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Cairo University

**PEN AND PAPER SKETCHING VERSUS DIGITAL-
BASED TOOLS**
**- ANALYSIS OF DESIGN THINKING AT THE EARLY STAGE OF DESIGN
PROCESS**

By

Hager Gamal Abdel-Hady Ghita

A Thesis Submitted to the
Faculty of Engineering at Cairo University
in Partial Fulfillment of the
Requirements for the Degree of
MASTER OF SCIENCE
in
Architecture

FACULTY OF ENGINEERING, CAIRO UNIVERSITY
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Under the Supervision of

Associate Prof. Dr. Ahmed Mostafa Abdel Ghaffar

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PEN AND PAPER SKETCHING VERSUS DIGITAL-BASED TOOLS - ANALYSIS
OF DESIGN THINKING AT THE EARLY STAGE OF DESIGN PROCESS

Key Words:

Conceptual design; pen-and-paper sketching; digital tools; Linkography

Summary:

At the beginning of any architectural creative work, the architect faces the page fright (putting pencil to a blank page), especially when it meant to be a creative work which attempt to enrich the material world, The real process that occurs between the moment an idea is conceived and the final design of any project, is the main concern currently. This research aimed to compare and evaluate the used tools to perform thinking at the first stage of design process, conventional pen-and-paper sketching versus the digital-based tools, to identify which of them is more suitable to empower students' inventiveness thinking, during the conceptual form generation stage of the architecture design process, in the educational sector, by performing an experiment using protocol research. To attain this aim, the linkography analysis technique was used to collect the associated data from the protocol research. The linkography approach allows for the analysis of design as a system and the tracing of design concepts and their relationships, which aided the current study's objectives

Disclaimer

I hereby declare that this thesis is my own original work and that no part of it has been submitted for a degree qualification at any other university or institute.

I further declare that I have appropriately acknowledged all sources used and have cited them in the references section.

Name:

Date: ../../...(it's the date that you handover the thesis)

Signature:

Dedication

I am dedicating this thesis to four beloved people who mean so much to me.

First and foremost, to my father "Gamal Abdelhady", Although he is no longer of this world, his memories continue to regulate my life. whose love for me knew no bounds and, who taught me the value of hard work. Thank you so much, I will never forget you.

Next, my mother "Mirvat" who raised me, loved me, and taught me, I will always be grateful to you.

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