SDG 4

4.1 Research on Quality Education Publications within SDG 4: Quality Education (2022-24)

Parameter	Data
Scholarly Output	165
Field-Weighted Citation Impact	2.68
Citation Count	1,691

From 2022 to 2024, Amrita Vishwa Vidyapeetham made significant advancements in achieving United Nations Sustainable Development Goal 4 — Quality Education, through impactful research that integrates technology, pedagogy, and inclusivity. With 165 scholarly outputs and a Field-Weighted Citation Impact of 2.68, Amrita's education research stands well above global standards, reflecting its commitment to advancing educational excellence and accessibility. The university's work spans diverse themes such as Learning Analytics, Educational Data Mining, Virtual Reality, and Electronic Learning, driving innovation in teaching, learning, and student engagement across all levels of education. Focus areas including K–12 Education, Learning Disabilities, Employability, and Higher Education highlight Amrita's dedication to equitable learning and skill development for sustainable futures. Supported by 58 international collaborations and achieving over 12,000 views, Amrita's SDG 4 research underscores its global leadership in transforming education through

technology-driven and learner-centered approaches.

4.2 Lifelong learning measures

Amrita's Vishwamrit Project Empowers Rural Women through Tailoring Training

Amrita launched the Vishwamrit Project at Punlar to empower rural women with vocational tailoring skills. Through a structured five-month programme, participants were trained in sewing and design, equipping them with employable skills and self-reliance. Beyond technical training, the project also provided mentorship and access to markets, ensuring that women could transform their skills into sustainable livelihoods. This initiative exemplifies Amrita's commitment to equal access and directly contributes to SDG 4 by building vocational pathways for disadvantaged communities.

Amrita's Accelerated Learning Program Strengthens Teaching and Learning in Primary Education

Amrita's **Accelerated Learning Program (ALP)** focused on improving literacy and numeracy outcomes in primary schools while simultaneously building teacher capacity. Teachers were trained in phonics, differentiated instruction, and formative assessment, while students benefitted from innovative teaching methodologies. The programme also offered postgraduate teacher training qualifications, thereby contributing to the supply of certified educators. By strengthening both teaching quality and student learning, ALP advances

SDG 4's call for free, equitable, and quality primary education.

Amrita's ARISE Initiative Fosters Innovation and Lifelong Learning through Public Engagement

ARISE (Amrita Research and Innovation for Sustainable Education) brought together scholars, students, and the wider public through workshops, exhibitions, and seminars designed to share knowledge across disciplines. The event, open to all, served as a hub for dialogue, innovation,

and learning. By hosting free and inclusive sessions, ARISE provided a model for lifelong learning and public engagement, reinforcing Amrita's role as an institution that democratizes access to knowledge.

Anokha Techfest: Inspiring Lifelong Learning in STEM

The annual **Anokha Techfest** at Amrita's Coimbatore campus provided a vibrant platform for innovation and learning. Hosting competitions, workshops, and exhibitions in engineering, computing, and sustainable technologies, Anokha drew participation from thousands of students and the general public. As an open educational event, it contributed to SDG 4 by promoting science, technology, and

innovation learning beyond the boundaries of formal classrooms, reinforcing lifelong learning as a core institutional value.

Wayanad

Following the July 2024 Wayanad landslide, Amrita University began immediate support for affected communities, combining early relief with livelihood restoration and skills training. As part of these efforts, the Center for Women's Empowerment and Gender Equality trained 112 women in Self-Employed Tailoring and Computer courses to strengthen their resilience and economic independence. Later, a comprehensive post-disaster assessment, completing over 1,300 household, mental-health, and landslide surveys, was conducted by social work students from Amrita University, to inform targeted interventions and guide long-term recovery planning in the region.

HaKsh-E: AI-Powered Social Robot to Promote Good Hand Hygiene Practices in Children

Amrita University's AMMACHI Labs developed HaKsh-E, a social robot designed to help young children cultivate healthy hand-washing habits through friendly, interactive engagement. Using

AI-based vision, HaKsh-E recognizes whether children are following the WHO-recommended steps and provides real-

time feedback to guide, correct, and encourage proper hygiene. Built as an embodied agent with an expressive, conversational face, it interacts playfully and supportively with children, motivating long-term behavioral change through positive social cues. Over time, HaKsh-E also enables stakeholders to gather objective data on hygiene practices, strengthening school and community health initiatives.

Enhancing Teaching and Learning of Vocational Skills through Machine Learning and Cognitive Training (MCT)

For the past 15 years, AMMACHI Labs has trained women in diverse vocational trades to strengthen their skills, tools, and market opportunities. In 2024, the team launched a new research project to complement this work by generating neurocognitive, data-driven insights on dexterous vocational performance, specifically in tailoring. By

assessing tailors' psychomotor abilities using standardized measures, the project provides empirical evidence to inform technology-enabled training models and enhance overall skill proficiency.

