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Research Article

Enhancing Dentistry Students' Knowledge of Dental Jurisprudence and Ethics through Outcome-Based Instructional Materials as an Instructional Strategy

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ABSTRACT

Dental Jurisprudence and Ethics (DJE), a board-exam subject in the Dentist Licensure Examination, presents challenges for dentistry students due to its complexity and the limited availability of outcome-based instructional materials (OBIM). This study developed and validated an OBIM in DJE using a pretest-posttest experimental design. Two validated instruments were utilized: the OBIM and a 100-item Board-Exam-Patterned Test (BEPT). A total of 276 dentistry students from Centro Escolar University Manila and Makati were assigned to experimental and control groups. Baseline results showed both groups were comparable and demonstrated low knowledge of dental jurisprudence and ethics. Following the intervention, the experimental group achieved significantly higher BEPT posttest scores than the control group. The learning gains remained significant after controlling for baseline differences and reflected a substantial educational effect. The findings demonstrate that the developed OBIM effectively enhances students' legal knowledge, ethical understanding, and professional preparedness, supporting its institutional adoption in dental education.

Keywords: *Board Examination, Dental Jurisprudence and Ethics, Dentistry, Non-Law Students, Outcome-Based Education*

Introduction

The study of law and professional ethics is an arduous discipline that requires serious and thoughtful exchange of ideas. There have been several research reports that confirm its high level of rigor and difficulty (Riparip & Opina, 2025; Orga-Dumitriu, 2025; Sherinda, 2024; Kiskina & Tkacheva, 2025; Sheppard et al., 2025; Morris, 2010). These studies explain that mastering legal concepts requires not only time

and effort but also a nuanced understanding of various legal frameworks (Khan, 2021; Razak, Osoman, & Patel, 2020; Poon & Kong, 2014; Ali & Ali, 2009). It is further aggravated by the fact that non-law students struggle to understand the relevance and practicality of the study of laws, especially in their chosen fields. The lack, if not the absence of student engagement, and the poor teaching strategy also worsen this issue (De Silva & Cowap, n.d.). While laws

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generally affect a person's daily life, university students still fail to recognize its importance in their respective professions.

It is an established fact that legal studies are inherently difficult and demanding. A lot of non-law students consider the study of law heavily structured, increasingly loaded with legal jargons, and commonly conducted through traditional lectures with lack of interactive activities. According to studies, low-engagement and non-participatory learning environments can lead to decreased motivation and interest among learners because they provide limited opportunities for interaction, autonomy, and meaningful participation (Bergmark & Westman, 2018; Cents-Boonstra et al., 2021; Rezai et al., 2025). Moreover, the perception that law is a tedious subject can deter students from fully engaging with the material. As pointed out by Bunjevack (2013), law teachers have to shift from being mere "repositories of legal knowledge" to active facilitators of student learning through present-day academic curricula and engaging teaching strategies.

While there is a slowly growing body of literature addressing the challenges faced by non-legal students, there are still gaps in the development of instructional materials that effectively and efficiently link these concerns (Kariyawasam & Low, 2014; Batty, 2013; Douglas, 2012). Consequently, law professor Edward Chico has criticized the focus on rote memorization or rote learning in Philippine legal education, specifically in the Philippine Bar Examinations, arguing that recall type of learning does not improve critical thinking and analytical skills, which are essential for the practice of law. Furthermore, Retired Supreme Court Associate Justice Arturo Brion has emphasized the need for law teachers to possess both in-depth legal knowledge and pedagogical expertise to provide meaningful learning experiences for the students. The lack of formal training in teaching methodologies among law instructors exacerbates these issues. This leads to reliance on archaic resources and ineffective teaching methods (Tiroli, 2024). In fact, the problems in teaching the law at present are still the same several decades ago (Cortez, 1976). The anatomy of law teaching in the Philippines involves the

combination of recitation, popularly known as Socratic method, major examinations, and unengaging lectures (Sugang & Cruz, 2021; Sugang, 2020; Cortes, 1976).

Meanwhile, there is an extraordinary lack, if not absence, of comprehensive instructional materials that cater particularly to dental jurisprudence and ethics, a core professional subject in Doctor of Dental Medicine. Current textbooks and references fail to address the unique needs of dentistry students who need to understand the legal framework of dental practice. Thus, this gap raises critical questions: *How can instructional materials be designed to enhance understanding and application among dental students? What pedagogical strategies can be employed to engage these learners effectively?* Significantly, these questions must be addressed in order to improve the intended learning outcomes in this specialized area.

