

Dr Sivakumar Manickam

Curriculum Vitæ

Summary

- With over 30 years of experience in academia, I bring a dynamic combination of leadership, management, and research expertise, with a strong focus on innovation and technology integration in education. My career has evolved through diverse roles, including Teacher, Department Head, Academic Chair, Head of Educational Technology, Associate Professor, and Chairman of the Board.
- For the past 14+ years, I have excelled in higher education leadership and online pedagogy, successfully planning and implementing virtual learning initiatives aligned with institutional objectives. My hands-on experience includes designing and developing high-quality virtual learning programs tailored for effective teaching, learning, and assessment.
- I am an active researcher and collaborator, contributing significantly to ongoing projects and publications in EdTech, data science, artificial intelligence, and curriculum development. My work has been published in several Scopus-indexed journals, including Human Resources for Health, Discover Education, European Journal of Dental Education and Biophysical Reviews.
- I have extensive expertise in managing open-source learning management systems (LMS) such as Moodle, Canvas, and WordPress. My work includes customization, plugin development, and system optimization, along with proficiency in LMS analytics, third-party tool integration, and faculty training for optimal platform utilization.
- I am skilled in advanced instructional design tools (Articulate Storyline, SoftChalk, Adobe Captivate) and programming (Python, PHP, MySQL), alongside full-stack development (Django, HTML, JavaScript) and data science/AI frameworks (NumPy, Pandas, TensorFlow, PyTorch). My technical abilities have enabled me to develop interactive data reporting and visualization applications, implement streamlined assessment environments, and create tailored solutions such as item bank management systems, online double-blind marking workflows, secure lockdown browsers, and psychometric-powered personalized feedback mechanisms.
- Two-time Elected Chairman, Board of Directors – Indian Schools in Oman: Held the apex governing position, overseeing strategic direction and ministerial engagement for 22 schools serving 45,000+ students across Oman.
- Recognized for my contributions to education, I was honored with the 'Educator of the Year' award on November 20, 2019, at a ceremony in the British Parliament, presided over by Baroness Dorothea Glenys Thornton. This accolade celebrates my dedication to innovative academic practices and excellence in teaching and learning.

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Education

- 2006—2012 **Doctor of Philosophy**, *Bharathidasan University*, Tiruchirappalli, India, *Highly Commended*.
Physics (Computational Biofluid Dynamics)
- 1990—1995 **Master of Science**, *Bharathidasan University*, Tiruchirappalli, India, *First Class, III Rank*.
Physics with specialisation on Microprocessor and Special Electronics
- 1995—1997 **Master of Education**, *Annamalai University*, Chidambaram, India.
Specialisation in Curriculum Development
- 2010—2011 **PG Dip. in Comp. Appl.**, *Bharath Sevak Samaj*, Tamilnadu, India, *I class with distinction*.
Application development, programming languages and database management system

Experience

- Teaching: **Associate Professor & Head of Educational Technology and Resources**, *Oman Dental College (current)*, Educator & Head of the Department, *Indian School Muscat (past)*.
- Research: **Researcher**, *Member of Research & Ethics Committee*, Involved several research projects in the field of AI, Data Science & Psychometric Analyses.
- Academic Development: **Member**, *Academic Council, Oman Dental College*, **Chair**, *Academic Subcommittee, Indian School Muscat Management*.
- Board Advisory: **Member**, *Academic Advisory Council, BoD of Indian Schools Oman*.
Member, *Task Force, BoD of Indian Schools*
- Chairman: **Chairman**, *BoD of Indian Schools Oman*.

Professional

- 2010—Present **Associate Professor & Head of Educational Technology and Resources**, *Oman Dental College*, Muscat.
The first and only dental college in Oman offering a BDS degree, with an international academic affiliation with the prestigious Complutense University of Madrid (UCM), Spain.

