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The Integration of "Forensic Science" as a Compulsory Course into the Legal Education System of Pakistan and its Impact on Lawyering Skills

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Abstract



This research paper intends to explore the scope and impact of introducing "Forensic Science" as a compulsory course in the different Bachelor of Law degree programs that are being offered in Pakistan. The study investigates the importance of forensic science education in Pakistan and evaluates the potential benefits of incorporating this course into the legal education system of Pakistan. It also gives a short introduction to the institutions providing forensic services in Pakistan. The paper analyses the challenges that may arise in implementing this idea and proposes solutions to overcome them. It also discusses the influence of the teaching of forensic science over the lawyering skills of students of law. The authors have also proposed the course contents of "Forensic Science" which may be approved with the consent of stakeholders and the National Curriculum Review Committee of HEC with or without modifications. The research method which has been adopted to gather the data and draw conclusions is doctrinal. The outcome of this research suggests that introducing forensic science into the curriculum of legal education programs in Pakistan would have a significant impact on legal education, legal practice, and the administration of justice in Pakistani society.

Keywords: Law, Forensic science, Bachelor of Law, LLB, Legal education, Curriculum, Legal System, Pakistan.

Introduction

Forensic science is an essential component of the modern legal system. The need and use of forensic evidence in legal proceedings have become increasingly common (Fukami, Stoykova & Geradts, 2021) and lawyers are expected to have a basic understanding of forensic evidence (Beety, 2020) and its applications in the courtroom. In Pakistan, however, forensic science education is still in its infancy, and there is a lack of emphasis on the importance of forensic evidence in legal education. This research paper aims to investigate the impact of introducing forensic science as a compulsory course in the legal education of Pakistan. No specific research has been done on the given topic concerning Pakistan. The instant research would, thus, be a pioneer study on the subject.

With the evolving nature of legal practice and the increasing demand for competent lawyers, it becomes crucial to explore and incorporate new avenues into the curriculum of legal education. Forensic science is not a new thing; however, it has gained much importance due to its development in the modern and digital age (San Pietro, Kammrath & Peter, 2019). This study seeks to shed light on the potential benefits and implications of this integration. Moreover, it aims to contribute to the enhancement of legal education and the development of well-rounded lawyers equipped with the necessary forensic competencies to navigate the complexities of the legal profession in Pakistan.

What is Forensic Science?

Forensic Science refers to the set of skills, knowledge, and techniques used to collect (Amendolare, 2021), preserve, examine, analyze (AAFS, 2022), and interpret evidence (Curley et al., 2020) related to a crime (Ansari et al., 2022) or a civil dispute (Siegel, 2023) to assist the lawyers, judges and law enforcement institutions (Baharuddinet al., 2019).

The English word "forensic" (part of the English language since 1650) came from the Latin "*forensic*" which means public, forum, public discussion, place of assembly, argumentation relating to a debate, or an examination performed in public. It is because the trials in ancient times were held in public (Turner, 2020). A relevant, modern definition of forensic is a discussion or debate relating to, or used in the courts. The term's historical roots can be traced back to ancient Rome, where the process of presenting a criminal charge involved bringing the case before a public assembly (Andrews & Wilson, (1895). During this time, both the accused and the accuser had to deliver speeches, presenting their respective versions of the events. The outcome of the case would be determined by the strength of their arguments and the persuasive abilities of their delivery. The individual who presented the most compelling case would typically be declared victorious in the proceedings.

In the old times, there were no standardized forensic methods in place, which made it easier for the wrongdoers to go unpunished. Trials and investigations primarily relied on coerced confessions and evidence from witnesses. Despite this, there are some instances available in ancient sources that prefigure the principles and methods of forensic science that emerged much later (Schafer, 2008). Forensic science, nowadays, includes a wide range of specialized techniques like fingerprint analysis, DNA analysis, toxicology, ballistics and digital forensics.

Forensic scientists and investigators use their forensic science to evaluate physical evidence, reconstruct crime situations and offer expert testimony in criminal as well as civil trials. The application of forensic science is essential in criminal investigations and legal proceedings, as it can provide crucial evidence that can help identify suspects (Samuel & Prainsack, 2019) establish timelines and prove guilt or innocence.