Initially, the present study developed and validated the Outcome-Based Instructional Materials (OBIM) focused on Philippine dental jurisprudence and ethics. Consequently, the study examined the effectiveness of these materials in strengthening critical thinking and practical application of legal principles, theories, and doctrines among dentistry students. This approach is in accordance with the finding that the combination of traditional lectures with problem-based learning can improve student engagement and collaboration (Poon & Kong, 2014).

Finally, this research aimed to contribute in the improvement of legal education within the context of dental practice in the Philippines through accessible and relevant instructional resources. Also, it addressed both content delivery and pedagogical effectiveness and aspired to create a more enriching learning experience that prepares future dental professionals not only with essential legal knowledge but also with critical thinking skills necessary for ethical practice in their field.

Research Questions

The main objective of the present study was to determine the effectiveness of Outcome-Based Instructional Materials (OBIM) in Dental Jurisprudence and Ethics in enhancing the dentistry students' knowledge of the legal

aspects in the practice of dentistry. Particularly, it sought to answer the following sub-questions:

1. What is the overall baseline knowledge of dentistry students in Dental Jurisprudence and Ethics as measured through board-examination-patterned questions?
2. Is there a significant difference between the pretest and posttest scores of the student-participants in the control and experimental groups in the board-examination-patterned questions?
3. What are the implications of the findings for the enhancement of instructional strategies in teaching Dental Jurisprudence and Ethics?

Literature Review

Outcome-based education

Outcome-Based Education (OBE) is an educational framework that provides emphasis on the importance of clearly defined learning outcomes as the basis for curriculum development, design, and assessment. Spady (1994) explains that OBE moves the focus from traditional teaching methods to what students are expected to achieve by the end of their learning experiences. This approach encourages teachers to communicate specific, measurable outcomes that guide the development of instructional materials and assessment strategies.

Gurukkal (2020) further emphasizes that OBE promotes a student-centered learning environment, where student accomplishments are given primordial concern rather than merely the content delivered. Moreover, he also centers on the integration of curricular design, instructional strategies, and evaluation methods to achieve clearly defined learning outcomes (LOs). It bears stressing that curriculum alignment with international standards and learning outcomes with quality and relevance is increasingly important in higher education. In dental education, OBE can considerably improve the germaneness and usefulness of learning materials so that students gain essential competencies in the subject Dental Jurisprudence and Ethics.

Meanwhile, the OBE effectiveness has been widely explored, with various scholars

stressing its impact on student learning. A systematic literature review on OBE by Asim et al. (2021) indicates its effectiveness in transitioning the focus from teacher-centered to learner-centered approaches, emphasizing clear learning outcomes and the need for well-structured curricula in tertiary education. The study identifies five critical factors impacting student learning outcomes—assessment strategies, complexity-aligned learning objectives, preferred learning styles, English language proficiency, and employer requirements—while recommending further research to address limitations and ensure broader applicability. This stresses the importance of developing assessments that not only measure knowledge but also evaluate practical skills relevant to dental practice.

Moreover, OBE is a transformative paradigm that emphasizes measurable learning outcomes, curriculum alignment with societal demands, and pedagogical strategies specifically tailored to student needs (Pusporini & Nurdiyanto, 2024; Tsalits et al., 2024). Further, continuous improvement in OBE implementation is essential for sustaining its effectiveness. Further, regular feedback mechanisms and revisions based on student performance can enhance the quality of educational programs (Gurukkal, 2020).

Meanwhile, Evardo (2020) examines the implementation of Outcomes-Based Education (OBE) in higher education institutions in Bohol, Philippines. She states that while the administrators and faculty have extensive knowledge of OBE principles, there are still some skill gaps that require targeted training. The findings emphasize the important role of OBE in enhancing student academic performance and call for further research on its impact on graduates' employability.

The teaching of law to non-law students

According to Khan (2024), law subject is not exclusive to law students only. Many universities offer law subjects to the non-law students. He added that in terms of teaching and learning law, there are a few teaching strategies such as lectures and case studies. Creativity is particularly important when teaching law to non-law students. Many of

these students find law challenging and uninteresting. This is why there is a need to revise teaching methods to capture their attention and change their perceptions about studying law.

