

PROBLEMATISING CONFIDENCE: IS IT A HELPFUL CONCEPT?

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Abstract

The word "confidence" was used frequently by teachers in unstructured interviews about teacher assessment of mathematics. The author analyses how it was used and finds that different relationships are perceived between confidence and achievement. It is conjectured that different relationships lead to different kinds of teacher action or inaction. Lower usage among the secondary teachers than among primary teachers is examined and discussed, the author finding that the secondary teachers used a slightly more subject-specific vocabulary in similar circumstances, seeing links between thinking, hard work and achievement. A lack of specific description of mathematical achievement is a feature of both groups.

Context

I have been using unstructured interviews with primary and secondary teachers to find out how they make judgements about what pupils know and can do in mathematics. My raw data has been transcribed interviews which I have explored for information about the language and practices of informal teacher assessment. Interviews were typically conducted at the end of a day during which I had worked as a support teacher under the teacher's direction, and were usually in the teacher's own classroom, or some other place the teacher chose. Interviews were informal but based around some core questions, teachers being asked to elaborate or exemplify their answers in various ways. From the interview data is being developed into a model of teachers' informal assessment practices [Watson, 1995]. This paper relates to a small part of the initial analysis.

Confidence

While transcribing I noticed that the word "confidence" occurred frequently, so wondered how it was being used. I picked out occurrences of the word, in context, in the transcripts and clustered them according to similarity of usage.

Use within a community of practice can carry understood meanings and can also obscure other possible meanings, forestall analysis and influence practice. It is important to remember that the word was being used in the context of describing practices and judgements to an outsider, hence meanings were expected to be shared. I assume that teachers presented an edited version of themselves to me, and would choose language which they felt presented their practice in a fair and understandable light [Goffman, 1959]. "Confidence" is worthy of attention because it is presented neither in literature on assessment nor explicitly in my interviews as a key idea in assessment of mathematics; nevertheless the word appeared in a variety of contexts during the interviews and I also noticed it in the Evaluation of Implementation of National Curriculum [Askew et al, 1993]. In my interviews it was generally used in the context of describing the mathematical potential of individual students or particular groups, while in the Evaluation it was used in the context of describing achievements under A T1.

Taking the view that usage would indicate meaning I eventually identified five shades of meaning:

- Trust in something;
- Trust in someone specific to provide support;
- Trust that one can handle a familiar situation;
- Enterprise, in the sense of willingness to take a risk in a new situation; •

Assurance as a general personality trait.

I shall provide examples of some of these and critique their use by examining whether they serve to promote or forestall teachers' actions, or whether they are seen as unrelated to teachers' actions.

Quotations are from interview transcripts.

Trust in something or someone

To go into the abstract needs them to have a lot of confidence in their own ability (MD)

Rather than re-label this as "self-confidence" usage suggested trust in a separate object, property or process: something that would not let them down, like a calculator perhaps. There is a sense of the object being tried and tested and known to work well. It implies enough previous experience to know how the object usually performs. A constructivist view of how mathematics is learnt requires a certain amount of trust in the processes of learning; trust that the experiences the teacher provides will trigger some mental activity in the learner. This quotation suggests that the learner can develop that kind of trust for themselves.

I think it was a lack of her confidence in the student who taught them (OJ)

This second quotation uses "confidence" in terms of trusting some human agent, or, in this case, not trusting. There were other similar uses in which teachers spoke of having confidence in their pupils. As I did not explore this aspect through interviews with teachers I have no more to say about it, except that pupils' trust in their teachers seems intuitively to be important in learning.

Trust in a familiar situation

She's more confident with investigative work because she doesn't feel "this is maths so I can't do it" (DP)

She is quite confident with finding $\frac{2}{3}$ or $\frac{3}{4}$ of things ... I don't think she is confident about recording everything (DR)

He is not fully confident about writing out division sums (MD)

This meaning of confidence seems to be connected to previous successful experience in some aspect of mathematics, possibly a technical aspect. In order for the situation to become familiar it needs to have been experienced several times, for instance, a technique rehearsed several times, so that it can be recognised as one which has been done before, and the emotions connected with it are those of success. It may be a euphemism for "getting things right" as opposed to "getting things wrong".

