IMPROVING THE QUALITY OF HUMAN LIFE:
Multidisciplinary Approach on Strategic Relevance for Urban Issues
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PREFACE

On September 6-7, 2007, the Faculty of Psychology - University of Surabaya hosted the International Conference entitled “Improving the Quality of Human Life: Multidisciplinary Approach on Strategic Relevance for Urban Issues”. The event took place in Surabaya and was organized in conjunction with the 25th Anniversary of Faculty of Psychology, University of Surabaya. The International Conference was held at the JW Marriott Surabaya Hotel.

The need for multidisciplinary approach on improving the quality of human life has never been greater. Rapid economic and social changes may bring negative effects to the quality of human life. The changes have led to changing in various aspects of human life. It seems clear that multidisciplinary approach on strategic relevance for urban issues will continue to be important.

Taking the time to review our quality of life gives us a chance to re-evaluate what we are doing and where we want to go. It lets us fine-tune our direction, to ensure we are on track for what we most want. Therefore this conference provided opportunities for all participants to discuss ways of improving the quality of human life.

The conference presented three sub-themes related to the quality of life in urban settings: industrial and social setting, community health setting, educational, developmental and environmental setting. Each sub-theme produced numerous interesting discussions during the event, of which the full papers can be read in this proceeding. We wish for the proceeding to be fruitful and able to provide insight for readers, particularly those interested in the central theme on Improving the Quality of Human Life.

Surabaya, September 2007

Jenny Lukito Setiawan
Chair, Scientific Committee
Acknowledgments

We are truly indebted to our invited plenary speakers for their willingness to share their expertise and experience before the conference audience. It is partly from their contribution that this conference turns to big success. We would like in this opportunity to thank those people:

- Associate Professor Anne Bardoel
  *Deputy Director, Australian Centre for Research in Employment and Work, Department of Management, Faculty of Business and Economics, Monash University, Australia*

- Prof. Madya. Dr. Aminudin Mohd Yusof
  *School of Psychology and Human Development, Faculty of Social Science and Humanities, University Kebangsaan Malaysia, Malaysia*

- Prof. dr. Jan Vinck, Emeritus
  *University of Hasselt, Belgium*

- Dr. Yusti Probowati
  *Faculty of Psychology, Surabaya University, Surabaya, Indonesia*

- Dr. Ing. Haryo Sulistiarso
  *Faculty of Architecture, Institut Teknologi Sepuluh November, Surabaya, Indonesia*

We also thank to all presenters who participate in this conference.
OPENING REMARKS

The Honorable Speakers;
Distinguished Guests and Participants;
Ladies and Gentlemen:

I am very much honored to deliver the opening remarks of the 25th Anniversary of Faculty of Psychology, University of Surabaya (UBAYA) International Conference "Improving the Quality of Human Life: Multidisciplinary Approach on Strategic Relevance for Urban Issues". I also wish to take this opportunity to welcome all of the distinguished participants in beautiful city of Surabaya and to express my utmost appreciation to Mrs. Artiawati Mawardi the Chairperson of this conference and all the members of the committee who have been such gracious personnel, serve this a wholehearted conference.

It is the nature of every Higher Education Institution to be gratified with the values of truth, democracy, human rights, supporting marginal and lower class society, peace, and sustainable development. As a Higher Education Institution that possesses a high commitment upon those values, UBAYA organized this International conference not only as the commemoration of a silver jubilee in the history of Faculty of Psychology UBAYA, but more importantly also as the Social Responsibility of UBAYA upon the beneficial of the society. Perhaps the most important rationale the 25th Anniversary of Faculty of Psychology UBAYA International Conference will address is to gather various ideas and perspectives to respond the challenges of improving the quality of human life for the beneficial of the society.

