of contextual sensitivity.

Their analysis of winning entries in national architectural competitions might reveal a trend toward designs that prioritize technical proficiency and aesthetic appeal over social impact and cultural relevance. This trend reflects the reductionistic paradigm inherent in OBE.

Among others, the study also described architecture lecturers in Malaysian public universities reported excessive documentation burden under OBE. Many creative activities could not be meaningfully captured in CLO–PLO mapping. Student reflection processes became “forced” to conform to predetermined outcomes—contrary to the open-ended and organic nature of design thinking.

Impact of OBE on architectural education

The impact of OBE on architectural education can be observed in several ways. Reflecting the problems of the reductionist paradigm highlighted earlier. These include fragmentation of knowledge, a focus on measurable, discrete outcomes rather than holistic understanding, diversion of resources from meaningful teaching activities, and neglect of the “hidden” curriculum. Such tendencies illustrate how OBE can constrain both the

depth and breadth of architectural learning.

Nevertheless, architectural education has characteristics that are distinct from other fields. It is naturally a holistic approach to teaching and learning. Learning activities include studio consultations, experiential learning, and continuous iteration and dialogue between tutor and students. Unlike most academic fields that primarily focus on theoretical knowledge, architecture also emphasizes hands-on design, drawing, and modelling, integrating art and engineering (Nelson and Stolterman 2012). It requires students to develop a balance between aesthetic sensibility and technical proficiency, often through studio-based teaching that fosters collaboration and real-world problem-solving (Kvan 2000). Additionally, architectural education extensively involves critique sessions, which provide iterative feedback, promoting a reflective and developmental process unique to the discipline (Brandon and Platt 2014). The interdisciplinary nature of architecture necessitates the understanding of human psychology, environmental factors, and societal contexts, setting it apart from purely scientific or artistic academic fields (Cuff 1991).

Considering the distinctiveness of architectural education discussed above, the investigation will now explore other problems arising from the implementation of OBE and its reductionistic paradigm in architectural education.

Impact of OBE on creativity

Creativity is the hallmark of architectural education. To come up with a building design, knowledge from diverse areas needs to be pulled together to formulate a design solution. This points to the need for divergent thinking and creativity. The impact of OBE on creativity in architectural education cannot be ignored.

A growing body of empirical research and critical literature suggests that Outcome-Based Education (OBE)—particularly in its standardized and metric-driven implementations—can stifle creativity in both students and educators. Below are several empirical studies and scholarly reviews that support this conclusion.

Although not exclusively about OBE, Amabile (1996) investigates how different environmental factors influence motivation and creativity. Her research indicates that environments emphasizing external evaluation, competition, and narrowly defined outcomes—characteristics often associated with Outcome-Based Education (OBE)—can significantly diminish intrinsic motivation, which is essential for fostering creativity. She argues that when education prioritizes predefined outcomes, students may shift

from engaging in curiosity-driven exploration to merely fulfilling prescribed tasks. This outcome-driven approach risks undermining learners' internal motivation to innovate and think creatively, ultimately constraining the deeper, more meaningful aspects of learning that thrive in less externally controlled settings.

Sahlberg (2011) believes that countries that emphasize standardised testing and outcomes, such as the UK and US, experience declines in creative and critical thinking skills. In contrast, Finland encourages teacher autonomy and integrated curricula, leading to higher student creativity. "Curriculum narrowing is a major concern... especially where high-stakes assessment dominates instructional planning." Nichols et al, (2007) concludes that implementation of OBE as high-stakes testing has led to a decline in project-based, inquiry-driven learning and increased rote memorization. Teachers reported less time and incentive to implement creative tasks.

In tertiary education under OBE, instructors felt pressure to deliver measurable outcomes instead of cultivating open-ended inquiry. This reduced space for innovative pedagogy and fostered a culture of compliance. (Viskovic 2006)

Curricula shaped by OBE often marginalize the arts and humanities, which are difficult to assess with standard metrics. This results in fewer opportunities for students to engage in creative projects. (Eisner 2000). In an OBE framework, students were more likely to adopt surface learning and strategic (grade-maximizing) approaches, rather than deep learning and creativity (Tang S. Y. 2007).

Davis (2013) critically examines OBE education within architectural pedagogy, particularly in studio-based learning. The author argues that while OBE aims to clearly define learning outcomes to improve educational quality, it often emphasizes measurable results at the expense of creative and critical thinking skills essential in architecture. Davis highlights that assessment under OBE tends to focus on end products, such as final designs, which can limit iterative learning and exploration during the creative process. The critique suggests that this outcome-centric approach may stifle individual expression and hinder the development of professional judgment. The paper advocates for a more balanced assessment strategy that values process, reflection, and contextual understanding. Davis also calls for rethinking assessment practices to better align with the complex, iterative, and experiential nature of architectural learning, promoting a pedagogy that nurtures both technical skills and creative inquiry.

