



## **EQUAL – ARK**

**EQUINE-ASSISTED LEARNING FOR AT-RISK KIDS**

**THREE-YEAR REPORT -- 2011 – 2013**

**EQUAL-ARK (EQUINE-ASSISTED LEARNING FOR AT-RISK KIDS) IS A COMMUNITY AND SOCIAL SERVICE PROJECT OF THE  
EQUESTRIAN FEDERATION OF SINGAPORE**

**A CHARITY AND INSTITUTION OF PUBLIC CHARACTER**

**100 Jalan Mashhor Singapore 299177**





*Thanks everyone. The students were very excited and  
I am proud to see how much they have grown;*

*from being very fearful, and do not dare to go near to a horse  
to being so comfortable in grooming it.*

*I gave myself one month to see the change and I am amazed  
that the teachers are beginning to see the first change after 2 weeks.*

*The students are less bitter, they have improved  
in their communication skills  
and are now able to better read body language.*

*Thanks for running the NorthLight cause with us.*

*Lim Yen Ching, Principal, Northlight School  
1 April 2011*







## **EQUAL – ARK (Equine-Assisted Learning for At-Risk Kids)**

A pioneering and innovative school programme of horse-based lessons  
for Children with Primary School Disruption  
The first of its kind in the world

EQUAL teaches

### **HABITS OF MIND**

Managing Impulsivity

Persistence

Listening with Understanding and Empathy

Taking Responsible Risks

Thinking Flexibly

which increase the chances of success in School, Employment, Community and Family Life

**A 2013 Study by the Centre for Quantitative Medicine, Duke-NUS GMS Shows  
13 Year-Old “At Risk” School-Children  
Improved by an Average of 67.8% In Their Habits of Minds after EQUAL  
EQUAL Produces Significant, Rapid and Cost-Effective Changes In “At Risk Kids”**

Tested on 102 Students by Bar-On EQJ Study, 2011

Tested on 163 students at Northlight School, 2012

Scientifically Validated by Study of 157 Northlight School students, 2013

“Exploring the Effectiveness of Equine-Assisted Learning (EQUAL) for Improving Habits of Mind in 13 Year-Old School-children,” (Centre for Quantitative Medicine, Duke-NUS Graduate Medical School, Institute of Mental Health, and KK Women’s and Children’s Hospital)

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## HIGHLIGHTS

### EQUAL-ARK 2011 – 2013

#### ANNUAL RESULTS

- 1) **2011:** a Bar-On EQI Study of 132 Northlight School students showed that EQUAL students gained **(4.76 points)** in EQ Skills over students who did not do EQUAL.
- 2) **2012:** a Habits of Mind study of 163 Northlight School students found that EQUAL students made **43% - 46% gains** in Habits of Mind after EQUAL
- 3) **2013:** a Centre for Quantitative Medicine study of 157 Northlight School students showed that EQUAL students gained in Habits of Mind by an average of **67.8 percent** from start to the finish of EQUAL, and **65.4 percent** over a Control Group.

#### COST EFFICIENCY OF EQUAL-ARK

A total of **605** At Risk children underwent EQUAL courses from 2011 to 2013.

- 1) The cost of an EQUAL course of 48 EQUAL Lessons was **\$1,432** per student.<sup>1</sup> The cost per EQUAL lesson was approx. **\$30**.
- 2) The students paid only **\$5** per lesson. This allowed the entire school cohort to attend EQUAL, enhancing bonding and relationship-building between the students and teachers.
- 3) The balance **\$25** per lesson was paid by Grants, Sponsorship and Donations.

#### COST-EFFECTIVENESS, ACHIEVEMENT OF GAINS, SPEED

The average EQUAL student gained **67.8%** in Habits of Mind after a 48 hour EQUAL programme.

- 1) EQUAL delivers **1% gain** in Habits of Mind at the cost of **\$21**.
- 2) It costs **\$210** to achieve a **10 % gain** in Habits of Mind in the average student through EQUAL.
- 3) A **\$30** one-hour EQUAL lesson brings **1.4%** gain in Habits of Mind in an average student.
- 4) The gains of 67.8% gains are achieved within **4-5 months**.

<sup>1</sup> Accounts and statistics are included in the Report 2011-2013







**AT RISK KIDS**

Every year, between 2.2 and 2.8 % of 12 year-old school-children fail their Primary Schooling Leaving Examination (PSLE). They are Singapore's At Risk Kids.

In 2011, Temasek Care CLG, Trailblazer Foundation and T Touch and the Equestrian Federation of Singapore founded

**EQUAL-ARK  
(EQUINE-ASSISTED LEARNING FOR AT-RISK KIDS).**



### **AT RISK KIDS**

The prospects for children who fail their PSLE are bleak. They do not qualify for further schooling. They are too young to look for a job. They have an average reading age of 7 years old, and have failed mathematics. And they are 12 years old.

They are "At Risk Kids." Every year, between 1,100 and 1,300 children become "At Risk" due to school failure.

Many "At Risk Kids" have parents who are similarly, "At Risk." More than half have not finished primary schooling. 70% receive social welfare assistance. There is a high rate of broken families, and incarceration.

Like their parents, these children are clearly "At Risk" of failure, not only in their schooling, but as workers and employees, parents and citizens. As adults, they have a higher chance of being unemployed, falling into debt, and committing criminal offences. They may spend time in jail or institutions. They will have many children. They will vote.

### **PRE-VOCATIONAL SCHOOLS**

In 2007, a new School opened, called Northlight School.

This Pre-Vocational School brought the "PSLE failed" children back into school until the age of 16. At age 16, they could sit the "N" Level Exam. Those who passed could apply to the Institute of Technical Education, thereby rejoining the education mainstream. Those who failed yet again would be old enough, at age 16, to start work.

The demand for "Pre-Vocational" places was far larger than expected, and in 2009, another School opened, called Assumption Pathway School.

This opened a total of 1,600 school places for At Risk Kids.



### **THE NORTHLIGHT EXPERIENCE**

When Northlight School started in 2007, they found the students academically weak, and lacking in social and emotional skills.

Their ability to think and react positively, to communicate, listen, relate to others, and have a basic sense of “self” (self-control, self-confidence, self-awareness and self-discipline) -- skills normally acquired through parents or the home -- was poor.

Each student felt a failure. Many were bitter, and depressed. They felt helpless, and angry. Some became bullies. Others withdrew into silence.

Northlight Teachers worked hard to build, restore, and repair the social, emotional, and mental states of their students. By 2010, the School was concerned. The process was taking far too long.

