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By

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A THESIS PRESENTED TO THE GRADUATE SCHOOL
OF THE UNIVERSITY OF FLORIDA IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE DEGREE OF
MASTER OF SCIENCE

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TABLE OF CONTENTS

	<u>page</u>
ACKNOWLEDGMENTS	4
LIST OF TABLES	6
LIST OF FIGURES	7
CHAPTER	
ABSTRACT	8
1 LITERATURE REVIEW	9
1.1 Computers in the Classroom	9
APPENDIX	
BIOGRAPHICAL SKETCH	12

LIST OF TABLES

Table

page

LIST OF FIGURES

Figure

page

Abstract of Thesis Presented to the Graduate School
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Chair: Dr. Beverly Sanders
Major: Computer Science

Abstract goes here.

CHAPTER 1 LITERATURE REVIEW

1.1 Computers in the Classroom

One of the most notable aspects of computer-based instruction and learning is its ability to replace devices which have been associated to the classroom for over a century, namely the blackboard, textbooks, dictionaries, notebooks, pencils, erasers, and pens. More subtly, however, the computer is capable of replacing rulers and other sketching devices with an immense increase in speed and accuracy, which has a fundamental effect on influencing the development of intuition around a yet unknown topic. If, on one hand, teaching devices in use today have not evolve much since the nineteen hundreds, on the other, the demands for knowledge in our society are rocketing, making the adoption of personal computers as teaching and learning tools all that more crucial [1, 77]. One way of evaluating just how more effective computer-centered instruction can be is based on cognitive theories of learning, which suggest that the presence of active engagement, participation in groups, frequent interaction and feedback, as well as connections to real-world contexts are key to achieving said efficacy. These tenets go hand-in-hand with the characteristics, resources, and physical structure of the classroom, indicating that a careful application of computer technology to aid learning can in fact better suit the way individuals learn than a traditional setting [1, 79]. We discuss in detail each of these four premises below.

We refer to the traditional classroom practice of teaching through lectures supported by textbooks as the *transmission* model of learning, which is characterized by putting the student in a very passive role. As a consequence, the transmission model does not engage the student in applying recently learned materials to situations beyond the context of classroom and textbook exercises. In some sense, the motivation for learning itself becomes clouded by the very model. This practice may contradict the idea of actively building knowledge from interactions, hands-on experience, and reasoning about the subject at hand. Computers can very effectively provide hands-on experience and can help build knowledge through data interpretation in the

form of plots, graphs, videos, sounds, and internet searches, to name but a few. What is yet more remarkable is the agility with which all occurs. In cases where the learning style of a particular individual antagonizes the traditional transmission model, computers can further be adapted to suit more particular needs, such as a combined approach [1, 80].

REFERENCES

- [1] J. M. Roschelle, R. D. Pea, C. M. Hoadley, D. N. Gordin, B. M. Means, *The Future of Children* **10**, 76 (2000). Available from: <http://www.jstor.org/stable/1602690>.

BIOGRAPHICAL SKETCH

Bio goes here.