Forensic science requires extensive training, education, and experience. Many forensic scientists and investigators have backgrounds in fields such as biology, chemistry, physics, accounting, computing, etc., and receive additional training in forensic techniques and procedures. The development and advancement of forensic science is an ongoing process, as new techniques and skills are continually being established and refined to enhance the accuracy and reliability of forensic analysis.

Pakistani institutions dealing with Forensic Science:

Forensic science may be regarded as a herald of the modern era, in the realm of identification, investigation, and conviction. While humans may hide the truth (Kartika, 2020), project alibis (Charman & Shambaugh, 2022; Dunbar, Bernhold & Hansia, 2022), forget crucial details before the court (Fishbane, Ouss & Shah, 2020), or even disappear from the crime scene (Ajah, Ajah & Obasi, 2020), actual evidence continually remains present as a quiet witness (Allwood, Fierer & Dunn, 2020; Machado et al., 2020). Highly skilled and adequately trained forensic scientists possess the expertise to make this quiet witness speak before the courts of law by applying their knowledge and skills.

Forensic facilities do play a crucial role in our justice system. Forensic scientists offer invaluable services and opinions across various disciplines, aiding in inquiries/investigations of civil and criminal proceedings through systematic inspection of physical proofs (Sapir, 2020). The efforts of forensic personnel, maintained to the maximum ideals of scientific excellence, objectivity, and integrity, provide the ability to speak to the quiet witness of actual evidence and significantly participate in the system of justice. There are several institutions in Pakistan which deal with forensic Science, including:

- **National Forensic Science Agency (NFSA):** NFSA is a government institution that provides forensic services to law enforcement agencies, courts, and other government departments in Pakistan. The agency offers a range of services, including crime scene investigation, DNA analysis, and drug testing.
- **Punjab Forensic Science Agency (PFSA):** PFSA is a provincial government agency in the province of Punjab that provides forensic science services to law enforcement institutions. The Punjab Forensic Science Agency Act was instituted in 2007 and encompasses 14 advanced forensic laboratories. These laboratories are equipped to handle a diverse range of investigations including DNA and serology, latent fingerprints, narcotics, polygraph testing, toxicology, forensic biology, forensic chemistry, computer and digital forensics, and analysis of questioned documents, among others.
- **Sindh Forensic Science Agency (SFSA):** The Sindh Forensic Science Agency Act was enacted in August 2017. Thereafter, Sindh's first and the country's second Forensic DNA and

Serology laboratory (SFDL) which is a futuristic facility was built and made operational for Molecular Medicine and Drug Research, providing all DNA and Serology services. This facility is established to help law enforcement agencies including police and prosecution departments during investigations and trials using modern technology to detect and identify DNA and human biological fluids from crime scenes.

- **KPK Forensic Science Agency:** In Khyber Pakhtunkhwa (KPK), a forensic science agency has been set up under the KPK Forensic Science Agency Act 2000. The agency is dedicated to assisting investigation officers in the exploration of forensic evidence in various civil and criminal cases. It also provides support in evidence collection for ongoing cases in provincial courts. The forensic agency conducts meticulous scrutiny of documents used in civil and criminal activities, as well as the equipment and other materials recovered from crime scenes.
- **Baluchistan Forensic Science Laboratory:** This is a laboratory located in Quetta, Baluchistan that provides forensic services to law enforcement agencies in the province. The laboratory has examined about 4000 cases of different types including narcotics and biological specimens in Baluchistan including the Anti-Narcotics Force, Pakistan Customs, Excise and Taxation, Baluchistan Levies, Anti-Smuggling Agency, Regional Ehtesab Bureau, Pakistan Railway Police, Anti-Corruption, Federal Investigation Agency and Several Courts in Province the Baluchistan.
- **Centre for Applied Molecular Biology (CAMB):** CAMB is a research institute affiliated with the University of Punjab that focuses on molecular biology research and forensic analysis. The center provides DNA analysis and other forensic services to law enforcement agencies, courts, and other clients.
- **Forensic Science Laboratories:** There are several forensic science laboratories located throughout Pakistan, including in Lahore, Karachi, and Islamabad. These laboratories provide forensic analysis services to law enforcement agencies and the judiciary, including DNA analysis, drug testing, and ballistics analysis.
- **Institute of Forensic Sciences (IFS):** IFS is a private institution in Islamabad that provides education and training in the discipline of forensic science to students and professionals. The institute offers courses in crime scene investigation, forensic anthropology, and digital forensics, among other areas.

