



Fostering scientific temper in Mizoram

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ABSTRACT

This article celebrates the theme “Fostering Scientific Temper” of the Department of Science and Technology, Government of India. It emphasizes the need for breaking unscientific approaches to understanding nature and events in our lives, particularly stressing on those of the Mizo people. The linger belief that leaf insects and stick insects spontaneously transform from plants, that house lizards are venomous, that animal intestines are good for diabetes mellitus, and that malaria is spread through water. The indigenous notion that crocodiles are the male species, and gharials are the females, that two edible snails are males and females, porcupines can shoot their spines, and that the rough-skinned toads are leprous. This paper is an attempt to provide the scientific rationales of these apparent myths.

Key words: Mizo; insects; mimicry; diabetes; toads; snakes; porcupines; scientific temper.

KAMKEUNA

Kum 10 kalta khan India sorkar chuan kum 2004 kha ‘The Year of Scientific Awareness’-ah a lo puang tawh a. Kha kumpuan kha puithûna âthlâk buaipui em em thin Zofate tân a lâw-mawm ngawt mai. Mizoram sorkar pawhin hma lain district hrang hrangah organising committee pawh din a nih kha. Kha kumpuan zârah khan Zofaten science lama kan rindân âthlâk pui pui, kum zabi 21 hnu lam thleng pawha kan la sa-huai thing vawn tlatte hi kan bânsan tawh kan beisei laiin bânsan hlei thei lo kan la awm nualin a lang.

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Science subject a degree neiten college/school-ah an zirtir a, chu chu zirtirtute hian an duhtâwk mai tur a ni lovang. Feet 14 biala nau-pang 20/30 vêl hrilh hriat atân mai chuan an hriatnate hi a uiawm ka ti deuh tlat a ni. Science subject zirtirtute hi chuan an thil hriatte hi he-lam pang hre pha lo, layman te an hrilh a, an ziak peih pawh hi a tûl leh zual hle. Chanchinbu thenkhatah science lama Mizote rindân âthlâk tak tak, kum zabi 21-naah pawh chu rindân âthlâk tak takte chu kan la bânsan theih lohzia chungchâng ka ziak tawh thin a. Ka point tam tak zingah hnah rannunga chang thei tlata ring pâwl an la awmte hi a âthlâkzia, thlai leh rannungte hi thilnung ve ve ni mah se an cell te chu a inan si lohzia leh inan lohna tam tak an neihzia te, hnah rannunga chan chu thil theih a

nih lohzia ka ziaik tawh a. Mi tam tak, a bikin ramvâk mi te, chuan min chhuahchhâl ta noh noh mai a. Ka han hrilhfiah fê hnu leh min hni-alna khân zawng zawng ka pheh thlaksak hnu pawhin ka hneh thei chuang miah lo a, pa thenkhat phei chu an thinrim lek lek mai zu nia! Chhiartu leh hretu an tam poh leh chhuahchhâltu kan tawng tam ting mai niin ka hria. BSc (Biology) zirlaite zingah ngei pawh hetiang rindân âthlâk nei tlat hi an awm nual tho, a beidawnthlâk hle. Science zirlaite meuhin hetiang rindân an nei ve ta mai hi tu mawh nge? Kan zirlai te pawh zirtirtute hian kan convince thei lo a nih chuan layman te chu convince ngaihna a lo awm lo a nih hi. Tu dik loh nge ni ta ang? Hnah rannunga chang lai hmua insawi te pawh kan awm nuk mai. Hnah chang a ni lo, thing tâng pawh rannunga changa sawi pâwl pawh an awm.



Leaf insect (*Phyllium scythe*). Hnah a ang ve ringawt mai a ni, hnah a ni lo.

RANNUNG INSIAM

Rannung chi khat sapin leaf insect an tih hi mi tam takin hnah rannunga lo chang thin nia an puh chu a ni. He rannung hi hnah a tanga lo piang ni lovin rannung (insect) pângngai ve tho a ni a, hnah a an em avânga sapho pawhin leaf insect (hnah nung) lo ti ngawt an ni. Hei hi an hmelma sava leh rannung dang laka an invenna, an bumna (mimicry) mai a ni. An awmna hnah ang deuh chiaha an lan theih thin avang hian an hmelmaten an hmu fuh thei ta thin lo a, an him phah ta thin a ni zawk. Leaf insect hi rannung chanchin zir mite chuan Phyllium scythe an ti a, rannung dik tak a ni, hnah a tanga lo piang/insiam a ni love. Insect bâkah rannung dang rûl, laiking leh nungcha dangte pawhin mimicry hi an ti thin bawk.

