

INTERNATIONAL JOURNAL OF LAW MANAGEMENT & HUMANITIES

[ISSN 2581-5369]

Volume 9 | Issue 3

2026

© 2026 International Journal of Law Management & Humanities

Follow this and additional works at: <https://www.ijlmh.com/>

Under the aegis of VidhiAagaz – Inking Your Brain (<https://www.vidhiaagaz.com/>)

This article is brought to you for free and open access by the International Journal of Law Management & Humanities at VidhiAagaz. It has been accepted for inclusion in the International Journal of Law Management & Humanities after due review.

In case of any suggestions or complaints, kindly contact support@vidhiaagaz.com.

To submit your Manuscript for Publication in the International Journal of Law Management & Humanities, kindly email your Manuscript to submission@ijlmh.com.

Integrating Forensic Studies in Legal Education: A Need for Revisiting the Curriculum

B SATHEESH BALAN* AND DR. ARCHANA SARMA**

ABSTRACT

*The systematic integration of forensic science into contemporary legal education has become essential to enhance the quality of criminal adjudication and align curricula with the interdisciplinary demands of the modern legal profession. Globalization, technological change, and the expanding reach of law across various domains have made specialized, cross-disciplinary training essential for lawyers, judges, and prosecutors. National Education Policy 2020 reinforces this shift by calling for globally competitive legal education that adopts best practices and remains grounded in constitutional values and socio-cultural contexts. Forensic science occupies a pivotal position at the intersection of law and medicine: forensic reports and expert evidence increasingly shape criminal investigations and trial outcomes. Judicial standards for assessing scientific reliability—exemplified by landmark rulings such as *Daubert v. Merrell Dow Pharmaceuticals*—require legal actors to critically evaluate the validity and admissibility of scientific evidence. Yet current legal curricula often lack structured exposure to scientific methods, evidentiary interpretation, and the limitations of forensic techniques. This paper examines key forensic disciplines, principles of evidence evaluation, and procedural responsibilities of legal professionals in screening expert testimony. It identifies pedagogical gaps and proposes curricular reforms—including course modules, clinical training, and collaborative programs with forensic scientists—to foster evidentiary literacy and interdisciplinary competence. By equipping law students with a working knowledge of forensic methodologies, error sources, and standards of reliability, legal education can improve fact-finding, reduce wrongful convictions, and strengthen public confidence in the justice system. Integrating forensic science thus advances both effective adjudication and the broader objectives of legal education: promoting rule of law, human rights, and socially responsive, evidence-based legal practice.*

* Author is a Research Scholar at School of Law, The NorthCap University, Gurgaon, Haryana, India.

** Author is a Professor at The NorthCap University, Gurgaon, Haryana, India.

I. INTRODUCTION

The overwhelming presence of law and its application in every field of knowledge is what the contemporary world strongly reflects. Law influences everything that involves personal, social, economic and political affairs. With the advent of globalisation, the interactions among the various legal systems of the world have gone up significantly in the last few years. This has given rise to emerging areas in law demanding more expertise from a law professional than what was expected from a very traditional approach to the study of law. From state relations in international law, to medicine in tort law, from personal relations in family law to regulating the impact of information technology in cyber law and forensics, the list goes on to justify the study of law as an excellent way to develop a wide range of skills and explore many aspects of human life. In fact, the scenario of legal education is becoming more and more specialised, like any other professional course such as medicine or engineering. Some branches of law involve an interdisciplinary approach to legal education in order to develop a holistic understanding of the challenges and the solutions thereto. Interdisciplinary studies are gradually going to become an integral part of legal academia, and the same has been highlighted in the National Education Policy, 2020. Legal education, according to the Policy, must be globally competitive, adopting best practices and embracing new technology in order to provide greater access to, and timely delivery of, justice. Simultaneously, it must be governed by the constitutional values of social, economic and political justice, and directed towards nation-building through the application of democracy, the rule of law, and human rights. In addition, the Policy highlights that the curricula of legal education must effectively and adequately reflect socio-cultural backgrounds as well as the history of legal thinking, principles of justice and other related subjects in an evidence-based manner.