In the study of Poon and Kong (2014), they argued that students taking business in college are often challenged to study law. Results reveal that students become more interested under the lecture- and problem-based learning. In fact, group dynamics, collaboration activities, peer evaluation, teamwork, and confidence building encourage law learners to actively participate in the process of learning. Generally, the students express contentment with this teaching method.

Morris (2010) explored how outcome-based education and criteria-referenced assessment are applied in teaching law to non-law students. He stressed that it was a challenge to use these methods because such remains underexplored and unclear. Specifically, it is uncertain whether the goal is for students to think, act, or be like lawyers—or perhaps none of these.

Ali and Ali (2009) conducted a study on non-law students' perceptions about law and the challenges they faced in studying law. The research aimed to understand how these students view the relevance and importance of legal education in their fields of study. Findings reveal that non-law students generally recognize the significance of legal knowledge in various professional contexts, even if they are not pursuing law as a career. They also believe that understanding legal principles can enhance their critical thinking, decision-making skills, and employability. The perceived complexity and lack of resources are some of the challenges encountered by students in studying the law.

The studies of Khan (2021), Poon and Kong (2014), and Ali and Ali (2009) confirm the findings of Razak, Osoman, & Patel (2020) that studying law is inherently difficult, challenging, and tedious. They attribute these difficulties to negative experiences shared by upperclassmen and the reliance on traditional teaching strategies. Non-law students encounter specific challenges in their studies, often adopting a passive attitude toward learning. Many do not recognize the relevance of the subject matter to

their respective degrees. Moreover, as some lecturers continue to use conventional teaching methods, learners may compare these approaches unfavorably with more advanced, technology-driven methodologies.

The lack of professional textbooks in health sciences law

One of the gaps that stood out in the course of literature review is the inadequate study on instructional materials on complex fields of study such as law. Further, the lack of professional textbooks in health law such as dental law is alarming. The insufficiency of professional textbooks in health law, particularly dental law, is worrying. Xu and Wang (2022) examined health law education in China from 2012 to 2021 and found that it remains in its infancy stage, lacking a systematic pedagogical approach in higher education institutions. Despite some advancements, the results have been unsatisfactory.

They proposed methods to create a more consistent pedagogical framework and noted a deficiency of qualified health law faculty, leading to reliance on uninspiring teaching materials and ineffective pedagogical methods in both medical and law schools. One of their four suggested solutions for advancing health law education is to provide more professional textbooks. They also recommended translating high-quality health law textbooks from developed countries like the U.S. and creating practicum courses to help students grasp the importance of this emerging interdisciplinary field.

Meanwhile, according to Deng, Kuang, and Feng (2020) as cited in Xu and Wang (2022), the health law curriculum in China suffers from outdated teaching methods and ineffective materials. Students have few opportunities to engage with real-world health cases, often encountering dry statutes that outline health-related laws. This lack of engaging teaching resources contributes to a dull learning experience for students.

The teaching of dental law and ethics

The teaching of dental law and ethics has long been considered an important aspect of dental education. However, studies

consistently report inadequacies in its delivery. Early work by Pollack (1989) emphasized the value of integrating legal, ethical, and risk management instruction with clinical training to prepare students for professional practice. Similarly, Bebeau (1985) pioneered a curriculum grounded in ethical development theory that enabled students to identify, analyze, and resolve ethical dilemmas through authentic learning experiences. These foundational studies highlighted the importance of moving beyond theoretical instruction toward practical and professionally relevant ethics education.

Despite these early initiatives, research has identified persistent weaknesses in dental law and ethics curricula. Bridgman et al. (1999) found that ethics and law instruction was often inconsistent, insufficient, and poorly integrated into dental programs, with limited teaching hours, inadequate assessment, and instructors lacking specialized training. Bertolami (2004) likewise argued that existing curricula were insufficient to promote meaningful behavioral change because they emphasized theoretical knowledge without fostering the introspection necessary for ethical professional practice. Both studies showed the need for more structured, comprehensive, and reflective approaches to ethics education.

Subsequent research has reinforced the importance of strengthening ethics instruction throughout the dental curriculum. Lantz et al. (2011) reported that although dental schools recognized the significance of ethics education, instructional time remained limited. They identified several unmet needs, including greater curricular integration, competency assessment, faculty development, and improved teaching strategies. Patrick (2017) similarly observed that while ethics education had progressed, there remained a need to incorporate patient perspectives and promote deeper self-reflection among dental students.

