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Evaluation of equine assisted learning in education for primary school children: a qualitative study of the perspectives of teachers

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The study presents qualitative research on the impact of Equine Assisted Learning in Education (EALE) has on the development of life skills in children as perceived by teachers and programme trainer. A qualitative design was utilised with semi structured interviews of the 8 participants investigating what changes were observed in the children's cognitive, psychomotor and social skills were during and or after participation in the EALE. Data was analysed using thematic analysis. Four themes emerged, including, (i) relationships and trust, (ii) communication and confidence, (iii) achievement, (iv) teamwork and participation. The study identified cognitive, social and psychomotor learning for children across the four themes. This study found that there was increased interaction with each other, increased nonverbal communication and group work which was transferred into the classroom after the EALE and was reported to be seen for a considerable time after the programme ended. This supports previous research investigating the impact of EALE in children and supports its use as an alternative to classroom teaching for those who struggle to engage in the conventional classroom.

KEYWORDS

equine assisted learning, equine assisted therapy, horse therapy, animal assisted intervention, equine therapy, teachers

1 Introduction

The first documented use of animals as part of a treatment plan or therapy can be traced back to the 1960s (Levinson and Mallon, 1969). There is an expanding body of literature that reports the use of animals in therapy across a diverse range of populations (Selby and Smith-Osborne, 2013; Kamioka et al., 2014). Hallberg (2008) argues that the use of horses brings additional qualities to the therapy that domestic animals (cats and dogs) cannot bring. Horses are prey animals, and this gives them an innate vulnerability that sees them depending on group living, highly developed non-verbal communication skills and the ability to take flight from a predator (Mills and Nankervis, 1999). These survival skills means that horses are more social beings and are finely tuned to body language therefore are extremely sensitive and responsive to human behaviors and non-verbal cues. This means that they can provide feedback which facilitates the therapeutic process.

Equine assisted interventions are the collective term used to refer to programs that use horses to provide rehabilitation and educational benefits to those involved (Kendall et al.,

2015). Therapy involving horses can be divided into two broad categories: therapy aimed at improving mental health and therapy aimed at improving physical health. The range of conditions that utilize horses is vast from those with Cerebral Palsy (Menor-Rodríguez et al., 2021), after life changing physical injuries (Portaro et al., 2020), ADHD (Pérez-Gómez et al., 2021), Autism (Gabriels et al., 2018; Maresca et al., 2020), and Mental Health conditions (Ward et al., 2022). Work has also been done with at risk adolescents (Trotter et al., 2008), young people with adverse childhood experiences (Tsantefski et al., 2017; Craig, 2020) and young offenders (Hemingway et al., 2015). Within the categories of mental health and physical health the therapy can be subdivided into grounded equine assisted therapies (Grounded-EAT) or mounted equine assisted therapies (Mounted-EAT) (Ward et al., 2022). Grounded-EAT as the name suggests is almost exclusively groundwork-based activities with no mounting or riding of the horses allowed (Lac, 2017). Mounted EAT prioritizes mounted activities and incorporates groundwork through grooming and tacking. The use of groundwork here is in addition to the mounted work. Each program will have different elements dependent on the practitioner but also the individual undertaking the program (Lee et al., 2016).

Saggers and Strachan (2016) and Elbertson et al. (2010) suggest that social-emotional learning has a pivotal role in academic performance, attendance, classroom behavior and academic engagement. Stormont et al. (2012) describe a window of opportunity where intervention can cause the prevention of social, emotional and early academic problems. If this window of opportunity is not realized and students reach the final years of primary school education, and they are still experiencing the problems then these are more likely to remain, and these children are at risk of various negative outcomes for example school failure and dropping out of school. Saggers and Strachan (2016) conducted an equine assisted intervention in a small group of primary school students where their findings indicated that students perceived that it was beneficial to them, they were more confident, had better communication skills and had developed coping mechanisms to support their learning and social-emotional wellbeing.

This paper will discuss the findings of a small descriptive qualitative research project which was designed to identify the perceived benefits, identified by teachers, to a child's emotional, social and behavioral wellbeing. None of the children in the study had identified physical or mental health conditions but were identified by their teachers as those who were not engaging well in the normal classroom learning environment. These students can be perceived to have been given the window of opportunity to undertake this intervention in the hope that there is an improvement in their social-emotional wellbeing. Equitots Lanarkshire were keen to build the evidence base for EALE, and their approach to learning, and evaluate the impact of this equine assisted intervention on children who require an alternative approach to learning. This study was commissioned to evaluate the impact and effectiveness of their approach in how and why it improves (or not) confidence, communication skills, relationships, trust, resilience and teamwork of the pupils.