### **THE EQUESTRIAN FEDERATION OF SINGAPORE (EFS)**

The Principal of Northlight School turned to the Equestrian Federation of Singapore after noticing marked improvements in a few students who attended horse-riding classes at the Singapore Turf Club. They improved in their behavior and self-confidence.

They also improved in self-awareness. One student realized, for the first time, how frustrated his teachers felt when he was being rebellious and disrespectful. When his horse was rebellious and disrespectful, he felt the same way! Another realized that he could never force a horse to obey using bullying or violence. He had to ask “nicely” and elicit the horse’s cooperation.

The Equestrian Federation of Singapore (EFS) EFS agreed to create a programme which would bring all the Northlight students into contact with horses, to raise the students’ social and emotional skills, motivation and general mood, quickly.

The Founding Grantors, Temasek Cares CLG, Trailblazer Foundation CLG, and T-Touch, contributed start-up funding for 2011 to 2013.

### **EQUAL-ARK (EQUINE-ASSISTED LEARNING FOR AT-RISK KIDS)**

EQUAL-ARK (EQUINE-ASSISTED LEARNING FOR AT-RISK KIDS) enrolled 605 students from 2011 to 2013. It was an innovative, creative, and pioneering programme, based on the mission of the two sending schools, Northlight School and Assumption Pathway School. It addressed the unique challenge of rehabilitating 13 year-old children devastated by Primary School failure.





## HABITS OF MIND

The basis of EQUAL-ARK was **Habits of Mind**, a concept developed by Northlight School, using the concepts of Costa and Kallick, defined for the Singapore Pre-Vocational School.<sup>1</sup> These five Habits of Mind (HOM) were:

HABIT OF MIND (HOM)	CODE	DESCRIPTION
Thinking Flexibly	TF	To generate new ideas, considering new perspectives and other points of view
Taking Responsible Risks	TRR	To weigh risk and make good decisions. To be willing to try something new despite difficulty and fears of failure.
Managing Impulsivity	MI	To respond to a situation by thinking through it rather than reacting to it.
Listening with Understanding and Empathy	LUE	To be alert and attentive, to listen and respond appropriately to others.
Persisting	P	To focus on a problem or difficulty and try different ways of solving or overcoming it.

Using the Habits of Mind, Dr Trotter's exercises, and with the input of Northlight and Assumption Pathway Schools, the EQUAL Team designed 48 Lessons, each Lesson designed to create a learning opportunity for Habits of Mind.

<sup>1</sup> Costa, A. and Kallick, B., *Learning and Leading with Habits of Mind: 16 Characteristics of Success*. Alexandria, VA, Association for Supervision and Curriculum Development, 2009



HABITS OF MIND

	Listening with Understanding and Empathy	How do Others Feel?	Listen / Empathize / Respond
	Managing Impulsivity	Stop – Think – Do	Stop /Think / Do
	Persisting	Stick to it!	Focus / Try / Complete
	Taking Responsible Risks	Try new things	Be Brave / Be Aware / Experience
	Thinking Flexibly	Look at it Differently!	Be Open / Explore / Solve

Equestrian Federation of Singapore is grateful for the support and sponsorship of Temasek Care CLG, Trailblazer Foundation and T-Touch in the EQUAL-ARK (Equine-Assisted Learning for At Risk Kids) programme.



### EQUAL ARK AND HABITS OF MIND

Through EQUAL-ARK Lessons, the students are encouraged to think, and not to react impulsively, and to develop self-control. This is to **Manage Impulsivity**. Other Lessons teach **Persistence**, to be determined, concentrated, and focused on tasks, and to derive a satisfaction from completion of work.

EQUAL Lessons make students aware of non-verbal signs and signals. They became more self-aware, and more conscious of their communication style. This helps them to enlist the understanding, empathy and cooperation of others, by **Listening with Understanding and Empathy**.

EQUAL challenges students to **Think Flexibly** and devise new and lateral solutions, to innovate, create, and imagine. They must persevere, and not to give up, and be able to plan alternatives.

Many of these students live in unsafe family situations and are anxious. EQUAL teaches them to keep safe by observe simple rules: to recognize danger, to weigh risks, and to make wise choices. At the same time, the students must be willing to venture, to try new things, and not be afraid of failure. This is called **Taking Responsible Risks**.

Over the course of the 48 hours' EQUAL, the students learn **Habits of Mind**. These Habits will make them more successful at school, at the workplace, and for the rest of their lives.

**At EQUAL, they learn that they are not "At Risk Kids." They are normal kids, with problems. They can overcome these problems through good Habits of Mind. This realization is startling, and life-changing. They leave EQUAL with a bounce to their step, with bright and shining eyes. They are ready for a new start.**



THE ROLE OF HORSES IN EQUAL-ARK

After repeated failure during their early childhood years, children have low self-esteem. They are afraid of failure, yet they expect to fail. They are mistrustful of people, avoiding eye contact and communication. They mask their anxieties by feigning dis-interest. They act bored.

**But they are curious about horses.**



### **EQUAL USES HORSES TO ENGAGE AND CONNECT WITH AT RISK KIDS**

Although horses are the basis of EQUAL, it is not a horse-riding programme. The students are on foot, encountering, and relating with the horse. On the ground, the student feels very small, and intimidated to meet an animal 3 times his height, and 10 times his weight. The normal At-Risk Kid actions – bullying, violence, gangster behavior – don't work. The student has to find new ways of communicating, relating and acting – new Habits of Mind.

### **THE HORSE AS THERAPY**

Horses are strong therapy animals because they are individual, communicative and cooperative. They are intelligent and autonomous, capable of judgement, self-expression and choice. Horses have social patterns of cooperation which are similar to those found in human groupings. These traits make the horse an ideal partner for human therapy.

The horse is individual. Yet, the individual horse cannot survive without friendly and supportive relationships. Horses evolved in large, social groups, which use coordinated actions to defend the herd – particularly the youngsters – from predators. For a horse, social relationships, communication, coordination and teamwork are crucial for survival. And because their communication is non-verbal, they are naturally able to observe, understand, and respond to unspoken signs, signals, emotions and feelings.

### **THE HORSE AS A REFLECTION OF SELF**

The horse has to be alert for enemies. They are acutely sensitive to hostility, aggression, and danger. This ability to detect, in a split second, the approach of a friend or a foe, makes the horse a very accurate judge of people. They detect subconscious, masked or repressed emotions, and react immediately. When a horse reacts, he makes the student self-aware; conscious of the signs, signals, and feelings which emanate through his behaviour. The student becomes aware of himself through the reactions of the horse.

The horse thus gives a student a mirror in which he can see himself, and his actions. Through the horse, the student has the opportunity to experiment with alternate modes of behaviour.