Hetiang deuh bawk hian sapin stick insect an



Stick insect chi hrang hrang.

tih hi thing t̄ang a an em avanga a hming hi vuah ve mai an ni leh pek a, keini chuan aramawng-hawlh kan tih hi a ni. Aramawng-hawlh pawh hi a awmna thingt̄ang a ro leh hrin athuin a rawng hi a tidanglam thin a, mimicry tho kha a ni. Aramawng-hawlh hi rannung chanchin zir mite chuan Caraucius an ti a, hei pawh hi thing t̄ang a t̄anga lo piang/insiam ni lovin rannung dik tak, rannung ni tur r̄enga Pathian siam a ni z̄awk.

Mi thenkhat chuan hnah rannunga chang ni ngeia an hriat chu rawn kengin min rawn hmuh thin a, mahse Phyllium bak a ni ngai lo. An sawi ang hi lo ni tak tak se, he thil mak tak hi plant leh animal anatomist te leh taxonomist hote pawhin hmuh ve an ch̄ak d̄awn em asin mawle. Mahse vawiin thleng hian hetiang thil hmu intia rawn keng th̄inte rawn ken thin hi chu Phyllium b̄ak hi a la ni rih ngai tlat lo. Hnah a t̄anga insiam a nih lohzia, hnungz̄ang ruh nei lo (invertebrate) rannung zinga hl̄awm lian tak phyllium Arthropoda hnuaia class pakhat Insecta zing ami niin thlai (plant) nen inzawmna pakhat mah a nei lo a, hnah anga a lanna chhan chu mimicry mai a ni e, ti a kan inhrilhfi ah hnu pawha hmin hlei thei lo an la tam mai zu nia! Engpawhnise life science zir lo leh helam chanchin hre lem lo t̄an chuan he rannung Phyllium hi hnah a t̄anga rawn insiam ni a w̄m tak chu a ni ve bawk a ni. A taksaah hnah zia (veins) ni a w̄m tak a lo z̄am ve chit chiatin a mah a lo hring ve nghelh bawk nen. Thenkhat chuan hnah rannunga chang lai, a chanve hnah/thing t̄ang, a chanve rannung hmute pawhin an insawi a, hetiang hi in hmu a nih chuan in awmna a t̄anga hnai ber college/university a life science zirtirtuah emaw zoology department-ah kengin hmuhtir chhin ta ula, an lo hrilhfi ah thei ngei ang. Hnah hi rannungah a lo chang tak tak thin ngei a ni tih an thil rawn ken a t̄anga finfi ah a nih ngat phei chuan khawv̄el life science history hi an tidanglam vek dawn asin.

Zirtirtute pawh hian hlawh hmuh nan chauh kan zirtir ta em ni le? Kan naupangte awih turin thu kan sawi thei ta lo em ni? Keimahniah ei tur an hmu ta lo mai em ni? Ngaihtuah a ti thui khawp mai. Kan naupangte pawh hian an zirtir-

tute, vantlang pawhin ‘mi thiam’ a an ngaihte thu sawi hi awih si loin tu pa zu khawn chang lo rind̄an a t̄hl̄ak, finfi ahna mumal pawh awm hlei lo hi an awih ta z̄awk poh em ni? Chutiang a nih ngat chuan zirtirtute chu dem theih an ni ngawt si lo ang.

DAIDĒP HLAUHAWM

Daidēp kan tih hi inhrik an ti bawk. Hm̄an deuh tawh khan Lunglei khawpuiah pa pakhat chu daidēp seh hlum angin a thang vak mai a, hei vang hian mi pawhin daidēp chu an th̄in an thinhrik phah hle a. Ani lo pawh hi daidēp seh hlum anga sawi, belhchian d̄awl vak si lo leh finfi ahna chiah pawh awm l̄em si lo an awm nual mai. Rannung chanchin zir mite sawi leh ziah danah chuan daidēp chu sawi loh, a chi leh kuang laiking (lizard) ho reng rengah hian mi seh hlum thei khawpa t̄ur pai tam (poisonous/venomous) an lo awm mang hauh lo mai. Mizoram chu sawi loh, Asia khawmualpui meuhah pawh hian hetiang lam zir mi, mi thiam (herpetologist)-te chuan poisonous/venomous lizard awm loin an lo puang hi a lo ni si a.



