

PINNACLE SCHOLARS ACADEMY

Kalanki, Kathmandu

Proposal for Science Equipment Grant

Academy Premises Pictures & School Introduction Included



Introduction:

Pinnacle Scholars Academy (PSA) was established in 1998 AD (2055 B.S.) and is located at Kalanki 14, Kathmandu, Nepal. Pinnacle's mission is guided by its motto "**Dark onto Light**". Numerous ethnic groups like Newar, Chhetri, Tamang, Gurung, Madhesi, and religious minorities like Christians, Muslims and others major inhabitants reside in this locality. Most residents of this region work in private as well as public workplaces. PSA offers educational programs from play group to grade 10. It provides education up to secondary level with minimum fee and optimum quality education with extracurricular activities and co curricular activities and provides multiple scholarship schemes for deserving students. PSA believes "**Co-operation, co-ordination & collaboration**" between all its stakeholders and community. Honesty and Loyalty deeply embedded in heart of PSA education. We encourage innovative learning through our academic and non-academic programs.

Pinnacle Scholars Academy cultivates excellence in every student by engaging them in rigorous and relevant learning opportunities that promotes academic, physical, social and emotional growth through integration of following 21st century skills in our educational practice.

1. Critical thinking
2. Communication and ICT skills
3. Creativity
4. Problem solving
5. Perseverance
6. Collaboration
7. Technology skills
8. Media literacy
9. Local & National Heritage
10. Global awareness
11. Self-direction
12. Social skills
13. Social responsibility
14. Innovation skills
15. Thinking skills



Students in the Morning Assembly

The school family consists of 42 teachers, 850 students and 35 management and support staff at PSA. Since its founding 25 years ago, the school management has been enhancing and upgrading quality in curriculum, pedagogy and teaching learning activities. The school management's aspiration to be a centre of excellence has seen thousands of successful graduates intellectually, physically, emotionally, socially and morally competent in their professional and personal areas. We have imparted perfect schooling that has helped them acquire life-skills, sound character and positive attitude to excel in their lives. As a result, students graduated from PSA have developed academic skills also learning beyond the text to solve contemporary issues and excel in a global world.

Pinnacle Scholars Academy believes that students can only receive a high quality education if we offer them practical learning environment. Learners, therefore, visit labs to where they can learn by doing which helps them retain concepts and gain hands on experience of the concepts in the books.

Social associations and collaboration of Pinnacle Scholars Academy

Pinnacle offers multiple scholarship facilities for students in multiple categories to make education inclusive and participatory to all social and cultural strata of the population in western Kathmandu. Also, we have been actively participating and supporting multiple social campaigns and organizations in areas of scholarships and social works. We feel proud to have been associated and collaborated with following social organizations and campaigns:

1. Little Sisters Fund (Education for Empowerment)
2. Lions Club of Kathmandu Vision
3. Nepal Women Welfare Forum
4. Senior Citizens Society Nepal / Jestha Nagarik Samaj
5. Kalanki Mandir Bikas Samiti
6. Nepal Lions Blood bank
7. Quest Nepal
8. Lions Club of Pinnacle Vision

Introduction to Pinnacle Scholars Academy Science and Robotics Lab

Pinnacle Scholars Academy had its first science lab since its inception days and is constantly upgrading. We also introduced Robotics Branch to our Science Lab to introduce the concepts of electronics, mechanics and practical application of Robotics in real world environment. Despite our efforts here are some constraints and problems we are facing to expand and promote quality practical science classes.

1. Infrastructure & Space Constraint due to urbanization
2. Constant Breakage of Lab equipments
3. Lack of awareness in guardians and policy makers regarding importance of practical experimentation
4. Need of Separate Labs for Biology, Chemistry and Physics in school education in Nepal as all these departments need different infrastructure.
5. Separate Lab Technician to coordinate, monitor and function the labs to run labs efficiently.
6. Large group of students using same lab equipment and having to wait for their turns.
7. Giving practical experiments more value in examination at National level.