More recently, scholars have advocated for learner-centered and experiential pedagogies to enhance legal and ethical learning. Roganović (2021) recommended integrating case-based learning, problem-based learning, realistic patient scenarios, reflective activities, and narrative approaches to cultivate ethical

reasoning, self-awareness, and professional behavior. Likewise, Hsu et al. (2025) demonstrated that role-playing courtroom simulations significantly improved students' learning motivation, legal understanding, critical thinking, and professional attitudes, suggesting that experiential learning is more effective than traditional lecture-based instruction in medical-legal education.

Although significant advances have been made in promoting active, reflective, and experiential learning, the development and validation of comprehensive instructional materials specifically designed for dental law and ethics remain limited. This gap highlights the need for evidence-based instructional resources that effectively integrate legal knowledge, ethical reasoning, and professional competencies within dental education.

Knowledge of dental ethics and jurisprudence

A study on the evaluation of the knowledge regarding dental ethics and law among private dental practitioners in Pune, India was conducted by Muralidharan, Pendyala, Gandhage, and Sachan (2022). It was found that dental practitioners demonstrate a lack of awareness regarding dental ethics and jurisprudence. This has raised a lot of concerns in the dental profession in Pune, India. As a result, there needs to have enhanced educational programs and curriculum reforms that focus on ethics, jurisprudence, and legal aspects related to clinical practice. The authors emphasized the need for easier access to information for dentists, increased continuing dental education (CDE) programs, comprehensive nationwide surveys, and a commitment from clinicians to stay informed about updated rules and regulations.

The afore-cited was validated by the study of Swetha, et al. (2023) that also assessed the knowledge of dental ethics and jurisprudence among dental professionals. The dental professionals also show lack of knowledge in dental ethics and law. Moreover, the earlier study of Kesavan et al. (2016) found that dental practitioners' understanding of dental ethics and jurisprudence is only unexceptional. While recommendations can be made to encourage

behavioral changes within the dental profession, significant improvement is unlikely without legislative and social policy changes. Most dental practitioners have some awareness of dental ethics, but their knowledge of jurisprudence requires further improvement.

Methodology

Research Design

This study employed a pretest-posttest design to determine the effectiveness of the Outcome-Based Instructional Materials (OBIM) in improving the knowledge of dental jurisprudence and ethics of dentistry students. A developmental research approach was likewise utilized in the design and validation of the instructional materials.

Research Participants

The participants were 276 fifth-year Doctor of Dental Medicine students from Centro Escolar University Manila and Makati during the Second Semester of School Year 2024–2025. Using purposive sampling, only Filipino students enrolled in Dental Jurisprudence and Ethics and taking the course for the first time were included. They were assigned to either the experimental group (DMD5A-Makati, DMD5A-Manila, and DMD5C-Manila) or the control group (DMD5D-Manila, DMD5E-Manila, and DMD5F-Manila) based on their pretest scores. Both groups completed the 100-item Board-Exam-Patterned Test before and after the intervention.

Table 1. Comparison of the Pretest Performance of the Control and Experimental Groups in the Board-Examination-Patterned Questions

	Board-Examination-Patterned Questions				t-value	p-value	Sig.
	EG		CG				
	Pretest		Pretest				
	Mean	SD	Mean	SD			
Board-Examination-Patterned Questions	41.78	11.18	40.15	10.61	1.24	0.22	NS

*EG (Experimental Group); CG (Control Group)

*Legend: $p < .05$ (Significant); $p > .05$ (Not Significant)

Before the intervention (OBIM), the pretest results in Board-Examination-Patterned Questions for both control and experimental groups were compared using an independent samples t-test. As presented in Table 1, the results indicate that the two groups were initially comparable. Particularly, the analysis yielded a t-value of 1.24 with a p-value of 0.22, which is greater than the 0.05 level of significance. This result indicates that there was no statistically significant difference between the pretest scores of the control and experimental groups.

Hence, both groups may be considered statistically equivalent at the baseline stage of the study. This comparability suggests that both groups started with similar levels of knowledge regarding the legal aspects in dentistry. Consequently, any significant changes observed in the posttest results may reasonably be attributed to the instructional intervention rather than to pre-existing differences in the participants' knowledge.

Research Instruments

The researcher employed two instruments to determine the effectiveness of OBIM in raising Dentistry students' level of knowledge of dental jurisprudence and ethics. These instruments were (1) the validated researcher-developed OBIM in Dental Jurisprudence and Ethics, and (2) the validated researcher-made Board-Exam-Patterned Questionnaire.

