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Embracing Mathematics: On Becoming a Teacher and Changing With Mathematics

Author: Peter Appelbaum with David Scott Allen (and others).

My formal teacher-training began in 1972, and I have worked in schools and teacher-education ever since. I have read many books about education, generally, including many that focus on training school teachers, and many that discuss mathematics education, and some that specifically focus on training school mathematicians. Appelbaum and Allen’s book *Embracing Mathematics*, is one of the strangest of these books that I have ever come across.

Appelbaum explains the strangeness by declaring that it is, intentionally, an “alternative methods text” (p. xxi). Indeed! By declaring that it is, intentionally, an *alternative methods text*, Appelbaum expands the idea of what he calls “mathematizing”. He acknowledges that this is how the pioneering early 20th century philosopher Ludwig Wittgenstein approaches the challenge of defining something: explore how it is used! Appelbaum expands the idea of “mathematizing” further as being equivalent to “embracing mathematics”. Then he adds to this that, in his view, teaching is learning (as an alternative to the latter word he also uses the word “studenting” to highlight this), and learning is teaching; and he says, “I am always becoming a new person”.

The paradoxical conclusion is that if Appelbaum can say what it does mean to be a teacher of mathematics then he is no longer growing and changing, and hence is no longer becoming a teacher of mathematics. An “arrived” teacher is no longer an active growing-teacher.

The slippery subtleness of the discussion should be starting to become clear. The words seems to be simple and everyday, but they are used in challenging ways, and need careful critical consideration to reveal their (likely) intentions.

Almost certainly there is a good book in this challenging discussion, but it is well hidden—or, it is structured and written in ways that make it hard to know where you are, or what you are actually reading or meant to understand.

To begin grasping the richness of the challenge, it must be understood that each chapter (presumably by Peter Appelbaum himself) is followed by a reflective commentary by David Scott Allen, but then each chapter-reflection is itself followed by what are called “Action Research” discussions from a range of other contributors: Isaiah Manzella, Karen Cipriano, Ada Rocchi, Colleen Murphy, Kristen Iaccio, and Petal Sumner (all school teachers). There is more: each Action Research section is followed by a MathWorld section that poses questions, mainly mathematical, but some more broadly educational, like a worksheet. In one of several appendices, Bernadette Bacino offers solutions and hints for the six MathWorld sections. There is even a “songsheet” with words for a song called “Polya Was a Mathematician”, to be sung to the tune of “Joy to the World” (not the traditional Christmas carol, but the 1970 hit by Three Dog Night which starts, “Jeremiah was a bullfrog…”).

David Allen, a teacher in his own right and at one stage a trainee-teacher student of Appelbaum, introduces the whole book with a Preface, “How Can I (Better) Embrace Mathematics?”. He also has an almost-concluding Afterword, “What Will You Write in Your Chapter?” The book, if nothing else, offers itself as a large multi-voice conversation on its many topics, mainly concerned with thinking mathematically and communicating this to others. Clearly the reader is expected/invited to “embrace” his or her own “becoming” by joining the conversation—hence the challenge of writing one’s own “chapter”!

Following the “Brief Contents” that in the usual way lists the official name of each chapter and major follow-on sections, the rather larger Contents listing is an annotated summary of the broad ideas of each chapter and its major sections and contributors.

As noted, the effect is partly like being at a very noisy and busy party—a lot of people have the opportunity to do a lot of talking at you!

When the discussions get going they use long paragraphs, and pages are often broken up by grey-shaded challenges to think about education, or mathematics, or both.