Nowadays, we face complex and confusing problems surround us. If we try to take a glimpse to the condition of the environment where we live then we will know that the obstacles in our lives now are different with the condition we had several years ago. As people try to make some improvements in their lives, the other parts of the community may be still left behind. Either, they do not have the chance to improve or they have the chance but they fail to fulfill the improvement they want in their lives. The problem increases together with the increasing people's expectation of the quality of life. All those problems mostly deal with education, health and social life. We value all those three things as the judgment points whether we are facing a certain problem or we are doing fine.
We all agree that one of the bases of improving life lays on education. In reality, people still can not get equals access in gaining education, especially for people in lower-class society. Without enough education, it will be hard for the society to realize their condition, moreover facing their problems. Through education, people will find it easier to analyze something deeper because they have the knowledge to do it. That is why education not only helps people to understand themselves but also to understand others better. Modern life style also takes a great part in causing individual and social problems for both physical and mental health. Pathological behaviour gives rise to problems in area of sexual and reproductive health, impact of pollution on health, substance abuse, stress disorder, health-related attitudes and behaviors, physical and physiological health, pain and pain management and environment-behavior relationship. The effects of physical element and social changes are the discussions deal with industrial and social parts. Problems have appeared in these issues which include crowd and density, social conflict, criminality, multicultural issues, street hawkers (called 'anak jajanan' in Indonesian), and disaster management. Cities with growing industry have multifaceted impacts on labour life, city transportation, employee mental health, including work stress and burnout, and work-family conflict.

Those conditions take a great attention of certain people, in this case the scientists and practitioners. They hope to find the best solution to solve all the problems through multidisciplinary approach. That way will also help to improve the quality of life of the human kind. Definitely, we need to do something to make some progress for our lives and a better future. Putting a high concern upon the problems, several years ago, UBAYA has arranged 4 different centers named Center for Environmental Studies (PSL), Center for Human Rights Studies (PUSHAM), Centre for Urban Community Empowerment (PUSDAKOTA) and Center for Business and Industrial Studies (CBIS). As we can see from their names, Center for Environmental studies is concentrated on how to provide better environment to the society; Center for Human Rights Studies concerns with Human Rights (especially, on political and civil rights and also economic and socio-cultural rights, ECOSOB); Center for Urban Community Empowerment deals with how to assist and serve the marginal and lower class society; while Center for Business and Industrial Studies deals with business and industrial community. Having those 4 centers is not enough, as UBAYA also expects some supports from the society as well as its Faculties. On this opportunity, I would like to convey my sincere appreciation to the Faculty of Psychology UBAYA in organizing this International Conference. Yet, your obligation as a Faculty has not done yet, as I specially encourage and await this faculty to
continually develop contemporary ideas and strategies to respond all of the recent conditions and problems.

Let me conclude my remarks by wishing all of you a deeper, intensive, serious but enjoyable and productive discussion in this conference. Let me wish you every success in this Conference, and may all our fruitful works come to the excellent results.

Surabaya, September 6, 2007

Wibisono Hardjopranoto
Rector, University of Surabaya
How to understand and handle math difficulties encountered by students with attention deficit and hyperactivity disorder (ADHD)

Nanik
University of Surabaya, Surabaya, Indonesia

ABSTRACT: Students with ADHD often find difficulties in learning mathematics. Such condition happens because they usually have limitations in perception, visual-motor, fine-motor, and spatial organization development. Furthermore, they have limitations in memorizing, giving attention, sequencing, language, self monitoring and self management. Some cases of elementary-school-age students with ADHD whose intelligence capacity was average or above that had been learned revealed that the math difficulty the students had the most was in problem-solving test (a story-form question). This matter is understandable because this type of question demands that the students have comprehensive language skills to comprehend the implicit meaning of the mathematical sentences, ability to analyze synthesis, ability to maintain attention continuously in following the problem-solving sequencing, and ability to recall and monitor whether the sequence has been done correctly. Other difficulties in math are related to mistakes in reading the question—they might skip some parts, copying the symbols or numbers, counting, writing down the results of the counting. Some strategies and interventions to handle math difficulties include making the abstract more concrete, compensating for memory difficulties and increasing recall of math facts/procedures, compensating for spatial organization and perceptual motor difficulties, using instructional and assessment strategies and modifications, increasing focus and attention, using problem-solving strategies, using self monitoring and meta-cognitive strategies, and increasing the motivation.

Keywords: ADHD, math difficulties, handle.