### **UNCONDITIONAL ACCEPTANCE**

If a horse accepts a child, it is unconditionally and without prejudice. They see through appearances and disabilities. They are not concerned about poverty, or broken homes. They do not know – nor are they very concerned – that the child is a “failure.”

A horse’s friendship can give the child a feeling of acceptance. For a moment, they can forget about their past failures. They feel whole, normal, and no longer “At Risk.” For students at EQUAL, this experience is transforming. They smile, their eyes shine, some laugh out loud, they stand straight and establish eye contact – first with the horse, and then with humans.

### **TAKING RISKS, SAFELY**

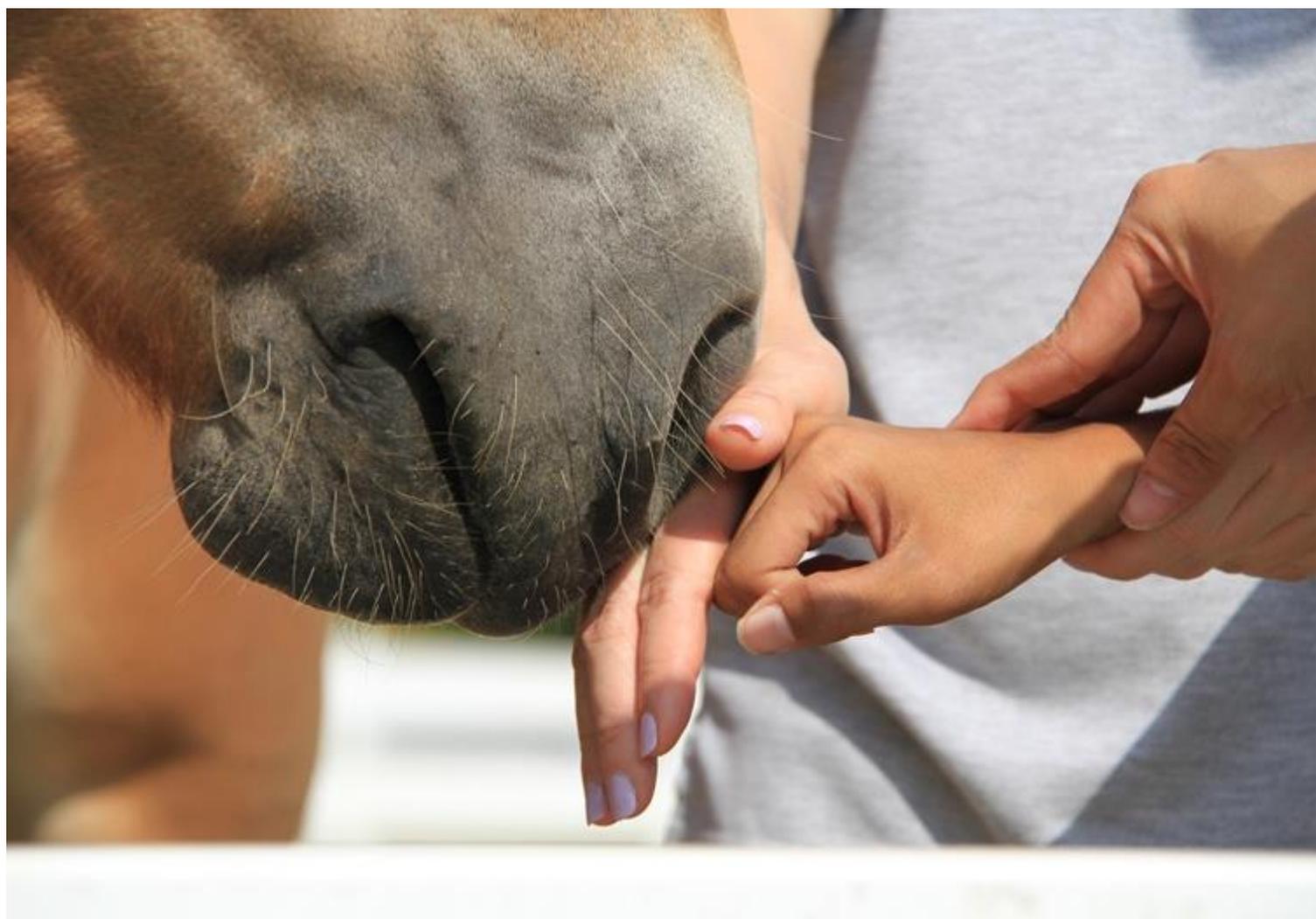
Horse therapy carries an element of risk. If the horse is approached safely, and accepts the rider, then riding is safe and fun. If the horse is approached in an unsafe way, and the horse refuses to accept being ridden, the encounter can be painful. Horse-riding requires both courage and caution. Learning to ride a horse makes a child brave, yet careful. And because in Singapore, horses are rare, everyone tries riding for the first time. The students can fail; they are not afraid of trying.

### **OVERCOMING FEARS**

Many children arrive with disabling fears. When they see a horse, the physical size of the animal makes them tremble visibly. The horse reacts by standing quietly. In time, the child stops shaking, and starts to overcome his fear. In overcoming his fear of the horse, he takes the first step to normality.

### **LEARNING OPPORTUNITIES**

The uniqueness of the horse as a therapy animal is this combination of traits: size, power, danger, fear, empathy, communication, and unconditional acceptance. Interactions with horses can spark learning opportunities for children suffering from various disabilities, difficulties and problems in their lives.



### CURRICULUM AND DELIVERY

The EQUAL Curriculum has three components: Stable Management, Horse-Riding and Horse Therapy.

#### **A: STABLE MANAGEMENT**

This component allows children to engage with the horse. EQUAL teaches the child how to use Habits of Mind to build safe, trusting, and mutual friendships. In relating to the horse, the child must communicate clearly, be firm and determined, yet empathetic and reassuring. When the child fails to communicate, or acts aggressively, the horse will be uncooperative or aggressive. Horses give honest and immediate feedback. In this way, the horse is an excellent teacher.

There are 16 Lessons in Stable Management, which requires the child to relate and interact with the horse. These are often framed in stable tasks such as cleaning or brushing the horse, or cleaning the stable. To achieve these tasks, the child must win the cooperation of the horse with good Habits of Mind. At critical moments, the Instructor will intervene to counsel and mentor the child, suggesting the Habits of Mind which the child can try.





#### MODEL EXERCISE (STABLE MANAGEMENT)

To put a halter on a horse requires the student to approach the horse in a way that reassures the horse, and establishes a friendship. The horse controls the process. If the horse trusts the child, he lowers his head and allows the child to attach the halter. If the horse is wary or frightened, he pulls away, raises his neck and puts his head out of the child's reach.