Equitots Lanarkshire, established in 2016, provides “an experiential learning approach that promotes the development of life skills for education, professional and personal goals through equine-assisted activities.” The approach taken is a “carefully

designed, holistic Equine Assisted Learning in Education program (EALE), which benefits children physically and improves cognitive and sensory, emotional, social and psychological development.” The program is a mounted – EAT program with groundwork and “learning hut” work too. “Learning hut” is where the children who are not riding at the time work through set tasks associated with the theme of the week and is aimed at linking the riding, the groundwork and “forest” work together with treasure hunts at the end of the session.

The EALE provided by Equitots Lanarkshire focussed on activities that would improve confidence, communication, resilience, achievement, teamwork and relationships. The program provided to primary school children (ages 4–12-year-old) was created to link to the local Authorities' vision, and the Scottish policy on Getting it Right for Every Child Indicators (GIRFEC) (Scottish Government, 2017a). GIRFEC is a framework and shared language to provide all children in Scotland with the right support at the right time by promoting, supporting and safeguarding the wellbeing of children and young people. It is embedded in organizations, services and practitioners with a focus on changing culture, systems and practice. In summary, this framework and vision includes raising achievement and attainment for children, as well as keeping children safe, nurtured, and healthy: these are shown by the eight well-being indicators in Figure 1.

For this initial study, it was important to understand the teachers' perceptions of the benefits to their pupils who attended the EALE at Equitots Lanarkshire. For example, what skills had the pupils gained as a direct result of this program? It was important to qualitatively understand the impact the intervention had on children when they returned to school—that day, the rest of week, time in school and after the program had completed.