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Selected

Achievements & Innovations

1. **Advanced Psychometric Analysis:** Developed composite indices for enhanced reliability and validity in dental education assessments, advancing beyond traditional Cronbach's alpha; published in *European Journal of Dental Education* (article link).
2. **AI-driven Question Bank Management System:** Designed and implemented an end-to-end assessment platform modernizing the full question life-cycle, including structured authoring, peer review, AI-based quality checks, automated paper generation, psychometric analytics, and learner-faculty feedback; published in *Sultan Qaboos University Medical Journal* (article link).
3. **Just-in-Time Quiz (JiTQ):** Developed a QR-based system integrating real-time attendance with synchronous formative assessment and instant feedback; published in *Springer Nature Discover Education* (article link).
4. **Curriculum Mapping and Evaluation Framework:** Created a novel, application-supported framework to visualize curricular progression, integration, and learning outcomes; accepted for publication in *Cogent Education*.
5. **Immersive VR/AR Learning Solutions:** Conceived and developed multiple immersive learning applications, including a **VR Tooth Atlas**, significantly enhancing 3D conceptual understanding and clinical preparedness.
6. **Learning Resources Quality Intelligence Dashboard:** Built an analytics platform providing learner behavior analysis, predictive insights, equity indicators, collaborative usage patterns, and sustainability metrics to support evidence-based resource optimization.
7. **3D-enhanced Digital Assessments:** Enabled the integration of interactive 3D models directly within assessment questions, allowing authentic evaluation of students' spatial and clinical understanding.

Additional

Contributions

- Lead the deployment, customization, and ongoing management of enterprise-scale Virtual Learning Environments (VLEs), including server administration, system integration, custom development, and mobile-first delivery.
- Design and advance secure, paperless, multimedia-rich assessment ecosystems, incorporating online double-blind marking, lockdown-browser environments, and psychometric feedback and analytics.
- Provide statistical and data science support for multidisciplinary research projects, contributing to international collaborations in e-learning, assessment, VR/AR, and artificial intelligence.
- Teach Information and Communication Technology (ICT) and digital dentistry modules, with active involvement in curriculum development, laboratory-based instruction, and both face-to-face and online assessment.

2003–2012 **PGT & Head of the Department of Physics, Indian School Muscat, Oman.**

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One of the largest community schools in Oman, affiliated with the CBSE, New Delhi.

Significant achievements

- In addition to teaching physics to senior students, served as Head of the Department, overseeing curriculum planning and supervision.
- Monitored and delegated a variety of curricular, co-curricular, and extra-curricular responsibilities for the faculty.
- Successfully introduced the use of computers as an interactive teaching tool for physics instruction.
- Developed Java applets to teach kinematics, dynamics, and other branches of physics effectively.
- Founded the Robotics and Astronomy Clubs as part of hobby club activities in the senior section.
- Guided students in participating in international science exhibitions, with several projects winning first place at school, national, and Gulf regional levels.
- Actively participated in the International Award Scheme (Duke of Edinburgh Award Scheme), organizing student treks and camping trips.
- Initiated the E-learning system at Indian School Muscat, enabling students to learn physics through interactive animations and quizzes.
- Designed, programmed, and maintained the school's first computerized e-report card system, automating grade management and generating graphical reports for final grades and promotions.

1996–2003 **PG Teacher**, *Arasu Nagar Matriculation Higher Secondary School*, Ariyalur, India.

A govt. undertaking institution running as Gurukul School System.

Significant achievements

- Taught Physics to senior students and Science to junior students.
- Assisted students in developing their talents in extracurricular activities such as drama, public speaking, drawing, painting, and more.

Academic Honour

2011–Present **Editor**, *American Journal of Fluid Dynamics*-a leading peer-reviewed scientific journal published from USA, Reviewing research papers and recommending publications by serving the editorial board.

2016–Present **Research Supervisor & Examiner**, *Bharathidasan University, India*, Guiding PhD scholars and serving as an External Examiner.

2015–2016 **Member, Academic Task Force**, *Indian School Muscat*, Actively participated as a member of Academic Task Force and involved in academic auditing.

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2018–2020 **Member, School Management Committee**, *Indian School Muscat*, Chair Academic Sub-committee.

2019 **Educator of the Year**, *In recognition of outstanding contributions to innovative academic practices, teaching, and learning, awarded the 'Educator of the Year'*, at a ceremony presided over by Baroness Dorothea Glenys Thornton, a member of the House of Lords at the House of Commons, the British Parliament in London.

2021–2025 **Chairman**, *BoD Indian Schools Oman*, Chairing the Board for two successive terms that governs 22 Indian community Schools in Oman with 45,000 students and 3000 teachers. The Board is also running a Center for Special Education that is need-centric inclusive education and therapeutic care to children with impaired mobility, developmental delays, learning incapacity and mental disabilities including Autism, Down's syndrome, Attention Deficit (Hyperactivity) Disorder and other challenges.

