

Hwa Chong Institution

Project Work

Category 3 Inventions Log Book

Title of Project: Transbrella
Group Name:Transbrella
Group Members: <ol style="list-style-type: none">1) Elliot Chang (Leader)2) Chung Wei Hong3) Lu Junjie4) Wong Zhi Wei

1. Problem Finding

(The beginning...)

1 A Document a list of problems you have identified. Your documentation should show clearly how your group came up with the problems.

Dghqtg'eqo kpi 'wr 'y kj 'c'ruv'qhr' tqdrgo u.'vj g'vj go g'öJ qo g'cpf 'uej qqnl'kgö'y cu'wugf 'v'pcttqy " vj g'ugctej 'qh'qwt'r tqdrgo u0Vj g'r tqdrgo u'qh'c'f kqti cplugf 'dci . 'vj g'vt qwdrg'qhl' y cnlpi 'wr 'cpf " wo dtgmcu'vj cvf q'pqv'y qtnlkp'dqvj 'y gcvj gt u0

1 B You should have selected a problem based on some considerations. Identify and justify these considerations.

Vj g'r tqdrgo 'qh'wo dtgmcu'vj cvf q'pqv'y qtnlkp'dqvj 'y gcvj gt u'y cu'ej qugp'v'q'y qtnlkp0Vtcur ctgpv' wo dtgmcu'ctg'cm quv'qduqrgv'y j gp" {qw'wug'k'cu'c'uj kgrf "ci ckpuv'vj g'drc| kpi 'uwp'cu'vj g'iki j v' eqo kpi 'htqo 'vj g'uw'p'ecp'r cuu'vj tqwi j 0Qp'vj g'qvj gt'j cpf . 'cp'qr cs wg'wo dtgmc'ku'c'o wej "dgwgt " cngt'pcv'k'g'v'q'wug'w'pf gt'vj g'uw'p0Wphqt wpcv'gn{ . 'wukpi "cp'qr cs wg'wo dtgmc'f wtkpi "c'j gcx { 'uqto " dgeqo gu'c'j c| ctf "cu" {qw'ecppqv'ugg'y j gtg" {qw'ctg'i qkpi 'y kj 'vj g'qr cs wg'wo dtgmc'qxgt" {qwt " j gcf "cpf " {qw'o ki j v'kplwtg" {qwtugr0Y j krg'qp'vj g'qvj gt'j cpf . wukpi "c'v'cur ctgpv'wo dtgmc. " {qw' y kn'dg'cdrg'v'q'ugg'engctn{ "cpf 'vj g'ej cpegu'qh' {qw'j kxkpi "cp'qdlgev'y kn'dg'r'qy gt00 quv' v'cur ctgpv'wo dtgmc'v'gpf 'v'q'dg'iki j vt'vj cp'qr cs wg'qp'gu'v'q'q0'

1 C List some problems your group would like to solve. List also the considerations for selection of problem in the evaluation grid below. Score the considerations, against the problems, with points 1 (least significant) to 4 (most significant). Sum up the total points for each problem. Identify that problem you would like to solve.

Problem Evaluation Grid

Eqpukf gtcv'kpu'hqt " Ugrgevkpp " ""	Rtqdrgo u"		
	%ö" Wo dtgmcu'vj cvf q' pqv'y qtnlkp'dqvj " y gcvj gt u'	%4" F kqti cplugf 'dci "	%ö" vj g'vt qwdrg'qhl' y cnlpi 'wr "

Eqpukf gtcvqap"3" Equw"	" "5"	"4"	"4"
Eqpukf gtcvqap"4" F go cpf "	" "5"	"3"	"4"
Eqpukf gtcvqap"5" Hgcuklkrk\ "	" "5"	"5"	"3"
Vqvcn!Ueqtg"	" "; "	"8"	"7"

40""F ghpg'vj g'Rt qdigo "

***Vj ku'ku'qpgí +"**

4'C" Gzvppvqhlrt qdigo *Tgugctej 'ēpf 'f kēwau'vj g'rt qdigo 'ēpf 'y tkg'f qy p'vj g'rt qdigo "
ucvgo gpv+"