Picture of PSA Science Lab





Objective:

1. To help understand and explore the concepts of science in practical way.
2. To develop cognitive abilities of children like critical thinking, problem solving, application, analysis.
3. To understand the nature of science like scientific enterprise, scientists and how they work, existence of scientific methods, interrelationships between science and technology and among the various disciplines of science.
4. To develop positive attitude towards scientific research like curiosity, interest, risk taking, objectivity, precision, confidence, perseverance, satisfaction, responsibility, consensus, collaboration, and liking science.
5. To develop and enhance the interest & understanding of scientific theories & knowledge among students in more comprehensive manner by imparting real and practical approach.

List of experiments

PHYSICS

SN	Name of Experiments	Equipments	Available Quantity	Required Quantity
1	Calculation of average time period of simple pendulum	-a simple pendulum bob and stand - stop watch	-	Pendulum bob and stand- 5
2	To determine upper fixed point in thermometer	-Beaker -stand -cork -delivery tube -Hypsometer -Thermometer -Burner	Beaker, delivery tube, tripod stand, thermometer, stand	2 sets each

		-Tripod stand		
3	To demonstrate longitudinal wave	Slinky spring	-	4
4	To study reflection and refraction of light	Optical bench	-	1
5	To study electric circuit	-Battery -connecting wire -bulb -Switch	-	2 sets
6	To measure volume of irregular bodies	-Measuring cylinder		
7	To measure density of body	-Spring balance -Measuring cylinder	Measuring cylinder-1	Measuring cylinder-3
8	To measure relative velocity	-Stop watch	-	4 sets
9.	To find velocity ratio. MA, VR of different simple machines.	-different types of pulleys -model of wheel and axle -inclined plane -wooden box -slotted weight with hanger -spring balance	Pully-1	4 sets each
10.	To show liquid pressure	-A glass vessel with different structures	-	4 sets each
11.	To measure pressure exerted by human lungs	-Manometer	-	5 sets
12.	To measure atmospheric pressure	-Barometer	-	1 set
13.	To measure human body temperature	-Clinical thermometer -digital thermometer	Clinical thermometer-1	5 sets each
14.	To measure boiling point and melting point of different substances.	-laboratory thermometer (alcohol/mercury)	Laboratory thermometer (mercury) -1	5 sets
15.	To measure the maximum and minimum temperature of different places	-maximum and minimum thermometer	-	1 set
16.	To show the image formed by curved mirror	-Optical bench -Concave/convex mirrors with stand	-	Optical bench-1 Concave and convex mirrors with stand-5 sets
17.	To show refraction of light through glass slab	-Optical board -Pins -glass slab	Glass slab-1	8 sets each
18.	To prove sound is produced by the vibration	-Tuning fork -rubber pad	1 set	5 sets each
19.	To demonstrate the propagation of sound	-Bell jar -electric bell	-	2 sets each

		-vacuum pump -9v, 6v battery		
20.	To measure the distance of cliff depth of the pond or lake (Echolocation)	-Fathometer -hydrophone -stop watch		
21.	To study about static electricity	-Glass rod -ebonite rod		5 sets each
22.	To demonstrate conductors and insulator	-electric wire -bulb -dry cell -glass rod	-	1 set each
23.	To verify Ohm's law	-Ohm's law set -Multimeter	-	2 sets
24.	To determine A.C. frequency	- sonometer	-	1
25.	To make simple cell and study its defects	-copper plate -zinc plate -Glass container -dil. Sulphuric acid	-	3 pcs each
26.	To demonstrate about the combination of resistors and their properties	-Bulb -battery -switch -voltmeter -ammeter -conducting wire	-	3 sets each
27.	To study about dynamo and internal resistance of cell	-Dynamo -Potentiometer -PO Rheostat	-	2 sets each
28.	To show combination of cells and their properties	-Electric wire -bulb -battery -Switch	-	3 sets each
29.	To electroplate an iron nail with copper	-copper plate -iron nail -copper sulphate solution -DC supply (6V) -beaker -connecting wire	Copper sulphate	3 sets each
30	To make an electro magnet	-DC source(6v) -solenoid wire -iron -nail -pins	-	5 sets
31.	To determine Archimedes principle	-Hydrostatic balance with weight box -Ureka can -top pan balance -spring balance	-	3 sets each