There is no denying the fact that multidisciplinary legal scholarship is set to become the trend of future legal education. Indeed, such an approach has already been initiated through the introduction of diverse disciplines into legal studies. Among the various inter-disciplinary approaches, the field of forensic science is one of the most rapidly developing and expanding areas in both the disciplines of law and medicine. Forensic science reports and expert evidence are becoming increasingly crucial in criminal adjudication. The reliability standards of scientific evidence have been laid down by the judiciary from time to time through landmark judgments such as *Daubert v. Merrell Dow Pharmaceuticals*¹ to assess the reliability and validity of scientific evidence, which plays a crucial role in criminal investigations. During criminal

¹See generally *Daubert v. Merrell Dow Pharm., Inc.*, 509 U.S. 579 (1993).

prosecutions, lawyers, prosecutors and judges are expected to screen forensic evidence, like any other form of evidence, before admitting it during a trial. While acknowledging the significance of forensics, it is also important to understand the extent to which the legal education curriculum has integrated such specialised areas, or training on scientific methods or evidence, in order to facilitate the effective delivery of justice. This paper highlights the importance of integrating forensic science into the curriculum of contemporary legal education, with an analysis of various aspects of forensic science which may strengthen the appreciation of forensic evidence in the criminal justice system.

II. ROLE OF EVIDENCE IN CRIMINAL PROSECUTION

Evidence plays a decisive role in the prosecution of a criminal case. In any criminal litigation, proving or disproving a fact in issue depends upon the evidence produced by the prosecution or the defence. Evidence, according to Sir Blackstone, is anything which exhibits, clarifies or establishes the truth of the facts or issues in dispute, whether on one side or the other.² Whenever a crime is committed, it is the primary objective of every criminal justice system to deliver justice to the victim. This may be achieved by taking recourse to the best evidence rule, i.e., by producing the best available evidence without doubting its integrity.³ Due to lack of evidence, or lack of proper evidence, hard-core criminals are often acquitted or let scot-free on the basis of the slightest doubt. Evidence is the key element in determining the guilt or innocence of a person accused of an offence. Hence, it is very crucial that the process through which such evidence is collected, analysed and presented before the court must be established beyond reasonable doubt.

When such evidence is presented before the court, it becomes the responsibility of the court to arrive at a conclusion as to whether the evidence may be made admissible after applying the rules of evidence. A judge presiding over a criminal case has a sacred duty to consider the evidence in a seemingly objective manner and is not to be influenced by any kind of personal philosophy, abstract concepts, conjectures or surmises, and should never be influenced by observations or speeches made in certain sections of society that are not based on binding precedents.⁴

The judiciary has, on many occasions, highlighted the importance of producing the best evidence, also known as the 'best evidence rule', in any criminal prosecution. The courts which

²WILLIAM MACK & HOWARD P. NASH, *CYCLOPEDIA OF LAW AND PROCEDURE* 847 (1905).

³Chiman Lal v. Datar Singh, 1998 Cri. L.J. 267, ¶ 10 (India).

⁴Om Prakash v. State of Tamil Nadu, 2013 Cri. L.J. 997 (Sup. Ct. India) (Misra, J.).

decide questions of fact have no personal knowledge of the fact to be decided by them. They arrive at their findings on the basis of direct evidence of those who have personal knowledge about the fact in issue; or on expert evidence; or on documentary evidence, if the document is admissible and duly proved; or on circumstantial evidence; or they decide an issue by drawing the presumption under a mandatory provision of law and by using the principles as to burden of proof.⁵ It is important to note that the outcome of criminal proceedings primarily depends upon the strength and admissibility of evidence, which includes real evidence, scientific evidence, witness testimony, and the like.⁶

It has been an established principle that direct evidence is always considered the preferred and best available evidence in proving a fact before a court of law. However, with the advancement of science and technology, new forms of evidence are being produced. Most of them are types of evidence involving criminal investigation, also known as scientific evidence, which may require expertise and tools to interpret. Expert evidence is used to help the court when the case is related to issues about which it lacks the necessary technical or specialised skills. In such cases, the opinion of an expert plays a crucial role in admitting evidence before the court.