The changeability implied here is important; in some cases, such as the last two above, it is clear what

sort of experiences the teacher will provide to lead to complete confidence. Success in mathematics is seen to lead to this kind of confidence; hence the teacher, by providing situations which lead to success, can affect confidence.

There could be a problem if this in the *only* approach used to build confidence, however, as it may suggest a step-by-step, path-smoothing approach is all that should be offered to those who lack "confidence". These tender approaches may lead to performance success, but are unlikely to provide success, or confidence, in more complex mental processes.

Enterprise

You can see whether they are more confident spatially, verbally or numerically (DP)

Just the ones who are confident enough with handling numbers to have a go, and confident enough to handle explanations (DR)

.. a kind of confidence to be able to think that through and not just use the methods I showed them (FJ) To me a mathematician is someone who is confident in tackling new ideas and using previous knowledge to work it out (MD)

There certainly seems to be a tradition of using the word to describe the willingness to take risks, to have a go at something, to be enterprising. Some of these require specific knowledge or dispositions to be sufficiently embedded in the learner's mind that they provide safety (for instance, spatial confidence). Others require previous successful experience (for instance, the tackling of new ideas). Confidence in this sense cannot be regarded as a fixed state of mind since it is based on skill or prior experience. Teachers can make a difference to skill acquisition and successful experience of risk situations. Provision of learning situations in which a child can develop mathematical enterprise allows the teacher to refer back in future to successful past situations and reduce the perceived risks of "having a go" in future. A awareness that this kind of confidence is an issue within mathematics, rather than as a given aspect of personality, can prompt teacher action. It would be easy, however, to misread it as personal assurance and hence regard it as outside the influence of the mathematics teacher. I suggest that the causal relationship here is that success leads to confidence, rather than the other way round.

Assurance

I think mathematics is a bit of a confidence trick. I believe you can do almost anything you can believe you can do (VI)

If it was a confident child I might be prepared to take the risk and give a test(DR) She will do well as she increases in confidence (MD)

Throughout the analysis I became increasingly concerned about the abstract acquisition of confidence implied by this usage. It is as if a child either is or is not confident and the successful learning of mathematics follows, or not, accordingly. The last quotation brings this home clearly and raises the question "how is she to increase in confidence?" The answer may be "by doing well" and the teacher

may indeed be looking for ways for her to succeed as a precursor to growth of confidence, but the statement implies the inverse causality. Of course there are children who are assured whatever they do. This assurance can come from successful parenting, past success, understanding of school culture and ability to demonstrate that they can fit in with expectations. Lack of assurance may be deep-rooted and unchanged by anything a teacher does.

Teaching for confidence

There is, therefore, a choice to be made. Should the teacher of mathematics accept the level of confidence the pupil demonstrates in the subject, or should she work in such a way that will boost confidence? If confidence can grow as a result of a build up of successful experiences, then it seems realistic to assume that the new confidence could be generalised to any mathematical situation, in time, rather than confined to one context (investigation, fractions or writing out division sums) which may have given rise to the success. Two teachers may have been suggesting this when they talked of personal confidence arising out of particular aspects of mathematical thinking:

His confidence has increased this year and he is beginning to think in the abstract where he couldn't before (MD)

Once she has got going and got her confidence she's quick to see how to get connections (DP)

My worry about this approach is that success may only ever related to small steps. The learner is then dependent on being offered small steps. I looked through the interviews for any voluntary mention of pupils having confidence to take large jumps or suggest links and connections in general. These are essential attributes for pupils to be independent thinkers in mathematics. Nowhere did any teacher talk about how these mental skills might be developed through teaching, although they were mentioned a few times as important, mainly in the context of A T1, specific assessment activities or GCSE coursework.