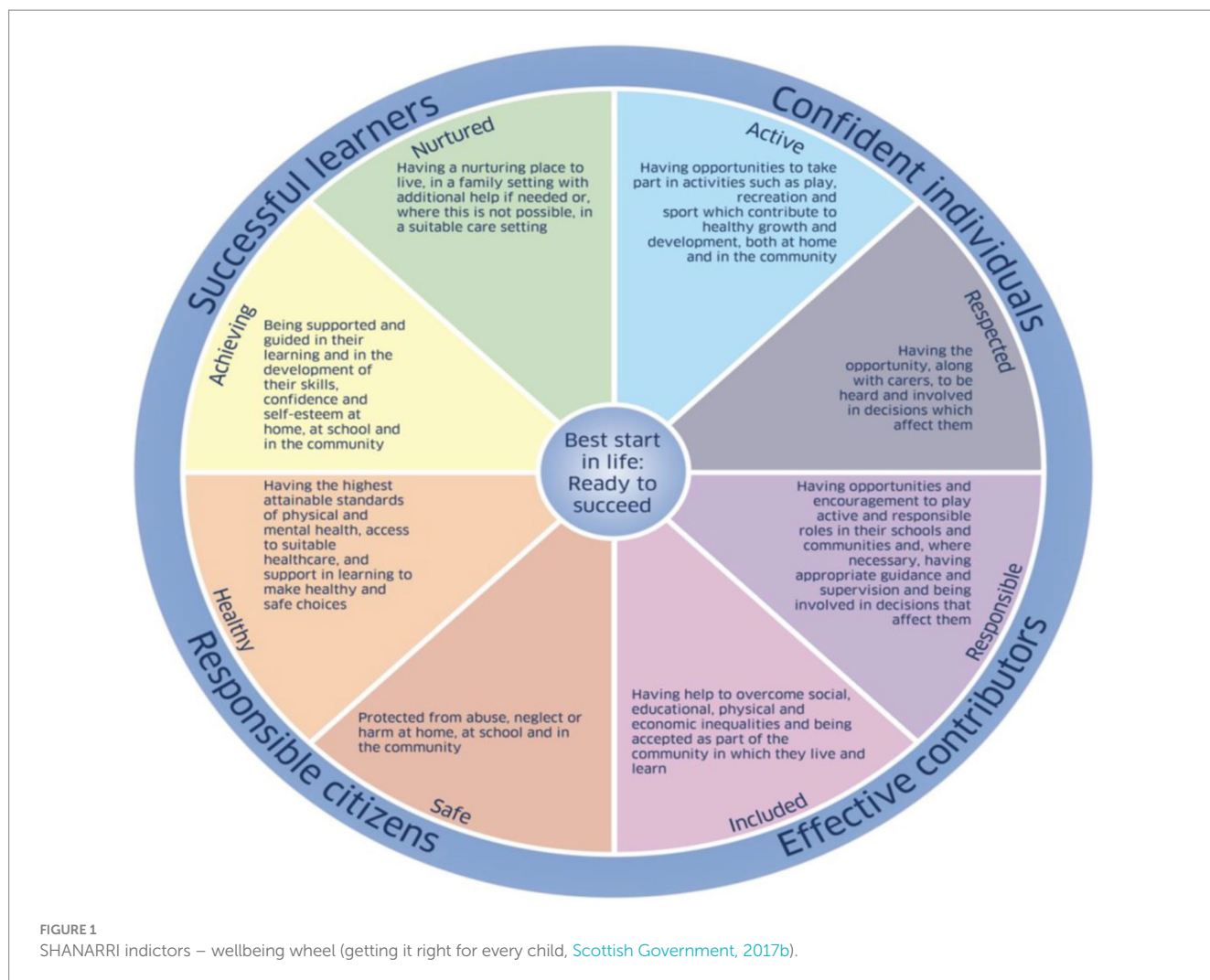
2 Materials and methods

2.1 Program approach

The EALE program provided by Equitots Lanarkshire focussed on activities that would improve confidence, communication, resilience, achievement, teamwork and relationships. There were 25 EALE sessions in total: five schools in two council authorities who received five sessions each with four children per school. A brief outline of the weekly focus is below:

Week 1 – ‘Stables—what do horses need?’

- Introduction to the facilities and safety rules around horses.
- Horse Care—describing brushes, allowing each child to brush a mane.
- Tacking up—describing equipment and letting child feel the bit and have a friend move the reins to understand what it may feel like.
- Riding—mounting process, stretching exercises while on the horse, simple gross motor skills activities—moving a flag from one cone to another.
- Children not riding—teacher supervises in learning hut use a stable pack drawing their room on one half and the horses stable



on other, think about what both need to be happy healthy and safe.

- Activity at end—children work in a group to find hidden pictures and words of brushes and then they have match them up.

From Week 2 onwards every session has—

- Introduction—recap of week one.
- Horse Care—recap of week one.
- Tacking up—recap of week one.

Week 2 – Knight-Coat of Arms

- Riding—as for week one then adding balance work, if child shows reasonable balance allow trotting. Do work on jousting, creating theme about knights. If no trotting does more stretched and then work on jousting at a walk.
- Children not riding—recap on week one—"build a stable" ensuring a horse can fit into it.
- Activity at end—use knight packs—discuss knights, clothes and patterns, discuss shields and coat of arms – what it means allow children to make a coat of arms and put 4 things that are on

them, if they feel comfortable then discuss what they put on shields and why.

Week 3 – Weight and Important to you dream catcher

- Tacking up—introduce heavier and lighter and approx. Weight of horses they can see.
- Riding—as for week one and week two re trotting but develop this as child grows in confidence. Additional games while on horse like posting mail or fishing.
- Children not riding—use weight pack. Weigh assorted items, pieces of equipment used with horses, then themselves and work out what additional weight is on the horse.
- Activity at end—everyone makes a dreamcatcher of what is important to them.

Week 4 – Measuring and Horseshoe Design

- Horse Care—as week one but expand on lengths of mane, tail, legs etc., child's legs, horse nose their nose. Height of horse and child by tape measure and by hands.
- Riding—as for week three

- Children not riding—use of length packs—need to measure equipment etc., make a rectangle of a certain length, work as a team to make the rectangle.
- Activity at end—make a horseshoe on card, whitewash it, design what going to put on it.

Week 5 – Hi five award Sheet and Decorating Horseshoe

- Riding as week four.
- Children not riding—complete Hi5 award.
- Activity at end -Decorate horseshoes, draw picture of them on a horse and write what they have liked to do. Achievement Certificates and Medals.

The study aimed to evaluate the perceptions of teachers and program trainers (referred throughout as participants) of the EALE delivered by Equitots Lanarkshire Community Interest Company therefore a qualitative approach was adopted.