International examples of the negative impact of OBE mapping in architectural education, based on scholarly

literature and documented experiences are discussed below.

In many UK architecture schools, OBE mapping has led to design work being fragmented into assessable criteria (e.g., "spatial understanding," "technical competence"). This compartmentalization restricts holistic thinking and undermines the complex, iterative nature of architectural design. Outcome mapping has turned the studio into a performance space for assessment rather than experimentation (Webster 2006).

Jansen (1998) critically examines the implementation of outcomes-based education (OBE) in South Africa and highlights how it has adversely affected the traditional architectural studio culture in higher education. He observes that faculty time, which was once predominantly dedicated to mentorship, personalized feedback, and fostering creative dialogue, has shifted significantly towards administrative tasks such as report-writing and maintaining mapping matrices. This shift, as Jansen argues, undermines the pedagogical essence of the studio environment, where the development of critical thinking and individual expression should be prioritized. Instead, the focus on measurable outcomes and standardized documentation leads to a more bureaucratic and mechanized teaching process. Consequently, the immersive, collaborative, and mentorship-driven aspects of studio culture suffer, diminishing the quality of learning and the potential for innovative design thinking. Jansen contends that this transformation in faculty roles compromises the very pedagogical principles that underpin effective architectural education.

In Australia, under OBE mapping, such work may be penalized if it doesn't align with rigid CLO rubrics, discouraging originality. According to Davis (2013), assessment practices under outcome-based education often prioritize standardized measures over creative expression, leading to a loss of design freedom. This emphasis on conformity to predetermined assessment outcomes results in students focusing on meeting specific criteria rather than exploring innovative ideas. Davis critiques this approach, arguing that it stifles originality and critical thinking in architectural pedagogy. Therefore, students may feel pressured to produce work that adheres strictly to rubrics, limiting their ability to experiment and develop unique, personal design solutions.

Salama (2007) generally criticizes OBE in architectural education for its potential to limit creativity and critical thinking. He argues that OBE's focus on measurable outcomes and rigid assessment rubrics can constrain the pedagogical process, reducing the scope for innovative and exploratory learning. Salama believes

that architecture, as a discipline rooted in creativity and contextual understanding, may be adversely affected by the standardized and prescriptive approaches of OBE. Instead, he advocates for a more flexible, student-centred learning environment that emphasizes the development of critical thinking, design exploration, and contextual awareness, rather than solely achieving predetermined outcomes.

In India, the imposition of national OBE standards in architecture led to uniform rubrics that ignored local, vernacular, or community-based approaches. Students felt pressured to prioritize grades over culturally relevant or experimental ideas (Nair, 2017). OBE was criticized for creating a “tick-box culture” that marginalizes meaningful design rooted in local context.

Till (2009), based on his view of American schools, noted that architecture students reported that OBE mapping made their studio works feel like a series of tasks to fulfil outcomes, rather than a space of discovery. This undermined student motivation and reduced intrinsic engagement. He notes that OBE frameworks clash with architecture’s nature as an uncertain, open-ended discipline that cannot be fully predicted or prescribed.

To conclude, across different countries, the negative impacts of OBE mapping in architectural education include constraining creativity, shifting focus to paperwork, discouraging originality, marginalizing cultural relevance, damaging student engagement, inflexibility toward contextual and cultural design values, and student disengagement and loss of studio culture.

Mitigating the problems.

This section will now explore strategies found in the literature for mitigating the symptoms of reductionism in OBE within architectural education. These suggestions are primarily drawn from sources that highlight the problems with OBE, as discussed above.

One crucial strategy lies in crafting outcomes that genuinely reflect the complex intellectual and dispositional goals of architectural education. To counter reductionism, learning outcomes should be framed to encompass higher-order thinking, creativity, and contextual understanding. For instance, instead of merely stating “students will be able to produce architectural drawings,” a more sophisticated outcome might be “students will be able to develop architectural designs that demonstrate a critical understanding of social, cultural, and environmental contexts, integrating technical knowledge with creative problem-solving.” This necessitates careful consideration and deliberate articulation of the complex attributes expected of

architectural graduates, emphasizing qualities that go beyond easily assessed skills (Davis 2013).

Furthermore, promoting holistic mapping is essential so that OBE does not become a rigid, exhaustive checklist. Mapping, the process of aligning course learning outcomes (CLOs) with program learning outcomes (PLOs), can easily devolve into a mechanistic exercise, focusing on ensuring each outcome is “covered” and “assessed,” neglecting the interconnectedness of knowledge and skills. Instead, mapping should be viewed as a guide and framework to inform curriculum design and assessment, emphasizing integration and synergy between outcomes. For example, rather than assessing design communication, structural integration, and sustainability as separate components, a holistic mapping approach would assess how students synthesize these elements in a single design project. This promotes a more integrated understanding of architectural design, encouraging students to see the bigger picture rather than isolated pieces (Barnett, 1994).