Daidēp hlahawm chi, Mexican beaded lizard (a chung) leh Gila monster (a hnuaia). N. America-ah chauh an awm.

Chutih laiin keiniho chuan rannung pawisawi lo daidêp chu kan lo tih ru riau mai bawk si a nih chu. Keini aia zir nasa zâwk leh research te hial hemi kawnga beitung a hlauhawm lo an tih chuan ringin awih ve mai ila a tha ang e. Amaherawhchu laiking (lizard) chi zawng zawng hi an hlauhawm lo vek tihna chu a ni lo. Khawvêlah hian laiking chi hrang 5,000 vêl lai awma hriat a ni a, chung zozai zingah chuan chi 2 chiah poisonous/venomous an awm a, chungte chu America thlalerawm 'Gila monster' an tih leh Mexico rama awm 'Beaded lizard' an tihte hi an ni. Chuvangin helaia kan daidêpte hi chu lo hlauin thah lo tum phêt tawh lo ila, kan hlauh tur berte lah chu America khawmualpui lam ami daih an ni bawk si a, heng daidêp pawisawi lo te hi chu lo nung ve mai mai ang hmiang, thosi leh rannung hnawksak dangte ei rêmtute an nih hi.

ARNU CHU ARPA

Hmân deuh khan khaw pakhat arpu pakhat chu arpa a chan daih thu chanchinbuah an chhuah a. He thil hi 'thilmak' (miracle) ang ema ngaih tur chu a ni lo e, Science thiamna lam ațanga chhûtin thil awm thei a ni tlat alawm. He thilmak kan tih mai hi mi thiamte chuan 'sex reversal' an ti a, kan ramah chauh ni lo, khawvêl ram dangah pawh thil thleng fo a ni. Ar kher ni lo, rannung dangah pawh thil thleng fo a ni bawk tih pawh hre tel ila. Arpu arpa chan hi thil thleng fo a nih laiin arpa arpuia chang ta erawh hi chu thil thleng ngai lo a ni rih thung. Sava chi ho reng rengah hian a tui leh a chi insiamna bawm (ovary) pakhat chauh a awm a, chu ovary lai takah chuan tisa mûr (mass of tissue), a pa til (testis)-a tisa mûr awm ang chiah hi a awm ve pek a. Ovary hian pangti pêng thununtu thâlbe tuihnang (hormone) chi khat progesterone chu a tichhuak (secrete) thîn a. Heihi a nu (female) tinu (feminine)-tu bik hormone a ni a, mihring leh ramsa/ranah pawh a awm vek a ni. Kan hriat angin sava chi ho reng rengah chuan a pa til (testis) hi a pum chhungah a awm daih a nih hi. Tichuan a til pawh hian ovary ang thovin hormone chi khat, a pa (male)

ti-mipa (masculine)-tu testosterone a ti chhuak ve reng bawk a ni. Arpu ovary hi natna (disease) avangin a pân chhe ve fo mai a, hetiang a lo nih chuan ovary-a a pa til tisa mûr ang chiah awm ve kan tih ațang khan progesterone hormone ni ta lovin a pa pangai til ațanga hormone lo chhuak thîn testosterone zâwk kha a lo chhuak ta vak mai a, a hup bettu tur ber a nu hormone progesterone lah chu a tichhuaktu ber ovary kha a lo pân chhe tawh bawk si. Tichuan zawi zawiin arpu khan testosterone hormone a lo tichhuak ta vak mai a, chu chuan a pa zia a puttir ta tial tial a, a tâwpah phei chuan chhuang leh siak te neiin a lo khuang ta ûl ûl mai a ni. Kha khaw arpu-arpa pawh kha hetiang lo arpa ta mai hi a ni ngei ang, rin mak vak tur a ni love.



He arpu phei hi chu a taksa veilam chauh arpaah a chang.