2.2 Research approach

As the methodology was qualitative the approach the researchers took was in the form of semi structured interviews with the participants and thematic analysis was then used to examine the data to identify common themes and patterns. Thematic analysis (TA) (Braun and Clarke, 2019) is described as an umbrella term which aims at identifying patterns across qualitative data. Braun and Clarke (2019) state that the terms thematic analysis and content analysis are often used interchangeably and that a hybrid term thematic content analysis is also common in the literature. Braun and Clarke (2019) define distinctive features of three schools of TA—“coding reliability,” “codebook,” and “reflexive TA,” this study used reflexive TA. Joy et al. (2023) states reflexive TA are common in education research as it allows exploration and interpretation of the data and telling a story about the patterns of meaning.

For the purposes of this study, children taking part in the EALE are known as “pupils.”

2.3 Research questions

The study was designed to answer two detailed research questions:

RQ1: What changes in cognitive, psychomotor or social skills were witnessed during and/or after the EALE in the children or young persons?

RQ2: What experiences do teachers and program trainers report about the EALE program?

2.4 Sample

Primary schools ($n = 5$) in North and South Lanarkshire, Scotland, UK were approached to take part in the evaluation via

the headteacher. Program trainers within the EALE program were also approached to take part. Participation was voluntary and participants were informed that they could withdraw at any time, refuse to answer any questions and that no follow up interview was required. Seven teachers from five schools, and one program trainer took part in this research.

No children were involved in this study, but it is anticipated that further evaluation work will collect data from children and young persons.

2.5 Data collection

Face-to-face or telephone interviews were carried out by the two investigators using a semi-structured set of questions, Figure 2. These interviews lasted approximately 60–90 min and were used to collect data from the participants ($n = 8$). For accurate analysis of the data these interviews were recorded with the consent of the study participants. Data was held securely and confidentially using General Data Protection Regulation guidelines (UK General Public Acts, 2018). Due to the small sample group, no demographic data from participants and their associated schools, were taken due to the risk of identifying participants.

The research data were kept anonymously as soon as the interview recording was transcribed. Participants were aware that direct quotes would be used in future publications. Personal data (i.e., name and school) were kept for 6 months and then securely destroyed. The anonymized interview transcripts and consent forms were retained for 10 years in line with University of Stirling’s data retention policy.

2.6 Data analysis

TA was used to analyze the data once transcription was complete. The process summarized in Figure 3 was used to identify key themes across the dataset using codes as identifiable markers so that the researchers could review the themes across interviews and identify which themes answered which of the research questions. To aid the process teacher/headteacher/classroom assistant participants were identified as Participant 1 [P1]—Participant 7 [P7], and one participant was the Program Trainer [P8]. The credibility of study findings was enhanced by keeping meticulous records of the clear decision trail on the coding and theming of data, the inclusion of rich verbatim accounts of participants’ perspectives, and using two independent researchers to code and theme data thus reducing the researcher bias during the analysis phase. Where disagreement in coding was apparent, researchers met and agreed the coding framework.

3 Results and findings

Four main themes emerged from the data analysis:

- relationships and trust
- communication and confidence

- What is your role within the school/Equitots? How long have you been doing this role?
- Describe your experience in using EALP
- What do you think works well for the children/young people? Please provide examples. Prompt: can you think of examples where this has helped with challenging behaviour?
- Can you think of examples where this has helped with developmental or support needs?
- What does not work so well for the children/young people? Please provide examples.
- When the intervention works, why do you think this is happening?
- Can you describe any changes you see in the child/young person during each session or whole programme? Prompt: such as manual dexterity, psychomotor skill, cognitive or social skills
- Can you describe any changes you see in the child/young person after each session or whole programme? Prompt: such as manual dexterity, psychomotor skill, cognitive or social skills

FIGURE 2
Standardized interview question.

1. Familiarise yourself with the data by reading and re-reading the transcript
2. Assign preliminary codes to the data
3. Combine codes into overarching themes across different interviews
4. Review themes
5. Define and name themes
6. Produce report

FIGURE 3
Steps in thematic analysis (Braun and Clarke, 2019).

- achievement
- teamwork and participation

The authors will report on each of the themes below utilizing the interview data to expand on the themes that emerged.

3.1 Relationships and trust

Participants reported that children interacted more, either at the time of the EALE session and/or afterwards:

“...he’s trying to socialize...trying to interact...” [P1].

At other times, participants reported more detailed examples of interaction, including the non-verbal communication common within the EALE session as well as afterwards:

“He will come and say, they are standing with their arms closed, does that mean that they are not happy? He is starting to link behaviors - someone’s nonverbal communication..... it is about trying to work out what they are communicating [through non-verbal communication].” [P1].

Another participant described that one pupil was “...now looking and saying, are you sad? And [he is] looking at people’s faces and looking at what they are doing, which is definitely gained from when he has been going to the horses.” [P1].