The Development and Validation of the OBIM in Dental Jurisprudence and Ethics.

The OBIM in Dental Jurisprudence and Ethics was developed following the ADDIE (Analyze, Design, Develop, Implement, and Evaluate) Model. The syllabus for Jurisprudence and Ethics from the CEU School of Dentistry was analyzed to identify the content and intended learning outcomes for the instructional materials to be developed. The researcher also consulted the Desired Learning Competencies outlined by the Commission on Higher Education in CMO No. 3 series of 2018,

titled "Policies and Standards and Guidelines for the Doctor of Dental Medicine (DMD) Program." The OBIM followed the principle of constructive alignment, in which the learning outcomes, learning activities, and assessments are aligned properly. Each chapter was composed of the following components: "Learning Outcomes," "Pre Task," "Legally Speaking," "While Task," and "Post Task." Then, expert feedback and evaluation were sought. Thereafter, the OBIM was implemented to the intended users.

The Development and Validation of the 100-Item Board-Exam Patterned Questions.

The 100-item Board-Exam Patterned Questions were developed by the researcher to evaluate the effectiveness of the Outcome-Based Instructional Materials (OBIM) in Philippine Dental Jurisprudence and Ethics. These questions were carefully constructed to simulate the format, coverage, and level of difficulty of the actual Dentistry Licensure Examination, ensuring content validity and alignment with national standards for dental education.

The test blueprint was anchored on the CHED Memorandum Order (CMO) Syllabus on Dental Jurisprudence and Ethics and the CEU School of Dentistry Syllabus, which outlines the prescribed learning outcomes and core competencies expected of dental graduates. To further ensure fidelity to licensure standards, the Table of Specifications (TOS) on Jurisprudence and Practical Management from the Professional Regulation Commission (PRC) Board of Dentistry was utilized as a guide in determining the proportion and distribution of questions across sub-domains such as fundamental legal principles, ethical practice, obligations and contracts, civil and criminal law applications, labor and taxation concepts, and professional regulatory standards. Selected items were also adapted, with modification, from past actual Board Examination questions in Jurisprudence to reflect authentic test conditions.

Following test construction, the items underwent content validation by subject matter experts, including practicing dentists and lawyer-educators. Their feedback ensured

that each item measured higher-order thinking skills beyond rote memorization, such as application, analysis, and evaluation of legal and ethical concepts in practical dental contexts. The instrument was then subjected to a pilot test with a sample group of dental students, after which item analysis was conducted to determine difficulty index and discrimination index. Results of the reliability analysis yielded a Cronbach's Alpha of 0.87, indicating high internal consistency. Test-Item Analysis was also employed, consisting of 24 items for revisions, 8 items for rejections, and 48 items for retention. The 24 items were then revised accordingly, and the 8 items were changed.

Data Collection

Data collection was conducted before and after the implementation of the OBIM, using the researcher-made Board-Exam-Patterned Test, which was validated by experts. The data collection process spanned approximately five months, from the start of the 2nd semester of School Year 2024-2025. Informed consent, anonymity, and confidentiality were observed during the data collection. The paper has ethical clearance from the Centro Escolar University-Institutional Ethics Review Board (CEU IERB) with protocol code: CEU-IERB_SY24-25_0825_GS.

Data Analysis

Both groups were administered the Board-Exam-Patterned Test before and after the implementation of the instructional intervention. The experimental group utilized the OBIM, while the control group received conventional instruction. Data were analyzed using descriptive statistics, specifically mean and standard deviation, which were used to determine the level of dental law knowledge of the student-participants. To examine baseline comparability, an independent samples t-test was computed on the pretest scores of the control and experimental groups. To determine the effect of the intervention while controlling for initial differences in knowledge of dental law and ethics, Analysis of Covariance (ANCOVA) was conducted using posttest scores as the dependent variable, group membership

as the independent variable, and pretest scores as the covariate. Further, the effect size was measured using Cohen's d.

Results and Discussion

Student-Participants' Overall Baseline Knowledge on Dental Jurisprudence and Ethics as Measured through Board-Examination-Patterned Questions

Gleaned from Table 2, the results of the student-participants in the Board-Examination

Patterned Questions in Dental Jurisprudence and Ethics show that they obtained a mean score of 40.95 with a standard deviation (SD) of 10.91. Thus, prior to the introduction of the Outcome-Based Instructional Materials (OBIM), dental students had relatively low level of knowledge (needs improvement) in Dental Jurisprudence and Ethics, a professional subject that is essential and necessary to the practice of dental profession.

