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RAISING SELF-ESTEEM THROUGH MATHEMATICAL ACTIVITY

Susan Hogan
Open University

As an aim for the classroom, raising self-esteem is a noble one, although difficult to quantify. What are identifiable are those activities that help children feel good about themselves and their mathematical activity. Within the context of a secondary school for boys with emotional and behavioural difficulties, some mathematical activities will be discussed from the perspective of the teacher/researcher and the pupils. The aim of this session is to explore the link between mathematical activity and self-esteem.

Introduction

For each activity I shall give an account *of* the event (What happened?) separate from accounting *for* the event (Why did that happen and how did my teaching actions affect what happened?) in an attempt to isolate my own emotional involvement in the event and to ensure the face validity of the data. The "accounting for" does not take place within an existing theoretical framework but should give rise to grounded constructs, which can be taken back to the classroom for further refinement (Shiu and Hatch, 1995).

In these accounts, I shall examine the impact of the way I behave on pupil behaviour and potential learning. What I am teaching *through* the activity – the mathematical, social and emotional objectives of the lesson – should be clear. First I shall define self-esteem within the context of emotional and behavioural difficulties (EBD).

Defining self-esteem

One of the characteristics of children with EBD is their low self-esteem. They have learnt not to value themselves highly due to their past experiences and the messages of the significant adults in their lives. One would hope not but in many cases teachers can be included in this assessment. Even if that is not the intention, children can interpret our words as personal criticism because they have learnt to be defensive in order to protect the self-concept from attack.

As an example, I said to a Year 11 boy: "You can't do the work." He immediately shot back with: ""You calling me thick?". "No", I said, "I meant you are *not able* to concentrate because he is being too noisy".

Coopersmith and Feldman (1974) distinguished between self-concept and self-esteem. *Self-concept* represents the inner beliefs and descriptions of ourselves; *self-*

esteem is the measure of our evaluation of the self-concept. Taking Daniel's self-concept in mathematics as an example, he believes that he can only do number work successfully. He also believes that to tackle anything more complex will lead to failure. Daniel's self-esteem is low because of his negative evaluation of that part of his self-concept. [See Activity 1 below]

> "The major condition for enhancing self-esteem is the teacher's acceptance of the child..." (Coopersmith and Feldman, ibid.:203)

This acceptance frees the child to be him/herself and work within the limits set by the teacher in a safe environment. If this were the only condition for learning, there would be few problems with self-esteem in this context. However, the relationships with other pupils in the classroom serve to counteract the work of the teacher in building self-esteem.

Socialization

McLeod (1991) quotes research by Grouws and Cramer (1989) who found that "effective teachers of mathematical problem solving were characterized by a supportive classroom environment where social norms encouraged students to be enthusiastic and to enjoy mathematical problem solving." In an EBD setting, pupils try to promote different kinds of norms where any sign of weakness or failure is castigated (bullying). Even within this context, pupils vie for attention, approval and praise and the teacher's skill is in management of disruption by setting and enforcing standards and limits of conduct and achievement.

The teacher is attempting to change the child's evaluation of his self-concept; in Daniel's case, to erode his negativity and plant alternative beliefs by showing him that other work can lead to success.

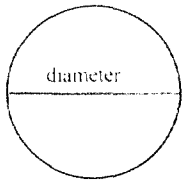
The benefits of higher self-esteem are a more positive and resilient child. There are also follow-on benefits in terms of the teacher's own raised esteem.

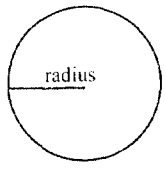
Activity 1

1. Circumference: Daniel, 5.11.99, 11.30, Year 9, 8 boys

I had laid the books and folders out to save time but when Daniel came in he immediately said, "I'm not doing this" before he'd even sat down. In fact he would not sit down. When I said everyone was doing the same thing and I was sure he'd be able to do it, he said, "I'm going then" and walked back to the door.

At that point Di [support teacher] came in offering to help and brought him back in with the others. We got them sat down. I gave out compasses and asked them to draw 2 circles and copy from the board where I'd written:





radius = $\frac{1}{2}$ x diameter

Di read the questions in the book and also told Daniel that he'd be able to "have a go at it".
"Noooh!" he moaned but at least he had his coat and hat off.
He pleaded with me. "I'll do something else. I'll do times."
I said, "Just sit there a minute while I get the others started."

They needed urging to get on with their circles. I drew circles for Tom and Mark (as this was not the objective of the lesson). Chris and Matthew were not skilled with the compasses either but they persevered, their first efforts thrown crumpled into the bin.

I had a quick look through a Level 3 Number book - but did not find anything inspiring – and gave Daniel a multiplication square.
"I still can't do it!" He was becoming more and more agitated. "Look, why can't I do times? I asked nicely". How could I refuse?
"O.K. Do this." I took a stencil and drew 6 circles on a piece of paper, wrote on the diameter of the circles (whole numbers < 10) and underneath wrote 3x4 etc.