For some children, particularly those with autism, making eye contact can be difficult. The Program Trainer [P8] explained that:

“Quite often pupils’ with autism find it actually painful to make eye contact; it’s physical pain they experience. So, a horse does not demand eye contact. Probably the horse does not look you direct in the eye because the horse’s eyes are at either side of its head. So, it does not seek out eye contact whereas humans, if you want to engage with somebody, you seek out eye contact deliberately, which can make that person [with autism] feel uncomfortable. So, I think it is one reason why pupils with autism can gravitate toward the horse.”

The opportunity for small group learning as well as one-to-one time provided some children with a “...wee bit time away in a smaller group situation... getting the space and time [they] need to maybe chat through the home situation, you know, things that are going on that [they] would not normally do in a big, busy school day.” [P5]. Some participants noted that after the sessions, pupils were “more open to coming forward to speak about [their] feelings” [P5].

Instant feedback that is provided by the horse to the pupil was reported by a number of participants. The physical care of the horse is one of the key aspects of the program, and while learning about grooming, cleaning out the horse’s feet, the pupils appreciate that the horse is “...responding to what you are doing. To get that actual response from another live thing that’s not a human being, for kids, its priceless!” [P7].

One participant gave an example of the love between the pupil and the horse:

“It is the fact that the horse will love you if you treat it nicely. It will love you no matter what you are doing or how bad your day has been: that they are there to support you. I think that massive for the pupils, ‘cause that might not always be their experiences at home.” [P4].

One activity that the participants reported as greatly significant to the pupils was that pupils were asked to make a coat of arms, identifying who and what was important to them in their lives. The importance of making and maintaining relationships is an area that participants spoke of throughout the interviews, and the benefits pupils had from it. Participant [P2] explained that her group of pupils would talk to each other during the craft hut time and would disclose things about their home life to each other, and it made them feel that “... other people can have a difficult time at home too ...,” and she stated that this continued well after the sessions were finished.

Participants reported a range of activities that pupils could participate in and gain immediate benefit from in other themes.

3.2 Communication and confidence

The Program Trainer [P8] explained her thoughts around the program design:

“Quite a lot of pupils do not understand social norms in the playground, but they start to see through the horses, who are very big and visual, that social acceptance.... How close you can be to someone or how heavily you can touch somebody without a reaction. Horses either bring their ears back, or move a leg, or swish their tail.”

Participant [P2] gave an example of a pupil who “...does not follow instructions, is disengaged at school, he pushes the boundaries, he runs away...but the interesting thing about him is that actually he is very affectionate toward the horses, ...and cares about how the horse views him.” When asked to explain why that is, the Program Trainer explains:

“I think the horses do not put pressure on the pupils. They treat everyone equally and sometimes, because the pupils appreciate something or someone [i.e., horse], that they can connect with, that actually is not making a noise; that is not speaking.”

The use of horses to provide “instant feedback” was seen as such an advantage within the EALE. “Pupils got instant feedback without it being, sort of, harsh, verbal.” [P8]. Participant [P5] explained that the pupils talked of the horse not approving or liking their behavior as it would make the horse step away. This encouraged pupils to think about their non-verbal behavior and verbal approach to making relationships that did not have the other person moving away from him/her. Participant [P1] explained that she could think of several instances where the pupils had referred to their learning even after months had passed since their last event at EALE.

The benefit of working and learning with horses was explained by [P4] who said that “...there was loads of learning ongoing on in terms of how to be safe around it [the horses] and as soon as they went near the horse, they had to be a bit more confident in themselves, but they had to be gentle too... I think that was important for that pupil as he had issues associated with attachment.”

Another teacher reported a feeling of fear with one pupil initially, but during the EALE her confidence improved, as well as her communication:

“...she was really anxious to the point that sometimes she is not able to speak. She would remember from week to week the name of the equipment and was able to answer questions really clearly and the confidence was amazing. The first week she was terrified and now she actually attends horse riding lessons, and she is doing really well.” [P6].

Participants reported that the children used their experiences, and talked about them, long after their EALE had finished. The confidence the pupils showed to get involved in activities at school was a clear benefit to completing EALE, with participant [P6] explaining that “... [the child] would normally hang back a lot and now he is not. He’s quite confident now and he is getting involved in a lot of things.”

3.3 Teamwork and participation

The EALE program is designed around the GIRFEC model (Scottish Government, 2017a). One of the areas that the participants address in their responses is the development of a nurturing environment within the EALE.