Table 2. Student-Participants' Overall Baseline Knowledge on Dental Jurisprudence and Ethics

	Mean	SD	V.I.
Board-Exam Patterned Questions on Dental Jurisprudence and Ethics	40.95	10.91	Needs Improvement

**Excellent (94-100); Superior (82-93); Very Satisfactory (70-81); Satisfactory (58-69); Fairly Satisfactory (52-57); Barely Satisfactory (48-51); Needs Improvement (38-47); Unsatisfactory (37-below)*

Ali and Ali (2009) explained the perceptions of non-law students regarding the relevance of legal education in their professional lives. Their findings suggest that while these students recognize the importance of legal knowledge, they also face significant barriers such as perceived complexity and insufficient resources. This claim is echoed by Razak et al. (2020), who identify common difficulties faced by non-law students, including negative peer experiences and traditional teaching methods that do not cater to different learning styles.

The studies of Rigby et al. (2024), Khan (2021), Poon and Kong (2014), Ali and Ali (2009), Razak, Osoman, & Patel (2020), and Riparip and Opina (2025) that studying law is inherently difficult, challenging, and tedious necessitate the need for outcome-based instructional materials on a law subject for non-law students.

This performance mean that the fifth-year dentistry students started with limited mastery of legal and ethical concepts relative to the practice of dentistry. Furthermore, the low mean scores demonstrate that students' initial understanding of Dental Jurisprudence and Ethics was below the expected competency threshold for professional-level performance.

Hence, there is the need for structured, contextualized, and outcome-based learning materials that can scaffold their understanding and application of legal and ethical principles in dental practice.

Moreover, the low baseline performance aligns with CHED's (2013) assertion that instruction in professional programs should be outcome-based to ensure that learning experiences focus on measurable competencies rather than rote learning. The Outcome-Based Education (OBE) framework by Spady (1994) stresses that all educational efforts must be directed toward ensuring that learners can exhibit the essential knowledge, skills, and values expected at the end of their learning process.

Comparison of the Pretest and Posttest Performances of the Control and Experimental Groups in the Board-Examination-Patterned Questions in Dental Jurisprudence and Ethics

As revealed by Table 3, desirable findings are evident in the comparison of the pretest and posttest scores of the student-participants in the control and experimental groups on the Board-Examination Patterned Questions in Dental Jurisprudence and Ethics.

Table 3. Comparison of the Pretest and Posttest Performances of the Control and Experimental Groups in the Board-Examination-Patterned Questions in Dental Jurisprudence and Ethics

	EG		CG		t-value	p-value	Sig.	EG		CG		t-value	p-value	Sig.
	Pretest		Pretest					Posttest		Posttest				
	Mean	SD	Mean	SD				Mean	SD	Mean	SD			
Board-Examination-Patterned Questions	41.78	11.18	40.15	10.61	1.24	0.22	NS	77.87	10.544	64.24	17.476	7.868	0.00	S

*EG (Experimental Group); CG (Control Group)

*Legend: $p < .05$ (Significant); $p > .05$ (Not Significant)

As indicated, the EG recorded a pretest mean score of 41.78 with a standard deviation (SD) of 11.18, while the control group (CG) yielded a pretest mean score of 40.15 with an SD of 10.61. With the computed t-value of 1.24 with a p-value of 0.22 ($p > 0.05$), it means that there is no statistically significant difference between the pretest mean scores of the two groups (EG and CG). This suggests that prior to the intervention, both groups are statistically comparable.

However, the more critical comparison lies in the posttest results, where the experimental group recorded a mean of 77.87 (SD = 10.54) while the control group garnered a mean of 64.24 (SD = 17.48). The computed t-value of 7.868 with a p-value of 0.000 ($p < 0.05$) shows a highly significant difference between the two groups' posttest performances.

Consequently, the null hypothesis—*there is no difference between the pre- and post-test scores of the participants in the control and experimental groups in board-examination patterned questions on Dental Jurisprudence and Ethics*—is rejected. Clearly, the student-participants in the EG, who were taught using the Outcome-Based Instructional Materials (OBIM), performed significantly better than those in the CG who received conventional instruction through the use of old textbook material.