1 MATH DIFFICULTIES ASSOCIATED WITH ADHD

According to Reif (2003), math challenges may be specifically related to limitation with ADHD (such as inattention, organization, working memory) and some others may be because of learning disabilities (sequential learning, perceptual-motor, and language). It is reasonable since children have both ADHD and coexisting learning disabilities. Impairments related to ADHD and learning disabilities and their negative effects toward performance in math are as follows—as adapted from Reif (2003).

a. Memory weakness cause problem with:
   1) Learning and acquisition of basic math facts.
   2) Being able to recall math facts and retrieve those maths facts quickly and accurately.
   3) Computing multistep problems (forgetful of sequence and recalling where they are in the process).
   4) Recalling rules, procedures, algorithms, teacher instruction, and directions.
b. Attention weakness cause problem with:
1) Noticing processing/operational signs math problems (for example, being aware that the + sign changes to -).
2) Paying attention to other details (such as decimal points and other symbols).
3) Self-correcting and finding own errors in computation.
4) Being able to sustain the focus and mental effort necessary to complete the problems with accuracy.

c. Sequencing weakness cause problems with:
1) Being able to do algebra and other step by step equations.
2) Executing any multistep procedure.
3) Being able to do skip counting (3, 6, 9, 12, 15, ...; multiples of other numbers).
4) Recognizing and using patterns.

d. Perceptual, visual-motor, fine-motor, and spatial-organization weaknesses cause problems with:
1) Copying problem from the board or book onto paper.
2) Aligning numbers, decimal points, and so on accurately on paper.
3) Writing and computing within the minimal amount of given space on the page, spacing between problems; leaving enough room.
4) Remembering and using correct directionality for solving math problems (such as beginning with the column to the right and moving right to left; regrouping accurately).
5) Recognizing and not confusing symbols (+, x, 6/9, 38/83).
6) Speed writing down problems and answers (often either too fast and illegible, or too slow and cannot keep up or complete assignment/tests).
7) Difficulties in the above result in numerous errors and need for frequent erasing and correction, causing the student much frustration.

e. Language weakness cause problems with:
1. Understanding and relating to the numerous abstract terms in math.
2. Solving word problems (interpreting and understanding what is being asked; separating relevant from irrelevant information provided.
3. Following directions.

f. Self-monitoring and self-management weaknesses. These important executive functions, which involve self-awareness, metacognitive skills, and self-management, cause problems with:
1. Taking time to plan strategies for solving a problem.
2. Realizing if something is not working or making sense (for example, answer is not close to estimate) and readjusting or trying another strategy.
3. Being aware of time and time management in pacing and working the problem given.
4. Maintaining the level of attention and perseverance necessary to complete problems with accuracy.
5. Being able to check for errors and self-correct.

In line with the mentioned theory, Nanik's research found out similar weaknesses in math performance encountered by students with ADHD. The children with ADHD—the participants of the research—had low score in some WISC subtests. Ranked from the lowest were Object Assembly, Picture Arrangement, Information, Comprehension, Digit Span, and Block Design. The scores of the subtests reflected those children's limited capacity in visual-motor coordination, visual-perception organization, visual-spatial relationship and field dependence, sequencing, planning, effects of uncertainty, and social sensitivity. The limitations of the children with ADHD in actualizing their intelligent potential was associated with the dysfunction of the brain right hemisphere (Nanik, 2004). The dysfunction of the right hemisphere may cause certain disorders as seen in Table 1.
Table 1. Right Hemisphere Disorders (Pennington, 1991)

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<th>Primary</th>
<th>Specific problems in math/handwriting/art</th>
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<td>Correlated</td>
<td>Problems in social cognition, attention, conceptual skill</td>
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<tr>
<td>Secondary</td>
<td>Opposition to written work, spelling problems, depression, social withdrawal</td>
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<tr>
<td>Artifactual</td>
<td>Dyslexia</td>
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Math difficulties, however, are not only experienced by students with ADHD, but also by students with learning difficulties (LD). Common learning difficulties of LD students are presented in Table 2.

The findings of this research revealed that the general problems of children with ADHD were similar to those of LD students. Particularly, the problems encountered by the participants are italicized in Table 2.

2 MATH STRATEGIES AND INTERVENTIONS

As students with ADHD have difficulties in learning that later influence math performance, some strategies are needed. There are a number of ways the teachers or parents can do to help the students with ADHD. Those strategies are important to strengthen and build math skills (Reif, 2003).

a. Make the abstract more concrete
   1) Provide many kinds of manipulatives (cubes, chips, tiles, counters, beans, base ten blocks, number line) to help children visualize and work out math problems.
   2) Introduce mathematical concepts with demonstrations using real-life examples and motivating situations. For example, cut a pizza into 5 equal parts to share in small group (1/5 per student); or first count the total and then equally divide a bag of candy among a number of students (32 pieces divided by 5 kids = 6 each with 2 left over).
   3) Model the use of drawing, diagramming, and labeling in the problem-solving process. Encourage children to use those strategies.
   4) Give as many opportunities as possible at home and school for using math in the context of real-life situations (using money, balancing a checkbook, determining mileage on a fantasy road-trip, comparison shopping, ordering a meal with tax and tip).