An outdoor environment, with no artificial light or sounds, provides a completely different environment to school. One participant described that there was:

“...a benefit of taking those pupils out of class for a short time and doing something active with them ... [and] they formed a wee social group, where they discuss things. The school have become aware of issues in the pupils’ homes that we were not aware of. Those pupils’ have built enough trust between each other.” [P3].

For other pupils, they develop cognitive skills such as spelling, identifying letters, and maths skills. For example, children work out the perimeter of the horse arena:

“...when we do distance and measuring activities, there are children that would not necessarily demonstrate [those skills] in class, like problem-solving skills too.” [P8].

This was emphasized by teachers as an important learning activity, as exemplified by:

“In week three we moved onto literacy and numeracy work. We looked at the weight of the horse, and the distance around the horse arena and stables. It is the work like that where the children seem unaware that they are engaging in skills like that. For most of these children they would never engage in these activities in classrooms.” [P7].

The focus on the horse’s physical needs and care requirements is intended to provide the child with an understanding of the need to be active and healthy. The children are taught, for example, to identify and use the correct brushes on different parts of the horse’s body. *“That relates to self-care, whenever they are at home, and understanding that you need to wash skin for your skin to be healthy.” [P8].*

Making the wrong choices in life is what we all do at some point in our lives. Using the “brushing the horse” example, *“...horses are good at telling us when we have made a mistake”* and if the children brush the horse on a sensitive part of the body with the wrong brush, the horse will *“...swish its tail or stamp its leg or put its ears back ...so it’s about transferring those skills of if you make a choice that other people are not going to appreciate, there’s a consequence. And it’s all non-verbally.” [P8].*

Participant P4 said that the horse reacted negatively to the child while she was brushing the horse, and *“... the child then was more gentle [when grooming] and talked about learning to be kinder to others.”*

One aspect of using the horse was the instant forgiveness that the child perceived. For example, the child would approach the horse in a caring way [despite a poorer experience previously] and the horse would respond in the same way: *“The child can get a sense of ...they begin to understand that if you do make bad choices, it does not mean the end of the world.” [P8].*

Some children helped others to understand the horse’s behavior as Participant P3 explained:

“One child was explaining to the other how to approach the horse so that he did not think you were going to be cruel to him... and it was important that the horse understood your body language so that you were going to be kind and caring to him. I do not think either child was used to someone being as caring to them and it was good to see that they had picked up this life skill.”

3.4 Achievement

The Program Trainer stated that teachers reported to her that behavior within the session was transferred back to the classroom. Teachers reported that pupils were more focussed, generally more able to concentrate, and better able to participate in class. This was borne out in participants verbatim statements below:

“... they are nicer to each other ...” [P3].

“One boy did not like the noise of a pen on a board. Then the other kids started saying to each other that he did not like that noise: stop doing it, because remember he does not like that. They were showing that they really...cared about each other, which I had not seen before.” [P4].

In the same scenario, the participant reported that the teacher had changed the way that noises were used within this boy’s classroom, and that they had seen a difference, for the better, in his behavior. While another teacher reported that the child was *“...definitely still been a lot more open and coming forward to speak about his feelings and things like that.” [P5].*

No one reported any negative aspects of the EALE, and one participant [P3] explained that *“...every time they [the children] were happy: so, they have always got something to take home... they are proud of themselves.”* She noted that the children would *“...chat, chat, chat, chat and they were having really good conversations either about the session, or about what they were looking forward to next time.”*

Children were also presented with a Youth Scotland Hi5 Award (Scottish Qualification Agency, 2017), and participant feedback was particularly strong about the achievement children felt when receiving the award.

“...they were delighted and felt that they really achieved something that was different to their peers as well. ...some of them that were going together initially we had slight reservations over how well they would mix. It is only 4 of them and its quite an intense period of time that they were up there. ...But even the car journeys to and from, and as the weeks progressed, you would come back to school and say, what a difference! Even in their ability to start conversations with each other.” [P4].

One child reported to her teacher [P5] that she *“... had never received a medal for anything”* and that she *“... had never been good at anything before.”* The teacher remarked:

“Oh, my goodness, that’s how low her confidence is... so it’s a wee steppingstone ...that wee encouragement to go and take on something that is new and different. That sense of achievement.” [P5].

Teachers concluded that children appeared to have a sense of pride and enjoyment and sense of achievement from the EALE.