The considerable increase in the mean score of the experimental group from pretest (41.78) to posttest (77.87) reveals the effectiveness of OBIM in enhancing students' cognitive and applied learning. As evidenced by the data, the OBIM—designed around measurable outcomes, authentic assessments, and contextualized case-based learning—helped students to apply ethico-legal principles

in professional contexts, particularly in the practice of dentistry.

With regard to the effect size, the analysis yielded a *Cohen's d* of 0.94, indicating a large effect of the Outcome-Based Instructional Materials (OBIM) on students' performance in the board-examination-patterned questions in Dental Jurisprudence and Ethics, suggesting that the observed difference between the EG and CG is educationally meaningful. The magnitude of the effect shows that students exposed to the OBIM achieved substantially higher levels of knowledge acquisition than those who received traditional instruction.

It bears repeating that the statistically significant difference in posttest scores between the EG and CG shows strong evidence of OBIM's instructional effectiveness. The structured integration of learning outcomes, formative assessments, and contextualized ethical-legal cases in the OBIM facilitated the development of competencies expected of future dental practitioners—specifically, the ability to analyze cases, interpret legal provisions, and apply ethical and legal judgment in clinical situations.

More importantly, both groups exhibited highly significant improvement from their pretest results (EG = 41.78; CG = 40.15). However, the experimental group outperformed the control group by a substantial margin of 13.63 mean points. Taken together, the student-participants exposed to the OBIM developed greater mastery of the content and better test performance. As a result, OBIM's pedagogical effectiveness as a learning mediation enhances higher-order thinking and practical application of legal-ethical principles in dental practice.

The relatively lower standard deviation in the experimental group ($SD = 10.54$) compared to the control group ($SD = 17.476$) also implies that the performance of the experimental group was more consistent, whereas the control group exhibited wider score variability. Thus, the OBIM facilitated more uniform learning outcomes among learners, which aligns with Spady's (1994) premise that Outcome-Based Education (OBE) ensures that all learners achieve essential competencies through clearly defined, measurable outcomes and learner-centered activities.

The significant improvement of the experimental group's posttest mean score validates the effectiveness of contextualized, structured, and performance-based instructional materials in complex subjects such as Dental Jurisprudence and Ethics. It is worth noting that constructive alignment, i.e. outcomes, teaching-learning strategies, and assessments are interlinked, boosts student engagement and knowledge transfer. In this context, the OBIM definitely guided learners from conceptual understanding to contextual and practical application through case-based learning, formative and authentic assessments, and reflection tasks.

By the same token, the control group, which employed traditional learning materials, also exhibited posttest improvement but at a more limited score. Inference may be made from this: while traditional learning resources can facilitate knowledge acquisition, they may not provide the same level of contextualized learning and structured engagement offered by outcome-based instructional materials.

Thus, the excellent posttest performance of the experimental group shows that students

who were taught using the OBIM acquired not only factual legal knowledge but also the ability to apply such knowledge in solving professional and ethical dilemmas within the context of dental practice. The OBE-integrated instructional approach successfully bridged the gap between theoretical understanding and practical application—a major tenet in professional education.

Moreover, the use of outcome-based instructional materials allowed students to engage with the legal concepts through structured tasks, case-based discussions, and contextual examples relevant to their future profession. This learning design encouraged higher-order thinking skills, such as analysis, evaluation, and decision-making, which are essential in addressing legal and ethical issues in clinical practice. Consequently, the OBIM did not merely transmit legal information but facilitated meaningful learning experiences that enabled students to internalize legal principles and apply them responsibly in real-world dental settings.

In brief, OBIM is an effective pedagogical innovation for teaching Dental Jurisprudence and Ethics. Its design—anchored on measurable learning outcomes, authentic assessments, and learner-centered strategies—meaningfully improved students' preparedness for board-examination-type questions. Substantively, the OBE framework was found to be efficacious in adopting competency-based learning. Hence, this reinforces that what students can do with what they know is a more meaningful measure of learning than rote memorization.

Table 4. ANCOVA Results on Posttest Scores in Board-Exam-Patterned Questions Controlling for Pretest Scores

Variable	F	p	Partial η^2	Interpretation
Pretest Score (Covariate)	1.79	.183	.006	Not Significant
Group (EG vs. CG)	49.06	< .001*	.152	Significant

*Significant at $p < .05$. Note. ANCOVA was conducted using posttest scores as the dependent variable, group membership as the independent variable, and pretest scores as the covariate.