Since expert evidence is crucial in matters relating to art, science and any other specialised knowledge, it is equally important that such evidence is based on authentic sources and methods. Forensic science, the application of scientific knowledge in legal disputes, is an integral part of the criminal justice system and has a key role to play in extracting or analysing scientific evidence before the court. The Indian judiciary has also relied upon forensic science to a great extent in resolving legal disputes. Accordingly, the law of evidence has also been amended from time to time to accommodate such evidence within the purview of admissibility.

The twentieth century was known as the 'Age of Science' because of the significant scientific and technological advancements that occurred during that time. At the turn of the century, forensic science institutions arose in India as well. These institutions' networking persisted until the end of the twentieth century, and it intensified in the twenty-first century. In India, a plethora of forensic facilities have been established to expedite the disposal of criminal cases through scientific investigation in the field and in laboratories. However, the new facilities have not been able to keep pace with the alarmingly growing number of criminal cases. Although attempts are currently being made to establish additional infrastructure in the workforce and machinery, science and technology, to update forensics in India, there is still a need for forensic capacity-

⁵Jagdish Chandra v. State of Rajasthan, 1996 (2) WLN 542, ¶ 18 (Raj. H.C.).

⁶Mark McCormick, *Scientific Evidence: Defining a New Approach to Admissibility*, 67 IOWA L. REV. 879 (1982).

building in the country. An analysis of the pendency of cases indicates the challenges involving forensic examination.

It has often been observed that judges and lawyers, who constitute the core stakeholders of the criminal justice system, fail to appreciate such sophisticated evidence due to a lack of knowledge in this specialised area. Taking into consideration the increasing role of forensic evidence in the administration of justice, it has become essential to consider the integration of this crucial branch of science and law into the curriculum of legal education, in order to sensitise future lawyers and judges for better redressal of cases in India.

III. IMPORTANCE OF FORENSIC SCIENCE IN THE CRIMINAL JUSTICE SYSTEM

The recent phenomena of criminal prosecutions do not give a very encouraging picture of the criminal justice system in India. The ability of a witness to give testimony before the court, or to cooperate with the law enforcement agencies without fear of intimidation, is essential in maintaining the rule of law.⁷ Unfortunately, the country does not have a strong witness protection scheme; as a result, credible and trustworthy witnesses to a crime very rarely come forward to depose before the court without being prejudiced. Even the most hardened criminals are able to escape the law. Due to intimidation, fear and a variety of other factors, many of the prosecution's most important witnesses become hostile. As a result, the investigating agency must look for other ways to increase the quality of its inquiry, which can only be done by gathering scientific evidence. Investigation lays the foundation of a criminal case. Scientific investigation with the aid of forensic science is far more powerful, dependable and fruitful than a criminal justice system based on eyewitness testimony. A victim cannot be left at the mercy of eyewitnesses, whose credibility may be questioned at any point in time. The different branches of forensic science, like DNA, ballistics, fingerprinting and toxicology, are much more reliable than the examination of ordinary witnesses in the criminal justice system. In this age of advanced technology, there is a need to build legal foundations that are sound in science as well as in law. In *Dharam Deo Yadav v. State of U.P.*⁸, the Supreme Court of India held:

“Practices and principles that served in the past must give way to innovative and creative methods, if we want to save our criminal justice system. Emerging new types of crimes and their level of sophistication, the traditional methods and tools have become outdated, hence the necessity to strengthen the forensic science for

⁷BPR&D-NALSA, *Draft Witness Protection Scheme 2018*, https://nalsa.gov.in/sites/default/files/document/Suggestions_on%20_Witness_Protection_Scheme.pdf (last visited May 25, 2018).

⁸*Dharam Deo Yadav v. State of U.P.*, (2014) 5 S.C.C. 509, ¶ 28 (India).

crime detection. Oral evidence depends on several facts, like power of observation, humiliation, external influence, forgetfulness etc., whereas forensic evidence is free from those infirmities. Judiciary should also be equipped to understand and deal with such scientific materials. Constant interaction of Judges with scientists, engineers would promote and widen their knowledge to deal with such scientific evidence and to effectively deal with criminal cases based on scientific evidence. We are not advocating that, in all cases, the scientific evidence is the sure test, but only emphasizing the necessity of promoting scientific evidence also to detect and prove crimes over and above the other evidence.”