ZORAMA MALSÂWMNA

Heng ngaihdân mak tak tak hi a bul tak chu Mizoten rindân âthlâk thi thei lo kan neih tlat vang hi a ni mai. Tun thlenga hnah rannunga chang thei nia ring, lungphu pawh thinphu ti tlat thin (kan thin ni loin kan lung hi a phu zawk si a) Mizote zingah, mi rawn tlâk tak takte zingah pawh, an la kuh tui tlat alawm. Hei chang a ni hleinem, mautam sazu tam lai tak tak chuan bawkbawnte hi sazuah a chang zel te an la ti

asin! A dang pawh a la tam mai. Hmân deuh pawh khan tupa huanah emaw chuan khawnvartui thlitfim sa an lai chhuak a ni lo'm ni? Pathian zawn chhuah inti Zofate ram meuh pawh ni se kan Pathian hian a thlitfim sa em chuan khawnvartui hi chu min pe bik lovang. Pathian meuh pawh hian leilung dan bawhchhe lutuk hi chuan thil a ti bik lovang, min pe a nih pawhin mi ram a pêk ang bawkin crude oil an tih, thlitfim loh dum ngêk ngûk tho a nia min pêk dawn ni. Rindân âthlâk tuipuitu Mizote hian a thlitfim sa chu sawi loh, a crude oil kg khat pawh kan lai chhuak tawh em le? Zunthlum leh natna dang tualchher damdawi tam tawhzia te hi kan hria em? Mizoramah ringawt pawh hian science finna engahmaha ngai lo, intifing Mizopa hmuhchhuah zunthlum leh natna dang damdawi hi tam tak a ni. Zunthlum damdawi an tih pakhat, awih har ka tih em em chu sakhi chek hi a ni. Doctorte chuan sa ril (intestine) hi thau tamna a ni an ti a. Sachek chu sa ril a ni mai a, thau tam tak a awm tih a hriat mai. Thenkhat phei chuan dampui hmiahin an la insawi lehngal. Mi thiamten an sawi fo chu miin zunthlum a vei chuan a dam thei tawh lo tih hi a ni. Vawiin thleng hian research an bei mêk chung pawhin zunthlum damna hlauh damdawi hi an la hmu chhuak lo asin. Tihdam theih loh ni mah se a control theih tih erawh chu an sawi. Dama insawite pawh hi an insum loh chuan an vei leh tho tih hriat a tha hle. Zunthlum leh natna dang atana tualchher damdawi kan tihte, damdawi tha tak nia an sawi khan side effect engnge a neih kan hre ve tawh thin si lo a, tualchher damdawi hi tawng nêl ngawt loh a tha ngawt mai. Mi thiamte chuan research an bei a, an chhin a, side effect a neih leh neih loh te an en vek hnuah, an hralh chhuahtir chauh thin a ni zâwk. Kha damdawi kha eng natna emaw atân tha hle mah se kan taksa bung thenkhat tâna a that tlat si loh chuan damdawi tha a ni ngai lo ang.

CHENGKAWL BIAL LEH TUNG

Chengkawlte pawh hi mawle, a tung hi a nu,

a bial hi a pa, kan han ti leh ngawt mai a. Chengkawltung leh bial hian inhhungkhatna an nei lem lo, chi hran daih an ni zâwk. A tung hian no a pai (viviparous an ti a) avang mai hian a nu emaw kan ti ni maiin a lang. A nu leh a pa a hrangin an awm thlap a ni. A bial hi chu a tuia tui chi (oviparous) an ni a, luikam hnâwng hmunah an tui thin a ni, a no pai kan hmuh loh vang maia a pa ti ta mai kan ni ngei ang le.

MALARIA

Malaria hrikte pawh hi, rannung mâwl ber Protozoa-ah pawh a mawl ber chi, Sporozoa pâwl ami niin, chet vêlna kutke (locomotory organ) nei lo, an awmna thisen luan ang anga che sawn thei chauh an ni. Mizote zingah, mi thiam tak taka ngaihte zingah pawh kan tui tlan ațanga malaria hrik kai theih nia ngai an tam mai leh pek zu nia. Malaria hrikte lutuk tak mai Plasmodium hi thisen lumah lo chuan a awmin a nung thei miah lo, tuiah chuan a nung thei lo hrim hrim, siamtu'n a chenna tura a ruat a ni tlat lo. Mahse rindân âthlâk kalsan hleithei lo Mizo thenkhatte chuan tui ațanga kai theih niin kum zabi 21-ah pawh hian kan la ngai tlat mai a ni. Hmân deuh khan Mizoramah Taikheri a lar hle mai. Mi tai a khersak thin vanga chu hming chu phuhsak an ni tih chanchinbuah an chhuah. Taikheri hian tai (pile)-ah hian malaria hrik hi awm khawm duh bika sawiin malaria natna veite tai chu a lo kher sakin a lo vih sak thin a ni âwm e. Sikserh vei, a hmei a pa, a pui a pang, a lian a tein Taikheri hmaah chuan an va bungbu a, a nin an tai chu hriauin a lo khei/kher ta mai a nih chu. Khawi ațangin nge taiah malaria/sikserh hrik an tawmkhawm thin tih a hriat? Tu tih dan takah research a bei tawh em ni? Tai hi thil chhe awl (delicate) tak mai a ni a, tai harsatna (pile problem) nei tam tak an awm a, an buaipui em em a ni. Tai cancer ngat phei chu an an buaipui nasa bik em em lehngal. Taikheri hian mi tai a kherna hmanrua hi a tithianghlim (sterilise) ang em? Eng hmanrua nge a hman? A pawnfena pin a hmang mai nge, la zai pai ngeuh ngoh hriau te hi a hmang mai?