To know if there were observed differences in students' performance on the board-examination-patterned questions, which could be attributable to the intervention,

an Analysis of Covariance (ANCOVA) was done using pretest scores as the covariate. Results revealed a statistically significant effect of group membership on posttest performance,

$F(1, 273) = 49.06$, $p < .001$, partial $\eta^2 = .152$. After controlling for baseline knowledge, students exposed to the OBIM achieved considerably higher posttest scores than those who received traditional instruction.

The effect size was large (partial $\eta^2 = .152$), indicating that approximately 15.2% of the variance in posttest performance may be attributed to the instructional intervention. In contrast, the pretest scores did not significantly predict posttest performance, $F(1, 273) = 1.79$, $p = .183$, suggesting that differences in prior knowledge did not substantially influence the outcome after the intervention.

Thus, it is a strong evidence for the effectiveness of the OBIM in improving dentistry students' knowledge of Dental Jurisprudence and Ethics. Outcome-based and contextualized instructional materials facilitate deeper understanding of legal and ethical concepts relevant to the practice of dentistry.

Implications of the Findings for the Improvement of Instructional Strategies in Teaching Dental Jurisprudence and Ethics

The findings of the study bring significant implications for the enhancement of instructional strategies in teaching Dental Jurisprudence and Ethics to dentistry students. The noteworthy improvement in the performance of the experimental group entails that outcome-based instructional materials (OBIM) deliver a more effective instructional strategy than traditional lectures and conventional textbook utilization.

This pedagogical approach—the integration of clear learning outcomes, contextualized examples, case-based discussions, and authentic assessments—helped dental students link between ethico-legal principles with real-life dental practice. Hence, it is suggested that teachers—especially those who handle legal aspects subjects—adopt learner-centered strategies that focus on practical application, real-world analysis, and ethical decision-making rather than rote memorization of pertinent legal provisions.

Furthermore, the importance of instructional resources that are well-organized, accessible, and aligned with competency-based education frameworks such

as Outcome-Based Education (OBE) and constructive alignment is highlighted by the fact that the students had positive evaluation of the OBIM. Thus, dental educators, not only the legal aspects teachers, are encouraged to design teaching approaches that incorporate structured lessons, scenario-based learning activities, case-based analysis, reflective exercises, and performance-based assessments to stimulate an in-depth understanding of legal responsibilities and ethical duties in dental practice. Through the adoption of these approaches, the teaching of Dental Jurisprudence and Ethics can move forward away from theoretical instruction toward meaningful learning experiences that prepare dentistry students to respond competently to legal and ethical issues they will come across in professional practice.

Conclusions

The present paper sought to know the effectiveness of OBIM in improving dentistry students' knowledge of Dental Jurisprudence and Ethics. Findings show that prior to the OBIM intervention, dentistry students demonstrated a low level of baseline knowledge in Dental Jurisprudence and Ethics as reflected by their mean score in the board-examination-patterned questions, which fell within the "Needs Improvement" range. Thus, despite being in the last two years of their dental education, majority of them had limited mastery of the legal and ethical principles governing practice of dentistry. Such results point to the persistent challenge encountered by non-law students, particularly allied-health sciences students, in understanding legal concepts and reinforce the need for didactically sound instructional materials that can bridge the gap between the profession's legal aspect and professional application.

It is further revealed that a highly significant difference emerged in their posttest scores after the implementation of the instructional intervention—the OBIM. Even after controlling for baseline differences in knowledge, the experimental group, which used the OBIM, obtained substantially higher scores than the control group that relied on conventional reference materials. Equally

important, the intervention showed a strong and educationally meaningful impact on students' learning outcomes. This is a confirmation that OBIM considerably increased students' understanding and application of Dental Jurisprudence and Ethics. The structured alignment of learning outcomes, instructional activities, and assessments within the OBIM enabled deeper comprehension and promoted higher-order thinking skills necessary for analyzing legal and ethical issues encountered in dental practice.

In light of the a forecited findings, the integration of outcome-based instructional materials in teaching Dental Jurisprudence and Ethics significantly improves students' knowledge, promotes competency-based learning, and supports the development of ethically responsible and legally informed dental professionals. Thus, the OBIM represents an effective pedagogical innovation that addresses the instructional gaps in teaching law-related subjects to dentistry students and contributes to their readiness for professional practice and licensure examinations.

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Conflict of Interest

The researcher declares no competing interests.

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