Mathematics Anxiety In Secondary School Students

Improving education is a key priority for governments around the world. While many suggestions on how best to achieve this are currently under debate, years of academic research have already revealed more about how to encourage change than is sometimes assumed. This volume brings together for the first time some of the most significant work of Karen Seashore Louis, one of the foremost thinkers and researchers in the field. Organizing for School Change presents a unique variety of research-based results from studies conducted over the past twenty-five years. What emerges is not an idealistic plan, but a realistic picture of what needs to be done if schools are to be made better. Drawing on a wide and comprehensive list of sources, the ideas brought together in this collection will prove invaluable and insightful reading, stimulating both newcomers and veterans of the field to consider educational research in new ways.

The authors set out to define the aims, principles and objectives of recent research into what exactly happens in the language classroom, to describe the findings of this work, and to relate these to teaching practice. The detrimental consequences of mathematics anxiety have repeatedly been evidenced empirically, yet little is known of its influence on secondary school students in Asia. This study thus examined its origins and impact on 294 secondary students in Singapore through interviews and surveys. Results revealed an average anxiety level of 44% and a negative correlation with achievement. Of the top 5 situations that worried students, 4 were test-related. Nonetheless, highly anxious students continued to persevere and enjoy the subject.

This book presents several key principles for teaching mathematics for understanding that you can use to reflect on your own teaching, make more informed decisions, and develop more effective systems of instruction.

Is there a way to get students to love math? Dr. Judy Willis responds with an emphatic yes in this informative guide to getting better results in math class. Tapping into abundant research on how the brain works, Willis presents a practical approach for how we can improve academic results by demonstrating certain behaviors and teaching students in a way that minimizes negativity. With a straightforward and accessible style, Willis shares the knowledge and experience she has gained through her dual careers as a math teacher and a neurologist. In addition to learning basic brain anatomy and function, readers will learn how to * Improve deep-seated negative attitudes toward math. * Plan lessons with the goal of "achievable challenge" in mind. * Reduce mistake anxiety with techniques such as errorless math and estimation. * Teach to different individual learning strengths and skill levels. * Spark motivation. * Relate math to students' personal interests and goals. * Support students in setting short-term and long-term goals. * Convince students that they can change their intelligence. With dozens of strategies teachers can use right now, Learning to Love Math puts the power of
research directly into the hands of educators. A Brain Owner's Manual, which dives deeper into the structure and function of the brain, is also included—providing a clear explanation of how memories are formed and how skills are learned. With informed teachers guiding them, students will discover that they can build a better brain . . . and learn to love math! Now in a second edition, the award-winning The Trouble with Maths offers important insights into the often confusing world of numeracy. By looking at learning difficulties in maths from several perspectives, including the language of mathematics, thinking styles and the demands of individual topics, this book offers a complete overview of the most common problems associated with mathematics teaching and learning. It draws on tried-and-tested methods based on research and the author’s many years of classroom experience to provide an authoritative yet highly accessible one-stop classroom resource. Combining advice, guidance and practical activities, this user-friendly guide will enable you to: develop flexible thinking skills; use alternative strategies for pupils to access basic facts; understand the implications of pre-requisite skills, such as working memory, on learning; implement effective preventative measures before disaffection sets in; recognise maths anxiety and tackle self-esteem problems; tackle the difficulties with word problems that many pupils may have; select appropriate materials to enhance understanding. With useful features such as checklists for the evaluation of books, an outline for setting up an inclusive Maths Department policy and a brand new chapter on materials, manipulatives and communication, this book will equip you with the essential skills to tackle your pupils’ maths difficulties and improve standards. This book will be useful for all teachers, classroom assistants, learning support assistants and parents who have pupils who underachieve with maths.

This fourth volume of PISA 2012 results examines how student performance is associated with various characteristics of individual schools and school systems.

Interdisciplinary in approach, this book combines philosophy, sociology, history and psychology in the analysis of contemporary forms of suffering. With attention to depression, anxiety, chronic pain and addiction, it examines both particular forms of suffering and takes a broad view of their common features, so as to offer a comprehensive and parallel view both of the various forms of suffering and the treatments commonly applied to them. Highlighting the challenges and distortions of the available treatments and identifying these as contributory factors to the overall problem of contemporary suffering, Empty Suffering promises to widen the horizon of therapeutic interventions and social policies. As such, it will appeal to scholars across the social sciences and humanities with interests in mental health and disorder, social theory and social pathologies.

