

ZARA ANDHYARUJINA

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EDUCATION

The Cathedral and John Connon School (CAJCS), Mumbai, India

- International Baccalaureate Diploma Program (IBDP): Grade 12 2025

Subjects: Mathematics Analysis & Approaches HL, Physics HL, Chemistry HL, Economics SL, English SL & Spanish Ab Initio SL

- Indian Certificate of Secondary Education (ICSE): Grade 10 2023

STANDARDISED TESTS

SAT: 1540 (790 Math, 750 English) 2024

Advance Placements: AP Calculus AB - 5, AP Psychology - 5 2022-23

ACADEMIC ACHIEVEMENTS

- **Scholars Badge** (only 1 of 126) awarded for achieving continuous academic excellence in Senior School 2024
- **ICSE School Topper 99.2% & 100%** in English Literature, Chemistry, Biology, History & Commercial Applications 2023
- **Governors' Medal** for the Best Performance in ICSE Public Examination in school 2023
- **PTA Kuruvilla Jacob Prize Winner**, secured highest marks in ICSE English + Best of 4 subjects 2023
- **Subject Prizes** in Chemistry HL and Economics SL for ranking 1st in batch for the subject, Grade 11 2024
- **Subject Prizes** for Geography and Commercial Applications, for ranking 1st in batch for the subject, Grade 10 2023
- **Subject Prizes** for English, History and Commercial Applications, for ranking 1st in batch for the subject, Grade 9 2022
- **Honors, Academic Excellence**, Grade 11, Grade 10 (*Grade 9 qualified but was not awarded due to covid*) 2023-24
- **ICSE School Marks:** Grade 10 – 95.6% (Term 2), 94.3% (Term 1), Grade 9 - 93.6% (Term 2), 91% (Term 1) 2022-23
- Ranked 1st in Grade 12 (Term 1) in Chemistry HL and Economics SL 2024
- **Distinction**, International Chemistry Quiz, Royal Australian Chemical Institute 2023

WOMEN IN STEM – MENTORING & INITIATIVES

Intern, Indian Women Scientists' Association (IWSA) 2024 - Present

A 51 year old association of eminent Indian women scientists with over 2,000 members and 12 national branches dedicated to empowering women in science, taking science to the masses and developing a scientific temper.

- Youngest intern at the National Science Teacher mentor workshop which was reported in the local newspaper, News Band.
- Assisted with setting up and demonstrating experiments for the teachers including, laser microscope, double slit interference and momentum. Attended all lectures and demonstrations by eminent scientists. Written a report on the workshop.
- Establishing the IWSA Science Museum and making working science models including, the Solar Smart School Bag.
- Lobbying with the prominent national newspaper, Indian Express to promote IWSA.

Founder, STEMInist Initiative 2024 - Present

- **Science Laboratory**- Funded USD 1,045 from “@Zazzystudies” for new science laboratory at Gandhi Ashram school, West Bengal (GA School). Impacted 150 students enabling their first science fair - “SciPi”.
- **STEMInist Tote Bags**-Designed and sold 400 “STEMInist” tote bags in the UK/India. Donated 119 tote bags to students of GA School, Abhyudaya Nagar Mumbai Public School (AN School) and Savitri Bai Phule School (SB School) and my STEMInist Middle school club members. Donated tote bags to science associations: TIFR, IWSA, Dept. Atomic Energy.
- **STEMInist Scholarship - IWSA** - Donated proceeds of USD 2,390 to IWSA being used to fund 4 “STEMInist Scholarships” for women’s university education with an ongoing annual commitment and USD 1,195 for general purposes by IWSA.
- **STEMInist Shop** – Launched a shop, www.steminists.shop.com to sell self-designed STEMInist products including 200 T-shirts (8 designs), 60 hoodies (2 designs) and 100 tote bags. Raised and donated USD 1786 to fund TIFR’s Physics program, Vigyan Vidushi for M.Sc. female students. Donated 73 T-shirts to AN School students, IWSA and TIFR Vigyan Vidushi participants.
- **Promoter Science Literacy** - Curator and donor of 4 science libraries to promote women science role models to IWSA, GA School, SB School and my Middle School.

School Club Co -Founder, STEMInists 2024 - Present

- Created the CAJCS Middle School girls’ club to promote STEM in girls (Grades 5-7) focusing on fostering a supportive community. Involves demonstrating higher level experiments, inviting eminent female scientists speakers, excursions to famous science institutions and study workshops. Recruited 30% Middle School girls.

CHEMISTRY EXPERIENCES & RESEARCH

Intern, Nano Cat Laboratory, Prof. Polshettiwar, Tata Institute of Fundamental Research (TIFR) 2024

- Shadowed 7 PhD students on synthesizing nanocatalysts including black gold through wet impregnation method.
- Conducted my own synthesis of TiO₂ nanoparticles and analysed them under the Scanning Electron Microscope.
- Learnt about various characterisation techniques in spectroscopy. Assisted in Transmission Electron Microscopy sample preparation.