Chairman of the BoD of Indian Schools in Oman, responsible for the following:.

- Overall supervision of the Indian Schooling system in Oman which has a staff strength of 3000 personnel and a student strength of over 45,000.
- Presiding over the Board proceedings and supervision of the overall functioning of the Board.
- Liaison with various Ministries in the Sultanate of Oman on all matters related to the Indian Schools in Oman.
- Heading the Selection Committee of the Board that appoints School Management Committee members for 22 schools across the Sultanate.
- Guide and supervise the functioning of the Presidents of 22 School Management Committees of the Indian Schooling system in Oman.
- Appointment of Directors-in-Charge for various schools for effective control mechanism.

Workshop & Seminars Attended

- *In service training programme for physics teachers* organised by **Regional Institute of Education** - Mysore, from 10th to 16th June, 2005
- *Continuous and Comprehensive Evaluation training-cum-workshop* conducted by **Council of CBSE affiliated schools in the Gulf**, held on 18th and 19th January, 2010 at Indian High School Dubai.
- *Practising the CCE and Implementing the Assessment Techniques in the class room* conducted by CBSE. Held on 12th and 13th of January 2012 at Indian School Muscat.
- *Conference on Electronic Learning*, Association for Dental Education in Europe (ADEE) 2013 at **Birmingham Medical School**, UK, 28th to 31st August 2013
- *moodlemajlis*, Conference for diverse and talented Moodlers from across the Middle East, Arab Open University, Muscat, 16-18th November, 2013
- *International Conference on Big Data and Smart City*, Middle East College, Muscat MEC, 15-16th January 2019

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- *The Fifth Regional Conference of the Arab Network for Quality Assurance in Higher Education -2023*, Arab Network for Quality Assurance in Higher Education (ANOAHE) & Oman Authority for Academic Accreditation and Quality Assurance of Education. Conference Exploring the Future of Higher Education Quality: The Impact of Smart Technologies and Internationalization on the Education Quality System, 6-7 December 2023
- *First Majlis Nafath Workshop 2024*, Sponsored By University of Doha for Science and Technology held at Doha, Qatar, February 22, 2024
- *OQF Capacity Building Workshop on the Listing, Alignment and Evaluation of Qualifications on the Oman Qualifications Framework*, Conducted by Oman Authority for Academic Accreditation, April 13-14, 2025

Faculty Development Programmes Conducted

- **Effective Use of Virtual Learning Environments for Teaching and Learning** (16–19 July 2018), Conducted for Dental and Medical Faculty, University of Peradeniya (Medical and Dental Schools), Sri Lanka
- **Navigating New Features of the Virtual Learning Environment** (29 September 2024) Faculty Development Workshop, Oman Dental College
- **Leveraging Technology for Modern Assessment Practices** (20 September 2025) Faculty Retreat Day, Grand Millennium Hotel, Muscat, Oman
- **Assessment Software Workshop: Efficient Question Creation and Best Practices** (9 May 2016) Faculty Development Session, Oman Dental College
- **From Paper to Platform: Digitizing Logbooks Using the Virtual Learning Environment** (3 June 2025) Hands-on Workshop, Oman Dental College
- **Capacity Building Workshop on Curriculum Mapping** (19 May 2025) Institutional Faculty Development Programme, Oman Dental College
- **Strengthening Assessment Quality through Psychometric Analysis** (8 January, 11:00–11:30 AM) Faculty Development Session, Oman Dental College
- **AI for Administrative Excellence: Hands-on Training for Everyday Office Administration** (22 January 2025, 2:00–4:00 PM) Training Programme for Administrative and Clinical Support Staff, Oman Dental College

Publications

International Peer-reviewed Journals

1. **Beyond Cronbach's Alpha in Dental Education Assessments: Introducing Composite Indices for Enhanced Reliability and Validity.** **Sivakumar Manickam**, Tim