....."Vj tqwi j 'xctkqwu"qpnkpg"ctvkgu.'y g'hqwpf "qww'vj cv'tcpur ctgpn'wo dtgmcu'ctg"
i cklpi 'r qr wctk\ 'cv'c'hcuv'tcvg."cu'ur gekm\ 'lp'o qf gtpkugf "eqwptkgu'hkg'Lcr cp0"Vj ku'
ku'f wg'vq'vj g'fcev'vj cv'k'j cu'c'i tgcv'cguj gwe'f guki p0J qy gxgt.'k'j cu'c'j wi g"
f qy puf g/'k'ecppqv'dg'wugf "ghgevkxgn\ 'kp'wpf gt'vj g'uwp0"Gxgp'vj qwi j 'vj g'Ukpi cr qtg"
i qxgtpo gpv'j cu'lpvtqf weg'f 'o cp\ 'uj gngt gf 'y cmy c { u.'k'ku'p'gctn\ 'ko r qukdr'vq"
uj gngt'gxgt { 'lpej 'qh'Ukpi cr qtg.'j gpeg'r tqxkpi 'vj cv'wo dtgmcu'ctg'ukn'ko r qtvcpx'
Qr cs wg'wo dtgmcu'ecp'dmqen'wr 'vq'; 2' 'qh'vj g'uwp'w'WX'tc { u'y j kg'Vtcpur ctgpn'
wo dtgmcu'ecp'dmqen'wr 'vq'62' *LCOC'F gto cvqni { .Wo dtgmcu'ctg'i qqf 'uj kgf u"
htqo 'uwp'cpf 'tckp.'4235+Vj wu.'vj gug'r tqxg'vj cv'wo dtgmcu'ctg'ukn'itgrxcpv'lp'o qf gtp"
uqekv\ 'cpf 'ctg'wugf 'y kf gn\ 'd\ 'r gqr rgo

2 B Compare and contrast the existing or similar solutions.

""Y j kg'tgugctej kpi 'hqt'gzkukpi 'uqnwkpqu'cpf 'cngtpevkxgu.'y g'hqwpf 'y q'uqnwkpqu'vj cv'
eco g'emug'vq'qwt'lp'xgpv'qap0Vj g'htuv'qpg'y cu'cp'wo dtgmc'hqwpf "qp'co c\ qp0K'y cu'ecmgf "
vj g'f\ wgrxg'Rqtcdng'Vtcpur ctgpn'Ucm'c'O wuj tqgo '5/hqrf "Wo dtgmc'ku'ugo k'v'cpur ctgpn'
cpf 'ercko gf 'vq'dg'cdng'vq'uj kgf "{ qw'htqo 'Wm'cxkqng'vc { u0"J qy gxgt.'k'j cu'c'hgy "
f kuf xcpvcu gu0Hktuvn\ .'k'o c { 'qpn\ 'equv'WU& 05'dw'cf f "qp'vj g'equv'qh'uj kr r kpi 'cpf 'vj g"
r tleg'y kn'itkg'uki p'k'ecpv\ OC'f f k'kqpcmf . 'vj g'Wm'cxkqng'v'rtqve'vq'p'y kn'ipq'v'dg'cu'ghgevkxg"
cu'cewcn'qr cs wg'wo dtgmc0Hkpcmf . 'vj ku'wo dtgmc'f qgu'pqv'gxgp'uj kr 'vq'Ukpi cr qtg0'

Ugeqpf n{ .y g'cnuq'hqwpf "c'uko krcr'r tqf wev'd{ 'P cpLkpi "wpxgtukv{ 'y j lej 'j cu{ gv'vq'dg"
eqpwt wevgf 0K'tcpuhqto u'c'tcpur ctgpv'wo dtgmc'vq'cp'qr cs wg'qpg'wukpi "c'ur gekcn'
vcpur ctgpv'vks wkf "vj cv'tgcew'y j gp'r rcegf "wvf gt'vki j v0J qy gxgt."y g'cnuq'hqwpf "uqo g'o clqt"
hrcy u'y kj "vj ku0Hktuvv{ .vj g'vks wkf "pggf u'vq'dg'r rcegf "kp'dgwy ggp'vj g'wo dtgmc'cpf "y km'dg"
xgt{ 'equv{ 0Cf f kkkpcm{ .vj g'kpmlo ki j v'pqv"cnr c{ u'dg'tcpur ctgpv0Hkpcm{ .k'ku'lwuv'c"
f guki p'cpf "ku'wpcxckrcdrg'vq'vj g'r vdrle