The stance is deliberately post-modern, and uses the reader’s reaction to the Quentin Tarrantino film Pulp Fiction as a kind of cultural litmus-test. If you focus on the film’s violence, you are “modern” in mind-set; by contrast, if you focus on its humour you are seeing its irony and have a “post-modern” mind-set. That is, the film is seen as being different from how it appears, like a pop-star’s stage persona being different from the actual personage of the pop-star: here “irony” is the discrepancy between immediate appearance and possible underlying but different truth. (In my case, I know about the film, but have not seen it: what does that say about me?) Consider the Name (cited author) Index. Some familiar, possibly expected names are present: Polya, Lakatos, John Mason, Carraher, Lave, Davis and Hersh, Dewey, Escher, Fermi, Howard Gardner, Herbert Ginsgurg, Herbert Kohl, Mellen-Olsen, Noddings, NCTM, Piaget, Reys, Vygotsky, Walkerdine. Some unexpected names also appear: Bettelheim (a psycho-analyst), Bourdieu (a French philosopher), Buber (a German existential theologian), Foucault (a French philosopher), Frankenstein and Powell (ethno-mathematicians), Freud(!), Noel Gough (an Australian post-modernist educational theorist), Edgar Allen Poe (an American literary giant), Rorty (a philosopher), Winnicott (a psychoanalyst of infancy and mother-
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and his co-contributors, have worked for
as easily retrievable index-items.
body of the text, with few of them identified
activities (problems and investigations) are
life; and mathematics learned through ICT-
eded at all (e.g.: numeracy; mathematics
needs further development. Some index-
items are not at their cited pages (e.g.,
sabretrics). Some items that ought to be
in the Index are omitted (e.g., construct-
Some topics are talked about but not
explained, or do not offer indicative exam-
examples (e.g., rubrics: the word appears
several times, with not a single rubric
part of a rubric ever presented).
Some valuable topics are highlighted
and indexed (e.g., problem-posing,
reading, group work).
Some essential topics are not consid-
ered at all (e.g.: numeracy; mathematics
across curriculum areas; mathematics
in the workplace; mathematics in everyday
life; and mathematics learned through ICT-
facilitated experiences).
Overall the many practical classroom
activities (problems and investigations) are
excellent. Sadly, they are buried in the
body of the text, with few of them identified
as easily retrievable index-items.
We can be assured that Appelbaum,
and his co-contributors, have worked for
years developing and trialling draft
versions of the chapters and their mate-
rials. This suggests that the materials in
the book can be made to work: that is, they
have been shown to be effective as a
means to train student-teachers and stimu-
late experienced teachers undertaking
post-graduate study.
For me, this is not a book I would offer
to student-teachers, unless they are confi-
dent critical readers, and hell-bent on
exploring the philosophical depths of a
post-modernist view of a curriculum (and
pedagogy) that is, by its historical nature,
fundamentally traditional—and/or they
have a playful rebellious streak.
I would recommend this book for
strong-minded, adventurous thinkers who
want to explore things such as Bourdieu’s
“habitus” or Deleuze’s “nomadic episte-
ology”, or Britzman’s endorsement of
“perversity”. A graduate student, or a
thoughtful professional, who wants to see
what else might be possible in the broad
territory of “mathematics education” and
“education” and philosophy of culture, will
find a great deal of stimulus here!
Otherwise I would happily plunder it for
good activities, and skip the background
theory, or pick the eyes out of the more
personally interesting, and convincing
theorists that Appelbaum and confederates
draw on, such as John Mason.
Reviewed by John Gough, Deakin University

The Creative Use of Odd Moments
Author: Doug French
Published: The Mathematical Association,
Leicester, UK, 2007
ISBN 0-906588-626
Available from AAMT: $42.00 for members
There are often times when a maths
teacher might have a few minutes to fill in
a lesson, be looking for a worthwhile and
challenging exercise for a few students, or
just want to motivate a group with some-
thing a bit different. This book will provide
many such examples, although I would
strongly encourage the user to try the prob-
lems before launching them on a class!
The Creative Use of Odd Moments is a
publication from The Mathematical
Association in the UK. It contains 80 exam-
les of short mathematical tasks and items
of interest, with accompanying solutions,
explanations and ideas for extensions. The
tasks range in difficulty but would, in my
view, be suitable for most middle years
mathematics classes. Most are tasks
which generally require some investigation
and exploration, but which may be consid-
ered fairly superficially or in greater depth
considering algebraic justifications, etc.,
depending on the cohort of students and
the time available.
This little book includes a CD which
contains both the book contents in PDF
format and some PowerPoint slides of
each problem, which may be produced for
the students, shown on a board or simply
posed verbally as required. The book is
actually a collection of the association’s
Odd Moments sections from their publica-
tion Mathematics in School, published
between 1993 and 2001, with additional
teacher notes and explanations. A couple
of examples:

#51 How many straight cuts are
needed to cut a 4 by 6 bar of chocolate
into 24 separate pieces. Can you do it
more than one way?
This exercise is actually a special case
of a simple and more general result that
tells us the number of tears needed to split
a piece of paper into n pieces is n – 1.
#68 In how many ways can you shade
3/8 of the squares of a two by four
rectangle? In how many ways can you
shade 5/8?
This problem lays a foundation for a
revisit when considering Pascal’s Triangle
in later years.
I highly recommend that any teacher of
middle years mathematics classes should
have a closer look at this publication and
consider it for both a faculty and personal
library.
Reviewed by Carol Moule
Advances in Mathematics Education is a new and innovative book series published by Springer that builds on the success and the rich history of ZDM (The International Journal on Mathematics Education formerly known as Zentralblatt für didaktik der Mathematik).

One characteristic of ZDM since its inception in 1969 has been the publication of themed issues that aim to bring the state-of-the-art on central sub-domains within mathematics education. This book presents the key debates that the mathematics teacher will need to understand, reflect on and engage in as part of their professional development. Issues in Mathematics Teaching is suitable for those at initial training level right through to practising mathematics teachers.

Communication in mathematics classrooms. Mathematics, social class and linguistic capital: an analysis of mathematics classroom interactions. What is the role of diagrams in communication of mathematical activity? ‘The whisperers’: rival classroom discourses and inquiry mathematics. Section 3: Pupils’ and teachers’ perceptions. This book has been produced primarily for students studying the Open University course ME825 Researching Mathematics Learning and as such it contains articles that would be relevant to the work of practising teachers and advisers of mathematics at all phases.

The article builds on Povey’s work with mathematics teachers with the main thrust being about discursive practices and how they can liberate a learner.