AI for Humanitarian Impact at ITU WTSA-24 Expo in New Delhi

In October 2024, AMMACHI Labs participated in Amrita Vishwa Vidyapeetham's "AI for Good" stall at the ITU WTSA-24 Expo in New Delhi, showcasing the university's commitment to using AI for humanitarian impact. Held from October 14–18 and inaugurated by Prime Minister Shri Narendra Modi, the event featured Amrita's AI innovations in disaster

management, agriculture, education, and healthcare, developed with partners such as the Government of India and UN agencies. AMMACHI Labs demonstrated cutting-edge tools including the HaKsh-E social-good robot and the AI-based sapling health monitoring system from the WADI project in Rasol Panchayat, Odisha.

The 2nd Foundation Workshops

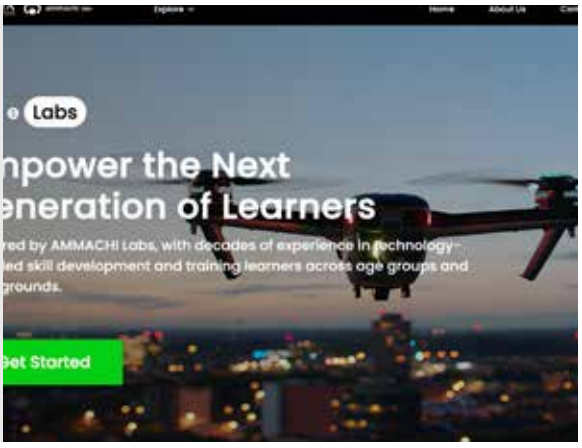
In 2024, The 2nd Foundation, an initiative of Amrita University Research Center's AMMACHI Labs, conducted a wide range

of STEM workshops across multiple Amrita Vidyalayam campuses, focusing on Game Development & AI, IoT & Robotics, 3D Modeling & Design, AI & ML and Virtual Circuit Design. These workshops trained 480+ students through hands-on sessions using tools like Scratch, Tinkercad, circuit simulators, and beginner-friendly AI/ML platforms. Across locations such as Tirupur, Kanyakumari, Puducherry, Nallampalayam, Erode, and Kochi, students created games, built IoT prototypes, designed 3D models, and developed functional AI/ML projects.

In addition to technical workshops, The 2nd Foundation also delivered mentorship programs at Amrita Vidyalayam Thalassery and Puthiyakavu for the Atal Innovation Mission's School Innovation Marathon. These programs supported nearly 60 students across 21 teams, helping them refine problem statements, build prototypes, and prepare final presentations.

Skills e-Labs

Developed by AMMACHI Labs, Skill e-Labs is an innovative platform created by a multidisciplinary team of educators, designers, and technologists to make learning immersive, practical, and



future-ready. It offers skill and technical training through videos, AR, VR, and 3D simulations, enabling students to learn complex concepts by doing. With a vision to provide high-quality, hands-on training to learners everywhere, Skill e-Labs bridges the gap between theory and practice, makes vocational education engaging, and equips students with real-world career skills, including on drones, solar energy fundamentals, electrical vehicles and basic life support skills.

Amrita Skills for Life

AMMACHI Labs launched the "Amrita Skills for Life" YouTube channel to provide accessible vocational and life-skills training. The platform offers over 16 courses across six languages, comprising more than 3,000 videos and 300+ learning hours. Aligned with the National Occupational Standards, these resources can be used by learners in ITIs, Jan

Shikshan Sansthans, secondary schools, and vocational training centers, supporting widespread skill development and self-paced learning.

Skill-eLabs Projects / VET-Sankalp

Launched in December 2024 under the SANKALP initiative, the Skill-eLabs project, implemented by AMMACHI Labs in collaboration with MSDE, DGT, and

NIMI, aims to strengthen India's vocational education system through technology-enhanced learning. Guided by an expert committee of national training institutions, the project addresses the gap in evidence-based research on digital tools in skill development. Skill-eLabs introduces a scalable, sustainable framework for industry-relevant training, supported by a pilot implementation and impact evaluation that measures gains in student learning, skill acquisition, confidence, and instructor feedback on tool usability. Skills training includes solar technicians and electronics mechanics trade.

Virtual Skill Labs Project

Virtual Skill Labs (VSL) are interactive, simulation-based environments that enable learners to practice real-world vocational skills through 3D simulations, animations, and hands-on virtual tasks. Developed by Amrita University's Research Center AMMACHI Labs, in collaboration with PSSCIVE, Bhopal, under NCERT and EdCIL (India) Limited, these labs aim to strengthen vocational education across schools and training institutes. They provide digital, scalable, and experiential learning solutions aligned with NEP 2020

and NCF 2023. VSLs bridge the gap between theory and practice, allowing students and teachers to engage in safe, repeatable, and cost-effective skill training even without physical infrastructure.