Author, Nuclear Chemistry Paper on appearance of a superheavy nucleus: Investigating shape-dependent nuclear stability 2022

- Predicted the most stable shape of a superheavy nucleus, under the mentorship of Arthur Campello (PhD, Stanford University). Calculated their stability metric and concluded that toroidal nuclei are more stable than spherical (3,500 word paper).

Chemistry Extended Essay 2024

- Researching the optimal dopant concentration for doping TiO₂ nanoparticles with copper by measuring the photocatalytic degradation rate of methylene blue through UV-Vis Spectrophotometry (4,000 word paper).

- Author, Research Paper on Transition Metal Chemistry** 2024
- Conducting research on the impact of geometric shapes of transition metal complexes for selective pollutant extraction, under the mentorship of Dr Sally Boss, Cambridge University.
- Chemistry Internal Assessment** 2024
- Investigating how varying the pH influences the aerobic degradation of Vitamin C over time measured through iodometric titration.
- Shadow Experience, Nuclear Medicine Department, Breach Candy Hospital** 2024
- Exposed to nuclear medicine including the functioning of various machines that use radioactive substances in diagnosis and treatment of disease such as PET, CBCT, MRI, X-ray, sonography scans and safety processes.
- Intern, "Tandys Ice Cream", (Jehsom Food Products Pvt. Ltd)** 2024
- Developed understanding of chemical process in wholesale ice cream manufacture and guided on marketing/packaging.
- Summer Intern, "Skillmatics", (Grasper Global Pvt Ltd)** 2022
- Designed a prototype game based on Charles Darwin's "Survival of the Fittest" at this STEM education game company.
- In Quest, Science Fair, CAJCS** 2024
- Created the Solar Smart School Bag which uses solar energy to charge phones.

MENTORING & TEACHING

- Founder and Content Creator, "@zazzystudies", Instagram** 2020-Present
- Acquired over **66,000 followers**, offering study tips to boost productivity, motivation and focus to achieve my follower's academic goals.
 - Secured contracts for international financial sponsorships with brands such as Speechify, Photomath and CamScanner.
 - Selected as an affiliate for Notion from creators all over the world.
 - Endorsed products from brands such as Studyo, Occushield and tested the first prototype to improve focus, Foci.

- Chemistry Teacher** 2024
- Taught Grade 8-10 students at AN School and GA School concepts of bonding and catalysis and demonstrated experiments including, on the decomposition of hydrogen peroxide through the elephant toothpaste experiment.

- Numeracy and Literacy Teacher, Yasham Foundation** 2023 - Present
- Taught a group of Grades 5 & 6 children numeracy and literacy skills weekly for over 1 year employing Skillmatics games to aid in developing scientific cognitive skills.

- Book Donor and Assistant, Kitabh Khana** 2022 -24
- Donated 300+ of my story books from my favourite bookstore, Kitabh Khana to municipal schools (part of Teach for India) PCMC English Medium School Bopkhel and SB School, Pune.
 - Donated 75+ story books to Phiroza Godrej Library of IWSA.
 - Donated 50+ story books to GA School.
 - Worked with Kitabh Khana bookstore to curate their children's and young adult sections, wrote book reviews for the display, recommended books for customers and organised the section.

PIANO ACHIEVEMENTS 2015-Present

- Completed practical piano exams with all Distinctions in Grades Initial-4 (Trinity), Grades 3, 4 and 6 (ABRSM). Working on Grade 8. Completed ABRSM Music theory exams from Grade 1 to 5 with all Distinctions/ one Merit.
- Selected as 1 of 11 students across India to perform at a national ticketed concert, the Budding Brigade at National Centre for Performing Arts, Mumbai (NCPA).
- Played at over 13 public piano concerts in the last 10 years including, High Scorers' Concert ABRSM, Romantics & More, NCPA advertised in local newspaper, Mumbai Mirror, Add Art Open Air Concert, NCPA and Furtados Concert.

SCHOOL LEADERSHIP

- School Prefect, Student Council** 2024
- Appointed out of 126 students. Representing the student body in school leadership meetings. Mentoring 38 Grade 8 students. Successfully lobbied for introduction of Sex & Relationship education.

- Organising Committee Member, Cathedral Mathematics Competition** 2024
- Co - wrote all Junior level maths questions and handled overall administration for this competition with 2,600 participants.

- Head of Social Media, CAJCS** 2023-24
- Led social media teams to promote the events of Encore, the school's charity concert and Cathedral MUN.

- Secretariat member, Cathedral MUN** 2023

SUMMER PROGRAM & COURSES

- Student, Brown Pre-College Summer Program - *Quantum Mechanics: The Intersection of Physics and Philosophy*** 2023
- Learnt about the physical/metaphysical and philosophical implications of quantum mechanics and it's real world meaning. Completed project on the existence of free will from the perspectives of physicists and philosophers.

Courses

- Completed an *Introduction to Mathematical Thinking* by Stanford University. 2020
- Completed *Fashion as Design* by the Museum of Modern Art. 2020
- Completed a basic and intermediate Python course. 2022

INTERESTS: Sustainable and Nuclear Chemistry, Physics, Sewing, Reading, Poetry & Badminton.