

# Veterinary Education in India: A Future Ready Framework for Global Impact

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Veterinary education in India has advanced significantly, driven by rising demand, institutional growth and curriculum reforms. Key reforms include a one-year internship with interstate exchange and a mandatory entrepreneurship module. The VCI is aligning curricula with global standards like the DVM. Digital tools, humane teaching and virtual simulations are being adopted widely. Research is expanding in fields such as animal biotechnology, zoonotic diseases and One Health. Postgraduate courses now offer specializations in genomics, public health and ecosystem health. Industry partnerships provide hands-on experience and research opportunities. New courses in animal law, welfare science and business management reflect interdisciplinary learning. The curriculum also addresses global concerns like antimicrobial resistance, climate change and sustainable livestock farming. Veterinary education in India is evolving rapidly, emphasizing technology, research and sustainability to meet modern veterinary and public health challenges. With institutional expansion, curriculum redesign, technological integration and a strong focus on sustainability and interprofessional collaboration, the system is being shaped into a globally recognized hub for veterinary excellence.

## Institutional Expansion and Rising Demand for Veterinary Careers

India's veterinary education sector has witnessed considerable growth, with over 60 Veterinary colleges currently in operation—including 16 private institutions. This expansion is fuelled by the increasing relevance of veterinary science in food security, public health and rural economic development. According to Indian Council of Agricultural Research (ICAR), enrolment in veterinary undergraduate programs has surged by more than 40% over the past decade. Importantly, the field is becoming increasingly gender-inclusive, attracting a diverse range of students. The emergence of private veterinary institutions has filled critical gaps by offering cutting-edge infrastructure, modern labs and industry collaborations. Simultaneously, government-funded colleges ensure equitable access to quality education for students from all socio-economic backgrounds.

## Curriculum Modernization: Aligning with Global Veterinary Standards

The Veterinary Council of India (VCI) has introduced several forward-thinking reforms to align the Indian veterinary curriculum with international benchmarks

such as the Doctor of Veterinary Medicine (DVM) model. Although there have been shifts between semester-based and year-wise systems, the ultimate aim remains the same; to elevate the academic framework to global standards. The internship period has now been extended to one year, which includes an interstate exchange program that exposes students to diverse clinical environments. Moreover, the mandatory entrepreneurship module prepares students to launch and manage veterinary practices and businesses. New additions to the curriculum—such as animal law, welfare and ethical decision-making, reflect the profession's growing societal responsibilities. Diploma programs have also gained traction, particularly in Karnataka, where institutions under the Karnataka Veterinary, Animal and Fisheries Sciences University (KVAFSU) offer two-year para-veterinary courses. These programs provide alternate pathways for students to enter the field, supporting the growing demand for skilled veterinary assistants.

## Harnessing Technology: Transforming the Veterinary Learning Experience

Technology is playing a pivotal role in reshaping Veterinary education. The integration of e-learning platforms, AI-powered diagnostics, virtual and augmented reality tools and humane teaching alternatives has modernized the teaching landscape. Virtual clinical simulations and anatomical models now allow students to develop diagnostic and surgical skills without relying on live animals, promoting both ethical learning and better skill retention. High-fidelity simulators provide a risk-free environment to master emergency care and complex procedures. These innovations are not only improving education outcomes but are also preparing students for a future, dominated by technological advancements.

## Cutting-Edge Research and Global Health Focus

India is increasingly becoming a hub for research in emerging Veterinary sciences, including One Health, telemedicine, genomics, and zoonotic disease control. Postgraduate programs are being tailored to incorporate these themes, with specializations in ecosystem health, animal biotechnology and veterinary public health.

The One Health approach, which integrates human, animal and environmental health, has become a cornerstone of research agendas. Collaborative initiatives, such as Rabies research efforts by KVAFSU's Veterinary College in Hebbal, in partnership with KIMS, NIMHANS, and BBMP, showcase India's active role in addressing global health challenges.

## Industry Collaboration: Bridging the gap between Theory and Practice

A closer alliance between veterinary colleges and industry stakeholders is strengthening the practical training of students. Partnerships with pharmaceutical companies, livestock nutrition firms, agribusinesses, and research organizations provide valuable exposure through internships, workshops and field visits. These collaborations give students hands-on experience with real-world applications, from vaccine development and herd management to field diagnostics ensuring that they graduate job-ready and capable of meeting industry expectations.

