Comprehensive Examination of Diverse Assessment Methodologies Applicable to Sport Science Departments at Higher Education Institutions

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Abstract: Educators and educational leaders have engaged in ongoing discussions and debates concerning student assessment in higher education. Concerns have been raised by academics about the disconnect between assessment methods and actual student learning outcomes. The aim of this review was to conduct a comprehensive examination of diverse assessment methodologies applicable to higher education. Furthermore, a critical analysis was performed to evaluate the alignment of current assessment practices within the author's specific academic field with the various assessment methods under scrutiny, as well as to assess their efficacy. The literature review pertaining to the evaluation techniques employed in higher education underwent an electronic search across several databases: EBM Reviews, Current Contents, Science Direct, Google Scholar, CISTI Source (from 1995 to June 2021), Cochrane Database of Systematic Reviews and international e-catalogues. A total of (n=38) studies were found that met the necessary criteria to be included in the study. It is important to acknowledge that this examination should be regarded as a foundational framework, with ample room for future research to incorporate additional assessment approaches, given the multitude of options available. Assessment for learning, tasks of learning, and peer and self-assessment emerge as invaluable tools applicable across various disciplines within higher education.

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1. INTRODUCTION

Educators and educational leaders have engaged in ongoing debates concerning student assessment in higher education, as reflected in various studies (Boud and Falchikov, 2007; Gilles et al., 2011; Carless, 2015). Concerns have been raised by academics about the disconnect between assessment methods and actual student learning outcomes (Carless et al., 2006; Douglas et al., 2012; Webber, 2012). These discussions often revolve around critical questions, such as the relationship between students' performance in examinations and academic rigor, the most effective assessment tasks for promoting learning, the role of assessment practices in fostering lifelong learning, and the potential for feedback to enhance student progress (Carless, 2015).

Studies have identified that educators sometimes fail to connect assessment with the quality of teaching (Postareff et al., 2012), viewing assessment primarily as a tool for evaluation and grading (Sambell et al,. 2012; Torrance, 2012). Nevertheless, there is a growing body of literature suggesting that assessment can serve as a valuable instrument for active learning within the classroom (Bonwell, 1997; McGinnis et al., 2018). Despite the extensive discourse on assessment practices that promote learning, it seems that many academics continue to rely heavily on traditional pen-and-paper examinations as a means of gauging student knowledge (Carless et al., 2006; Duncan and Buskirk-Cohen, 2011; Gilles et al., 2011; Postareff et al., 2012). However, authors argue that testing in this conventional sense is often a passive process that can hinder the learning experience (Ertmer and Newby, 2013).

One potential root of this issue may lie in the lack of awareness regarding diverse assessment methods employed across various postsecondary institutions (Gilles et al., 2011; Postareff et al., 2012; Webber, 2012). Thus, in the context of this review article, the primary objective of the investigation was to conduct a comprehensive examination of diverse assessment methodologies applicable to higher education. Furthermore, a critical analysis was performed to evaluate the alignment of current assessment practices within the field of Sport Science with the various assessment methods under scrutiny, as well as to assess their efficacy.

Literature Review

The concept of assessment in education encompasses a range of activities aimed at gathering information about students' performance and achievements (Gronlund, 2005). Researchers emphasize two primary purposes for assessment: facilitating student learning and certifying student achievement (Norton et al., 2013; Carless, 2015). Formative and summative assessments are key tools that serve these purposes (Sambell et al., 2012; Carless, 2015), ideally overlapping seamlessly when effectively employed.

Formative assessment is an ongoing process that occurs throughout a course, engaging students with the subject matter and promoting familiarity with the material (Jacoby et al., 2014). Effective formative assessment requires active participation from both students and teachers, leading to deeper comprehension and long-term retention of concepts (McCoy, 2013). Valuable feedback from various assessment tasks plays a crucial role in enhancing students' performance (Sambell et al., 2012), making formative assessment synonymous with "assessment for learning" (Carless et al., 2006; McDowell et al., 2011; Hernández, 2012).

In contrast, summative assessment serves to evaluate student achievement and usually occurs at the end of a course or instructional phase (Gronlund, 2005). While common summative assessment methods include unit tests, exams, and final presentations, their timing limits the ability to modify student learning, primarily serving grading purposes (McDowell et al., 2011; Hernández, 2012). However, it is noteworthy that summative assessment can also serve formative purposes if it includes feedback to aid students in their learning process (Carless et al., 2006).