The Encyclopedia of Mathematics Education is a comprehensive reference text, covering every topic in the field with entries ranging from short descriptions to much longer pieces where the topic warrants more elaboration. The entries
provide access to theories and to research in the area and refer to the leading publications for further reading. The Encyclopedia is aimed at graduate students, researchers, curriculum developers, policy makers, and others with interests in the field of mathematics education. It is planned to be 700 pages in length in its hard copy form but the text will subsequently be up-dated and developed on-line in a way that retains the integrity of the ideas, the responsibility for which will be in the hands of the Editor-in-Chief and the Editorial Board. This second edition will include additional entries on: new ideas in the politics of mathematics education, working with minority students, mathematics and art, other cross-disciplinary studies, studies in emotions and mathematics, new frameworks for analysis of mathematics classrooms, and using simulations in mathematics teacher education. Existing entries will be revised and new entries written. Members of the international mathematics education research community will be invited to propose new entries. Editorial Board: Bharath Sriraman Melony Graven Yoshinori Shimizu Ruhama Even Michele Artigue Eva Jablonka Wish to Become an Author? Springer's Encyclopedia of Mathematics Education’s first edition was published in 2014. The Encyclopedia is a "living" project and will continue to accept articles online as part of an eventual second edition. Articles will be peer-reviewed in a timely manner and, if found acceptable, will be immediately published online. Suggested articles are, of course, welcome. Feel encouraged to think about additional topics that we overlooked the first time around, and to suggest colleagues (including yourself!) who will want to write them. Interested new authors should contact the editor in chief, Stephen Lerman, at lermans@lsbu.ac.uk, for more specific instructions.

The purpose of this study was to examine the differences between age, gender and school types in terms of math anxiety at the junior secondary school level. A total of 1,679 students with age ranges from 10–16 years from four junior secondary schools selected through stratified sampling participated in the survey. Two schools were selected each from the public and private schools. A modified and adapted version of the MARS-E survey was used for data collection. Data collected were analyzed using both the Pearson Correlation Coefficient and One-Way ANOVA. Findings from the study indicated that there is a significant relationship between math anxiety and the participants' age disregarding the type of schools they attend. There is no significant difference between the participants' gender on their level of math anxiety. Other results indicated that there is a significant relationship between school type and math anxiety. Junior Secondary School 3 students have the most level of math anxiety, though the differences are not statistically significant from junior secondary school 2 and junior secondary school 1 students. Lastly, public school students have greater math anxiety than private school students irrespective of their gender, though it was not a statistically significant difference. Recommendations for future research include (1) a replicate quantitative or qualitative study with more schools consisting of different demographic makeup participating either within or outside the same Local Government Area; (2) investigating
self-reported accounts of other stakeholders like teachers and parents; (3) further study at the Senior Secondary School grade levels to conduct comparison study between the Junior and the Senior Secondary Schools; and (4) further study focused on participants that are mainly from the other two major ethnicities (Igbo and Hausa) in Nigeria. These additional efforts should be carried out to ascertain the similarities and differences with the present study.

This collection of papers from an international group of academics invites the reader to explore the complex set of phenomena surrounding mathematical skills acquisition and development in children.

This book examines the beliefs, attitudes, values and emotions of students in Years 5 to 8 (aged 10 to 14 years) about mathematics and mathematics education. Fundamentally, this book focuses on the development of affective views and responses towards mathematics and mathematics learning. Furthermore, it seems that students develop their more negative views of mathematics during the middle school years (Years 5 to 8), and so here we concentrate on students in this critical period. The book is based on a number of empirical studies, including an enquiry undertaken with 45 children in Years 5 and 6 in one school; a large-scale quantitative study undertaken with students from a range of schools across diverse communities in New Zealand; and two related small-scale studies with junior secondary students in Australia. This book brings substantial, empirically-based evidence to the widely held perception that many students have negative views of mathematics, and these affective responses develop during the middle years of school. The data for this book were collected with school students, and students who were actually engaged in learning mathematics in their crucial middle school years. The findings reported and discussed here are relevant for researchers and mathematics educators, policy makers and curriculum developers, and teachers and school principals engaged in the teaching of mathematics.