32.	To demonstrate magnetic lines of force around a bar magnet and properties of magnet	-Board -bar magnet -magnetic compass -iron dust -different types of magnet (U-shaped, horse, shoe shaped, circular, cylindrical)	Bar magnet-2	Board- 5 Bar magnet-5 Magnetic compass-5, Iron dust-1 Different types of magnet-1 set each
33.	To study electric bell	Electric bell	-	1
34.	To study about solar heater	A model of solar heater	-	1
35.	To demonstrate dispersion of light	Prisms of different size	1	5
35.	To show light is a form of energy	-Magnifying glass -concave mirror	1 each	5 sets each
36.	To prove white light consist 7 colors	-Newton's colour Disc	1	4
37.	To show types and properties of shadow formed by opaque bodies	-Torch light	-	4 set
38.	To find angle of dip and angle of declination	- A dip circle	-	1 set

Chemistry

SN	Experiments	Equipment's	Available Quantity	Required Quantity
1	To show dissolving of salt in water is a physical change	A porcelain basin, a wire gauze, a tripod stand, burner		Porcelain basin-4 Wire gauze-12
2.	To demonstrate sublimation process	Porcelain basin, burner, tripod stand, funnel, wire gauze, test tube, cotton, camphor		Camphor-5pkt Cotton-1pkt
3.	To demonstrate burning of a magnesium ribbon is a chemical change	Magnesium ribbon, burner, tongs/forceps	1set	3 sets each
4.	To show the change in color of acid, base and salt with different indicators	Blue litmus paper, red litmus paper, methylorange, phenolphthalein, PH paper, PH meter, PH scale	-	Litmus paper 3 pkt each, Methylorange-1 Phenolphthalein-1, Ph paper-4 pkt, Ph meter-1, Ph scale-3sets

5.	To study classification of elements	A chart of periodic table	-	3
6.	To show filtration process	Stand, funnel, beakers, glass rod, filter paper	Stand-2, funnel-2, beakers-3, glass rod-1, filter paper-1 pkt	5sets each
7.	Laboratory preparation of gases (Hydrogen, Oxygen, Nitrogen, Carbondioxide, Ammonia)	Glass tube, triangular file, rubber cork, cork borer, Gas jar, beehive shelf, watch glass, wash bottle, wire gauze, tripod stand, clamp and stand, test tube brush, test tube holder, spirit lamp, Bunsen burner, woulfe's bottle, conical flask, hard glass test tube, thistle funnel, glass rod, asbestos sheet, water trough, lime tower Chemical required Calcium chloride, Granulated zinc, sulphuric acid, Hydrochloric acid, Hydrogen peroxide, potassium chlorate, Ammonium chloride, sodium nitrite, calcium Hydroxide, sodium hyudroxide, potassium hydroxide, sodium, manganese dioxide	Galss tube-2 rubber cork-3 Gas jar-2 beehive shelf-2 watch glass-2 wire gauze-3 tripod stand-3 clamp and stand-2 test tube brush-2 test tube holder-2 spirit lamp-2 woulfe's bottle-1 conical flask-1 hard glass test tube-1 thistle funnel-2 glass rod-1	5sets each Chemical 1 set each
8.	To show distillation process	Distillation set		
9.	To separate –soluble and insoluble solids -volatile and non-volatile solids -insoluble solids	Porcelain basin, tripod stand and wire guaze, funnel and filter papers, Beakers, Test tubes, Burner, Asbestos sheet, conical flask, water trough, glass retort	tripod stand-3, wire guaze-3, funnel and filter papers-3, Beakers-2, Test tubes-6, Burner-1, Conical flask-1, Water trough -3	3 sets each

10.	To compare the reactivity of different metals	Zinc power, copper fillings, aluminium powder, iron fillings	Iron fillings-	1 pkt each
11.	To study the rusting of iron	Test tubes, clean iron nails, corks, anhydrous calcium chloride, vascelin, distilled water	Test tubes-6pcs	Test tubes- 1doz, anhydrous calcium chloride-1, vascelin-1, distilled water-1
12.	To explain about chromatography	Adsorbent chromatogram	-	1 set