## Sustainability and Climate-Responsive Veterinary Education

Climate change is increasingly influencing animal health and India's Veterinary institutions are adapting accordingly. Courses in sustainable livestock management, disaster preparedness and disease forecasting are being embedded in the curriculum.

Students are being encouraged to develop eco-friendly practices and solutions to reduce the environmental impact of animal farming. These efforts are critical in aligning Veterinary science with India's broader climate action and food security goals.

## Interdisciplinary Learning and Diverse Career Pathways

The integration of disciplines such as biotechnology, business management and animal welfare into Veterinary education is expanding students' career prospects. Today's Veterinary graduates can explore roles in wildlife conservation, public health, animal advocacy, policy-making and entrepreneurship. This holistic approach to education is empowering students with the knowledge and adaptability to thrive in a multidisciplinary world, breaking the conventional mold of veterinary practice.

## Sustainable and Competency-Based Educational Models

Sustainable education is no longer an option, it's a necessity. Veterinary institutions are adopting green campus initiatives, paperless operations and remote learning platforms to reduce their environmental footprint. Additionally, the transition to competency-based education (CBE) ensures students master essential skills rather than simply completing time-based requirements. This learner-centric model promotes self-paced progress, greater clinical proficiency and enhanced communication skills and traits essential for modern Veterinary professionals.

## Interprofessional Collaboration: A Team-Based Approach to Animal Health

Veterinary professionals increasingly work in teams alongside doctors, pharmacists and environmental scientists.

The rise of Interprofessional Education (IPE) fosters this collaboration from the classroom stage itself.

Joint case studies, integrated learning modules and shared clinical scenarios train students to work seamlessly across disciplines, especially in public health, epidemiology and zoonosis management.

## Strategic Roadmap for the Future of Veterinary Education in India

To build a resilient, future-ready veterinary education ecosystem, the following strategies must be prioritized:

- 1. Continuous Quality Assessment**
  - Implement structured feedback loops from students and employers.
  - Conduct periodic accreditations aligned with global standards.
- 2. Curriculum Overhaul**
  - Integrate core competencies in One Health, animal welfare and preventive medicine.
  - Emphasize hands-on training and entrepreneurial development.
- 3. Community Outreach**
  - Conduct animal health camps and public awareness programs.
  - Address rural veterinary needs through mobile units and extension programs.
- 4. Faculty Development**
  - Regular training in emerging technologies and pedagogical techniques.
  - Orientation and induction programs for new faculty.
- 5. Technology Integration**
  - Use AI in diagnostics, simulations in surgery and telemedicine for rural healthcare.
  - Expand access to e-learning modules and digital libraries.
- 6. Research and Innovation**
  - Foster student-led research with grants and mentorship.
  - Collaborate with international institutions for knowledge exchange.
- 7. Infrastructure Development**
  - Upgrade clinical facilities, labs and wildlife centers.
  - Enhance access to modern equipment and digital tools.
- 8. Industry-Academia Synergy**
  - Offer internships, certifications and practical training through partnerships.

- Co-create modules on trending topics such as vaccine, R&D and herd analytics.
- 9. **Ethics and Animal Welfare**
  - Replace harmful teaching practices with humane, tech-based alternatives.
  - Promote ethical literacy through dedicated coursework.
- 10. **Global Exposure**
  - Establish exchange programs and seek international accreditation.
  - Prepare graduates for global veterinary markets.
- 11. **Tackling Global Challenges**
  - Train students in climate-resilient animal farming.
  - Emphasize the One Health model to tackle pandemics and zoonotic threats.

### Conclusion

Veterinary education in India is undergoing a transformative phase, marked by institutional growth, curriculum advancements, technological integration, research excellence and a commitment to sustainability. These developments have positioned the country's Veterinary education system as a dynamic and forward-looking platform, capable of addressing the challenges of modern Veterinary practice. The future of Veterinary education is dynamic and ever evolving, shaped by technological advancements global health challenges and shift towards more personalized, competency-based learning. With these we can enable next generation of Veterinarians with tools they need to face the complex challenges of animal health, public health and environmental sustainability.