In higher education, many assessment strategies, such as course assignments, can fulfill both formative (assessment for learning) and summative (assessment of learning) functions (Taras, 2008; Hernández, 2012).

Assessment for Learning

Assessment for learning (AfL) is fundamentally rooted in the principle that all assessment methods should contribute to the process of student learning (Sambell et al., 2012). Key components of AfL encompass several crucial aspects, including the incorporation of authentic, real-world assessments (McDowell et al., 2011; Sambell et al., 2012).

AfL places a strong emphasis on actively involving students in the learning journey, with a reduced focus on grades (Sambell et al., 2012). It provides learners with opportunities to apply previously acquired skills and knowledge in practical contexts (Sambell et al., 2012). Furthermore, AfL involves the provision of feedback, achieved through a combination of written comments and dialogues among students, peers, and instructors (McDowell et al., 2011; Sambell et al., 2012).

AfL also plays a pivotal role in nurturing independent learners (McDowell et al., 2011). These characteristics of AfL closely align with the cognitive constructivist theory, where educators actively engage students in the learning process (Paily, 2013). This engagement encompasses collaborative efforts, the integration of real-world scenarios, and self-reflection as integral components (Paily, 2013). The concept of social constructivism further expands on this approach, emphasizing the importance of involving others in the learning journey (Paily, 2013). It underscores the value of dialogue for sharing ideas, fostering collaboration, and promoting cooperation (Paily, 2013).

Through such active engagement and interaction, knowledge and understanding are cultivated through various forms of interaction, including teacher-student interactions, peer-to-peer interactions, and interactions with tasks or assignments (Torrance, 2012). This theoretical framework underscores the critical role of learners' experiences in the process of knowledge generation (Schreiber and Valle, 2013).

Learning-oriented Assessment

Learning-Oriented Assessment (LOA) serves as a pedagogical framework that closely aligns with the principles of assessment for learning, as delineated by Carless (2015). LOA represents a comprehensive approach that aims to enrich the learning experiences of students, both in the immediate and long-term contexts (Carless, 2015). This multifaceted framework comprises three interrelated components: the utilization of tasks as instruments for learning, the incorporation of self and peer assessment, and the facilitation of constructive feedback (Carless, 2015).

Each facet within the LOA framework actively engages students in the assessment process. This active participation empowers students to redirect their attention towards the generation of knowledge, with a pronounced emphasis on honing critical skills such as analytical thinking, problem-solving, and engaging in metacognitive activities. These skills are pivotal in nurturing their cognitive capabilities and fostering a deeper understanding of the subject matter (Demirci, 2017).

Tasks as Learning Tasks

In the pursuit of fostering effective learning experiences, a fundamental consideration lies in the authenticity of the tasks employed (Sambell et al., 2012; Carless, 2015). Authentic assessment, a specific subtype of extended performance assessment (Gronlund, 2005), embodies an

evaluative approach characterized by its heightened realism and complexity, integration of knowledge and skills, and its capacity to encourage deeper learning (Gronlund, 2005). While extended assessments require students to consolidate their acquired knowledge, it is the concept of authentic assessment that propels learners towards a more profound level of understanding. This approach compels students to apply their comprehension to real-world tasks or scenarios (Boud and Falchikov, 2007; Sambell et al., 2012).

Furthermore, authentic activities contribute to the acquisition of future-oriented knowledge and skills (Gronlund, 2005; Boud and Falchikov, 2007; Libman, 2010; Hui and Koplin, 2011; Trevelyan and Wilson, 2012; Sambell et al., 2012; Carless, 2015). These pedagogical approaches play a pivotal role in developing specific competencies and enhancing the critical thinking capabilities of learners (Oladele, 2011; Sambell et al., 2012). Scholars emphasize the importance of employing performance-based authentic methodologies in student assessment (Gibson and Shaw, 2011). Learners resonate with authentic approaches, making them invaluable tools for assessment (Gibson and Shaw, 2011).