3. Your BIG IDEA#

3 A Describe your proposed invention.

"Qw'r trq qugf "kpxgpvqkp'ku'cp'gzvwpukqp'qh'cp'wo dtgmc'vj cv'ecp'tcpuhqto "k'kpvq'cp"
qr cs wg'wo dtgmc'cv'y km0K'ecp'dg'wugf "qp'o wvkr ngu'y gc'v'gtu'cpf "y qtmu'd{ "wukpi "
p{ nqp'eqxgtkpi "cpf "c'ugtkgu'qh'erkr u'cpf "j qqm'vq'ugewt'g'k'k'p'r rceg0K'ecp'cnuq'dg"
hqrf gf "gcukv{ "vq'hk'kpvq'r qengv'qt'dci u0

3 B Explain the purpose of your proposed invention and the potential benefits to users.

Y kj "vj ku'r trq qugf "kpxgpvqkp."vj gtg'y km'dg'pq'pggf "vq'ectt{ "cp'qr cs wg'cpf "c"
vcpur ctgpv'wo dtgmc'vq'wug'kp'dqv'j "y gc'v'gtu'cu'k'ku'kpeqpxgpkp0K'y km'dg"
uki pkk'ecp'v{ "ej gcr gt."vki j vgt'cpf "uo cnrg'teqo r ctgf "vq'dtkpi kpi "y q'wo dtgmcu'qp"
cxgtci g'cpf "uj qwf "dg'cdrg'vq'hk'kpvq'o quv'dci u0

3 C In what ways would your proposed invention be different and/or better than existing solutions, if any?

Qw't'kpxgpvqkp'y qwf "dg'o wej "ej gcr gt'vj cp'gzkukpi "uqnwkp'u'vj cv'drqem'
wntcxkqrgv'tc{ u'dw'pqv'uwpki j v'cpf "k'ecp'cmqy "vj g'wug'vq'dg'cdrg'vq'hqnmctqwpf "kp'cm'cpi ngu"
kpugcf "qh'lwuv'c'uo cm'j qng0Vj gtg'y qwf "cnuq'dg'pq'pggf "vq'dw{ "c'pgy "wo dtgmc0

3 D What are some problems you expect in the course of your proposed invention?

Qpg'dki "r tqdrgo "ku'vj cv'y g'o ki j v'pqv'dg'cdrg'vq'hk'vj g'gzvwpukqp'qp'vq'vj g'j gcf "qh"
qwt'wo dtgmc'cpf "k'o c{ "pqv'dg'cdrg'vq'hqrf "uo qqv'j n{ 0Vj g'gzvwpukqp'o c{ "pq{ "dg'c'r gthgev'hk'vq"
vj g'wo dtgmc'vq0Cnuq.'hk'kpi "k'kpvq'c'r qengv'qt'dci "y km'dg'c'r tqdrgo "

3 E What and when are the major milestone (project timeline) in your invention?

K'y kn'uctv'htqo 'rcvg'O c{. 'y j gtgd{ 'y g'y kn'uctv'y g'r tqvq\{r g'etgcvkqp0Vj gp'lp" cr r tqzko cvgn{ 'o kf 'Lwp.g. 'y g'r rcp'vq'uctv'y g'o qf gmkpi 'r tqegu'cpf 'lp'Cwi wuv'y ku"{ gct. 'y g'y kn' hpkuj 'y g'y tkwgp'tgr qt0D{ 'y g'htuv'qh'Cwi wuv. 'y g'y kn'j cxg'eqo r rvgf "qwt'r tqf vev0

''

#must be able to be constructed based on current / emerging technologies, must not violate the laws of Science or go against the laws of nature.