In *Som Prakash v. State of Delhi*⁹, the Supreme Court recognised the requirement and the necessity of scientific investigation. Besides, the 14th Law Commission of India Report emphasised the need for training of police officers in the use of scientific methods of investigation. However, there have been a series of judicial interventions on the admissibility of scientific evidence. For example, in *Ranjitsing Brahmajeetsing Sharma v. State of Maharashtra & Ors.*¹⁰, the Supreme Court relied upon the principles laid down in *Daubert*¹¹ and *Frye*¹² (the first important judgment in the United States regarding the admissibility of scientific evidence) to question the reliability of scientific tests in arriving at a conclusion as to how far a report of a brain-mapping test can be relied upon in criminal proceedings. The Court held that the admissibility of the result of a scientific test would depend upon its authenticity. In *Selvi & Ors. v. State of Karnataka & Anr.*¹³, the Supreme Court questioned the legitimacy of the involuntary administration of certain scientific techniques. The Court held that brain-mapping and polygraph tests were inconclusive and thus their compulsory use in a criminal investigation would be unconstitutional.¹⁴

The function of forensic science in criminal investigations is becoming increasingly important as science and technology develop. This is unquestionably a great step towards improving the much-needed objectivity of investigation, thereby increasing the credibility of the process and increasing the probability of bringing perpetrators to justice. Forensic science is described as the application of science in resolving questions involving legal interest. Forensic scientists, in

⁹Som Prakash v. State of Delhi, A.I.R. 1974 S.C. 983 (India).

¹⁰Ranjitsing Brahmajeetsing Sharma v. State of Maharashtra, A.I.R. 2005 S.C. 2277 (India).

¹¹Daubert v. Merrell Dow Pharm., Inc., *supra* note 1.

¹²Frye v. United States, 293 F. 1013 (D.C. Cir. 1923).

¹³Selvi v. State of Karnataka, (2010) 7 S.C.C. 263 (India).

¹⁴*Id.*

particular, use techniques and tools to assess crime-scene evidence and apply it in investigations. In today's world, forensic science is an advanced scientific approach applied in criminal and civil investigations that can answer crucial questions and is an important part of the criminal justice system. Scientific evidence covers diverse fields of science, such as physics, chemistry, mathematics, biology and computer science. Opinions are sought from individuals with scientific, technical, or other specialised knowledge whose ability and competence may aid the court in comprehending the evidence or determining the fact in question. The court is frequently confronted with circumstantial evidence, which can be scientific or technical in character. In fact, in the absence of any direct evidence, the court often resolves criminal cases on the basis of circumstantial evidence.¹⁵ The subject matters of expert testimony, as mentioned in Section 39 of the Bharatiya Sakshya Adhiniyam (BSA), 2023 (Section 45 of the Indian Evidence Act, 1872), are foreign law, science, art, and the identity of handwriting or finger impressions.¹⁶ Other subject matters of expert evidence may include fingerprints, brain-mapping, polygraph, DNA, and ballistics. An analysis of the criminal cases resolved in the past few decades reveals that the scientific evidence relied upon by the Indian judiciary was mostly limited to medical opinions.

However, with the development of forensic science and technology, the scope of scientific evidence is no longer confined to medical opinions but also extends to experts in other relevant fields. In fact, in most criminal proceedings, ballistics and firearm examination, forensic DNA and serological examination, forensic document examination, toxicology, chemical examination, psychiatry and digital evidence (computer forensics) have been playing a critical part in the investigation of crimes and ensuring that their evidence is accepted in a court of law in accordance with the law.¹⁷

Forensic science in contemporary times is an important scientific technique used in criminal as well as civil investigations, and significantly contributes towards the effective administration of the criminal justice system in India. In this context, the State and Central Governments have established forensic laboratories which provide assistance to courts, law enforcement agencies, private agencies and individuals during investigation or cross-examination procedures. During criminal investigations, forensic evidence is collected by experts from the scene of crime; the

¹⁵ ARTHUR PERCIVAL WILL, A TREATISE ON THE LAW OF CIRCUMSTANTIAL EVIDENCE 1 (2012).