Diversifying assessment practices is equally crucial to counter the reductive tendencies of OBE. This includes incorporating design critiques, portfolio reviews, and self-reflection exercises to evaluate students’ creative process, critical thinking, and contextual understanding. Furthermore, emphasizing formative assessment, providing ongoing feedback throughout the design process, can encourage students to explore different ideas and learn from their mistakes, fostering a culture of experimentation rather than conformity (Harden 2012). By prioritizing assessments that measure complex abilities authentically, even if they are harder to quantify, architectural education can move beyond “teaching to the test” and focus on developing well-rounded designers.

Finally, fostering a balance between accountability and autonomy is essential for mitigating reductionism in OBE. Quality assurance processes, while necessary for ensuring educational standards, can inadvertently stifle faculty judgment and pedagogical innovation. To counter this, quality assurance frameworks should value faculty expertise and encourage experimentation with different teaching and assessment approaches (Wahid, Abdullah, Koesmeri, and Awang Sulong, 2023). Furthermore, institutions should provide adequate resources for faculty development, supporting them in designing and implementing OBE in a way that aligns with the unique characteristics of architectural education (Jansen 1998). The need for accountability should not come at the cost of academic freedom and the inherent unpredictability of rich learning experiences.

To summarize, there is a need for crafting sophisticated

outcomes that reflect varied intellectual goals beyond easily assessed skills. This is important especially for architectural education which requires holistic understanding, integrated knowledge, and creativity. Mapping of outcome, if necessary, needs to be holistic. It should be viewed as a guide, not a rigid checklist, emphasizing interconnectedness. Diversifying assessments through critiques and self-reflection fosters experimentation. Balancing accountability with faculty autonomy is crucial, as is providing resources for faculty development. The aim is to adapt OBE to architectural education, preserving creativity and critical thinking while meeting quality standards, ensuring that quality assurance is a catalyst for enhancement.

5. CONCLUSION AND RECOMMENDATIONS

This study set out to examine how OBE shapes Malaysian architectural education, with particular attention to its inherent reductionistic tendencies. Addressing this issue presents a unique challenge because it operates largely at the level of concepts, policy frameworks, and epistemological assumptions rather than observable phenomena. As such, the investigation necessarily relied on interpretive analysis of scholarly literature and educational policy documents, allowing the study to uncover the structural and philosophical dynamics that empirical data alone cannot reveal.

The adoption of OBE, with its adherence to strict mapping practices as adopted by Malaysian education agencies, as well as its implementation by education providers, needs rethinking. Symptoms of reductionism are evident. The effects on architectural education are manifold. Fragmentation of knowledge, loss of holistic understanding, loss of creativity, loss of studio culture, and inappropriate assessment practice for architectural education are widely documented in the literature.

The debate between the need for structure and accountability and the problem of reductionism is central to modern higher education quality assurance. While OBE mapping is the dominant paradigm, acknowledging and actively managing its limitations is crucial for preserving the depth and richness of the educational experience.

The paper highlighted the reductionist undertone as a fundamental tension within OBE mapping. It is a significant pitfall with demonstrable undesirable consequences, particularly when implemented mechanistically or with an overly narrow focus on measurability of rigid outcomes. However, the practice persists globally because it also addresses genuine needs for transparency, accountability, coherence, and a focus on student learning in mass higher education systems. The challenge lies in mitigating the reductionistic effects.

If outcomes are to be mandated, there is a need for a more granular approach when determining outcomes for different courses and disciplines. There is a need for writing outcomes that genuinely reflect higher order intellectual and dispositional goals. The need to have a holistic outlook requires a more flexible mapping, as guides and frameworks instead of a rigid, exhaustive checklist. Integration and synergy between outcomes needs to be emphasised. The assessments need to be diverse and authentic. Prioritizing assessments that measure diverse abilities authentically, even if they are harder to quantify directly against atomized outcomes.

If outcomes are to be mandated, there is a need for a more granular approach when determining outcomes for different courses and disciplines. Outcomes should be written in ways that genuinely reflect higher-order intellectual and dispositional goals, rather than narrowly specified competencies. A holistic outlook requires mapping to function as a flexible guide or framework, rather than as a rigid, exhaustive checklist. Greater emphasis should be placed on integration and synergy between outcomes, acknowledging how knowledge, skills, and dispositions are developed relationally. Assessment practices, in turn, need to be diverse and authentic, prioritizing integrative, performance-based abilities, even when these are more difficult to quantify against atomized outcomes.

The desire to achieve accountability and transparency needs to be balanced with autonomy, which is the catalyst for creative and divergent thinking. Quality assurance processes must value faculty judgment, pedagogical innovation, and the inherent unpredictability of rich learning alongside documented alignment. Mapping should be viewed as a tool for genuine reflection and improvement, not just compliance paperwork.

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