A tai kher avanga sikserh/malaria natna ațanga dam ta eng zat chiah nge awm ang? A nih loh leh a tai kher avanga tai hrisel lo nei ta, tai cancer hial vei ta te hi an awm em? Heti zawng te pawh hian ngaihtuah ve tur a ni ang. Khawvêl finna a sâng zêl a, science leh technology-ah pawh hma kan sâwn zêl lai a, mi thiam leh fîng zâwk, zir sâng zâwkte thusawi awih lova, kan rindân âthlâk leh mâwl zâwk ringa kan kal zêl mai chuan India rama literacy percent sâng ber pawh ni ila, awmzia a awm dâwn chuang tlat lo a ni. Chuvangin kan rindân âthlâk tak takte hi bânsan ve tawhin khawvêl finna sâng zêl rual hian i pen ve tawh ang u. Hemi chungchangah hian waviina science zirlaite an pawimawh zual hle a, science zirtirtute pawhin kan zirlaite mai ni loin zir ve lo mipuite pawh kan hrilh fin

(aware) a hun ta e. Zirtirtute pawh class rooma student tam vak lote hmaa kan thusawi hi duh tâwk mai lovin mipui vantlang (laymen)-te hne-nah sawiin ziakte pawhin i puang uar leh zual teh ang u, chuti lo chu khawvêl finna lamah hnungah kâwl-êk kan thai rei bik lutuk palh ang e.

AWLE NU LEH PA

Mi ðenkhat chuan awle hi a nu, saritawm hi âwle pa a ni tih rindân nei an awm bawk. Mizo in âwle kan tih hi crocodile a ni ngei a, alligator pawh hi awle kan ti tho niin a lang. Alligator hi sahan (zoo) tih lohah chuan America ramah leh China ram bakah khawvêl hmun dangah an awm ve lo niin an sawi. Awle erawh hi chu



Awle chi hrang hrang. Vei lam chung crocodile; a hnuai gharial; ding lam American alligator.

khawvêl hmun hrang hrangah an awm thung. Heng laia saritawm kan tih hi gharial an tih mai hi niin a lang a, a scientific hming chu *Gavialis gangeticus* a ni a. Gharial hi India, Pakistan, Myanmar leh Nepal-ah te an awm a, tuiah leh khawmualah an khawsa thei a ni. A tlângpuiin gharial ho hi an hmui a sei hle a, nghafunglawr lian tak hmui te pawh a ang deuh a ni. Tin, awle chi khat spectacled caiman an awm bawk a, a scientific hming chu *Caiman crocodilus* a ni thung. Hei hi chuan awle kan tih hi a pawl hle a, Central America leh South America lama khawsa an nih hlawm avangin Mizo in saritawm kan tih hi chu ni theiin a lang lo bawk. Alligator hi awle pa, saritawm kan tih chu a ni lo tih a chianna chu crocodile leh alligator te hi mihring leh gorilla kan inthlahpawlh thei lo ang chiah tho hian an inthlah pawlh thei lo a ni. Engpawhnise heng awle chi hrang hrang ho – crocodile, alligator leh caiman kan tihte – hi ‘zoological classification’ ah pawh an inchhengkhat hnai hle tho, hetiangin: kingdom: Animalia; phylum: Chordata; class: Reptilia; order: Crocodylia thleng hian an inñawm vek a, chipchiar zâwka then hranna family leh genus-ah te an hrang chauh a ni. Heti khawpa inhnaih ni hlawm mah se species hrang daih an nih avangin an inthlahpawlh thei chuang lo a ni.