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- O'Brien, Rachappa Mallikarjuna. *European Journal of Dental Education*. Published 2026. DOI: 10.1111/eje.70176.
2. **Mapping the unseen: a data-driven visualization framework for curriculum analysis.** Sivakumar Manickam, Mohamed Al Ismaili, Rajmohan Chidambaram Sivamani, Radhakrishnan, R., & Chadwick, R. G. *Cogent Education*, 13(1). Published 09 Apr 2026. DOI: 10.1080/2331186X.2026.2650882.
 3. **AI-Assisted Integrated Question Bank Platform for Comprehensive Curriculum Alignment and Psychometrically Driven Assessments.** Manickam S, Mallikarjuna R, Radhakrishnan R. *Sultan Qaboos University Medical Journal*, 2026;26:303–346. DOI: 10.18295/2075-0528.2989.
 4. **A Novel eOSPE System Enabling Systematic and Applied Learning Through Smart Scenario-Based Assessments (SALSA).** Radhakrishnan R, Mallikarjuna R, Manickam S. *Sultan Qaboos University Medical Journal*, 2026;26:303–346. DOI: 10.18295/2075-0528.2989.
 5. **Course-Integrated Case Completion & Presentation in Pediatric Dentistry: Pilot Evaluation of Fifth-Year Student Learning.** Mallikarjuna R, Nalawade T, Kumar S, Radhakrishnan R. *Sultan Qaboos University Medical Journal*, 2026;26:303–346. DOI: 10.18295/2075-0528.2989.
 6. **An integrated system for just-in-time formative assessment and attendance monitoring.** Sivakumar Manickam, Mohamed Al Ismaili, Rajmohan Chidambaram Sivamani, Sapna Dileesh. *Discover Education*, Published 12 November 2025. DOI: 10.1007/s44217-025-00960-2.
 7. **Optimized Hybrid Approach for Anomaly Detection of DDoS and Network Attacks in IoMT Systems using Autoencoders and TabNet.** K. G, S. Sivakumar and S. Manickam. *4th International Conference on Mobile Networks and Wireless Communications (ICMNWC)*, Tumkuru, India, 2024, pp. 1–7. DOI: 10.1109/ICMNWC63764.2024.10872358.
 8. **A Study to Check the Readiness of Final-Year Dental Students Vis-à-Vis to a Safe and an Independent Practitioner in Sultanate of Oman Amidst the Recent Pandemic.** Triveni Nalawade, Sanjay Saraf, Rachappa Mallikarjuna, Belal Haj-Hamed, Siva Kumar, Nutayla Al Harthy, Mohamed Al Ismaili. *International Journal of Dentistry*, Volume 2024, Article ID 7476437. Published 15 October 2024. DOI: 10.1155/2024/7476437.
 9. **Enhancing Accessibility: Exploring the Impact of AI in Assistive Technologies for Disabled Persons.** Krishnan, R., and Manickam, S. *Nafath*, 2024(9). DOI: 10.54455/MCN2505.
 10. **Efficacy of a Novel Computerized Aid in Designing Removable Partial Dentures.** Sivamani Chidambaram R., Rajmohan S., Manickam S., et al. *Cureus*, 2024, 16(2): e54581. DOI: 10.7759/cureus.54581.
 11. **Acceptance of Technology by Parent Fraternity as a Means of Remote Learning for Children: An Empirical Study.** Gokuladas, V. K., and Manickam, S. *International Journal of Educational Technology and Learning*, 15(1), 38–44 (2023). DOI: 10.55217/101.v15i1.688.
 12. **Sultanate of Oman: Building a Dental Workforce.** JE Gallagher, Siva Kumar, NHF Wilson. *Human Resources for Health*, 13(1), 50 (2015). DOI: 10.1186/s12960-015-0037-z.

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13. **Creeping Flow Past Spheres — Insights on Flow Properties through 3D Simulation Studies.** [Siva Kumar, M.](#), and P. Philominathan. *International Journal of Engineering Simulation*, 13(2), July 2012. ISSN 1468-1137.
14. **Robo-Linked Purcell's Swimmer.** [Siva Kumar, M.](#), and P. Philominathan. *International Journal of Fluid Mechanics Research*, 38(6) (2011): 565–571. DOI: 10.1615/InterJFluidMechRes.v38.i6.90.
15. **Bringing Out Fluids Experiments from Laboratory to *In Silico* – A Journey of Hundred Years.** [Siva Kumar, M.](#), and P. Philominathan. *American Journal of Computational Mathematics*, 1(4) (2011): 271–280. DOI: 10.4236/ajcm.2011.14033.
16. **Computational Fluid Dynamics Modeling Studies on Bacterial Flagellar Motion.** [Siva Kumar, M.](#), and P. Philominathan. *International Journal of Fluid Machinery and Systems*, 4(3) (2011): 341–348. DOI: 10.5047/ijfms.2011.4.3.341.
17. **Purcell's Swimmer Revisited.** [Siva Kumar, M.](#), and P. Philominathan. *International Journal of Automation and Computing*, 9(3) (2011): 325–330. DOI: 10.1007/s11633-012-0651-7.
18. **The Physics of Flagellar Motion of *E. coli* During Chemotaxis.** [Siva Kumar, M.](#), and P. Philominathan. *Biophysical Reviews*, 4(1) (2010): 13–20. DOI: 10.1007/s12551-009-0024-5.