¹⁶ Bharatiya Sakshya Adhiniyam, No. 47 of 2023, § 39, Acts of Parliament, 2023 (India).

¹⁷ Himanshu Setia, *Evidentiary Value of Forensic Reports in Indian Courts*, 4 RES. J. FORENSIC SCI. 1, 1–7 (June 2016).

evidence so collected becomes crucial to solving the case, and it is necessary to analyse such evidence separately in order to arrive at a rational conclusion.

IV. FORENSICS AND THE NEW CRIMINAL LAWS

With the enforcement of the new criminal laws, namely the Bharatiya Nyaya Sanhita (BNS), 2023, the Bharatiya Nagarik Suraksha Sanhita (BNSS), 2023, and the Bharatiya Sakshya Adhiniyam (BSA), 2023, a strong emphasis has been laid on the incorporation of forensics at various stages of the criminal proceedings. The BNS, 2023 has expanded the scope of substantive criminal law to include contemporary offences committed in cyberspace, highlighting the need for legal measures keeping pace with the advancement of forensic science. An important example of such incorporation is the offence of Organised Crime provided under Section 111 of the BNS, 2023. Law students need to grasp forensic science techniques, cyber forensics, and the interpretation of evidence, beyond just legal definitions. Similarly, the BNSS, 2023 has made forensic investigation mandatory for every offence punishable with imprisonment of seven years or more. The Sanhita has introduced some key features such as the use of technology in investigation, audio-video recording of search and seizure, and electronic communication in investigation processes. Forensic experts have an important role to play in the investigation of an offence. The BSA, 2023 has ensured modernisation in the law of evidence by recognising the admissibility of digital evidence, with an emphasis on forensic science.

V. INTEGRATION OF FORENSIC STUDIES IN LEGAL EDUCATION

There is no doubt that expert testimony and forensic evidence are becoming increasingly crucial in criminal cases.¹⁸ Taking the example of the United States, before admitting forensic evidence at trial, all States and the Federal Government require judges to screen it, just like any other expert evidence. Many states now follow the guidelines of the Supreme Court of the United States in *Daubert v. Merrell Dow Pharmaceuticals*¹⁹, which requires judges to evaluate the reliability and validity of scientific evidence. Similarly, defence lawyers' responsibility for effectively presenting forensic evidence has become an increasing focus of constitutional litigation and Supreme Court post-conviction rulings.²⁰ The lack of scientific knowledge and

¹⁸Joe S. Cecil & William W. Schwarzer, *Management of Expert Evidence*, in REFERENCE MANUAL ON SCIENTIFIC EVIDENCE (2000).

¹⁹See generally *Daubert v. Merrell Dow Pharm., Inc.*, *supra* note 1.

²⁰See Paul C. Giannelli & Sarah Antonucci, *Forensic Experts and Ineffective Assistance of Counsel*, 48 CRIM. L. BULL. 8 (2012). See also Brandon L. Garrett, *Validating the Right to Counsel*, 70 WASH. & LEE L. REV. 927, 955 (2013) (noting the need for research on whether 'defense lawyers properly understand expert evidence, or forensic science evidence, and does the presence of that evidence tend to alter defense strategies, and if so, how?').

education among lawyers in general, and judges in particular, is one obstacle to improving the judicial use of forensic evidence. Scientific evidence puts judges and lawyers into inconvenience at times, as they may lack the scientific competence to understand and analyse the evidence properly. One of the leading publications of the United States, the authoritative 2009 National Academy of Sciences Report, has observed that lawyers and judges have not taken an active or effective role in reviewing the credibility of forensic evidence in criminal cases.²¹

One of the recommendations of the Report called for ‘law school administrators and judicial education organisations to assist law students, practitioners, and judges in creating continuing legal education programmes (in forensic science) for law students, practitioners, and judges.’²² This was followed by training of lawyers in forensic science. The 2009 National Academy of Sciences Report identified legal education as an important need in the path forward for improving the use of forensic evidence in criminal cases in the United States. Chapter Eight of the Report, dedicated to ‘Education and Training in Forensic Science’, described a need ‘to educate the users of forensic science analyses, especially those in the legal community’, and the Report then recommended improved legal education efforts.