4. Construction or Modelling Process

4 A Explain how and why the materials were chosen for the prototype/ product of your invention

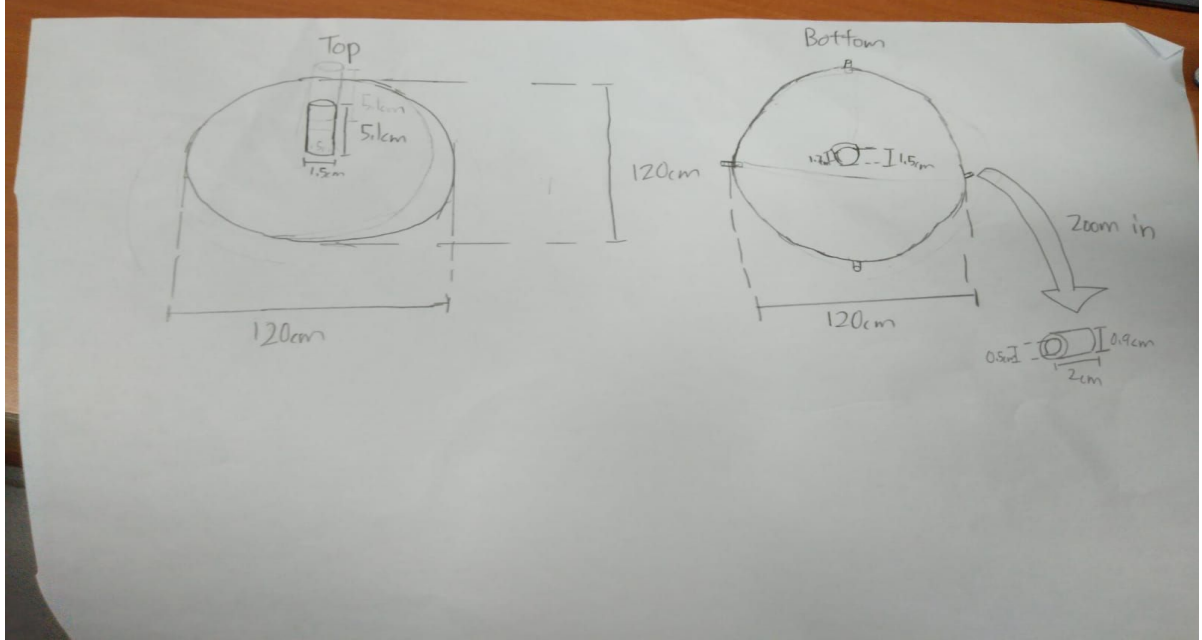
Qwt'i tqwr 'j cu'f gekf gf 'vq'wug'cnwo kpkwo 'vq'j qrf "qh'qwt'r tqvq\{r g'vqi gjj gt'cpf " p{ rnp'cu'v'j g'hcdtle0Cu'hqt'P { rnp. 'y g'tgugctej gf ""wukpi 'qyj gt'qr vkpu'uwej "cu" r qn' guvgt "cpf 'o ketqkdtg'cu'v'j g{ 'j cf 'uqo g'y cvgr tqqh'r tqr gt'vku0J qy gxgt. "dqj " qr vkpu'hckrgf "cu'v'j g{ 'y gtg'wpcdrng'vq'dg'hwm{ 'y cvgr tqqh "cp"guugpvkn'etkgtkcu'hqt'cp" wo dtgmc0Rqn' guvgt 'ku'j gcv'tgukucpv."grukle"dw'pqv'xgt { 'utqpi 'cu'v'j g'hcdtle'pqv' y qxgp"vki j v'Rqn{ o gt'F cvdcug. Rtqr gt'vku'qh'Rqn{ o gt.4237+"J gpeg'P { rnp'y cu" r tqxgf "vq'dg'v'j g'pgz'v'dguv'qr vkp0"