While I was writing I explained that this was the three times table.
"I can't do my three times" he complained. I said, "Good" then he'd be learning something and he could use the multiplication square.

He was happy with this and I left him to fill in the answers, 'though watching from a distance I could not help noticing that he did not look at the multiplication square before writing his answers.

"Finished that!" he yelled across the room to me. All this had taken 20 minutes.

Analysis

1. Objectives: (i) mathematical - to appreciate the approximate ratio between circumference and diameter. This was a follow up to a practical session measuring circular objects with string and a ruler and dividing circumference by diameter. (ii) social and emotional – to keep the group together and Daniel in the lesson. To allay any fears about the work and ensure some success for everyone.

2. How did my teaching actions affect what happened? I was successful in achieving the social and emotional objectives through the mathematical activity. My actions brought Daniel some success by adapting the task to suit his emotional state at that particular moment but also to deal with the problems he has with spatial tasks. I was also trying to prevent disruption of the lesson on his part, as his behaviour would distract others and lower their achievement. I do not believe that he understood the relationship between the circumference and the diameter – this would take more than one lesson.

3. Why did Daniel behave in this way? Daniel feels safe with number. His was a fear of the unknown. He had no previous experience of the book that I laid on his table. By being efficient I had made the classroom seem too challenging for him. When he looked at the questions inside the book he saw a lot of writing and drawings of circles which he was expected to measure. He has difficulty reading and measuring, hence his behaviour was intended to preserve his existing self-concept.

Activity 2

3 Digits: Luke, 24.9.99, 13.50, Year 11, 3 boys

I had decided to play maths games – one I hadn't tried before and one I had – as this is a half-hour lesson at the end of Friday before they go home for the weekend. I found the 3 in a row game in a textbook (Vickers) – it was a new one on me. Each player drew a grid 3 by 2 and a leader (me to start with) chose six digits from 0 to 9 calling them out one at a time. After each number is called out, the player chooses which square to put the digit in. When all six are filled the two 3 digit numbers are added together and the player with the highest total wins and becomes the leader for the next game. Linda [classroom assistant] joined in too.

As I called the numbers out Luke realised immediately what to do and, consequently won the first game. He wanted me to see what he had done. He said: "There's a way of doing it, isn't there?" I said, "I know" but he didn't want me to

give the others any clues as they obviously hadn't got it yet (ie. the understanding of place value).

I joined in the second game, which I won then chose Linda to call the third game. The eerie thing was (and what made it such fun) that Luke and I kept coming up with identical answers even when we didn't win. We both placed the digits in exactly the same place on the grid, except for one instance when we transposed the two 3 digit numbers, which still gave us the same answer.

What was funny was the development in the relationship between Luke and me. After each game he asked to see what I had written so I got up walked quickly over to him to the accompaniment of Linda's laughter and my own giggles, which got longer and louder every time I confirmed that we had the same answer. I could see that Luke was enjoying himself and eventually the other two caught on. We played for 20 minutes because they kept asking for another game.

Next lesson Luke said to Gary who had been absent that day that he would show him how to play. "Go on, try it. It's fun really" Luke coaxed him.

Analysis

1. Objectives: (i) mathematical – to appreciate place value of hundreds, tens and units.
   (ii) social – to provide a pleasurable activity for the group.
   (iii) emotional – (as arose from the lesson) to connect with Luke or find a point of connection between us.
2. How did my teaching actions affect what happened? In joining in I (apparently) reversed the roles of teacher and pupil. There was a danger of excluding the other two boys; one felt left out as he was not sure what was going on between Luke and me until we showed him.
3. How did Luke feel? He felt special and clever, maybe only because he felt superior to his classmates.

Conclusion

Can I ever know if a decision I have made has raised a child's self-esteem? I can know when I have made them feel good for a short time – sometimes this feeling extends beyond the classroom when pupils go out and tell others what they have done – then I also feel good. It is not so much the activity as the way it is presented and interpreted by the teacher, which can lead to changes in the way children think of themselves in the mathematics classroom.

On the one hand, my ability to affect self-esteem comes in fleeting moments; in this case, I must be aware and seize the moment. On the other hand, I should be able to develop particular strategies for pupils like Daniel so that I am not only reactive but also proactive in trying to pre-empt his difficulties. Individuals respond in different ways to activities; some prefer practical work, others are loath to leave their seats. Some are only happy when creating something aesthetically pleasing to them.

Experienced teachers will usually have built-in contingency plans for lessons that do not go according to plan. However, what I need as a teacher of children with emotional difficulties is the ability to respond flexibly to said difficulties in the way I feel is appropriate at that particular moment without subjugating my objectives to the wishes of the child. My role is to enable children to create mathematics by following through their own decision-making. For this I must feel that I have the freedom to enable the children; a freedom that comes partly from within (do I allow myself?) and partly from without (am I allowed to?).

References

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