The forensic science disciplines must base their legitimate methods on well-established scientific knowledge, principles and procedures, which are best learned through formal education, training, and the ethical conduct of research. Forensic science experts will better be able to evaluate evidence and coherently present their findings in court if there are better educational programmes, accredited laboratories, certified forensic practitioners, trained judges and lawyers, sound operational principles and procedures, and serious research to establish the limits and measures of performance in each discipline.

As far as the contemporary legal system is concerned, some judges have struggled to understand the increasingly complicated scientific data presented in recent years. They often have insufficient training and background in scientific methodology, and they often fail to fully comprehend the approaches employed by different forensic science disciplines and the degree of reliability of the forensic science evidence offered at trial. In complex epidemiological and toxicology cases, expert testimony is frequently used in mass tort litigation. In antitrust disputes, complicated econometric models are typical. The crux of patent litigation frequently revolves

²¹See generally COMM. ON IDENTIFYING THE NEEDS OF THE FORENSIC SCIS. CMTY., NAT’L RESEARCH COUNCIL, STRENGTHENING FORENSIC SCIENCE IN THE UNITED STATES: A PATH FORWARD (2009).

²²STRENGTHENING FORENSIC SCIENCE IN THE UNITED STATES, *supra* note 21.

around disputes over complex engineering principles. The integrity and independence of the judiciary will be jeopardised if such evidence is not carefully and thoughtfully considered.

The courts have also developed science-based judicial education programmes that explain scientific concerns as they may arise in the context of litigation, in response to the growing complexity of evidence. However, there is no fixed schedule for continuing education in legal practice in relation to science. Besides, these courses are not mandatory, and there are no reliable methods to assess the competence of judges who participate in such programmes. The forensic science community needs to comprehend the services and their language in order to educate those who use them. Law enforcement personnel, forensic pathologists, the judiciary, lawyers and policymakers are among those who use forensic science analyses.²³ Unfortunately, by the time most lawyers and judges enter their profession, it might be too late to adequately train them. Short-term gains come from training programmes, since they give the selected members of the legal fraternity a way to acquire the necessary knowledge. However, it has been duly established that the best way to get lawyers and judges sensitised in the field of forensics is to introduce credit-based courses in different fields of forensic science in the curriculum of legal education itself.

In spite of significant changes in the trend of evidence in the criminal justice system, the state of forensic science education in law schools has remained ambiguous in India. It is unclear whether more law schools have incorporated forensic science courses into their programmes in recent years, considering the increasing demand for the application of forensic science in the criminal justice system. It is worth mentioning that in the last ten years, forensic science has become increasingly popular. As a result of this demand, numerous universities have started to offer forensic science degrees at both the undergraduate and graduate levels. The U.S. Department of Justice (DOJ) has extended its support to West Virginia University's Technical Working Group for Education and Training in Forensic Science, which aims to recommend best practices for forensic science educational curricula so that practitioners are adequately prepared for careers in operational laboratories.²⁴

The data relating to training on forensic science for lawyers in India are not readily available. In a review of the role of inaccurate and invalid forensics in DNA exonerations, it was discovered that lawyers rarely asked inquiries about the mistakes in forensic expert testimony.²⁵ Ethical failures on the part of the prosecutors, and outright wrongdoing in the presentation or

²³STRENGTHENING FORENSIC SCIENCE IN THE UNITED STATES, *supra* note 21.

²⁴Brandon L. Garrett *et al.*, *Forensic Science in Legal Education*, J. L. & EDUC. (2021).

²⁵See BRANDON L. GARRETT, *CONVICTING THE INNOCENT: WHERE CRIMINAL PROSECUTIONS GO WRONG* (2011).

hiding of forensic evidence, have also been reported across criminal proceedings in India. Studies of judicial attitudes toward forensic evidence have revealed that judges have varying levels of comprehension of scientific ideas such as error rates and peer review. In fact, there are instances where the scientific evidence was poorly dealt with, as a result of which the judicial proceedings could not arrive at a reasonable and fair conclusion with regard to the forensic analysis.