Biology

SN	Experiments	Equipments	Available Quantity	Required Quantity
1.	To study onion cell/blood cells, permanent slides	A compound microscope, cover slip, glass slides, glycerine/formaline, drawtube, Dissection set(brushes, dropper, needles), Blotting paper, petri dish, Permanent slides: amoeba, paramecium, animal cell, spirogyra etc, plant tissues	Cover slip-1, Permanent lides: Amoeba-1, Paramecium-1, animal cell-1, spirogyra-1,	Cover slip-3pkt, Glass sliques-1set, Glycerine/Formaline-1, Draw tube-4, dissection set-5sets, Blotting paper-2sets, petri dish-4, permanent slides-6sets, plant tissues; 6sets
2.	To study different vertebrates and invertebrates and classify them	Biological specimens (octopus, starfish pila, seahorse etc)	Octopus-1, Starfish-1, Seahorse-1	Each 5sets
3.	To study vegetative structure and spores of the mushroom/fern -making a spore print	A hand lens, glass slides, cover slip, compound microscope, glycerine	Microscope-2	Hand lens-5 Slides-1set Compound microscope-6
4.	To study the model of human skeletal system	Model of human skeleton and chart of human skeleton	1	2sets

5.	To study about human heart, lungs, kidney, digestive system, eye	Model of human body having all body organs	-	1 set
6.	To study solar and lunar eclipse	Globe, torch light, tennis ball	-	Each 2
7.	To study solar system, constellation, galaxy, meteor, meteorites	Chart of solar system, galaxy, constellation	-	Each 2
8.	To study weather	Hygrometer, barometer, Anemometer, Maximum and minimum thermometer	-	Each 2
9.	To show the formation of fossil	Plaster of paris, petroleum jelly spoon, plastic cups, soap case, leaf	-	Each 2 sets
10.	To study the parts of flower	A model chart of flower	-	2
11.	To explain various methods of vegetative propagation in plants	Model chart of vegetative propagation in plants	-	2
12.	To study different phases of the moon	A model chart of phases of the moon	-	2

Some science equipment for Primary Level

SN	Experiments	Equipments	Available Quantity	Required Quantity
1.	To study traffic light	A model of traffic light	-	2
2.	To study about first aid box	A set of firstaid box	-	2
3.	To study clock	A clock	-	2
4.	To study types of food and nutrition	Chart of food and nutrition	-	2
5.	To study the classification of animals	Chart classifying vertebrates and invertebrates	-	2
6.	To identify soluble and insoluble substances	Beaker, stirring rods	-	2 sets each
7.	To demonstrate the formation of clouds and rainfalls	Beaker, burner, tripod stand, wire gauze	-	2 sets each

8.	To measure volume of liquids:	Measuring can, Measuring cylinder	-	2 sets each
9.	To demonstrate solar system, phases of the moon, changes in seasons	-model of solar system, Model of phases of the moon	-	2 sets each
10.	To measure the length, breadth	Measuring tape, scale and height	-	Model of water cycle

Budgeting

PHYSICS

SN	Required Equipments	Required Quantity	Estimated Price
1	-a simple pendulum bob and stand - stop watch	5 set each	1250./-
2	-Beaker(250ml) -stand -cork -delivery tube -Hypsometer -Thermometer -Burner -Tripod stand	2 sets each	160/- 950 20 20 1650 175 550 375
3	Slinky spring	4	375/-
4	Optical bench (s,s,rod)	1	9500/-
5	-Battery (9V) -connecting wire -bulb -Switch	2 sets	90/- 75 5 35
6	-Measuring cylinder (250 ML)		275/-
7	-Spring balance -Measuring cylinder	3 sets each	325./- 275
8	-Stop watch	4 sets	450/-
9.	-different types of pulleys -model of wheel and axel -inclined plane -wooden box -slotted weight with hanger -spring balance	4 sets each	380/- 1650 1450 2500 475 (100g) 325
10.	-A glass vessel with different structures	4 sets each	1000./-
11.	-Manometer	5 sets	1200/-