b. Compensate for memory difficulties and increase recall of Math facts/procedures
   1) Teach children the “counting up method” on their fingers for a reliable back-up system to memorizing addition and subtraction facts to 18?.
   2) Use mnemonic devices (memory clues, images, and associations) to help students remember facts, sequential steps, procedures, and abstract concepts/vocabulary.

c. Compensate for spatial organization and perceptual-motor difficulties
   1) Encourage students to write and solve their computation problems on graph paper rather than notebook paper. Experiment with graph paper of varying square/grid sizes.
   2) Turn notebook paper sideways (with lines running vertically rather than horizontally). This makes it much easier for students to keep numbers aligned in columns, and reduces careless errors.
   3) Reduce the requirement of copying problems from the board or book by photocopying the page or writing out the problems on paper for certain students.
   4) Require struggling students to copy from the board/book just the first three or four problems practice. Then give them a photocopy or assistance recording for the remaining problems of the assignment.
Table 2. Common Learning Difficulties of LD Students Affecting Math Performance (Mercer, 1983)

<table>
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<th>Learning Difficulty</th>
<th>Behavioral Problems</th>
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| Figure-ground       | Frequently loses place on worksheet  
|                     | May not finish problems on a page  
|                     | Reading multidigit number |
| Discrimination      | Differentiating between numbers (e.g., 6,9,2,5; or 17, 71), coins, the operation symbols, clock hands |
| Spatial             | Copying shapes or problems  
|                     | Writing across paper in a straight line  
|                     | Before-after concepts; thus may have trouble with time or counting  
|                     | Directional aspects of arithmetic, which may be noted in problems with computations involving up-down (e.g., addition) left-right (regrouping), and aligning numbers in multiplication and division  
|                     | Putting decimals in right place  
|                     | Spacing manipulatives into patterns or sets  
|                     | Using number line  
|                     | Understanding positive and negative numbers (directional) |
| Short-term          | Retaining math facts  
|                     | Remembering all the steps in an algorithm  
|                     | Retaining the meaning of symbols |
| Long-term           | Difficulty mastering facts over time  
|                     | Initial difficulty with review sessions or mixed probes  
|                     | Forgets steps in algorithms |
| Sequential          | Counting rationally  
|                     | Completing all steps in a multistep computation problem  
|                     | Solving multistep word problems |
| Receptive           | Relating arithmetic terms to meaning (e.g., minus, addend, dividend, regroup, multiplicand, place value)  
|                     | Words that have multiple meanings (e.g., carry, times) |
| Expressive          | The vocabulary of arithmetic  
|                     | Oral drills in arithmetic  
|                     | Verbalizing steps in solving a word problem or an algorithm |
| Impulsive           | Makes careless mistakes in computation  
|                     | Responds incorrectly and rapidly in oral drills  
|                     | May often correct response when asked to look at or listen to a problem again  
|                     | Attending to detail in solving problems |
| Short attention     | Completing work in assigned time  
|                     | Multistep computation  
|                     | May start a problem and not finish it, but go to next problem  
|                     | May frequently be off-task |
| Perseveration       | Switching from one operation to another (e.g., addition to substraction)  
|                     | May work very slowly and go over work several times |
| Auditory            | Oral drills  
|                     | Oral word problems  
|                     | Counting on from within a sequence  
|                     | Writing numbers or assignments from dictation  
|                     | Hearing number patterns |
| Reading             | Understanding the vocabulary of math  
|                     | Word problems |
| Reasoning           | Word problems  
|                     | Comparisons of size, quantity  
|                     | Symbols in math (e.g., >, <, ≠)  
|                     | The abstract level of mathematical concepts and operations |
d. Use instructional and assessment strategies and modifications:
   1) Allow extra time on math tests so students are not rushed, which can lead to careless errors.
   2) Avoid the anxiety of timed tests and drills (especially those posted for all students in the class to see). Or extend the amount of time permitted for certain students as “passing”.
   3) List steps/procedures to multistep problems and algorithms. Display clear numbered steps and/or give students a desk copy model of steps to solve problems.
   4) Provide immediate feedback whenever possible. Go over homework assignments the next day, allowing students to comfortably ask questions and work any problems that they did not understand together as a class.
   5) Encourage students to come for help when needed (before, during, or after class). Do not allow students to remain confused without providing any necessary reteaching and/or tutorial assistance.