4 Discussion

This study looked at the perceived benefits to the pupils undertaking of the EALE from the teacher and program trainers' perspective. Through semi-structured interviews with eight participants their experiences were examined using thematic analysis allowing the researchers to answer the research questions.

Overall, the participants described the children's excellent active engagement in EALE, for example, there were more positive relationships between the children within the group, and teachers could provide examples of improved engagement in class and in the school environment. This supports previous studies in the area that EALE allows development of resilience skills which were transferred into the classroom environment (Ewing et al., 2007; Jarrell, 2009; Sagers and Strachan, 2016). This study found that there was increased interaction with each other, increased nonverbal communication and group work which supports Sagers and Strachan's (2016) work using slightly older primary school children. In early studies of an equine facilitated therapy approach to adolescents, Bowers and MacDonald (2001), found an increase in the ability to foster life skills, such as communication.

The stature of the horse alongside a child usually solicits respect for the animal, and when the person can ride the horse, there are feelings of pride and achievement (Melson, 2001; Lemke et al., 2014). Our findings support this where teachers perceived the sense of pride, achievement by the child in accomplishing care for the horse. 'Instant feedback' from the horse and the development of the relationship with the horse was identified by some participants as being important as it was silent and was not harsh like verbal communication can be. Punzo et al. (2022) identifies friendship with the horse to be through silent, honest and genuine communication which for some children will be much easier than regular verbal communication (Wilson et al., 2017), with Lee et al. (2016) highlighting that the friendship with the horse can contribute to improved emotional and social functioning. The small research project reporting here adds to these previous works with the younger child with no diagnosed condition also experiencing the same positives as those with diagnosed conditions.

There is existing evidence available on the impact an equine learning approach has on different groups mainly those with Autistic Spectrum Disorder (Gabriels et al., 2018), ADHA (Maresca et al. 2020; Pérez-Gómez et al. 2021) adolescents (Ewing et al., 2007), young people with adverse childhood experiences (Craig, 2020) and in those who are young offenders (Hemingway et al., 2015). However, in this evidence there is little involving younger children in primary school. Sagers and Stachan (2016) looked at the impact on children with no diagnosed condition and the impact EALE had on their social-emotional learning and found it to be positive in that students were more confident, had better communication skills and developed coping mechanisms to support their learning. While their study was small $n=11$, and the students themselves were interviewed, this current study adds to the data that the use of EALE seems to improve all these areas as perceived by the teachers who were with them in the program and working with them in the classroom.

In this current study participants identified cognitive, social and psychomotor learning for children which are described within

the four themes: relationships and trust; communication and confidence; achievement; teamwork and participation. Existing evidence, although on different sample groups, and outcomes (e.g., adolescents and depression, anger) and experiences (e.g., ability to make friends) and referral to the intervention as "therapy" or "program," does suggest that the equine learning approach could be useful. Hemingway et al. (2015) showed that including horses in the therapeutic process improves interpersonal skills, emotional regulation, empathy and social competencies in young offenders in the United Kingdom.

In early studies of an equine facilitated therapy approach to adolescents, Bowers and MacDonald (2001), found a decrease in depression and the ability to foster life skills, such as communication, and proper use of power and control. In Kaiser et al. (2004), concluded that a 5-day therapeutic riding program showed significant decrease in anger among able-bodied children. The findings of this current study support these early studies as positive changes to behavior were seen during and after the EALE particularly in relation to building relationships and communication, and in the children's confidence.

It should be noted that in a Norwegian study by Hauge et al. (2014) involving 49 adolescents who undertook a 4-month equine-assisted therapy program that although there was a significant increase in social support there was no difference in the self-esteem or general self-efficacy in the group.

A randomized control trial, conducted by Frederick et al. (2015), involving 26 adolescents enrolled in a 5-week equine assisted learning program, increased levels of hope and decreased depression within that timeframe. More recently Craig (2020) demonstrated use of equine assisted psychotherapy in adolescents who had experienced adverse childhood experiences (ACEs) to be beneficial in developing communication strategies. Craig (2020) states that the harmony with the horses allowed the adolescents in their study to reinterpret nonverbal cues and improved their ability to channel their emotions, thoughts, and behaviors. While this study was not designed to investigate whether the children in this study had experienced ACEs the thought that very few children experience a childhood without experiencing some ACEs is current (NHS Scotland, 2019). Also, the earlier an intervention the more positive the outcomes for the child so perhaps more work conducted in the younger age group may see more positive results during that "window of intervention" (Stormont et al., 2012).