Chuvangin Mizoten kan lo ngaihdan nia lang, kei phei chuan ka lo la hriat ngai loh, awle nu crocodile, awle pa alligator tih leh saritawm hi alligator nia kan lo ngai thin hi ngaihdan dik lo niin a lang a, India ram leh ram thenawma awle chi khat khawmual leh tuia awm thei, hmui nghafunglawr deuh hi chu gharial ngei hi niin a rinawm mah zâwk. Chuvangin Mizoram a awle kan tih leh kan hmuh ve thin hi crocodile ai mahin gharial hi a ni zâwkin a lang. Amaherawhchu crocodile pawh chu a lo awm ve reng thei tho bawk a. Crocodile awm duhna an sawi dan ngaihtuah hian Mizoram hi chu gharial awm duhna chi ni awm tak zâwk a ni. Mizoram buai hma leh buai hlimchhawn lai, kum 50 aia tam liam tawha awle an hmuh thin an sawi kha naupang hriatin ka hre ve ruai a, ram buai hnu hian hmu an awm tawh meuh lo a ni maithei. Tlabung khaw tan tlang

Khawthlangtuipuah sawn 1960-1970 chho vêl khan zawngdulinu (porpoise) an tam thin mai a, thenkhat chuan zawngdulinu kha awle tia lo sawi ta mai te pawh an awm thin a. Awle an ni lo a, awle-ho hi chu thisen vawt (cold blooded), phylum Chordata hnuaia Reptilia class-a mi an ni. Zawngdulinu (porpoise) te hi chu phylum Chordata hnuaia Mammalia class-a mi, thisen lum (warm blooded) an ni thung. Chuvangin ngaih pawlh chi an ni lo, class hrang daih an ni. Chuvangin awle kan tih hian saritawm pawh kha awle kan lo ti tho thin a ni maithei, a common name-ah awle kan hmang pawh a ni mai thei e. Mahse awle hi a nu, saritawm hi awle pa tih hi chu thu dik lo hul hual a ni e.

KAN ZIR TUR

Mizote hian science thiamna lamah a bikin life sciences-ah ti teh ang, rindân mak, belhchian dâwl lo kan ngah khawp mai kan tih kha. Miin research bein, zir binging hmuhchhuah thar an nei a, chutah eng research mah la ti ve lo ‘laymen’ te hian kan lo hnialin kan lo awihsak duh tlat thin lo ve bawk a. Tun hnaiiah Pachhunga University College-a kan scientist-ten sangha chi thar an hmu chhuak a, khawvêl hriatah an puang mêk a. Chutih laiin thenkhatin tapchhak zâwl ațangin, ‘Hmuhchhuah thar a ni lo e, hetiang sangha te chu sarba/ngha-ngiai a ni a, a awmna a rei tawh,’ te an lo ti ve ngawt zêl a. Nia, sarba kha a awm tawh ngei reng a, mahse a chi thar, species thar, khawvêl huap pawha scientific taka la hriat chian mumal loh an hmuhchhuak tihna lam a ni zâwk e. Chan-chinbu pakhat, hmâna ka chhiarah chuan, ‘Bâk hi a pum han zai hawng ila, note a lo pai a (a pui nge a pa a sawi chuang lo), chu a note chu a pum han zai hawng leh ila, bak note bawk a lo awm leh zel,’ tih hi, a mak awm asin. Thu belhchian dâwl lo tak, developmental biology-a thil awm thei hlek lo a ni. Tunhma chuan a awih tawk te pawh an lo awm maithei a ni. Tunhma chuan țangțial pum chhungah te pawh hian sarêp a awm an ti thin zu nia. Kha kha hepatic caecum nge ni ang malpighian tubules ka

hre Chiang ngam chiah lo a, a engemaw zâwk zâwk chu a ni ngei ang. Sarêp a ang em lah tak a, 'Pu Vana sarêp' an ti òthin a ni awm e. Hetiang hi sawi tur a tam mai. Tuten emaw rin-thua 'Awle hi a nu a ni a, saritawm hi a pa a ni e' tih leh 'Chengkawl bial hi chengkawl pa a ni a, a tung hi chengkawl nu a ni' tih ang chauh kha a ni awm e. Rin thu sawi hi kan huai òthin khawp mai.