These institutions play an important role in providing forensic services and training in Pakistan, and they may also offer opportunities for research and collaboration in the area of forensic learning.

Literature Review:

Forensic Science has become increasingly significant in legal education, particularly in countries like Pakistan where the justice system heavily relies on forensic evidence. It performs a vital role in the investigation and determination of legal proceedings. Incorporating forensic Science into legal education can equip law students with the necessary knowledge and skills to effectively navigate the legal system, and to evaluate and challenge forensic evidence in court. This literature review explores the views of scholars about the importance of teaching forensic Science to law students as there is a growing consensus among legal professionals and academics that incorporating forensic Science into legal education can be beneficial for law students, as well as for the legal profession as a whole.

Keith Inman, in his article *"The Importance of Forensic Science in Modern Society"*, discusses the contribution of forensic science in solving crimes and protecting society. He says, *"Forensic skill is a critical tool in modern society for the identification and prosecution of criminals. It plays an essential role in keeping communities safe and ensuring that justice is served"* (Inman, 2004).

The book *"Forensic Science and Law: Investigative Applications in Criminal, Civil, and Family Justice"* edited by Cyril H. Wecht and John T. Rago (published in 2005) discusses the importance of forensic science as a course in legal education. It argues that *"a basic understanding of forensic science principles and techniques is essential for lawyers to effectively represent their clients and understand the legal implications of forensic evidence"*. This book provides a broad outline of using forensic science in legal proceedings, including criminal, civil, and family cases. It covers a wide range of topics, from collecting and analyzing physical evidence to the interpretation and presentation of forensic findings in court (Wecht & Rago, 2005).

"The Importance of Forensic Science in Legal Education", published in 2006, by David E. Bernstein discusses the need for law schools to include forensic science courses in their curricula. He argues that *"lawyers who understand forensic science principles and techniques will be better equipped to evaluate and challenge forensic evidence in court, and to identify instances where it may have been mishandled or misinterpreted"* (Bernstein, 2006).

In an article titled *"Forensic Science Education in Law Schools: The Missing Link"*, published in 2010, John W. Kitchens and Janine Arno discuss the historical and contemporary role of forensic science in legal education. They argue that *"a strong foundation in forensic science is essential for lawyers, judges, and other legal professionals to effectively navigate the legal system and ensure that justice is served"* (Kitchens & Arno, 2010).

In another research titled *"The Importance of Forensic Science in Criminal Investigations and Justice"*, the authors argue that forensic skill is critical to the successful investigation and prosecution of criminal cases. They write: *"Forensic skill is essential to the proper investigation and prosecution of criminal cases. Forensic evidence can provide crucial information that can help identify suspects, establish timelines, and prove guilt or innocence"* (Williams & Miller, 2010).

The book with the title *"Forensic Science Evidence: Can the Law Keep Up With Science?"* written by Donald E. Shelton, discusses the challenges posed by the rapidly evolving field of forensic science concerning the legal system and the need for lawyers to have a basic knowledge of this science and its principles or techniques to effectively represent their clients. The writer reveals that the courts, generally, continue to admit the scientific evidence in routine (which, in many cases, became untrustworthy due to the development of DNA), irrespective of the function of judges as they may be regarded as the *"gatekeepers"* of forensic evidence. The author discovers grounds for the said phenomena and explains whether or how it would be changed in the coming times (Shelton, 2012).

Jay A. Siegel, in his book *"Forensic Science: The Basics"*, emphasizes the significance of forensic science in the justice system. He writes: *"Forensic skill is vital to the proper functioning of the criminal justice system. The ability to collect and analyze physical evidence can make the difference between a successful and unsuccessful prosecution"* (Siegel, 2015).