### References

1. <https://www.statista.com/statistics/737369/veterinary-institution-number-by-type-india/>
2. chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://icar.org.in/sites/default/files/Circulars/New-Education-Policy-2020.pdf
3. [https://www.researchgate.net/publication/320135791\\_Veterinary\\_education\\_in\\_India\\_Shaping\\_the\\_future\\_agenda\\_with\\_focus\\_on\\_veterinary\\_public\\_health\\_education](https://www.researchgate.net/publication/320135791_Veterinary_education_in_India_Shaping_the_future_agenda_with_focus_on_veterinary_public_health_education)
4. [https://www.teamleaseregtech.com/updates/article/37061/vci-issued-the-draft-veterinary-council-of-](https://www.teamleaseregtech.com/updates/article/37061/vci-issued-the-draft-veterinary-council-of-india-minimum-standards-of-)

- [india-minimum-standards-of-/?utm\\_source=chatgpt.com](https://www.teamleaseregtech.com/updates/article/37061/vci-issued-the-draft-veterinary-council-of-india-minimum-standards-of-/?utm_source=chatgpt.com)
5. [https://www.kvasu.edu.in/ahp\\_hassan.html?utm\\_source=chatgpt.com](https://www.kvasu.edu.in/ahp_hassan.html?utm_source=chatgpt.com)
6. [https://www.frontiersin.org/journals/veterinary-science/articles/10.3389/fvets.2024.1463642/full?utm\\_source=chatgpt.com](https://www.frontiersin.org/journals/veterinary-science/articles/10.3389/fvets.2024.1463642/full?utm_source=chatgpt.com)
7. chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://repository.ifla.org/server/api/core/bitstreams/82e9ecbc-c708-4d46-ba29-ab6efb6dbdcc/content
8. [https://indiaai.gov.in/article/analyzing-the-benefits-of-ai-in-veterinary-medicine-and-education?utm\\_source=chatgpt.com](https://indiaai.gov.in/article/analyzing-the-benefits-of-ai-in-veterinary-medicine-and-education?utm_source=chatgpt.com)
9. [https://surgicalscience.com/insights/customer-stories/surgical-simulation-a-game-changer-for-veterinary-training/?utm\\_source=chatgpt.com](https://surgicalscience.com/insights/customer-stories/surgical-simulation-a-game-changer-for-veterinary-training/?utm_source=chatgpt.com)
10. [https://ncdc.mohfw.gov.in/centre-for-one-health/?utm\\_source=chatgpt.com](https://ncdc.mohfw.gov.in/centre-for-one-health/?utm_source=chatgpt.com)
11. [https://www.kvasu.ac.in/training-programmes?utm\\_source=chatgpt.com](https://www.kvasu.ac.in/training-programmes?utm_source=chatgpt.com)
12. [https://www.iiverindia.com/internship?utm\\_source=chatgpt.com](https://www.iiverindia.com/internship?utm_source=chatgpt.com)
13. [https://arccjournals.com/journal/indian-journal-of-animal-research/B-5303?utm\\_source=chatgpt.com](https://arccjournals.com/journal/indian-journal-of-animal-research/B-5303?utm_source=chatgpt.com)
14. [https://www.kvasu.ac.in/distance-learning-1?utm\\_source=chatgpt.com](https://www.kvasu.ac.in/distance-learning-1?utm_source=chatgpt.com)
15. [https://todaysveterinarypractice.com/practice-management/a-practical-approach-to-sustainability-in-the-veterinary-clinic/?utm\\_source=chatgpt.com](https://todaysveterinarypractice.com/practice-management/a-practical-approach-to-sustainability-in-the-veterinary-clinic/?utm_source=chatgpt.com)
16. [https://www.veterinary-practice.com/article/embedding-sustainability-in-veterinary-practice?utm\\_source=chatgpt.com](https://www.veterinary-practice.com/article/embedding-sustainability-in-veterinary-practice?utm_source=chatgpt.com)
17. [https://www.vetandtech.com/?utm\\_source=chatgpt.com](https://www.vetandtech.com/?utm_source=chatgpt.com)
18. [https://cbve.org/?utm\\_source=chatgpt.com](https://cbve.org/?utm_source=chatgpt.com)
19. [https://avmajournals.avma.org/view/journals/javma/261/6/javma.23.04.0201.xml?utm\\_source=chatgpt.com](https://avmajournals.avma.org/view/journals/javma/261/6/javma.23.04.0201.xml?utm_source=chatgpt.com)
20. [https://pmc.ncbi.nlm.nih.gov/articles/PMC10931423/?utm\\_source=chatgpt.com](https://pmc.ncbi.nlm.nih.gov/articles/PMC10931423/?utm_source=chatgpt.com)
21. <https://pubmed.ncbi.nlm.nih.gov/27075273/>

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