In these circumstances, it is important to revisit the law school curricula to assess the incorporation of forensic science, which would lay the foundation for future lawyers, judges, law enforcement agencies and other stakeholders of the justice delivery process to come up with a more effective system.

VI. FORENSIC SCIENCE IN LAW SCHOOL CURRICULUM

With the changing trend of crimes in the last few decades across the globe, it has become a challenge for all the stakeholders of the criminal justice system to deal with highly sophisticated crimes, which require diversified knowledge involving law, science and technology. This is where forensic science plays a crucial role in resolving cases, especially in gathering relevant evidence. In order to identify, analyse and incorporate forensic evidence, it is very important to introduce forensic science not only to lawyers, prosecutors, law enforcement agencies and judges, but also to incorporate it into the law school curriculum itself, so that the future generation of law professionals is able to cope with the scientific aspects of evidence involving crimes. Unfortunately, by the time most lawyers and judges start working in their disciplines, it might be too late to adequately train them. Short-term gains come from training programmes, since they give responsible judges a way to acquire the necessary knowledge. In the long term, better forensic science courses in law school curricula are the most effective method to bring lawyers and judges up to speed.²⁶

Another crucial aspect with regard to the successful implementation of forensic science in the criminal justice system is research, which may enhance the ability of forensic laboratories to create research partnerships with other entities, including educational and research institutions.²⁷ Traditional, peer-reviewed research, which is typical in fields outside the forensic sciences, is required for lab-based disciplines. Such study is frequently carried out by educational institutions. In order to advance forensic science in the lab-based disciplines, a

²⁶Giannelli & Antonucci, *supra* note 20.

²⁷Jessica D. Gabel, *Realizing Reliability in Forensic Science from the Ground Up*.

research collaboration between forensic labs and educational institutions is essential, which would ultimately enhance lab efficiency and the reliability of evidence.

Having recognised this need, many institutions of legal education have introduced forensics as a specialised course, including DNA forensics, fingerprint evidence, ballistics, toxicology and cyber forensics. Introduction of such fields of forensics also requires an understanding of criminal psychology to assess through polygraph tests, narco-analysis, and the like. Law of Evidence is one of the core courses offered in any undergraduate law programme across the law schools in India. As a part of this course, forensic science in the form of 'Opinion of a third person' under the Bharatiya Sakshya Adhiniyam, 2023, has been incorporated into the curriculum. However, this does not include an in-depth analysis of various branches of forensics and their challenges. Similarly, in the United States, *Daubert*²⁸ and the concept of expert or scientific evidence have always been discussed in evidence law courses. Scholars have advocated that law schools must educate law students on the foundations of forensic evidence as part of the core, mandated curriculum. In most law schools, forensics is either not taught at all or is only offered as an elective.²⁹ Furthermore, most of the law school courses do not cover statistics or scientific methods; instead, they are primarily introductory or discussion-seminar courses.

Certainly, some law schools have made unstructured efforts to incorporate forensics into the curriculum. In fact, a few institutions of legal education have established forensic laboratories to provide practical experiences to students enrolled in such courses. These laboratories, such as the digital forensic laboratory set up at the National Law School of India University, provide training for lawyers, prosecutors, judges and law enforcement agencies, creating a conducive environment for forensic studies. Such initiatives will certainly take forward the integration of forensic science into the curriculum, thereby improving the plight of admissibility of scientific evidence in India. In another initiative, the Gujarat government set up the National Forensic Sciences University, previously known as Gujarat Forensic Sciences University. It was founded in 2009 with the primary purpose of producing skilled forensic scientists. There was a need for scientists and technocrats at a time when the number of crimes employing sophisticated technologies and highly evolved methods of operation was on the rise. As a result, such horrible acts could be investigated more thoroughly. The university was established as a unique and first-of-its-kind academic institution specialised in forensic sciences across the globe.

²⁸See generally *Daubert v. Merrell Dow Pharm., Inc.*, *supra* note 1.