The article namely *"Forensic Science in the Criminal Justice System: A Review"*, by Sarah Lucy Cooper and Glyn Morgan discusses the importance of forensic science regarding the investigation and resolution of cases. *"Forensic skill is essential to the successful investigation and prosecution of criminal cases. Without it, the criminal justice system would be unable to effectively identify and punish those responsible for crimes"* (Cooper & Morgan, 2016).

In an article published in the Journal of Forensic Sciences, the authors argued that forensic science was an important element of modern legal practice, and a report by the National Academy of Sciences Engineering, and Medicine emphasized the need for legal professionals to have a basic understanding of forensic science, to properly evaluate and utilize forensic evidence in court (NASSEM, 2018).

The book by Dr. Anna Sandiford *"Forensic Science and the Law: A Guide for Police, Lawyers and Expert Witnesses"* serves as a valuable source of information, offering practical insights to readers in respect of crucial aspects of forensic science. The author, utilizing her expertise as an expert witness, a consultant, and a forensic scientist, has authored this book, especially for persons without a scientific background. It aims to provide a clear explanation of the frequently encountered forensic matters that emerge throughout the investigation and legal processes of criminal and traffic proceedings. This book would be a great source of knowledge for students of law (Sandiford, 2019).

In his work, *"Forensic Science: From the Crime Scene to the Crime Lab"*, Richard Saferstein offers an in-depth look at the principles and procedures used in forensic science investigations. He also discusses the challenges as well as the limitations of forensic evidence in the courtroom. It is an excellent resource for law students seeking to gain a more comprehensive understanding of forensic science (Richard, 2020).

A recent study titled *"Forensic Science in Legal Education"* concerning the USA finds that forensic science is not a prevalent subject in law schools. While courses are available, they tend to lack a strong emphasis on quantitative methods. This highlights the need for not only specialized courses in forensic science but also more general courses and quantitative methods to provide a better foundation for future lawyers. It suggests that improving scientific literacy in the legal profession is

crucial and should start during law school and continue throughout the careers of practicing lawyers (Garrett, Cooper & Beckham, 2022).

Several cases in Pakistan highlight the importance of different types of forensic evidence in the legal system. Here are a few examples:

- In *Muhammad Azhar v. The State* (2005), the forensic evidence in the form of DNA test results helped establish the legitimacy of the child. Therefore, the utility and evidentiary value of DNA were accepted. Similarly, in the case of *Muhammad Riaz v. Muhammad, Zaman* (2005) the accused was convicted based on forensic evidence, i.e., a DNA test, for committing the offense of sodomy. In *Sikandar v. The State* (2006), the court accepted the high degree of accuracy of DNA test reports. In the case of *Muhammad Aslam Khan v. The State* (2008), the court asserted that forensic evidence (i.e., DNA) was unequivocal proof of an individual's identity.
- In *Muhammad Shahid Sahil v. The State*, (2010), the Federal Shariat Court declared that DNA tests were admissible to determine the paternity of the child of a rape victim. The Court further held that the Quran and Sunnah nowhere forbid the use of DNA tests but rather strongly recommend recourse to such scientific methods; the DNA tests were the best possible evidence in rape cases and therefore could be adopted by prosecution agencies.
- The case of *Zulfiqar Ali v. The State* (2010) resulted in the conviction of the culprit, with the forensic evidence provided by a DNA report. *State v. Abdul Khaliq*, (2011), is another case where the court emphasized the administration of DNA tests especially in gang rape cases.
- *Hamid Mahmood and another v. The State* (2013), was a case of *Qatl-e-amd*, ransom, and terrorism. The Supreme Court held that if the guilt of the accused has been proved beyond reasonable doubt through circumstantial and forensic evidence, no law says that a sentence of death cannot be awarded. The Supreme Court of Pakistan, in this case, emphasized the significance of forensic science in criminal investigations. The court noted that forensic evidence is often crucial in establishing guilt or innocence.
- In *Salman Akram Raja v. Government of Punjab* (2013), the court held that the advancement of DNA technology has brought about a revolution in forensic science, particularly with the inception of DNA profiling. This innovative approach now furnishes the courts with a trustworthy means of identifying perpetrators with an elevated degree of assurance. By incorporating DNA testing, the courts can efficiently reach a verdict, leading to the conviction of the actual culprits while also eliminating potential suspects and absolving falsely accused individuals.
- The case of *Hasham Jamal v. The State* (2018) was concluded with the help of forensic science. Upon forensic analysis, stills, capturing graphics, etc. details of the assault were retrieved. Forensic reports in addition to the stills, were generated separately, which confirmed the incidents of assault. The Lahore High Court refused bail on the forensic evidence concerning Articles 46-A and 164 Qanun-e-Shahadat 1984.
- *Haroon Bin Tariq and Others v. The State and Others* (2019) is another case, which was decided with the help of forensic evidence. The conviction and sentence of accused U/S 7 of the Anti-Terrorism Act, 1997 was set aside by the Supreme Court, based on forensic evidence. The court noted that forensic evidence could help establish the identity of the culprit and corroborate the testimony of the witnesses.
- The apex Court heard the case titled “*Dr. Atif Muhammad Khan v. The State through D.A.G. and another*” (2020), which was about disseminating explicit pictures of ex-wives on social media. The mobile phone was recovered from the accused and dispatched to the Federal Investigation Agency (FIA) for digital forensic examination. The report prepared by FIA indicated that the set of recovered paraphernalia did not generate the explicit material based on which, the investigating officer exonerated the accused. Bad blood between the former spouses though a possible motive to target the complainant's ex-wife, nonetheless, required solid proof to frame the accused with the charge. Forensic evidence which was the only tool to sustain the charge was faltering as the findings recorded by the FIA were in the negative. The accused was granted bail in the circumstances.
- In *Rashed alias Chand and another v. The State*, (2022), the Lahore High Court held that because the DNA of a human remains the same in all the parts of the human body, it could