However, Ewing et al. (2007) demonstrated that a 9-week equine-facilitated learning program on 26 participants, aged between 10 and 13 years, did not support any statistically significant results with regards to measurement of children's self-esteem, empathy, control, depression or loneliness. However, it should be noted that the participants in this study were not in mainstream education (as the participants in our study are) and suffered from moderate to severe behavioral or conduct disorders and or learning disabilities. This was highlighted by Ewing et al. (2007) in their findings and they emphasized that the issue of being out with mainstream education may have had a significant detrimental effect on the adolescents' self-esteem so perhaps if they were to repeat the participation in the program then this may have produced more positive results.

In this study long-lasting effects of the EALE were cited as an important benefit of EALE with teachers reporting that they had witnessed improved behavior and engagement in class, as well as

in forming positive relationships with classmates. The students were perceived to have benefits for a significant period after the program ended. Gabriels et al. (2018) described improvements in social and communication behaviors in children with autism spectrum disorder for up to 6 months. Harvey et al. (2020) highlights the various levels of reporting changes in the child's behavior with parents reporting the most change and more often in other areas than the teachers in their study reported. This highlights a key area for future research as our EALE study focused on interviews with the teachers and showed positive results so it would be interesting to see in future work what parents said about the longer lasting effects of the therapy and of course to include the children in the research too.

The qualitative reporting within this study provides insight into the potential benefits (as there were no negative aspects identified) of EALE, and the perceived impact it had on the primary school children (with no diagnosed condition) who took part.

There is increasing existing evidence for the use of EALE in children with a wide range of conditions however they are based on small sample sizes for quantitative studies, and therefore, the results should not be over-interpreted due to the risk of biases. In a review of the efficacy of equine-assisted interventions on psychological outcomes, Kendall et al. (2015) concluded that equine-assisted interventions hold much promise in terms of child/adolescent social and behavioral issues. However, they conclude that the evidence does not allow definitive conclusion of the efficacy of equine-assisted interventions, and that further research is required, such as randomized control trials. This has further been reported by Sissons et al. (2022) in their systematic review of animal interventions in children with autism.

5 Conclusion

The main findings can be summarized as:

Traveling to the facility, the work directly with the horse (such as riding, grooming, and understanding equine behavior), as well as craft and other learning activities (such as making a coat of arms and measuring the horse arena) were cited as being active ingredients of the intervention that teachers felt worked really well for children within the EALE. There were no negative aspects of the program identified, apart from the further availability of such a program to children within each council area.

There were examples of perceived immediate impact for the children, and this was often carried on for months after the intervention. Positive changes in social skills such as those associated with positive behavior (e.g., building relationships with the teacher and other children), as well as improvement in the children's confidence and communication skills, were provided as examples throughout every interview. Cognitive skills, such as numeracy, were improved by carrying out applied work during the sessions.

Interview data revealed that teachers' experiences of EALE was viewed as an excellent means of engaging children in learning that was more difficult within a classroom than they found in the outdoor environment with horses. Teachers noted areas where they were proud of their children's achievements both at EALE, and in the months after the intervention.

5.1 Recommendations

Further research, both qualitative and quantitative, with a larger and more diverse geographical spread of participants, could add to the evidence base for this type of learning for children. The evidence base for this type of activity should be strengthened, and there appears to be positive benefits to the child and their life within and out with school.

Longer-term benefits that were described were reported 2–3 months after the EALE sessions were completed. Additionally, participants were volunteers and not every school/teacher involved in EALE volunteered for the study: therefore, there is a chance of responder bias. Further evidence over a longer timeframe with a larger sample of participants would help add to the strength of evidence for this type of intervention.

There were no negative comments in relation to the intervention and the program of learning. This means that this may be an intervention that is personalized enough for each child, while providing a group-based intervention program that is responsive to the needs of children who learn in diverse ways. The findings of this research would suggest that there are benefits for children, and these opportunities should be considered and readily available for education commissioners, schools and parents as an alternative way to learn. The authors would offer advice to parents if this were not readily available through the education system then to find a local program and discuss potential benefits for their child.

This study provided a qualitative exploration of the impact of this intervention, and more evaluative research is needed before the impact of the intervention is fully understood. However, evidence from this and other studies would suggest that it may have the potential to have a significant impact on the way the child learns, as well as having longer-term benefits.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Author contributions

LS: Formal analysis, Investigation, Writing – review & editing. JD: Conceptualization, Funding acquisition, Investigation, Methodology, Project administration, Writing – original draft.

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The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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