12.	-Barometer	1 set	1850/-
13.	-Clinical thermometer -digital thermometer	5 sets each	125/- 1450
14.	-laboratory thermometer (alcohol/mercury)	5 sets	175+275/-
15.	-maximum and minimum thermometer	1 set	750
16.	-Optical bench -Concave/convex mirrors with stand	Optical bench-1 Concave and convex mirrors with stand-5 sets	9500 225 each 175
17.	-Optical board -Pins -glass slab	8 sets each	775 60 175
18.	-Tuning fork -rubber pad	5 sets each	275 45
19.	-Bell jar -electric bell -vacuum pump -9v, 6v battery	2 sets each	975 1250 1800 90-1650
20.	-Fathometer -hydrophone -stop watch		500 500 450
21.	-Glass rod -ebonite rod	5 sets each	25 125
22.	-electric wire -bulb -dry cell -glass rod	1 set each	25 5 25 20
23.	-Ohm's law set -Multimeter	2 sets	5500 650
24.	-sonometer	1	1650
25.	-copper plate -zinc plate -Glass container -dil. Sulphuric acid	3 pcs each	150 90 275 1000
26.	-Bulb -battery -switch -voltmeter -ammeter -conducting wire	3 sets each	5 90 35 700 700 800
27.	-Dynamo -Potentiometer -PO Rheostat	2 sets each	950 2200 6500
28.	-Electric wire -bulb -battery	3 sets each	

	-Switch		
29.	-copper plate -iron nail -copper sulphate solution -DC supply (6V) -beaker -connecting wire	3 sets each	950
30	-DC source(6v) -solenoid wire -iron -nail -pins	5 sets	
31.	-Hydrostatic balance with weight box -Ureka can -top pan balance -spring balance	3 sets each	4800 1400 75 950
32.	-Board -bar magnet -magnetic compass -iron dust -different types of magnet (U-shaped, horse, shoe shaped, circular, cylindrical)	Board- 5 Bar mgnet-5 Magnetic compass-5, Iron dust-1 Different types of magnet-1 set each	300 275 35 225 350 350
33.	Electric bell	1	
34.	A model of solar heater	1	
35.	Prisms of different size	5	90-125
35.	-Magnifying glass -concave mirror	5 sets each	275
36.	-Newton's colour Disc	4	475
37.	-Torch light	4 set	175
38.	- A dip circle	1 set	7500
	Total		184110

Chemistry

SN	Equipment's	Required Quantity	Estimated Price
1	A porcelain basin, a wire gauze, a tripod stand, burner	Porcelain basin-4 Wire gauze-12	75 20
2.	Porcelain basin, burner, tripod stand, funnel, wire gauze, test tube, cotton, camphor	Camphor-5pkt Cotton-1pkt	Funnel-150 Cotton-275 Test tube-20
3.	Magnesium ribbon, burner, tongs/forceps	3 sets each	275 125 125
4.	Blue litmus paper, red litmus paper, methylorange,	Litmus paper 3 pkt each,	150 220

	phenolphthalein, PH paper, PH meter, PH scale	Methylorange-1 Phenolphthalein-1, Ph paper-4 pkt, Ph meter-1, Ph scale- 3sets	240 475
5.	A chart of periodic table	3	450
6.	Stand, funnel, beakers, glass rod, filter paper	5sets each	Filter rod-275
7.	Glass tube, triangular file, rubber cork, cork borer, Gas jar, beehive shelf, watch glass, wash bottle, wire gauze, tripod stand, clamp and stand, test tube brush, test tube holder, spirit lamp, Bunsen burner, woulfe's bottle, conical flask, hard glass test tube, thistle funnel, glass rod, asbestos sheet, water trough, lime tower Chemical required Calcium chloride, Granulated zinc, sulphuric acid, Hydrochloric acid, Hydrogen peroxide, potassium chlorate, Ammonium chloride, sodium nitrite, calcium Hydroxide, sodium hydroxide, potassium hydroxide, sodium, manganese dioxide	5sets each Chemical 1 set each	15,175,275,650, 80,35,45,75,375, 220,45,75,50.375. 750,330,1700, 475,475,300, 900,350,540, 400,310,820, 550,350
8.	Distillation set		1650
9.	Porcelain basin, tripod stand and wire gauze, funnel and filter papers, Beakers, Test tubes, Burner, Asbestos sheet, conical flask, water trough, glass retort	3 sets each	Glass retort -650
10.	Zinc powder, copper fillings, aluminium powder, iron fillings	1 pkt each	1700,600 700,600
11.	Test tubes, clean iron nails, corks, anhydrous calcium chloride, vascelin, distilled water	Test tubes- 1doz, anhydrous calcium chloride-1, vascelin- 1, distilled water-1	Vascelin-650 distilled water-750
12.	Adsorbent chromatogram	1 set	
	Total		72090