not be altered at all; it was a type of evidence which was impossible to be tampered, so, such kind of forensic evidence was of great help where the individuality of an accused or defendant was doubtful.

- Hajira Bibi alias Seemi and others v. The State and another (2023) is the most recent case regarding the importance of forensic evidence. In this case, phones were recovered from the ladies accused which contained an incriminating voice message from the murderer. The ladies accused complied with the voicemail by deleting other incriminating messages on their phones as directed by the caller in the voice message who admitted murdering the deceased by shooting him in the head as found by forensic evidence.

This literature review provides an overview of the existing work on forensic science and its impact on legal education and practice. It shares the experiences of other countries that have incorporated forensic science education into their legal education programs. The courts have highlighted the importance of forensic evidence. Legal educators may quote these references to argue for the incorporation of forensic science into legal education in Pakistan, to better equip law graduates with the skills they need to succeed in the legal profession.

Impact of Teaching Forensic Science on Lawyering Skills:

The integration of forensic science as a compulsory course into the legal education system of Pakistan has the potential to enhance the overall lawyering skills of law students in the following ways:

- **Understanding forensic evidence:**
Law students need to understand the nature and limits of forensic evidence to be able to evaluate it effectively. This includes knowledge of different types of forensic evidence, how it is collected and analyzed, and its potential for error or misinterpretation. According to research, a lack of understanding of forensic evidence among legal professionals can lead to lengthy and costly court proceedings. By equipping law students with the necessary forensic skills, legal proceedings can be streamlined and expedited, resulting in a more efficient and effective justice system (Waqas & Arshad, 2020). By teaching forensic science, universities, and law schools can help prepare the next generation of legal professionals for the demands of modern legal practice.
- **Improving Communication and Advocacy Skills:**
Forensic skills training enhances students' capacity to communicate with judges, lawyers, litigants, officials, etc. vibrantly and persuasively in respect of forensic knowledge. This science would also help students develop their advocacy skills, enabling them to present compelling arguments and strengthen their overall legal practice.
- **Development in Science and Technology:**
Rapid advancements in science as well as technology have greatly influenced the legal landscape. The digital age has introduced new challenges in the field of law, such as cybercrime and digital evidence (Lee & Lee, 2020). From DNA analysis to digital forensics, the use of forensic science has become more prevalent in legal proceedings. By teaching forensic science, law students can understand the scientific principles behind these techniques and effectively navigate cases involving complex scientific data. They can adapt to technological advancements and effectively handle cases involving digital information.
- **Improving critical thinking and problem-solving abilities:**
Forensic science can help law students develop critical thinking skills (Eraña-Rojas, Cabrera, Barrientos & Membrillo-Hernández, 2019; Agarwal, Singhal & Yadav, 2020). This can help them approach legal problems with a more analytical and problem-solving mindset. Forensic analysis often requires the careful examination of information and statistics, and the students trained in these skills develop a systematic and logical approach to critical thinking and problem-solving.
- **Refining legal practice:**
By incorporating forensic science into legal education, law students can gain a deeper understanding of how forensic science is used in legal practice (National Research Council, 2009). This can help them better advocate for their clients in cases involving forensic information, as well as improve their ability to present their cases effectively in courtrooms. This includes the skills to prepare/present forensic reports and visual aids that enhance the clarity and impact of their arguments. By improving their oral, written, and communication