The child must win the horse's trust. If the horse trusts the child, the child will succeed. If the horse does not trust the child, the task is impossible.

Using voice, eye contact, and hand contact, the child reassures and calms the horse. Then, the child requests the horse to lower his head. When the horse lowers his head and accepts the halter, a relationship of trust and confidence has been established. This exercise is excellent in teaching children how to open a relationship with another child or adult, and to maintain a relationship of mutual trust and cooperation.

**B: HORSE RIDING**

There are 16 Lessons in the "Riding" component. Most children, though keen to ride, are deeply fearful of horse-riding and of other activities. They are reassured that fear is a normal and healthy emotion. They can express their fears openly. They may fail at riding. But they need not fear failure. If they fail, they can recover, they can try again.

They can ride the horse, but safely and responsibly. They have to follow safety rules, being alert, and observant and avoiding danger zones near the hind legs. They must ask the horse to accept their presence, and wait for the horse to accept them. Once on a horse, they learn basic riding skills and perform gymnastic movements on horse-back. Students take turns playing roles as a rider, handler, walker and teacher, who is responsible for the safety of the entire team. By rotating their roles, they learn to appreciate and empathize with their peers.

The emphasis of Riding is to help the children overcome their fears, encourage them to think from various perspectives, to understand other points of view, to learn safety and judgement, and not to be afraid of failure. Riding gives the students a feeling of achievement and self-confidence.





#### MODEL EXERCISE (RIDING)

Riding and Leading: In this exercise, the student is asked to ride a horse in the normal way, and then, facing backwards. During the period that the student is facing backwards, a second student will lead the horse and ensure that the horse is under control. A third student is the teacher, who instructs the rider and horse, and ensures their safety. One-third way through the Lesson, the three students rotate their roles.





### C: HORSE THERAPY “HORSE PLAY”

There are 16 Lessons based on exercises and interactions with and around horses in an open arena. In Horse Play, the children observe and interpret the horses' signals, non-verbal communication, and behaviour. Initially, Instructors teach students to observe the horse, and interpret the signs and signals which horses use to communicate. The ears of a horse are a valuable signal of interest, friendliness, anger or aggression. The eye position is also a key signal, as is the skin and the tail. These non-verbal forms of communication used by horses are linked to human non-verbal communication.

Students are assigned a task to perform in cooperation with the horse. They must communicate the task to the horse, using non-verbal communication and signals, in a respectful and considerate manner.

In increasingly complex exercises, the children learn to form cooperative teams. They have to use their creativity to “round up” horses in an arena, using linked arms. Or they have to organize themselves by specialization. For instance, they form a team in which each member is responsible for a different part of the task. Only by cooperation and communication is the task achieved.

**There are many skills and Lessons learned in Horse Play. In their interaction with the horse, the children can learn about listening, communicating, and influencing others. They learn to work as a Team.**



**MODEL EXERCISE: (HORSE THERAPY / HORSE-PLAY)**

Two children form a team, and are given the task of guiding a horse through an obstacle course filled with tempting treats and distractions. They must guide their horse past the temptations, using only non-verbal, non-violent, and respectful means.

This exercise is a metaphor for the real world, and the horse is like the child himself, going through life safely despite the dangers and difficulties along the way. It teaches children how to deal with dangers, difficulties and addictions. After this exercise, the children are asked what their own "temptations" are. Responses may include fighting, swearing, rudeness, drugs, smoking, alcohol, laziness, or over-eating. They then discuss simple skills to help them avoid temptation in their own lives.

**They learn that failure does not lead inexorably to failure. With Habits of Mind, they can recover from failure, and make changes in their lives.**



**MOTIVATION AND REWARD: SHINE CARDS**

The children have "Shine Cards" which they carry with them throughout the session. Their achievements are recognized with Comments entered on the Shine Card, which they can exchange for Stars.

The "Stars" are the currency of EQUAL. They can be exchanged immediately for tokens, or accumulated and saved for a bigger gift -- teaching delayed gratification, thrift, and saving. A stock of rewards are available. Through their Shine Cards, students are encouraged to exercise good choices; to build their savings, to think ahead, to plan for the future.

**1 STAR (4 Shine Card Comments)**

- Key Rings
- Feeding Your Horse a Treat
- Certificate Photo of Achievement

**2 STARS (8 Shine Card Comments)**

- T Shirts
- Give your Horse a Bath
- Friendship Bracelet

**SHINE COMMENTS ARE GIVEN FOR**

- COURAGE
- CRITICAL THINKING
- LEADERSHIP
- PROBLEM SOLVING
- EFFORT
- TEAM WORK/ SUPPORT



### SUSTAINED LEARNING

Every Lesson has a curriculum, print-outs, questionnaires and learning guides to reinforce and sustain learning. Every child is given a ring-file with pockets. This ring-file is personalized with his name, photographs, and has space for souvenirs and art-work.

At the end of every Lesson, the child inserts his completed worksheets, photographs, art-work and learning guides into his personal file. It is a permanent and personalized archive.

At the end of the course, the child brings his file home. The child is encouraged to show and share his file with others, and to refer to it from time to time. This reinforces learning in the long-term.

### GRADUATION CEREMONY

At the end of the EQUAL course, there is a Graduation Ceremony. The format follows graduations from Primary School, with speeches, presentation of scrolls, prizes and awards. **For most if not all of the EQUAL students, this Graduation Ceremony is the first in their lives.**





**THE EQUAL TEAM**

**THE EQUAL TEAM:** The EQUAL Team is responsible for the daily operation of the EQUAL programme.

The Team consists of:

- 1) Psychologists (qualified in Psychology and At Risk Counselling)
- 2) Instructors (knowledgeable about horses, safety, and certified in At Risk Counselling)
- 3) Volunteers (there are 114 Volunteers in the EQUAL Team)

The Team is under the overall supervision of the Chief Instructor, Administrative and Financial Managers, EFS. There is a student to staff ratio of 4. <sup>2</sup>

<sup>2</sup> More on the EQUAL Team appears in App II

### HORSES AND PONIES

The operation of the EQUAL programme requires up to 12 horses and ponies on rotation through the three-hour sessions. There is 1 horse for every two students. EQUAL horses and ponies are selected for their character and temperament. They must be:

- a) sociable, cooperative, friendly and open to new relationships,
- b) sensitive and nurturing,
- c) not fearful or nervous, without aggressive behaviours.

After their selection, EQUAL horses enter into a period of training. All the exercises and activities are shown to them. Their reactions are carefully scrutinized and monitored. The EQUAL Team ensures that the horses are able to withstand the constant activity of an EQUAL Lesson. When the horses show irritability, stress or fatigue, they are removed from the programme immediately.