Popular Science Articles:

1. [Siva Kumar](#), "Pen out. Calculator in. Brain at risk. Thanks, AI", **Times of Oman**, Monday 09th March, 2026. [Link](#)
2. [Siva Kumar](#), "Reimagining Higher Education for Digital Natives: Educational Technology Innovation at Oman Dental College", **TechOman**, Saturday, February 28, 2026. [Link](#)
3. [Siva Kumar](#), "A Geological Paradise on Earth", **Oman Observer**, Thursday 10th, December 2020, [Link](#)
4. [Siva Kumar](#), "The Art and Science of Lying", **Oman Observer**, Sunday 29th, November 2020, [Link](#)
5. [Siva Kumar](#), "A Viral Story", **Oman Observer**, Thursday 12th, November 2020, [Link](#)
6. [Siva Kumar](#), "Virtual meetings, real minds and Zoom fatigue", **Oman Observer**, Thursday 5th, November 2020, [Link](#)
7. [Siva Kumar](#), "The Art of Learning", **Oman Observer**, Monday 16th, March 2020, [Link](#)
8. [Siva Kumar](#), "When tomorrow becomes yesterday", **Oman Observer**, Monday 7th, March 2016, [Link](#)
9. [Siva Kumar](#), "Newton's Apple and Karan's iPhone", **Oman Observer**, Monday 22nd, February 2016, [Link](#)
10. [Siva Kumar](#), "Keep calm and observe ants", **Oman Observer**, Monday 15th, February 2016, [Link](#)
11. [Siva Kumar](#), "Jane, your name tastes like purple", **Oman Observer**, Monday 8th, February 2016, [Link](#)

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12. **Siva Kumar**, "If I only had a brain: With cloud backup", **Oman Observer**, Monday 1st, February 2016, [Link](#)
13. **Siva Kumar**, "This won't hurt a little bit", **Oman Observer**, Monday 25th, January 2016, [Link](#)
14. **Siva Kumar**, "Turn left or right? Always left with the fact that Jane is right", **Oman Observer**, Sunday 29th, February 2016, [Link](#)

Computer Skills

Operating Systems	Windows, Linux (Ubuntu), macOS	Cloud Platforms	AWS, Microsoft Azure, Google Cloud (Fundamentals)
Programming & Scripting	Python, JavaScript, SQL	Web Frameworks	Django, Flask, React
Learning Technologies	Moodle, Canvas, Blackboard, Google Classroom	Instructional Design Tools	H5P, Articulate Storyline, Adobe Captivate
Data & Analytics	Power BI, Tableau, Excel (Advanced), SQL	Statistical Tools	SPSS, R (Advanced)
AI & Automation	LLMs (API Integration), Scikit-Learn, Prompt Engineering	Low-Code / Automation	PowerApps, RPA Platforms
Collaboration & DevOps	Git, GitHub, Jira, Confluence	UX / Prototyping	Figma, Miro
Digital Assessment & Standards	SCORM, xAPI, LTI	Security & Compliance	Data Privacy, Cybersecurity Fundamentals

Development of Python Libraries

-  Pychometrics – An open-source Python library for conducting psychometric analysis of assessment items.
-  AI Q Insights – An AI-enabled MCQ quality assurance tool.

Interests

Writing Science Columnist
 Painting Pencil Sketch and Water Colour paintings
 Robotics Construct and programme robots using Mindstorm NXT

Languages

English **Read - Write - Speak**
 Tamil **Read - Write - Speak**

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References

- **Professor Gill Jones**, Registrar, UKPHR, Former Director of Undergraduate Dental Studies, Peninsula School of Medicine and Dentistry, Plymouth University. Phone: +44 7896 674513, Email: gj52gmj@gmail.com
- **Professor DYD Samarawickrema**, Emeritus Professor of Conservative Dentistry, Queen Mary University of London. Phone: +44 7983 588721, Email: d.y.d.samarawickrama@qmul.ac.uk

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