skills in a forensic context, students can become more persuasive counsels, and better equipped to present their case convincingly to judges, juries, and opposing counsel.

- **Expertise in Criminal Cases:**

Pakistan, like any other country, faces challenges related to criminal activities. By incorporating forensic science into legal education, law graduates gain specialized skills (Ariani, Sajedi & Sajedi, 2014), i.e., crime scene understanding, forensic analysis, etc. This expertise makes them well-suited for positions in law enforcement agencies, prosecution departments, and criminal defense firms.

- **Enhancing Investigative Capabilities:**

Lawyers with forensic skills are better equipped to conduct field investigations (Medeiros, 2019). After understanding forensic techniques and procedures, they can collaborate effectively with investigators, identify relevant factors, and analyze them critically. This strengthens their ability to build strong cases and contribute towards efficient and effective investigations. This can make them valuable assets to law enforcement agencies, investigative bodies, and legal firms involved in criminal law practice. Employers often seek applicants with strong investigative skills, and graduates with forensic training can fulfill this requirement.

- **Effective Evidence Gathering:**

Forensic training arms lawyers with the skills to collect evidence in a legally admissible and scientifically sound manner (Felix, 2022). They learn to prepare case files, chain of custody, and preservation methods to ensure the authenticity of evidence. Lawyers with forensic skills are better equipped to identify potential sources of evidence, interview witnesses, and collaborate with investigators to gather relevant information. This enables them to build stronger cases based on solid proofs which would increase their efficacy in the court of law.

- **Presenting Complex Evidence:**

Forensic science enables lawyers to present complex scientific evidence in a more accessible and persuasive manner (Regan, 2017). They learn how to simplify technical concepts and present evidence in a clear, concise, and compelling manner during trial. Lawyers with forensic training can use visual aids, demonstrative evidence, and expert testimony effectively to help judges and juries understand the significance of the evidence and its relevance to the case (Edmond, G. (2014).

- **Challenging and Evaluating Expert Testimony:**

Forensic science enables law students to critically assess expert testimony (Cowan, & Hunt, 2008). They can understand the limitations of different forensic methods, and evaluate the credibility of expert witnesses in court. This allows students to challenge weak or misleading expert opinions and present a more robust defense or prosecution.

- **Cross-Examination and Challenges:**

Lawyers with forensic skills are better prepared to cross-examine opposing experts (Edmond, Martire, Kemp, Hamer, Hibbert, Ligertwood, Porter, Roque, Searston, Tangen, Thompson & White, 2014)., challenge their methodologies, and expose weaknesses in their analyses. They can identify flaws in evidence collection, processing, or interpretation, and effectively question the reliability and accuracy of the evidence presented by the opposing side. This ability to critically analyze and challenge evidence strengthens their advocacy skills and improves their ability to present a strong case in court.

- **Ensuring Fairness and Accuracy:**

Forensic skills training helps law students understand the proper collection, analysis, and presentation of evidence. By learning about the protocols and methodologies involved, students can make sure that the evidence is gathered fairly and accurately, reducing the danger of wrongful convictions or erroneous outcomes in legal proceedings (Puch-Solis, Roberts, Pope & Aitken, 1930).

