REVIEW

Unlatching the Gate – Helping Adult Students Learn Mathematics

A Review by ARMIN HOLLENSTEIN

Review: Safford-Ramus, Katherine (2008): Unlatching the Gate – Helping Adult Students Learn Mathematics.

Xlibris Corporation, 186 pages. ISBN 978-1-4363-5121-8 (hardcover) and 978-1-4363--5120-1 (softcover)

Katherine Safford-Ramus is an associate professor of mathematics at Saint Peter's College, a Jesuit College in New Jersey, USA. She has been teaching introductory mathematics courses at the tertiary level for 24 years at a community college. This book is based on her doctoral thesis.

In Chapter 1, *Unlatching the Gate* deliberates a rich specra of conditions for, and peculiarities of, mathematics learning by adults in a formal environment. Influential theories and empirical findings in the fields of educational psychology, adult education and mathematics education are surveyed with a focus on adult learners and – of course –teachers and institutions. The text does not discuss empirical research undertaken by the author; it examines her broad personal teaching experience in the light of the above-mentioned body of knowledge and proposes directions for the development of adult mathematics education. In this sense, *Unlatching the Gate* is a theoretical book reflecting on practical issues. The target audience would be adult educators and students of post secondary mathematics education.

The field of adult mathematics is depicted as highly heterogeneous in terms of students, teachers, goals and settings. Safford-Ramus discusses different contexts of learning and their conditions, including adult basic education, adult secondary education, undergraduate studies and graduate school, and also formal learning in prisons, during military service, in parent education, in the workplace and in welfare-to-work programs. Heterogeneity marks also the personal aspects: differences among students in a group, between student bodies and among teachers are – in the author's view – as important as the shared common ground of adult mathematics learning and their teaching.

Starting out with Socrates and his methodology of discussing mathematical issues with adult learners, in Chapter 2, Safford-Ramus then fast forwards to modern theories of human learning. She avoids the often practised 'bashing of behaviourism'. She models math anxiety as a trait originating in classical conditioning à la Pavlov unintentionally administered

by early math teachers. She cites Thorndike who advocates for adult learning of mathematics to take place in authentic situations – and not by drilling isolated mathematical schemes. She clearly sees some of the fundamental restrictions of behaviouristic theory and their technological application in programmed instruction. She presents Gestalt theory as a counter movement to behaviourism, arguing that 'the whole is more then the sum of its parts' and that looking at patterns and structures of entities is a genuine mathematical activity.

In several short sections, the text describes social learning theory (Bandura), and information-processing theory (Gagné). Entering the field of constructivism she discusses the "classic duo": social constructivism introduced by Lev Vygotsky and individual constructivism or genetic epistemology by Jean Piaget. In a section on cognitive development, Piaget's concept of phase shifting (décalages) is addressed: horizontal décalage - an individual showing different developmental stages, depending on the content in question; and vertical décalage - different people in an age group staying in different developmental phases in regard to a common content. Both concepts are empirically backed up and is shown to be highly significant for adult education.

In a further section she discusses contemporary but theoretically more isolated issues like learning styles, multiples intelligences and brain research. Last but not least, emotional factors are seen as decisive for learning mathematics, i.e. negative emotions as important and hard to overcome barriers.

In Chapter 3, adult learning is contrasted with the learning of children and adolescents. And it's again Thorndike laying some foundations for situated cognition and life long learning. Adult learning is furthermore characterized by humanistic theories, assuming a "natural tendency for people to learn [...], if nourishing environments are provided" (Cross, 1981:28, cited 62); going from Maslow's concept of "self actualization" to Erikson's and Levinson's models of individual development. Key adult education theorists such as Knowles, Mezirow and Brookfield and their contributions are explained in this section.

Important to Safford-Ramus's work are "patterns of knowing" as proposed by Magolda (1992, cited 90) like absolute, transitional, independent and contextual knowledge; and the categorization of learners done by the NCSALL adult development research group (Helsing et al., 2001 cited 91, 92), that distinguishes instrumental from socialising and self-authoring learners. In accordance to the students perspective, the teachers perspective on teaching/learning can come in different flavours: the own teaching can be perceived as transmission of a stable body of knowledge, and/or as apprenticeship and enculturation in the field of mathematics, as developing existing knowledge, as nurturing the learners self concept and self efficacy

and/or finally as part of a collective social reform. These findings are transformed in some insights into climatic aspects of a course and it's developments.

In Chapter 4, headed "Mathematics Education Theory" Safford-Ramus takes an American-Canadian perspective of institutionalized mathematics learning to describe standards. (For the author of this review, standing in a European tradition, this is the only somehow alienating aspect of this very fine book. The open spirit breathing through this book seams to pause here and give the word over to an accountant, who claims to add up the essentials.) Standards for intellectual development, standards for content, standards for pedagogy and peaking at "standards 2000" with its content and process standards for school mathematics.

Much more interest is generated in the second part of this chapter which is devoted to pertinent topics like (a) the primacy of understanding over bare mathematical skills, (b) problems and problem solving with the ideal of real world problems in the background, critical thinking as essential part of doing mathematics in context and (c) in a cooperative manner. These standpoints reflect the need for problem based curricula, the quest of assessing this kind of knowledge, the role, information and communication technology can play and – of course – math anxiety.

After the broad discussions on foundations of mathematical learning and teaching, the book changes tone and direction in chapter 5 to discussing the author's own rich teaching experiences in relation to programs and classroom delivery. Last but not least chapter 6 sketches "The Road ahead" by raising questions like: What do we know and what can we do? Technology? What mathematics do adults need to know? Special needs? How do we change the adult mathematics classroom?

Unlatching the Gate is a good text for mathematics teachers in adult education, for students of education and for researchers looking for "sound" research questions. The range of topics covered is very broad with the effect that coverage of some aspects do appear rather sketchy and rough (e.g. the fundamental constructivist positions of Piaget or Vygotsky and their developments into present time) but without being inadequate.

The conclusions drawn from theories and research based findings for a praxis of adult mathematics learning in formal learning contexts are interesting and foster further discussion. Some questions remain, at least for the reviewer, undiscussed: How do we get adults engaged in mathematics? In a context of professional development, how is a balance to be achieved between understanding the mathematics and knowing how to do the job? What is the impact of standards and standardized assessments on adult mathematics education in the face of the great diversity (in learner groups, contexts, needs) such as is illustrated by this book?