Biology

SN	Equipments	Required Quantity	Estimated Price
1.	A compound microscope, cover slip, glass slides,	Cover slip-3pkt, Glass slides-1set,	6500,65.125 870,275,650,15

	glycerine/formaline, draw tube, Dissection set(brushes, dropper, needles), Blotting paper, petri dish, Permanent slides: amoeba, paramecium, animal cell, spirogyra etc, plant tissues	Glycerine/ Formaline- 1, Draw tube-4, dissection set-5sets, Blotting paper-2sets, petri dish-4, permanent slides- 6sets, plant tissues; 6sets	50,225,125
2.	Biological specimens (octopus, starfish pila, seahorse etc)	Each 5sets	550 each
3.	A hand lens, glass slides, cover slip, compound microscope, glycireine	Hand lens-5 Slides-1set Compound microscope-6	
4.	Model of human skeleton and chart of human skeleton	2sets	4500,325
5.	Model of human body having all body organs	1 set	
6.	Globe, torch light, tennis ball	Each 2	1450
7.	Chart of solar system, galaxy, constellation	Each 2	375,14000
8.	Hygrometer, barometer, Anemometer, Maximum and minimum thermometer	Each 2	Hygrometer -1450 Anemometer-16500
9.	Plaster of paris, petroleum jelly spoon, plastic cups, soap case, leaf	Each 2 sets	175
10.	A model chart of flower	2	275
11.	Model chart of vegetative propagation in plants	2	275
12.	A model chart of phases of the moon	2	3500
	Total		110060

Some science equipment for Primary Level

SN	Equipments	Required Quantity	Estimated Price
1.	A model of traffic light	2	14000
2.	A set of first aid box	2	3000
3.	A clock	2	1000
4.	Chart of food and nutrition	2	300
5.	Chart classifying vertebrates and invertebrates	2	400
6.	Beaker, stirring rods	2 sets each	380
7.	Beaker, burner, tripod stand, wire gauze	2 sets each	870

8.	Measuring can, Measuring cylinder	2 sets each	700
9.	-model of solar system, Model of phases of the moon Modal of water cycle	2 sets each	16000
10.	Measuring tape, scale and height		50
11	Wooden rack(5 ¹¹ x 6 ¹¹)	2sets	30000
		Total	66700

Total Budget

SN	Faculty	Amount	Request to LSF	School Share
1	Physics	186,890/-	186,890/-	-
2	Chemistry	42,687/-	-	42,687/-
3	Biology	91,100/-	-	91,100/-
4	Equipment for Primary Level	59,200/-	59,200/-	-
5	Project management & reporting		56,162	26,757
	Total		302,252	160,544
	VAT 13%		38,390	20,871
	Total request		340,642 65%	181,415 35%

Note# extra 13 per cent VAT will be applied to the quoted rates while invoicing

Monitoring/Evaluation

The teachers will keep a close eye on all of our activities and resources. Every teacher is required to report on their experiments and activities to their coordinators, and all of this information is then forwarded to the principal.

Committee Members:

- a. Shristy Karki(CM) – Leader
- b. Nimi Raj Ghimire (Principal)- Leader
- c. Ramesh Khatri (Secondary Level science teacher)-Leader
- d. Bikash Timalisina (Lower secondary science teacher) – Member
- e. Jani Sherpa (9) (LSF/E4E girl) – Member
- f. Srijana Ghimire (8) (LSF/E4E girl) – Member
- g. Pratima Bhusal (6) (LSF/E4E girl) – Member
- h. Aayusha Khatri (7) (LSF/E4E girl) – Member