Kum zabi 21-na kan chuang kai tawh a, science leh technology lamah pawh hma kan sâwnin kan hriatna pawh a zau tawh hle. Amaherawh chu heti lam kawnga hma kan sâwn hle lai hian vawiin thlenga science lama rindân âthlâk pui pui nei Mizote zingah leh hnam dang zingah pawh kan la tam hle mai hi chu a mak viau mai. A chung a kan sawi bâk tlêm han belh leh ila:

Saphu kâwr chhunga pathian thla

Hman deuh khan chanchinbu pakhtah Champhai ramhnuai a tuten emaw saphu an thah thu leh chu saphu kâwr/phuhlip chhung lamah chuan Hindu pathian Rama leh Sita thla a lo awm thu an chhuah a. Tin, hetiang hi Hindu puithiamten an lo zawn rûk reng a nih thu leh khawvêl hmun hrang hranga an zawn reng thu te leh khawvêl saphu 1% chauh in he pathian thla hi an kawl a ni tih te an ziak a. He thil hi mak ka tih em avangin Hindu kulmût deuh leh puithiam hna lo thawk ve te pawh ka zâwt hial a. Anniho erawh chuan chutiang thil an hriat lohzia min hrih bâkah an nuh te pawh a za deuh niin ka hria a. Chu chanchinbu in a sawi zêl dan chuan Hindu puithiamte hian he saphu hi pawisa tam tham takin an lei ta niin a ziak nghe nghe a. Saphu kâwr chhungah hian vai pathian thla chauh lo pawh Asoka pillar lem te pawh a awm òthinin an la sawi ta deuh deuh a, a mak thei hle a ni. Saphu hi zoologist ho chuan Mani crassicaudata an ti a, sap chuan pangolin an ti thung. Engpawh nise saphu kâwr chhunga pathian lem/thla emaw Asoka pillar lem emaw lo awm hi science thlirna a tang chuan thil âthlâk a tling hrim hrim a, ngaihruat (imagination) mai a nih a rinawm zâwk. Saphu

hi ramsa vang tak, mang mai thei dinhmun a ding an ni, he thil vang hian kan that mang mai ang tih a hlauhawm hle.

Utawh leh phârna

Utawh phâr (toad) hi Mizote hian kan hlauin kan òthin viau mai òthin a. Amah a bawl deuh hruah avang hian 'utawh phâr' kan han ti ngawt bawh a. Utawh hi a thinrim chuan a inhrosak ve nan a inhampuarin a beng bul hnuai deuh a tang hian pân hna ang deuh a tichhuak òthin a, hei hi òthenkhatin 'phârna' hri-a ngaiin an lo sawi òthibaawm ta òthin a ni ber awm e. He pân hna ang reng lo chhuak òthin hi a beng bul 'parotoid' a tang lo chhuak a ni a, gland chi khat 'parotoid gland' an tih chu a ni. Hei hi hmelma laka a in-venna mai a ni a, tûr leh hri hlauhawm a ni lo, a rim erawh a chhe hle thung a, he thil rim chhe tak hmang hian a hmelmata a hnawt bo ve òthin a ni zâwk. Phârna hri a ni lova, ten tur pawh a ni lo. Hnam òthenkhat phei chuan a sa te pawh an ei òthin niin an sawi. An sawi anga phârna te chu lo ni se biology student zawng zawng deuh thaw hi an phâr tawh hlawm ang chu.

Sakuh kuh

Sakuh hian a kuh zum tha tak hmang hian mi a kap theiin serthlum rahte pawh a kung a tangin a kap thla nalh nalh thei niin an sawi òthin. Hei pawh hi rindân âthlâk bawh a ni. Sakuh hi ramsa changkang 'Mammal' group ami an ni a, an kuh kan tih mai hi an hmul insiam danglam (modified hair) a ni. An kuh te hi an taksaah hian nghet lutuk lova chawr chhuak/inphûm a ni. Hmelma nena an inbeih nikhua hian sakuh hian a mei hi a hmelma hmai bul vêlah khan a thing ta chiam mai òthin a, chutianga a tih chuan a kuh hi awlsam takin a rawn dawh chhuak ta òthin a, chu chu ama duhthu, a control-naa kâp chhuak anga lo sawi an awm ta mai niin a lang. Mi thiamte sawi danin sakuh hian a kuh hi ama duhthu in a kâp chhuak thei lo.