²⁹See Robert M. Sanger, *Forensics: Educating the Lawyers*, 43 J. LEGAL PROF. 221, 245 (2019).

If the goal is for lawyers to have a core understanding of the methods and concepts that underpin a number of scientific disciplines, law schools could be better off offering courses in quantitative methods, scientific methods, and statistics.³⁰

VII. INTEGRATING FORENSICS WITH LEGAL STUDIES: THE WAY FORWARD

In Kolkata, the first Fingerprint Bureau of India was founded in 1897, which started operating in 1904.³¹ Since then, India has regularly used forensic science in criminal investigations, and efforts have been made to strengthen the country's forensics capacity. India has a number of State and Central Forensic Science Laboratories, and several states have also set up Fingerprint Bureaux. Additionally, under the control of the police and health departments respectively, toxicological and crime laboratories have been built, along with regional forensic laboratories. It is interesting to note that in India there are just 0.33 forensic scientists for every 0.1 million people, which is low when it comes to the investigation of crimes and the compilation of reports. However, depending on the volume of criminal prosecutions in various nations, the population ratio of forensic scientists in those nations ranges from 20 to 50 scientists per 0.1 million people.³² In India, there are around 80 colleges and universities, including the National Forensic Sciences University in Gandhinagar, Gujarat, and Rashtriya Raksha University in Lavad, Gandhinagar, where the School of Forensic Science & Risk Management also provides research and training to students, police, and paramilitary forces for security. Despite this, cases are pending in various forensic laboratories across India. When we look into the Indian forensic scenario, there are several limitations which need to be addressed for the proper functioning of the criminal justice system. In India, a number of factors have a negative impact on the reliability of scientific evidence, such as lack of scientific certainty and research. Here, the importance of legal education institutions arises, as they may facilitate a scientific temperament for appreciating forensic evidence by the stakeholders of the criminal justice system.

The National Forensic Sciences University, having various campuses across India, offers training for judges, prosecutors, lawyers and law enforcement agencies, including offering certificate and diploma courses in various subjects. The University should also support law schools and judicial education organisations in establishing continuing legal education programmes for law students, practitioners and judges.

³⁰See Mara Merlino *et al.*, *Science in the Law School Curriculum: A Snapshot of the Legal Education Landscape*, 58 J. LEGAL EDUC. 190 (2008).

³¹CENTRAL FINGERPRINT BUREAU, NAT'L CRIME RECORDS BUREAU, MINISTRY OF HOME AFFAIRS (2018), <https://ncrb.gov.in> (last visited May 23, 2022).

³²Prachi Kathane, Anshu Singh *et al.*, *The Development, Status and Future of Forensics in India*, 3 FORENSIC SCI. INT'L: REPORTS (2021), <https://doi.org/10.1016/j.fsir.2021.100215> (last visited Apr. 21, 2022).

Any advancements in the forensic science disciplines should be directly transferred to legal scholars and practitioners (including civil litigators, prosecutors, and criminal defence attorneys), federal, state, and local legislators, members of the judiciary, and law enforcement officials, in order to make the necessary changes to criminal and civil laws and procedures, model jury instructions, law enforcement practices, litigation strategies, and judicial decisions. By offering forensic science courses, granting credit for forensic science courses students take at other universities, and creating combined degree programmes, law schools could strengthen this connection.

Last but not the least, law is a proactive, competitive field that challenges one's intelligence in diverse situations. Even after a degree of Bachelor of Laws from a prestigious law school is earned, choosing the next course of action can be far more difficult. The majority of budding lawyers choose traditional professions like criminal law, corporate law, or civil law. However, very few are aware of the numerous options offered by the forensic industry. Hence, there is a rising need for incorporating forensic science into the law curriculum.

To conclude, in the words of U.S. Supreme Court Justice Stephen Breyer: 'In this age of science, we must build legal foundations that are sound in science as well as in law. Scientists have offered their help. We in the legal community should accept that offer.'³³

³³See Stephen Breyer, *Science in the Courtroom*, 16 ISSUES IN SCI. & TECH. 52 (Summer 2000).