- **Niche Legal Opportunities:**

The incorporation of forensic science creates new opportunities for law graduates in niche areas of law (Allen & Wagner, 2007). For example, graduates can specialize in forensic law, cybercrime law, or forensic accounting, which are emerging fields with a growing demand for

professionals who possess both legal and forensic expertise. This diversification of skills expands the career options available to law graduates.

- **Collaboration with Forensic Professionals:**

Legal cases often require collaboration between lawyers and forensic experts. By having a foundational understanding of forensic techniques, law graduates can effectively communicate and work with forensic professionals (Kelty, Julian, Bruenisholz & Wilson-Wilde, 2018). This interdisciplinary collaboration can strengthen their employability prospects, as it showcases their ability to work in a team and utilize scientific evidence effectively.

- **Meeting International Standards:**

International legal standards increasingly emphasize the importance of forensic evidence (Hofmeister & Navarro 2017). Teaching forensic science to law students aligns them with international standards, ensuring that these graduates would be equipped to handle cases with international dimensions independently or in collaborate with legal professionals from other countries. This makes law graduates more competitive in the global job market and increases their scope not just within Pakistan but also in other countries with a demand for legal professionals with forensic knowledge.

In a nutshell, it may be said that by equipping law students with forensic knowledge, legal education prepares them to effectively navigate the complexities of modern legal requirements and contribute to the fair and efficient administration of justice.

Teaching of Forensic Science in other countries:

Forensic science is increasingly being taught as a part of legal education in many countries around the world. These courses are typically offered through forensic science programs or departments within universities, providing students with a multidisciplinary education that combines scientific and legal perspectives. Here are a few examples of countries where forensic science is taught both at the undergraduate and post-graduate levels:

According to an old estimate, 120 institutions in the United States of America, were offering courses in forensic science (Tregar & Proni, 2010), including topics such as DNA analysis, fingerprint analysis, and digital forensics. The data gathered from 2019-2020 reveals that 43 courses of forensic science were being offered only in the Law Schools (Garrett, Cooper & Beckham, 2022). Some law schools also offer joint degree programs in law and forensic science.

Forensic science education is popular in the United Kingdom. According to data collected in 2012, about 75 universities were offering courses in forensic science, as well as joint degree programs in law and forensic science (Lallie, 2012). These courses have been designed to provide law students with a comprehensive understanding of forensic principles, methodologies, and their application in the legal field.

In Canada, several law schools offer approximately 32 courses in forensic science (IDP, 2023). The inclusion of these courses in Canadian law schools reflects the recognition of the importance of scientific evidence in the legal field and prepares future lawyers to navigate the complexities of modern legal cases.

In Australia, many law schools offer different courses in forensic science, as well as joint degree programs in law and forensic science (Calamba, 2020). The University of Technology Sydney, for example, offers a joint LLB and Bachelor of Forensic Science.

In India, forensic science courses have been attracting a lot of public interest in recent times. These include a BSc and MSc in Forensic Science, an MSc in Forensic Science and Criminology, a Master in Forensic Psychology, MSc in Information Security and Cyber Forensics, MD in Forensic Science and Toxicology, a Diploma in Forensic and Criminal Law, PG Diploma in Figure Print Expert, PG Diploma in Humanitarian Forensic, Certificate in Forensic Science, Certificate in Cyber forensic, etc. Some law institutions offer forensic science courses as part of their LLB programs. The National Law University, Delhi, for example, offers a course in Forensic Science and Law.

These are just a few examples of countries where forensic Science is taught both at LLB or non-LLB levels. Other countries may also offer such courses or joint degree programs, depending on their specific legal education system.

Challenges of Incorporating Forensic Science into Legal Education:

Despite the benefits of incorporating forensic Science into legal education in Pakistan, there are also several challenges associated with this approach.