**FACILITIES**

The first venue for EQUAL was the National Equestrian Centre (NEC) at 100 Jalan Mashhor Singapore 299177. When EQUAL exceeded the NEC's capacity, EQUAL moved to the EQUAL Centre, with 12 stables, a classroom, meeting room and office. In 2013, construction began on the Academy, which on completion in 2014 will be the permanent home for EQUAL. It will have classrooms, office, meeting rooms, activity centre and a 20 X 40 arena with a tent cover. The Academy will also run the EFS' vocational training programmes. The Academy is sponsored by the Singapore Totalizator Board.

The Equestrian Federation of Singapore has committed to hosting EQUAL-ARK for the life of the its land-lease, which is presently to 2024. The EFS will seek an additional 15 year lease extension to 2039.





**FUNDING AND COSTS**

The costs of the EQUAL ARK programme 2011 – 2013 was a total \$1,107,354<sup>3</sup> covering start-up, capital expenditure, and operating costs for three years. These costs were borne by the Founding Grant of \$632,000, fees charged to the schools, grants and donations from Lee Foundation, President’s Challenge, Tote Board, Major Sponsors and Donors.

**ANNUAL OPERATING COSTS OF EQUAL 2011 – 2013**

The annual operating cost of EQUAL for 605 students from 2011 to 2013 was:

ITEMS	2011 Y1 (Actual)	2012 Y2 (Actual)	2013 Y3 (Budget)
Insurance - Riders	2,106	1,544	1,621
Maintenance of classroom	10,107	4,365	4,501
Teaching Materials	3,959	6,213	8,174
Salaries	170,241	174,396	177,180
Staff & Volunteer Training	16,320	428	4,500
Horses and stables	85,938	103,132	91,763
<b>Annual Operating Cost</b>	<b>288,671</b>	<b>290,078</b>	<b>287,739</b>

TOTAL OPERATING COST 2011 – 2013	\$866,488
COST PER STUDENT FOR 48 HOURS' EQUAL LESSONS (based on 605 students over 3 years – see page 43/44 for student numbers)	\$1,432 PER STUDENT
COST PER LESSON OF EQUAL (ROUNDED UP)	\$29.83 (\$30)

<sup>3</sup> A more detailed cost account appears in App II

**COST EFFICIENCY OF EQUAL-ARK**

The cost of EQUAL per student, based on 605 students enrolled from 2011 – 2013, is **\$1,432 per student** for a 48 hours of EQUAL lessons.

The cost per EQUAL hourly lesson is \$29.83 which has been rounded upwards to **\$30**. The cost of EQUAL-ARK charged to the student or sending school is **\$5** per lesson. This enables the school to send the entire cohort to EQUAL, rather than just a selected few students.

<b>COST PER LESSON</b>	<b>\$30</b>
<b>AMOUNT CHARGED TO THE SCHOOLS BY THE EFS</b>	<b>\$5</b>
<b>AMOUNT RAISED BY THE EFS FROM GRANTS, SPONSORSHIPS AND DONATIONS</b>	<b>\$25</b>
<b>Cost of the programme borne by EFS fund-raising</b>	<b>83% or \$240,000 pa</b>

Of the \$30 cost per lesson, the sending school pays \$5, and the balance \$25 is paid by the Equestrian Federation of Singapore's Grantors, Donors, and fund-raising efforts. The amount borne by the EFS and its Grantors has been 83% or \$240,000 per annum.

**PROJECTED FUNDING 2014 - 2024**

The grant from the Founding Grantors expires in 2014. The Equestrian Federation of Singapore has committed to funding the EQUAL-ARK programme until 2024 or for the duration of EFS' own lease (now 2024, but an extension to 2039 will be applied). The EFS will raise these monies through revenues, grants, sponsorships and donations, and events such as the Annual Equestrian Ball.



## EQUAL-ARK 2011 – 2013

### ENROLLMENT, COURSE FORMAT, AND DELIVERY

#### NUMBERS OF STUDENTS AND LESSONS

There are three EQUAL formats:

- 1) **EQUAL-ARK** (48 hours taught in 16 Sessions X 3 hours per session)
  - a. 16 Sessions of 3-hours duration per Session
  - b. covering 3 Lessons in the space of 3 hours
  - c. providing a total of 48 Lessons
  - d. delivered over 4 mornings a week
  - e. groups of 20 to 40 Year One students.
- 2) **EQUAL-CCA** (54 hours taught in 27 Sessions X 2 hours per session) 27 Sessions of 2 hours per Session,
  - a. providing 54 hours in total
  - b. delivered in the afternoons
  - c. groups of 14 – 20 students
  - d. from various Year – groups
- 3) **EQUAL-HOLIDAYS** (40 hours taught in 10 Sessions X 4 hours per session)
  - a. 10 sessions of 4 hours
  - b. 40 hours' Total
  - c. Delivered during 2 weeks of school holidays

The total numbers of Students and Lessons 2011 – 2013 are in the following chart:



**THE NUMBERS OF STUDENTS ENROLLED IN EQUAL PROGRAMMES FROM 2011 TO 2013:**

Year 2011 – 2013	EQUAL-ARK (3 hour morning programme 48 Lessons / 16 Sessions NORTHLIGHT SCHOOL	EQUAL-ARK (3 hour morning programme 48 Lessons/ 16 Sessions ASSUMPTION PATHWAY SCHOOL	EQUAL CCA (2 hour afternoon programme 54 Lessons/ 27 Sessions NORTHLIGHT SCHOOL	EQUAL CCA (2 hour afternoon programme 54 Lessons / 27 Sessions ASSUMPTION PATHWAY SCHOOL	*HOLIDAY EQUAL (Intensive programs 40 hours / 10 Sessions)	TOTAL STUDENTS PER YEAR AND FOR 2011-2013	Total NORTH-LIGHT	Total ASSUMPTION PATHWAY	*Other Schools
2011	132	-	10	15	10 (Ahmad Ibrahim)	167	142	15	10
2012	163	41	17	23	10 Northlight	254	190	64	
2013	151	-	14	19	-	184	165	19	
Total Students 2011-2013	446	41	41	57	20	605	497	98	10
Total Lessons Delivered 2011-2013	21,408	1,968	2,214	3,078	800	29,468	24,022	5,046	400

\*Only programmes for Assumption Pathway and Northlight School, and conducted as EQUAL-ARK and EQUAL-CCA, were covered by the Grant. These numbers are for the entire programme, which contains non-Grant lessons and students. \*These smaller programmes were not included in the main EQUAL-ARK programme as they were run as pilot studies for data gathering of the EFS. The cost of these programmes was not included in the main EQUAL-ARK grant. \*The study did not include these other programmes due to the variable year-groups and ages.