Feelings of apprehension and fear brought on by mathematical performance can affect correct mathematical application and can influence the achievement and future paths of individuals affected by it. In recent years, mathematics anxiety has become a subject of increasing interest both in educational and clinical settings. This ground-breaking collection presents theoretical, educational and psychophysiological perspectives on the widespread phenomenon of mathematics anxiety. Featuring contributions from leading international researchers, Mathematics Anxiety challenges preconceptions and clarifies several crucial areas of research, such as the distinction between mathematics anxiety from other forms of anxiety (i.e., general or test anxiety); the ways in which mathematics anxiety has been assessed (e.g. throughout self-report questionnaires or psychophysiological measures); the need to clarify the direction of the relationship between math anxiety and mathematics achievement (which causes which). Offering a revaluation of the negative connotations usually associated with mathematics anxiety and prompting avenues for future research, this book will be invaluable to academics and students in the field psychological and educational sciences, as well as teachers working with students who are struggling with mathematics anxiety.

The book provides an overview of state-of-the-art research from Brazil and Germany in the field of inclusive mathematics education. Originated from a research cooperation between two countries where inclusive education in mathematics has been a major challenge, this volume seeks to make recent research findings available to the international community of mathematics teachers and researchers. In the
book, the authors cover a wide variety of special needs that learners of mathematics may have in inclusive settings. They present theoretical frameworks and methodological approaches for research and practice.

This study sought to identify whether targeted interventions produce a statistically significant reduction in student math anxiety, which methods are most effective in reducing student math anxiety, and whether effective methods differ according to academic achievement level. The interventions applied, consisting of curricular design, classroom practices, and instructor behaviors, were as follows: (1) use of unit outlines, (2) incorporating review work, (3) collaborative groupwork, (4) perceived instructor empathy, (5) concepts explained in various ways, (6) out-of-class 1:1 aid, (7) content made relevant, (8) positive reinforcement from instructor/peers. The research was performed in an Algebra 1 classroom of a public high school, containing 64 students, over the course of 1 semester (18 weeks). A presurvey and postsurvey measured students' math anxiety levels, while all 8 interventions were applied continuously throughout the semester. Pre- and post anxiety levels, semester grades, and supplementary postsurvey questions regarding students' opinions on intervention effectiveness produced the statistically significant result that targeted interventions do reduce math anxiety. However, when grouped according to achievement level, this result only holds for those students defined by high academic achievement. Overall, the most effective intervention methods were a caring instructor, an encouraging learning environment, and mixing in review work throughout the semester. Keywords: math anxiety, intervention, academic achievement, remediation

Arithmetic is still hugely important in many aspects of modern life, but our personal attitudes to it differ greatly. Many people struggle with the basic principles of arithmetic, whilst others love it and feel confident in their arithmetical abilities. Why are there so many individual differences in people’s performance in, and feelings about, arithmetic? Individual Differences in Arithmetic explores the idea that there is no such thing as arithmetical ability, only arithmetical abilities. The book discusses several important components of arithmetic, from counting principles and procedures to arithmetical estimation, alongside emotional and cognitive components of arithmetical performance. This edition has been extensively revised to include the latest research, including recent cross-cultural and cross-linguistic research, the development of new interventions for children with difficulties and studies of early foundations of mathematical abilities. Drawing on developmental, educational, cognitive and neuropsychological studies, this book will be essential reading for all researchers of mathematical cognition. It will also be of interest to educators and other professionals working within individuals with arithmetic deficits.

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A former math avoider demystifies the math experience so that those who believe they are hopelessly incompetent can conquer their fear and deal effectively with math problems

The Handbook of Motivation at School presents the first comprehensive and integrated compilation of theory and research on children’s motivation at school. It covers the major theoretical perspectives in the field as well as their application to instruction, learning, and social adjustment at school. Key Features: Comprehensive – no other book provides such a comprehensive overview of theory and research on children’s motivation at school. Theoretical & Applied – the book provides a review of current motivation theories by the developers of those theories as well as attention to the application of motivation theory and research in classrooms and schools. Chapter Structure – chapters within each section follow a similar structure so that there is uniformity across chapters. Commentaries – each section ends with a commentary that provides clear directions for future research.
This open access book, inspired by the ICME 13 topic study group “Affect, beliefs and identity in mathematics education”, presents the latest trends in research in the area. Following an introduction and a survey chapter providing a concise overview of the state-of-art in the field of mathematics-related affect, the book is divided into three main sections: motivation and values, engagement, and identity in mathematics education. Each section comprises several independent chapters based on original research, as well as a reflective commentary by an expert in the area. Collectively, the chapters present a rich methodological spectrum, from narrative analysis to structural equation modelling. In the final chapter, the editors look ahead to future directions in the area of mathematics-education-related affect. It is a timely resource for all those interested in the interaction between affect and mathematics education.