e. Increase focus and attention:
   1) Color-highlight or underline keywords and vocabulary in word problems (shared, doubled, product, average, larger, slower, difference, altogether, equal parts).
   2) Color-highlight processing signs for students who are inattentive to change in operational signs on a page. For example, color addition signs yellow, substraction signs pink, and so forth.
   3) Color-highlight place value. For example, given the number 16.432.781, write the hundreds (781) in green, the thousands (432) in orange, and the millions (16) in blue.

f. Use word problem-solving strategies:
   1) Teach step needed for solving math problems. Clearly list steps and keep a visible chart of various problem-solving strategies.
   2) Teach and model a number of strategies for solving word problems:
      a) Read the problem out loud
      b) Read at least twice before beginning
      c) Look for and color-highlight significant clue words (altogether, how much more, faster than, part of)
      d) Draw pictures, diagrams, and sketches representing the problem
      e) Use objects/manipulative
   3) Teach important math vocabulary and keywords that indicate the process or strategy needed, for example, total, sum, altogether (addition/multiplication); more/less, fewer, difference, what’s left? Missing? Larger than/faster than/smaller than (for subtraction); what part of/ per unit (indicating division).

g. Use self-monitoring and metacognitive strategies:
   1) Help students self monitor their level of alertness when working, so they maintain attention to task, stay paced, and work problems with accuracy.
   2) Teach how to work each problem carefully and check for accuracy.

h. Increase the amount of practice and review
   1) Pair students to practice and quiz each other on skill taught
   2) Motivate the practicing of skill through the use of board games, card games, and other class games.
   3) Use computer software games for drill and practice of math skills.

i. Increase the motivation
   1) Play team math games in class
   2) Use board games and card games for building math skills (counting, logic, probability, strategic thinking)

j. Points for parents to keep in mind
1) Since there is not enough time during a school day for the needed daily practice of math drill and rote memorization, parents try to spend at least five minutes a day practicing at home in a variety of formats. They should practice with their child in a fun, relaxed manner, without pressure or tension.

2) Many children with ADHD and/or learning disabilities are not proficient with functional math skills (measurement, time concepts, counting money/change). Parents and their child should practice as much as possible at home. These are critical skills that teachers often do not have enough time to teach until mastery. Parents can include their child in such activities as cooking/baking, constructing, sewing, gardening, and home improvements, as these all involve measurement and other functional math skills.

REFERENCES


Quality of life in urban settings is an area of study that has increased an amount of interest in recent years. Undoubtedly, urban life brings complex problems that interact to influence the quality of human life. In response to these issues, holistic recommendations for improving the quality of life based on a multidisciplinary approach are highly needed. In this conference, scientists and practitioners from various disciplines (psychology, anthropology, sociology, economic, medical, engineering, architecture, etc) concerned with urban problems are encouraged to share and to discuss ideas.

Nowadays, we face complex and confusing problems surround us. If we try to take a glimpse to the condition of the environment where we live then we will know that the obstacles in our lives now are different with the condition we had several years ago. As people try to make some improvements in their lives, the other parts of the community may be still left behind. Either they do not have the chance to improve or they have the chance but they fail to fulfill the improvement they want in their lives. The problem increases together with the increasing people’s expectation of the quality of life. All those problems mostly deal with education, health and social life. We value all those three things as the judgment points whether we are facing a certain problem or we are doing fine.

Today is a special day. We celebrate the 25th anniversary of the faculty of Psychology Surabaya University. It is not such a coincidence that we picked up “improving the quality of human life in urban area” to become the theme of the conference. As a growing city, Surabaya, like many cities elsewhere, experiences huge complex problems related to education, health, industry, and providing healthy settlements for its inhabitants. It needs our serious and active participation to propose alternative solutions based on academic research across disciplines.

This conference is in advance to enhance the vision of the Faculty of Psychology University of Surabaya, to be an excellent educational institution in psychology based on scientific endeavor and to apply life values in managing urban problems.

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