Differences between primary and secondary teachers

From the interviews it appears that the primary and middle school teachers use "confidence" significantly more than the secondary teachers when asked about pupils' mathematical behaviour, achievement and potential. One of the primary teachers who used it more than once used it nearly thirty times in an hour! I am not, however, misled into thinking that its use implies that teachers always attempt to develop confidence in their pupils, nor that non-use implies non-awareness. I suggest the following possible explanations, intended to be non-judgemental:

- that primary teachers, who may not be specialists, use "confidence" as a catch-all and explain-all phrase in the description of learning behaviour for which they may lack a vocabulary or analysis in their community of practice. They may not understand what learning and doing mathematics entails in detail and hence may not be able to teach it, therefore using "confidence" to describe the otherwise indescribable

- that primary age children need to develop confidence, of all kinds, above all else and hence it is high on teachers' agendas
- that secondary teachers, being more confident in mathematics themselves, have more specific language available to talk of mathematical ability or mental demands
- that secondary teachers, being primarily teachers of mathematics rather than teachers of children, regard confidence as outside their purview or as a "given"
- that secondary teachers, having worked with coursework for several years, have integrated confidence-building into their work to such a degree that it no longer needs naming, having a wider knowledge, vocabulary and understanding of what it takes to be successful in mathematics

I do not intend to offer any of these as the "truth". It is interesting, however, that the word is most frequently used in the context of describing ability, learning behaviour or potential and hence its use may indicate mismatch between the non-specialist teachers' experience of mathematical learning, the specialist teachers' experience and the language available to describe these experiences. To shed light on these possibilities I attempted to find out what the interviewed secondary teachers had said in place of confidence. The nature of the interviews made it extremely difficult to compare context for context. I identified four possible general contexts to help me search the secondary transcripts: descriptions of individuals, descriptions of what teachers look for in children in general, decisions about setting, and descriptions of attitudes and mental states. I selected, on the basis of the meanings I had identified, what teachers *might* be talking about in these contexts where the concept of confidence *could* have been used, but was not. It was an exercise to discover what might be in the mind of secondary teachers where "confidence" might be in the mind of primary teachers¹.

Out of 9 secondary interviews analysed the following ideas emerged strongly: usefulness of specific ways of thinking; hard work; communication; previous knowledge; pupils may have to be pushed; brightness or natural ability; pupils need challenge. These ideas also appeared strongly in primary interviews, so confidence could be an additional idea, rather than a substitute. However, it was also noticeable that secondary teachers were willing to talk about what the pupils *think* when asked about individuals, showing a little more articulate awareness of mathematics. Perhaps descriptions of thinking were taking the place of descriptions of personality. Typically teachers talked about such aspects as "willingness to half-formulate ideas", "willing to think things through", "... where she is in her thinking", "gathering thoughts", "ways of thinking" and the negatives of these were often given in

¹ The reader must be aware of the layers of interpretation involved here. First there is my analysis of use, then my clustering of usages into separate meanings, then my choice of context in other transcripts, and then my matching of use to the clusterings of meaning. Every stage of this is subjective. My purpose is to raise questions about delicate judgements through examining how they are articulated in unstructured interviews about teacher assessment of mathematics.

descriptions of weaker or insecure pupils. There was, however, no mention of any specific thinking strategies, apart from being systematic, so I cannot wholeheartedly say that the secondary teachers were more fluent about a range of thinking processes

Conclusion

The idea of "confidence" was used with varying frequency, much more by primary than by secondary teachers, to describe a range of emotional aspects of doing mathematics. Broadly these are about trust, enterprise and assurance. In some uses teachers seem to believe that confidence affects mathematical success, in others that success affects confidence. Sometimes specific areas of mathematics can be identified to work on and hence build confidence; other times it is a general personality trait which is possibly not regarded as changeable within the mathematics classroom. There was recognition that taking mental leaps and risks was part of being confident and part of learning mathematics, but the teachers interviewed did not in general relate these causally.

I suggested several possible reasons for the differences in its use. These range from differences in mathematical knowledge and experience of teachers to differences in recognition and care about confidence levels of pupils. Other aspects of my research suggest that the former is more likely than the latter.

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