# Chapter 9
# Selection of Plagiarism Detection Software and Its Integration Into Moodle for Universities:
## An Example of Open Source Software Use in Developing Countries

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## ABSTRACT

*Plagiarism detection software packages have an important role in detection of plagiarism in exams, assignments, projects, and scientific researches. The main goal of this chapter is the selection of plagiarism detection software (PDS) and its integration into Moodle, an open source learning management system (LMS), for the use of a higher education institution. For this reason, first, the selection criteria are determined by nominal group technique (NGT) and then the most appropriate PDS is selected. At the end of the study, Crot, an open source PDS, is determined and integrated into Moodle. The suggested selection criteria would be useful for other higher education institutions in Turkey and other countries that rely on open software.*

## INTRODUCTION

The development of information and communication technology (ICT) especially internet usage accelerated the preparation of scientific publications, assignments, and projects, but also facilitated plagiarism at the same time. Plagiarism is the "wrongful appropriation", "stealing and publication" of another author's "language, thoughts, ideas, or expressions" and the representation of them as one's own original work. According to researches, plagiarism is increasing daily because of a cheating habit of people from student days (Hamilton, 2003). The development in ICT not only causes an increment in plagiarism, but also makes it easy to detect plagiarism as well. While there are some legal and ethical measures to prevent plagiarism, software technologies also provide important opportunities to prevent plagiarism today. Mentioned technologies, named "plagiarism detection software (PDS)", are classified in different forms according to their characteristics and selected by higher education institutions in order to meet their own requirements. Therefore, selecting the most suitable PDS becomes an important issue.

Nowadays it is seen that many higher education institutions are using open source Learning Management Systems (LMSs), which are generally not only suitable for low-budget institutions such as those in developing countries, but also useful for automating the administration of education and providing an environment for learning and teaching without the restrictions of time or distance (for instance, Imaizumi, 2015). Using integrated PDS together with LMS is faster, easy-to-use and more effective than using both programs separately. Thus, integrating PDS into an LMS is an important issue. In Turkey, use of open source and free software is also strongly encouraged in public sector. While they may be generally a bit lagging behind in terms of the utilization of the available ICT, still specific Turkish higher education institutions and academicians also try to follow and catch up with the latest trends in the use of open source LMS (for instance Önaçan, M.B.K., & Ertürk, A., 2016) and PDS (for instance Ulubay, 2015).

In this chapter, the objective is to select a PDS and integrate it into an LMS, which is already being used by higher education institutions. This study is important and useful for both the researchers and the implementers because it presents a sample of the selection criteria of PDS and the way of PDS integration into LMS.

## BACKGROUND

In this part, legal regulations about plagiarism related with scientific studies and exam/assignment/project in Turkey is examined; PDS packages, as an action to prevent plagiarism, are discussed; and brief information about Moodle, LMS that PDS is integrated into, is given.

### Plagiarism and Legal Regulations in Turkey

Sanction of plagiarism in Turkey can be examined under two headings: plagiarism in scientific studies and plagiarism in exams, assignments, and/or projects.

### Legal Regulations of Plagiarism in Scientific Studies

Council of Higher Education (CHE; Yükseköğretim Kurulu-YÖK in Turkey) and universities make disciplinary regulations provided by law to prevent, detect and punish plagiarism. In accordance with

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