*****Y g'ej qug'cnwo kpkwo 'vq'j qrf "qwt'r tqvq\{r g'vqi gjj gt'cu'k'ku'iki j v0Y kj "c" f gpukv{ "qh'qpn{ "4Q i leo 5."c'v'j kf "qh'vuggn'u'f gpukv{ *Y qtrf 'C vcu."Y j cv'ku'v'j g'F gpukv{ " qh'cnwo kpkwo ."4239+'k'ku'xgt { 'iki j v'y j lej "o cng'u'k'v'w'k'cdng'vq'ectt { "ctqwpf "

4 B Explore these considerations that may guide the construction of your prototype/ product.

*****Dghqtg'v'j g'eqpuxwv'kqp. 'y g'eco g'wr 'y kj "c'hgy 'kpkkn'f vkf g'k'p'gu0K'o wuv'dg" eqo r cev."iki j v'cpf 'ugewtg0Hqt'v'j g'kpkkn'r tqvq\{r g. 'y g'y gtg'wpcdrng'vq' b cng'k'hqrf "vq" o cng'k'v'eqo r cev."gxgp'tgr'v'xg'vq'ku'uk' g0Vj wu'y g'wugf "f k'htg'gp'v'o gjj qf u'qh'hqrf kpi " qwt'r tqvq\{r g""

4 C Document the prototype/ product development stages. You may use drawings, photographs or videos.



Rlewtg'3<Hpcrlf tcy kpi "qh'qwt'r tqvq\ r g"



Rlewtg'4<Rtqvq\ r g'3*uecrf "f qy p+"

"

"

"

"

"



"

Rkewtg'5'cpf'6'<O cygtknu'hqt'r tqf wev'



"

Rkewtg'7'<Eqo r ngvf'r tqwv'r g"



Rlewtg'8<Hlpcnr tqf wev' *o qf hkgf 'htqo 'r tqvqv{ r g'd { 'wulpi 'j qqmu'vq'ugewtg'k'vq'wo dtgmc+''

5. Modification and Evaluation

5 A Write down your prototype/ product test criteria and check against it if it works. Identify areas of weakness for modification. Indicate the test iteration and date of test.

Hlpcnr tqf wev'

Etksgtk''	Hcki'	'Rcuu''	Tgo ctmi''	
P qv'ko g'equwo kpi A'	''	{ gu''	K'ku'pqv'vq'eqo r rlecvgf '''	'' ''

Utqpi "cpf "ugewtg"	"	{ gu"	K'eqwf "dg'ugewtgf "gcukf "dw'k" eqwf "pqv'xuv'hqt'iqpi "	"
Ej gcr "cpf "chqtf cdrg"	"	{ gu"	Vqvcn'equv'ku'cdqw'&6"	"
" F qgu'k'vgct" gcukf ly cvgtr tqqhA'	"	[gu"	P { nqp'ku'utqpi "cpf "y cvgtr tqqh"	"
Ecp"dg'hqrf gf "f qy p'uo cm" *tgm'xg'v'ku'uk' g+	"	[gu"	K'ecp"dg'hqrf gf "v'cdqw'7'ko gu" uo cmgt"	"
Gcu{ "v'r w'qp"wo dtgmcA'	"	[gu"	K'vcngu'nguu'y cp"42"ugeqpf u'vq" r w'k'qp"	"
Ecp'k'dmgeni'WX'tc{uA'	"	[gu"	Drcen'eqmwt'ecp"cdutd"o quv" WX'tc{u"	"

Vguv'f cvgu<4; "cpf "52'Lxn{ "423; "

"

"

'Rt qvqv{ r g'4"

"

Etkgtk"	Hcki"	Rcuu"	Tgo ctmi"
Vko g'eqpuwo kpi "	[gu"	"	K'vqqn's wkg'c'y j kg" v'q'o cng'y g'4pf " r tqvqv{ r g'"
Utqpi "cpf "ugewtgA'	"	[gu"	Vj g'4pf "r tqvqv{ r g" y cu'cdrg'v'y kj uepf " dgkpi "r wngf "qp'ku" ukf gu"
Ej gcr "cpf "chqtf cdrg"	"	[gu"	Vj g'vqvcn'equv'y cu'&5"
F qgu'k'vgct" gcukf ly cvgtr tqqhA'	"	[gu"	P { nqp'ku'utqpi "cpf " y cvgtr tqqh"