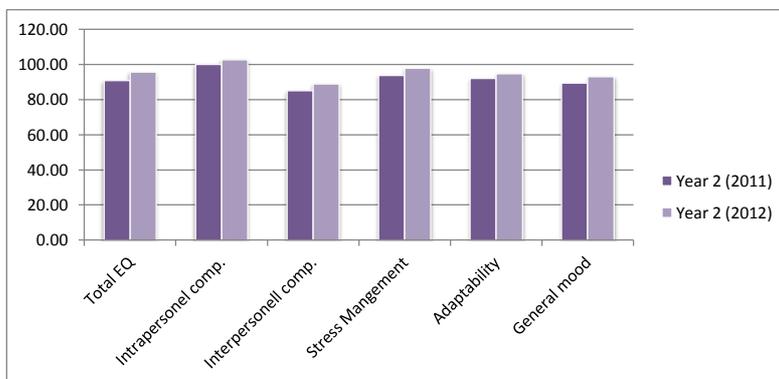


**RESULTS: 2011 EQUAL STUDY (BAR-ON EQ INVENTORY STUDY)**

Northlight School used the Bar-On EQi Inventory questionnaire to perform a controlled study on EQUAL’s effect on students. In 2011 and 2012, the questionnaire was administered to Year Two students. The 2011 Year Two cohort had never done EQUAL. The 2012 Year Two cohort had done EQUAL in 2011.

Table 1 - Mean EQ Score of Year 2 students in 2011 (not attended EQUAL) vs Year 2 students who have attended EQUAL 2011.

	Total EQ	Intrapersonal comp.	Interpersonal comp.	Stress Management	Adaptability	General mood
Year 2 (2011) (N=168) NON-EQUAL	90.86	100.01	85.15	93.89	92.03	89.40
Year 2 (2012) (N=102) EQUAL	95.62	102.71	89.02	97.79	94.74	93.11
<b>DIFFERENCE</b>	<b>+4.76</b>	<b>+2.70</b>	<b>+3.87</b>	<b>+3.91</b>	<b>+2.71</b>	<b>+3.70</b>





Study II compared the 2012 Bar-On EQ skills for Year Two Northlight School students who had undergone EQUAL in their Year One, with their predecessor cohort (2011 Year Two cohort) who had never undergone EQUAL.

**The gains of the EQUAL cohort over the non-EQUAL cohort were significant:**

- 1) The Total EQ score for those who had done EQUAL compared with the control group of those who had not done EQUAL showed a **4.76 increase in total EQ scores** for those who had done EQUAL.
- 2) The Highest improvement was in **Stress Management (3.91 gain)**.
- 3) The second highest gain was in **Interpersonal Comp (3.87 gain)**.
- 4) The third highest gain was in **General Mood (3.70 gain)**.

#### **RESULTS: 2012 NORTHLIGHT SCHOOL STUDY (HABITS OF MIND)**

In 2012, the Northlight School changed their measurement of the EQUAL programme to Habits of Mind. This was to ensure that the EQUAL programme was aligned with the Northlight School's own outcome measures.

Measurement of Habits of Mind is done by a qualified professional observer. In the case of EQUAL, the Northlight School judged the most qualified observers to be the Form Teachers. The Form Teacher had daily review of each student, a good knowledge of the student, and understanding of each Habit of Mind. The Form Teacher also observed the EQUAL students when they were outside of EQUAL, and transferred changes. They were also an external party and therefore a most credible source from a scientific perspective.

In 2012, the Form Teachers did a rating of the Habits of Mind shown by students in the EQUAL Programme. They measured the Habits of Mind at the Beginning, Mid-Point and End-Point of the EQUAL programme. The rating scale is shown in App III.



**NORTHLIGHT SCHOOL 2012 SURVEY OF 163 STUDENTS FROM NORTHLIGHT SCHOOL “BEFORE” AND “AFTER” EQUAL:**

HABIT OF MIND (HOM)	CODE	DESCRIPTION	GAINS IN HABITS OF MIND AFTER EQUAL TRAINING
Thinking Flexibly	TF	To generate new ideas, considering new perspectives and other points of view	+42.76%
Taking Responsible Risks	TRR	To weigh risk and make good decisions. To be willing to try something new despite difficulty and fears of failure.	+43.77%
Managing Impulsivity	MI	To respond to a situation by thinking through it rather than reacting to it.	+45.83%
Listening with Understanding and Empathy	LUE	To be alert and attentive, to listen and respond appropriately to others.	+44.19%
Persisting	P	To focus on a problem or difficulty and try different ways of solving or overcoming it.	+44.96%

The results were excellent, showing gains in Habits of Mind scores of between 42 and 45 percent on average for 163 students tested before EQUAL, and again, after EQUAL.



### 2013 EQUAL STUDY (CENTRE FOR QUANTITATIVE MEDICINE, DUKE-NUS GRADUATE MEDICAL SCHOOL)

In 2012, EFS consulted Singhealth and Duke-NUS Graduate Medical School with a view to conducting a scientific, controlled and published study on EQUAL-ARK. The resulting 2013 Study was on 157 Northlight School Year One students. They were split into two batches. The first batch of 75 students underwent the EQUAL programme in the first half of the year 2013 (Intervention).

During that time, the second batch of 82 students underwent an identical school programme but did not undergo EQUAL (Control). The two batches – Intervention and Control -- were deemed to have similar profile, experience and environment, except that the Intervention batch underwent EQUAL-ARK, and the Control batch did not undergo EQUAL. Data was taken from the Intervention and the Control Groups at the beginning, and at the 13<sup>th</sup> week and after the 16<sup>th</sup> week of the EQUAL course of 16 sessions over a 5 month period. The data was analyzed to ascertain any differences in Habits of Mind in the Intervention Group over the Control Group.<sup>4</sup>

The findings were: the Intervention group (which had EQUAL) achieved significantly higher scores in all 5 Habits of Mind than the control group (which did not have EQUAL). **There was an average rise of 67.8 percent in all Habits of Mind** seen in students from the beginning, to the 13<sup>th</sup> week of EQUAL. When the Intervention Group was compared with the Control Group, it was found that there was an average 65.4 percent gain by the EQUAL students (Intervention) over those students who did not do EQUAL (Control). When factors were controlled through multiple linear regression analysis, it was concluded that the changes in Habits of Mind was due to the EQUAL programme.<sup>5</sup>

