

# Integrated Copy-Paste Checking: Design and Services

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## Abstract

*The advances in technology have made academic cheating far too easy for learners. Furthermore, the World-Wide-Web has brought about a widespread culture of easy-access to all sorts of information, thus reducing the need for learners to perform diligent research or study. E-learning systems would then need to incorporate the monitoring and checking for student expressions of reading and writing, while guiding them towards learning the rightful skills. This paper describes the architecture and design of an integrated Copy-Paste system aimed at addressing these concerns.*

## 1. Introduction

Advances in technology, particularly the Web that has made it far too easy for learners to commit unethical practices. The over-reliance of students on Web resources such as Wikipedia and Google without considering the reliability has become a major concern. In current teaching-learning systems, the identification of problem situations in student learning processes, are largely performed after they actually happen. This approach is however ineffective in addressing the needs of future learning environments.

A learning ecosystem called ICARE [1] has been proposed to overcome the problems mentioned and to serve as a model for future e-learning systems. The term ecosystem as used here refers to a community of learners and instructors, interacting cooperatively and collaboratively supported by a technology enabled learning environment. Details of the ICARE concept can be found in [2]. Key ideas of this ecosystem are summarized as follows:

- Support for students to be actively engaged in creating their own intellectual property and respect other people's copyright.

- Provide a guided environment to foster constructive learning practices and critical thinking whereby students can structure their reading and construct written works systematically.
- Support for the acquisition of basic reading-writing skills i.e. paraphrasing, summarizing and referencing accurately.
- Support for process management to structure course-work as a series of process steps. Student learning can then be continuously checked and assessed at each stage.
- Incorporate preventive measures for making sure that unwanted versions of copy-and-paste just cannot happen (or is drastically minimized)
- Incorporate viable technologies required to minimize the supervision effort required from instructors.

This paper then further describes the architecture and design of an integrated Copy-Paste system, which is a key innovation of ICARE.

## 2. Overview of the ICARE Ecosystem

The ICARE ecosystem is being built on top of WBT-Master [3] [4], a sophisticated e-learning system that supports the definition of multiple learning scenarios, project-based administration of e-learning and the interactive classroom management activities such as mentoring, brainstorming, project management etc. [4]. An overview of the ICARE ecosystem is shown in Figure 1. It adopts a learner-centered approach in supporting learners' acquisition of knowledge and skills. Multiple learning scenarios are used to implement alternative learning modes made available to students.