Ecp'k'dg'hqrf gf " f qy p'uo cmi'tgncvkg" vq'uk g+	"	[gu"	Tgo qxcn'qh'y g'tqf u" gpcdr'uko r rgt" hqrf kpi "
Gcu{ 'v' r w'qp" wo dtgmcA'	[gu"	"	[qw'j cxcg'v'qr gp'k' cni'y g'y c{ 'Iwuv'v' r w' k'qp'"
Ecp'k'dmcm'WK" tc{uA'	[gu"	"	K'ku'pqv'y g'dguv'dw' p{ nqp'v'kmi'uj kgrf u" uqo g"

Vguwf cvgu<3'cpf '4'Lm{ '423; "

6. References

Read <http://www.bibme.org/citation-guide/apa/> on how to cite references.

6 A Cite the references you have used for your project work. Your source of reference should come from different types (eg books, magazine, websites, journal articles, interviews, photographs, product brochure, reviews etc.)"

/F .I 0D0*4236+0I wkf g'ht'Kpur gev'qp'qh'P { nqp.'Rqn' guvgt.'qt'P { nqp' Rqn' guvgt' Dngpf.'qt' Dqy " Mgtpo cpw' Tqr g0Y j cv'K'v'j g'F kht'gpeg' Dgy ggp'P { nqp'cpf 'Rqn' guvgt' A"

/Vq'F ctngp' Cnw kpkwo "Uj ggu0*3; 27+0Uekp'wke'Co gtkecp."82*3785uwr r +:47272/472730"

"Dci j gtr qwt."U0*4234+0Hkdtg'Tgphqtegf 'Rqn' guvgt'Eqo r qukgu0Rqn' guvgt'Of qk320799416: 8; 9"

/Y { Cr gm'I 0*4238+0Cp' Cwqo cve'Vguv'ht'v'j g'Wo dtgmc' Cngt'pcv'kgu0Uecpf'kpc'xkcp' Lqwt'pcn'qh' Ucv'k'keu."65*6+."3325/33450f qk32083331ulqu04453"

/J ktcw'wnc.'C0'('Hw'v'f c.'I 0*3; ; 6+0Cp'gxcn'cv'kqp'qh'w'p'ri j v'WX/tc{u'xq'w' g'd{ 'VNF 0' Gpxk'qpo gpx'n'U'wgo u'Tgugct'ej."44."5: 5/5: : 0f qk320442: 1r tqgt3; : : 04405: 5"

/Hcj o {.'C0C0*3; ; 8+0RTQF WE VIKP.'RTQRGT VIKU.'CP F 'CRRNEC VIKP U'QH'O QF GTP " EQO RQUK'G'O CTGT'K'NU, , Kpxk'gf 'Mg{ pqv'Ngewt'g0Ewt'gpv' Cf xcpegu'kp' O gej'cp'kecn' F guki p'cpf 'Rt'qf w'kqp'KK"437/4430f qk32082381d; 9: /2/2: /255662/2072254/6"

/Y j cv'[qw'Uj qwf 'Mpqy 'Cdqw'Rt'qv'v' r g.'Lxc'Uet'k v.'cpf 'v'j g'F QO 0*p'f 00Rt'cev'kecn'Rt'qv'v' r g"

cpf "Uetr v@ewr q0u."5/380f qk3202291; 9: /3/6524/2724/; a3"

/Y cvgr tqqh'O cvgtkn0*4233-0Dwrf lpi 'F geqtcvkg'O cvgtkn."564/57: 0'
f qk3207551; 9: 2: 792; 47: : 064"

/Y cvgr tqqhpi 0*423; .Lwn "49-0Tgtkxgf "hgo "

[j wru<lpgy knr gf kc0ti ly knkY cvgr tqqhpi](#) f qk32025: luegpwheco gtlecp34383; 27/47272euwr
r ""