It is remarkable to note the speed of the changes. The sampling was done at the beginning, and at the 13<sup>th</sup> week of the 16-week course. Allowing for school breaks and holidays, **the achievement of 67.8 percent gains in Habits of Mind was achieved very rapidly, within a four to five month period.** Disorders such as Intellectual Impairment, Dyslexia, and ADHD which were present in the student population studied. It is planned in 2014 to work together with the Institute of Mental Health and the Singapore Association for Mental Health to study the application of EQUAL-ARK on children with mental health disorders in Singapore.<sup>6</sup>

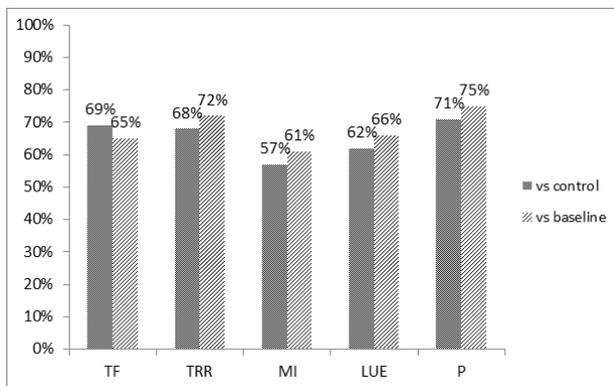
<sup>4</sup> After the study was complete, was the Control batch allowed to commence EQUAL.

<sup>5</sup> The results are appended in Appendix IV.

<sup>6</sup> The Study 2013 is currently being prepared for publication in an international peer-reviewed Journal, with co-Authors: **Dr Jade Kua**, EQUAL Chairman 2012/3 and Associate Consultant, KK Women's and Children's Hospital, **Mr Jonathan Zhou**, Programme Director and EQUAL Psychologist, **Associate Professor Arul Earnest** and **Dr Li Wenyun**, Centre for Quantitative Medicine, **Professor Daniel Fung**, Chairman of the Medical Board, Institute of Mental Health, and **Professor Ranga Krishnan**, Dean, past Head, Department of Psychiatry and Behavioural Sciences, Duke University Medical Centre.

**RESULTS 2013 STUDY**

**Figure 1. Percentage changes in HOM scores between intervention (at week 13) and control (at week 13) and intervention at baseline (week 1)**



HABIT OF MIND (HOM)	CODE
Thinking Flexibly	TF
Taking Responsible Risks	TRR
Managing Impulsivity	MI
Listening with Understanding and Empathy	LUE
Persisting	P



**RESULTS 2013 STUDY**

**Figure 2. Percentage changes in HOM scores between intervention (at week 13) and control (at week 13) and intervention at baseline (week 1), by Habit of Mind (HOM).**

HABIT OF MIND (HOM)	CODE	DESCRIPTION	AVERAGE GAINS IN HABITS OF MIND FROM START – FINISH OF EQUAL	GAINS FOR EQUAL STUDENTS OVER THE CONTROL GROUP
Thinking Flexibly	TF	To generate new ideas, considering new perspectives and other points of view	<b>+65%</b>	+69%
Taking Responsible Risks	TRR	To weigh risk and make good decisions. To be willing to try something new despite difficulty and fears of failure.	<b>+72%</b>	+68%
Managing Impulsivity	MI	To respond to a situation by thinking through it rather than reacting to it.	<b>+61%</b>	+57%
Listening with Understanding and Empathy	LUE	To be alert and attentive, to listen and respond appropriately to others.	<b>+66%</b>	+62%
Persisting	P	To focus on a problem or difficulty and try different ways of solving or overcoming it.	<b>+75%</b>	+71%

**The top Habit of Mind in terms of improvement is:**

- 1) Persistence 75%
- 2) Taking Responsible Risks 72%
- 3) Listening with Understanding and Empathy 66%

**Top Habit of Mind Improvement relative to the Control Group is:**

- 1) Persisting 71%
- 2) Thinking Flexibly 69%
- 3) Taking Responsible Risks 68%



## SUMMARY

### RESULTS 2011 – 2013

- 1) According to the Bar-On EQI study done on the 2011 Year One cohort after EQUAL training, compared to previous Year One cohort (who did not do EQUAL) as the Control, the gains of the EQUAL cohort over the non-EQUAL cohort were significant. **Those students who did EQUAL in 2011 showed an overall gain of (4.76) in EQ Skills over students who did not do EQUAL. All measures showing positive gains, with the highest for Stress Management (3.91), followed by Interpersonal (3.87) and General Mood (3.70), over a Control Group.**
- 2) In 2012, the Northlight School did a study of 163 students using 5 Habits of Mind as Indicators of Change, and found the **EQUAL students showed 43% - 46% gains in Habits of Mind** as measured from the baseline to the end of the EQUAL programme, after 48 hours' Intervention over 16 sessions.
- 3) In 2013, the Northlight School cohort of 157 students was divided into two, producing an EQUAL-trained group of 75 students which were compared to a Control group of 82. The two groups were identical except for the factor of EQUAL training. The analysis of the results by the Centre for Quantitative Medicine, Duke-NUS/Singhealth, and reviewed by the Institute of Mental Health and Duke-NUS, showed that:

**the Intervention Group (which did EQUAL) showed significant gains across all five HOM's, with the students gaining by in Habits of Mind scores by an average of 67.8 percent from Week 1 to Week 13 of EQUAL. When compared to a Control Group who did not do EQUAL, the EQUAL group gained an average 65.4 percent over the Control Group.**

### COST EFFICIENCY OF EQUAL-ARK

- 1) The cost of EQUAL per student, based on 605 students enrolled from 2011 – 2013, is **\$1,432** per student for a 48 hours of EQUAL lessons.
- 2) The cost per EQUAL hourly lesson is est **\$30**.
- 3) The cost to the students is **\$5** per hourly lesson, or **\$240** per EQUAL course, which is paid by the sending school or through the child's Edusave account.



- 4) The balance **\$25** or **\$1,200** per student was paid by Grantors, Donors and the Equestrian Federation of Singapore. In total, 83% of the cost of EQUAL 2011 – 2013 was borne by grants, donors, and the Equestrian Federation of Singapore.
- 5) The EQUAL programme is delivered to the students at a low cost of \$5 which allowed the entire student cohort to attend EQUAL.
- 6) The price per lesson at \$30 is **cost-efficient** in relation to other interventions for At Risk Kids.

#### COST EFFECTIVENESS OF EQUAL IN ACHIEVING TARGETS

To ascertain the Cost-Effectiveness of EQUAL, please refer to

- a) the section “Costs” (p 26) which describes the annual operating cost of the programme 2011 – 2013 to be \$866,488 and,
- b) the section “Numbers of Students” (p 29) describes that the total number of students for the years 2011 – 2013 to be 605.
- c) the section “Results” (pages 30 – 33) which concludes that EQUAL-ARK achieves gains in students of an average 67.8% across all Habits of Mind after a 48-hour EQUAL course.