- **Lack of Expertise:**
Pakistan may face a shortage of forensic experts and qualified faculty members who can effectively teach forensic Science to law students (Akram, Arif, Khan & Tauheed, 2019). Finding experienced professionals with a strong background in both law and forensics can be a challenge. Developing a pool of competent instructors and practitioners who can deliver high-quality forensic education and training may take time and require collaboration with forensic science institutes or professionals.
- **Limited Resources:**
Another primary challenge is the availability of resources, including laboratories, equipment, and materials required for teaching forensic Science (Mangi & Khan, 2021). Establishing and maintaining well-equipped forensic laboratories can be costly, and it may require substantial investments from educational institutions and the government to provide the necessary. Pakistan lags behind other countries in terms of forensic infrastructure (Haque, Abbasi, Murugesan, Anwar, Khan & Lee, 2023), which makes it difficult to provide law students with hands-on training and experience in forensic techniques.
- **Curriculum Development:**
Designing a comprehensive curriculum that effectively integrates forensic science into the existing legal education framework of Pakistan can be complex. It requires careful planning, coordination, and collaboration between legal and forensic experts to develop a syllabus that covers essential forensic topics while ensuring it aligns with the overall legal education requirements and standards. Additionally, obtaining approval from regulatory bodies and authorities may be a challenge.
- **Resistance to Change:**
Implementing changes in the curriculum can face resistance from traditional stakeholders within the legal education system. Some teaching faculty and administrators may be hesitant to adopt new teaching methodologies or introduce additional subjects into an already-packed curriculum. Getting support for the integration of forensic science may require effective advocacy and awareness campaigns.
- **Continuous Development:**
Forensic science is a rapidly evolving field, with new techniques and advancements being introduced regularly (Bell, 2012). To maintain the relevance and effectiveness of forensic education, continuous updates for teaching faculty are necessary. Ensuring that educators stay abreast of the latest developments and avail opportunities for professional development can be a challenge that requires institutional commitment and support.
- **Practical Training Opportunities:**
Forensic science requires hands-on practical training to develop proficiency (National Institute of Justice, 2004). Providing students with access to real-life case scenarios, mock crime scenes and internships/externships in forensic laboratories may be a big challenge. Collaboration with law enforcement agencies and forensic institutions to conduct practical training programs for teachers and students can help to achieve the purpose.

Meeting the above-mentioned challenges requires a multi-faceted approach involving will and collaboration among all the stakeholders. Overcoming the said obstacles will facilitate the successful integration of forensic science into the legal education system of Pakistan, which would ultimately benefit the law graduates and the justice system overall.

Proposed Course Contents of “Forensic Science” for Law students:

The course contents of "Forensic Science" for law students may include, though, not limited to the following topics:

1. Introduction to Forensic Science: History and Development
2. Types of Evidence: Physical and Digital
3. Collection and Preservation of Evidence
4. Chain of Custody and Evidence Handling
5. Analysis and Interpretation of Evidence

6. Forensic Ballistics: Firearms and Tool Mark Analysis
7. Forensic Toxicology: Drug and Poison Analysis
8. Forensic Anthropology: Identification of Human Remains
9. Forensic Psychology: Criminal Profiling and Behavioural Analysis
10. Forensic Accounting: Fraud Detection and Prevention
11. Digital Forensics: Cybercrime Investigation and Analysis
12. Courtroom Testimony and Expert Witness Preparation
13. Ethical and Legal Issues in Forensic Science

The course may also involve practical sessions, case studies, and visits to forensic labs and courtrooms to provide students with hands-on experience and exposure to real-life situations. The aforesaid course contents may be approved after a discussion with all the stakeholders and the National Curriculum Review Committee of HEC with or without modifications.

Conclusion:

In conclusion, this research paper suggests that introducing forensic science as a course into the legal education programs offered in Pakistan can have a positive impact on legal education and legal practice. It has the potential to enhance the quality and efficiency of the justice system as well as to improve the knowledge and skills of legal professionals.

The literature on forensic science education highlights the importance of incorporating forensic science into legal education programs. Studies suggest that forensic science education can help law students not only to develop their critical thinking but also to improve their analytical skills, expand their capacity to evaluate evidence, and enhance their understanding of the scientific principles behind forensic evidence. However, there are also challenges associated with introducing forensic science education into legal education programs. By addressing these challenges, the legal education system of Pakistan can be upgraded and the justice system can be strengthened.

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