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SMART: Selection Model for Assessment Resources and Techniques

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Abstract: The European Higher Education Area has ushered in a significant shift in university teaching, aiming to engage students more actively in classes. Professors have leveraged virtual platforms and external tools to introduce interactive tasks. With the proliferation of technology, educators face a challenge in choosing the most suitable approach. This paper presents SMART (Selection Model for Assessment Resources and Techniques), a methodology that determines the optimal assessment activities for university-level education. The methodology employs multicriteria decision-making techniques, specifically AHP and TOPSIS methods, to optimize activities based on various subject-, lecturer-, activity-, and student-related criteria. According to SMART, the top five assessment tasks are group and individual report submissions, workshops, complex H5P activities, and questionnaires. Therefore, it is advisable to prioritize these activities based on the methodology's results, emphasizing their importance over other assessment methods.

Keywords: multicriteria decision making; optimum activity; assessment methodologies

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1. Introduction

The first attempt to create the European Higher Education Area (EHEA) was in 1999, when 29 education ministers signed the "Bologna Declaration". Currently, the EHEA consists of 48 countries, and its implementation has involved a major change in most universities, moving from a traditional approach (teacher-focused) to a more student-centred approach [1]. All this has led to more dynamic classes, usually through interactive tasks based on information and communication technologies (ICTs) [2]. In fact, some authors consider ICTs to be an essential element in 21st-century education [3,4]. Thus, universities usually have virtual platforms, called learning management systems, where all the necessary elements of the subjects are included. In Spain, the most common one is based on Moodle [5]. According to [6], Moodle is characterized by a series of functionalities grouped into two classes: resources (which include teaching materials: web pages, documents, presentations, etc.) and modules (which provide interaction between students and teachers: databases, assignments, forums, questionnaires, wikis, activities based on the HTML5 package (H5P), etc.) [7–9]. These modules, in turn, are related to different types of activities: creation, organization, delivery, communication, collaboration, and assessment [10]. In [11] the different Moodle modules are grouped into the activity classes previously indicated. Along with the variety of Moodle modules, in recent years, numerous virtual tools have also appeared (such as Kahoot! [12], Socrative [13], Quizizz [14] or Genially [15]), which allow for the gamifying of classes [16,17]. Gamification is defined as a methodology used to increase motivation, competitiveness, and people's effort by using typical game techniques [18,19]. Gamification can be conducted individually (each student competes against the rest of their classmates) or cooperatively (in groups); in