Rûl chuk

Rûl in min chuk kan ti tlat mai hi a dik lo hrim hrim mai, min chuk nilo in min seh a ni zawk. A ngho zum takah hian kua a awm a, chuta tâng chuan a tûr hi a lo chik chhuak thin a, a nghoa min seh khan a tur (poison/venom) chu syringe-a damdawi tui kan kâp chik chhuak thin ang hian a lo kâp chik lût ta thin a ni. Min chuk ni awma ngaihdan lo awm hi a lei zum vin vên a chhuah zeuh zeuh thin vang hi a ni maithei. A lei hi a engkima engkim a ni e ti ila a dik awm e, a mit, a beng leh a hriatna zawng zawng hi a ni mai. A lei chhuah zeuh zeuh hmang hian ei tur awmna te, hmelma awmna te a hre (detect) zung zung thei thin. A zir mite chuan rûl lei hi tan ta ila a hriatna zawng zawng a hloh vek ang an ti a ni.

Heng ka han sawi bak pawh hi rindân âthlâk leh belhchian dâwl lo pui pui sawi tur a la tam mai. Hnam finga kan ngaih sapho meuh zingah pawh khuan tun hma chuan octopus-in thisen dawt (suck) theia ring pawl te, vampire bat (bâk chi khat) leh Dracula inzawm tlata ngai pawl te pawh an awm ve nawk thin a nih kha. Mizo zinga rindân dik lo tak pakhat vai artui aia zo artui chak zawk fea ngaih tlatna te hi paih chu a hun tawh ngawt mai. Mi thiam (nutritionist) te lahin Zo artui leh vai artui chu a chak zawng inang rengin an sawi fo si. Heng aia mak leh belhchian dâwl lo chu mitna hri laka invenna an sawi ka hriat kha a ni. Thâwkkhat laia mitna hri leng vak laka inven nan khan bân rêk leh ke rêkah saiip (buara) hrui hrên a tha an ti pek a nih kha, a mak the thin asin, saiip hrui leh mitna



hri chu a inkungkaih loh hmel hle si.

Mizote zingah rûngân tui awpa rinna a awm bawk. Rûngân hian arin a tui a awp luma a lo keu ta anga awp hi a ni lo a, a tui/a no a veng him (parental care) a ni zawk. Tin, awp lum turin rûl chi ho hi thisen vawt (cold blooded) an nih avangin an awp lum thei lo hrim hrim bawk. Rûngân hian parental care an nei tha hle a, ngaihnawm tham sawi tur a awm a ni. A tir lama kan sawi tawh ang khan tunah chuan kum zabi 21-na, third millennium an tih hunah kan chuangkai tawh a, rindân âthlâk leh belhchian dâwl lo hi kan bânsan a hun tawh hrim hrim. He rindân belhchian dâwl lo pawm tlattute, mi vengva pui puia ka ngaih thenkhat phei chuan chanchinbuah min rawn khak pahin lehkhabu a tang ngawta zia lovin ramhnuaiahte pawh kal ve thin turin min rawn zilh hial a, ramhnuaia kal ve ngai loah min ngai ni ngei tur a ni. Rûngân han sawi takah chuan he rûl hi kan sawi mak em em a, kan sawi 'hrang' a ni ber. Kan Mizo scientist-ten tûn hnaiah, 'Rûngân hi king cobra a ni e, kan sawi ang em em hian a makin a 'hrang' love,' an tih pawhin kan awihsak duh lo chu a nih ber kha.

2005 kuma nu pakhatin lirngin hun tur a darkar leh minute nen lam a puang lâwk a, mi tam tak a tihchiai nasatziate, hman ni lawka chi a vang dawn tih vanga kan chiai nasatziate kha kan sawi thui hman tawh lo ang. Vawiin thlengin a zirni mi thiamte pawhin lirnging tur an la hrihlâwk theih loh lai a khati taka kan chiai mai te, thil zawng zawngah hian chi ber kher hi chu lo vang thut pawh ni se a vang rei dawn lo a ni. Tuifinriat tui al a tang a chi an siam zung zung dante hre ve reng sia khati taka chi vang tur thawma kan han chiai maite kha chu a zia lo khawp mai. Khati taka mipui tichiai tute kha court-a khin tlâk khawpa an dem awm laiin, mipuite pawh khati em ema kan chiai mai kha rindân âthlâk laka kan la zalen lohzia tilangtu a ni bawk awm e.

Engpawhnise keini Mizote, India rama zia leh chhiar thiam tamna ber pawl state-a chengte, zaa za Kristiana inchoh ngamte hian rindân âthlâk leh belhchian dâwl lo hi chu bânsan a hun tawh takzet a nih hi.