From the above information, it can be concluded:

- 1) The cost per student is **\$1,432** per student for a 48-hour EQUAL course.
- 2) The cost per hour of EQUAL is **\$30** which compares favourable to other programmes for At Risk Kids, ie counseling, psychotherapy and psychiatry.
- 3) Based on the findings of an average gain of **67.8%** in Habits of Mind after a 48 hour EQUAL programme, we conclude:
  - a) EQUAL delivers **1% gain** in Habits of Mind in each student at the cost of **\$21.12**.
  - b) It costs **\$211** to achieve a **10 % gain** in Habits of Mind in each student through EQUAL.
  - c) One **\$30** EQUAL lesson brings about an average **1.4%** gain in Habits of Mind in each student.

**The 2011, 2012 and 2013 studies agree that EQUAL has produced very significant and rapid gains in EQI and HOM measures in 13 year-old At Risk schoolchildren in the space of a 48 hour programme. When related to the costs of the EQUAL programme, it is can be concluded that these gains are achieved at a cost-effective price.**

### CONCLUSIONS

Three years of EQUAL-ARK (2011 – 2013) show that At Risk students with a history of school failure benefit from the EQUAL programme, showing significant increases in their Habits of Mind.

These gains in Habits of Mind were rapid, and achieved at a very cost-effective price in terms of absolute cost of the lessons, and the cost charged to the students.

EFS is committed to offering the EQUAL programme to all Schools with students “At Risk ” for the long-term.

We believe that increases in Habits of Mind will give these students a far higher chance of future success in School, Employment, and Family Life.





#### THANKS AND APPRECIATION

The EFS wishes to express its deep thanks and appreciation to the Founding Grantors, Temasek Cares CLG, Trailblazer Foundation and T Touch for funding the EQUAL programme from 2011 to 2013.

They were joined by an eminent group of Major Sponsors and Donors, who answered appeals for funding generously.  
May we thank each and every Major Sponsor and Donor for their gracious and kind support.

And may we also thank our Honorary Life Patron, former President SR Nathan, Minister Heng Swee Kiat, and Minister Dr Ng Eng Hen, for leading our fund-raising efforts at the Equestrian Ball.

And may we thank the Equestrian Federation's EQUAL Team, and especially the 114 Volunteers, who devoted their time, efforts, and unique horse-skills, to give 605 young children a second chance in life.

### **EQUAL – ARK**

EQUINE-ASSISTED LEARNING FOR AT-RISK KIDS

EQUAL-ARK (EQUINE-ASSISTED LEARNING FOR AT-RISK KIDS) IS A COMMUNITY AND SOCIAL SERVICE PROJECT OF THE  
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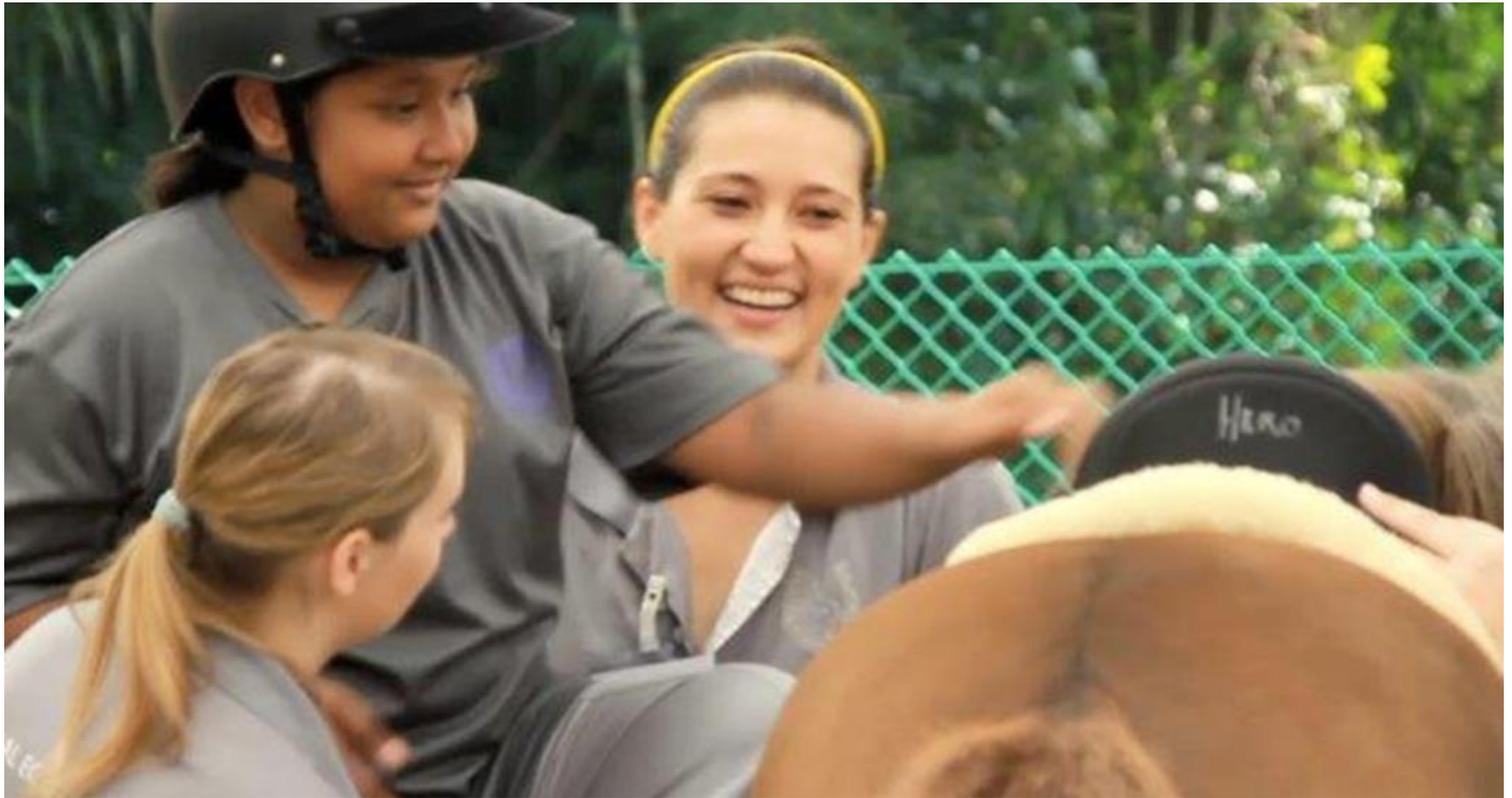
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