Most everyday number processing involves multi-digit numbers (e.g., money, prices, times, dates). However, much of the research in the field has so far focussed on single-digit number processing. Whilst some basic cognitive effects obtained this way transfer to multi-digit numbers, other cognitive mechanisms cannot be studied using single-digit material. Thus, multi-digit number processing and its cognitive consequences have recently moved more into the focus of scientific attention. This volume outlines commonalities and differences in related aspects of multi-digit number processing to highlight this important subfield of numerical cognition research.

This book provides teacher educators with an understanding of the issues around mathematics anxiety and a framework of teaching strategies to support undergraduates, trainee teachers and established professionals in primary settings in developing confidence in learning and teaching mathematics. The existence of mathematics anxiety in adults is both prevalent and well documented, and there is a real concern that adults who are anxious or lacking in confidence in their own mathematical ability may affect the quality of teaching and learning for those in their care. Research has identified that there are lower levels of mathematical confidence in adults working with children in primary rather than secondary schools, and that where adults are anxious this can be passed on to the pupils with whom they work. This book addresses issues related to the effect that mathematics anxiety has on those teaching and working with primary aged children and supports teacher educators to develop confidence in both trainee teachers and established professionals.

With the ninth edition of the four-yearly review of mathematics education research in Australasia, the Mathematics Education Research Group of Australasia (MERGA) discusses the Australasian research in mathematics education in the four years from 2012-2015. This review aims to critically promote quality research and focus on the building of research capacity in Australasia. Mathematical anxiety is a feeling of tension, apprehension or fear which arises when a person is faced with mathematical content. The negative consequences of mathematical anxiety are well-documented. Students with high levels of mathematical anxiety might underperform in important test situations, they tend to hold negative attitudes towards mathematics, and they are likely to opt out of elective mathematics courses, which also affects their career opportunities. Although at the university level many students do not continue to study mathematics, social science students are confronted with the fact that their disciplines involve
learning about statistics - another potential source of anxiety for students who are uncomfortable with dealing with numerical content. Research on mathematical anxiety is a truly interdisciplinary field with contributions from educational, developmental, cognitive, social and neuroscience researchers. The current collection of papers demonstrates the diversity of the field, offering both new empirical contributions and reviews of existing studies. The contributors also outline future directions for this line of research.

This book is a resurrection of local knowledges steeped in creative and imaginative reflexive methodologies that come to reorient how we come to know what we know, the values and realities that mark what we know and the how of knowledge production. It centres subjugated voices and knowledges as fundamental in production of knowledge.

A gargantuan, mind-altering comedy about the Pursuit of Happiness in America Set in an addicts' halfway house and a tennis academy, and featuring the most endearingly screwed-up family to come along in recent fiction, Infinite Jest explores essential questions about what entertainment is and why it has come to so dominate our lives; about how our desire for entertainment affects our need to connect with other people; and about what the pleasures we choose say about who we are. Equal parts philosophical quest and screwball comedy, Infinite Jest bends every rule of fiction without sacrificing for a moment its own entertainment value. It is an exuberant, uniquely American exploration of the passions that make us human - and one of those rare books that renew the idea of what a novel can do. "The next step in fiction...Edgy, accurate, and darkly witty...Think Beckett, think Pynchon, think Gaddis. Think." --Sven Birkerts, The Atlantic

This book is about a girl, a school and a family in Australia in the 1950s and 60s... A deeply personal account of teenage struggles with parental and sibling relationships and with school discipline, study demands, tough living conditions and rigorous religious education. Jill’s daily life as a school boarder, her rebellions, emotional highs and lows, and encounters with Dr Wood, MLC’s charismatic principal and pastor, are described with honesty, hilarity and sharp critical insight.

Research on cognitive aspects of mathematical problem solving has made great progress in recent years, but the relationship of affective factors to problem-solving performance has been a neglected research area. The purpose of Affect and Mathematical Problem Solving: A New Perspective is to show how the theories and methods of cognitive science can be extended to include the role of affect in mathematical problem solving. The book presents Mandler’s theory of emotion and explores its implications for the learning and teaching of mathematical problem solving. Also, leading researchers from mathematics, education, and psychology report how they have integrated affect into their own cognitive research. The studies focus on metacognitive processes, aesthetic influences on expert problem solvers, teacher decision-making, technology and teaching problem solving, and beliefs about mathematics. The results suggest how emotional factors like anxiety, frustration, joy, and satisfaction can help or hinder performance in problem solving.

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