To ascertain the authenticity of a task, educators can employ a set of questions outlined by Burton (2011). Beyond representing real-world contexts, these questions consider whether the final output is refined, whether higher-order thinking or metacognitive processes are engaged, and whether the assignment necessitates collaborative decision-making among students (Burton, 2011). Various activities fall under the umbrella of authentic assessments, including real-life tasks, exhibitions, interviews, journals, observations, oral presentations, performances, portfolios, patchwork texts, and simulations (Boud and Falchikov, 2007). Other methods include written and oral debriefing, peer and self-assessment, as well as small group collaborations (Gibson and Shaw, 2011). Problem-solving exercises, case studies, and role-playing also exemplify authentic activities (Carter and Hogan, 2013). Additionally, experiential undertakings embody authenticity (Hui and Koplin, 2011; Pierce et al., 2011).

Peer and self-assessment

The incorporation of authentic assessment modes serves as a catalyst for active student involvement in the learning process (Gibson and Shaw, 2011; Pantiwati and Husamah, 2017). Self-assessment and peer assessment, fundamental components of these modes, empower students to cultivate their ability to evaluate both their own work and that of their peers (Sambell et al., 2012; Yucel et al., 2014; Carless, 2015). Through this educational journey, students nurture lifelong learning tendencies (Boud and Falchikov, 2007; Sambell et al., 2012; Carless 2015), equipping them with the skills needed to make informed judgments and decisions in future scenarios they may encounter (Boud and Falchikov, 2007; Thomas et al., 2011; Sambell et al., 2012; Carless, 2015).

These methodologies, as asserted by Sambell et al. (2012), foster attributes such as independence, personal responsibility, and critical thinking. Moreover, peer assessment imparts valuable lessons to learners on how to handle constructive criticism and exercise responsibility when evaluating the work of others (Chetcuti and Cutajar, 2014). An additional advantage of peer assessment is that the competencies acquired serve as a solid foundation for engaging in self-assessment (Chetcuti and Cutajar, 2014). Central to the objective of self-assessment is the cultivation of metacognitive skills (Carless et al., 2006; Sambell et al., 2012; Nielsen, 2014). Metacognition involves learners gaining insight into their own learning process and is recognized as a significant determinant of effective learning outcomes (Stanton et al., 2021). Furthermore, self-assessment has the potential to empower students by fostering a culture of self-monitoring (Tan, 2009; Sambell et al., 2012). However, it is essential to emphasize that the autonomy granted to learners should be directed towards the sustained development of self-reflective abilities (Tan, 2009).

Methodology

Search strategy

The literature review pertaining to the evaluation techniques employed in higher education underwent an electronic search across several databases: EBM Reviews, Current Contents, Science Direct, Google Scholar, CISTI Source (from 1995 to June 2021), Cochrane Database of Systematic Reviews and international e-catalogues. A keyword-based inquiry led to the identification of MeSH headings such as "assessments," "higher education," "assessment methods," "educational assessments," "assessments in higher education," "assessment for learning," "peer assessment," "self-assessment," and "learning tasks," which were subsequently amalgamated. Only peer-reviewed articles in the English language were included in the search results. Original articles were categorized and singled out for further analysis.

Inclusion Criteria

The studies included in this review adhered to the following criteria: A keyword search was performed, generating MeSH headings, namely "assessments," "higher education," "assessment methods," "educational assessments," "assessments in higher education," "assessment for learning," "peer assessment," "self-assessment," and "learning tasks," which were subsequently combined and expanded. These headings collectively served as the basis for searching articles spanning the period from 2000 to 2023, as indicated in the data sources section. The rationale for conducting such an extensive search was to encompass a wide array of assessment methods potentially relevant to higher education. This comprehensive approach aimed to establish a foundational reference point for future research endeavours, facilitating the identification of further effective assessment methods for educators in higher education.

Exclusion Criteria

To uphold the integrity of this review and include only pertinent research, specific exclusion criteria were applied.

In the context of this investigation, exclusive consideration was granted to full-text articles composed in the English language. Additionally, articles were disqualified if their scope was exclusively directed toward educational phases other than higher education. Lastly, studies were omitted from consideration if they failed to furnish precise elucidation as to the rationales underpinning the superiority of certain assessment methods over others.

Data Extraction

Studies that did not meet the inclusion criteria were systematically excluded from the analysis. The initial phase involved the collection and thorough analysis of significant data, which encompassed an evaluation of assessment methods employed in higher education. The author also conducted an eligibility assessment for inclusion through a comprehensive analysis of full-text articles. The final selection of articles was subjected to scrutiny by a domain specialist, and any deficiencies were rectified until complete clarity was achieved.

All the selected papers were classified into two categories, namely "assessments" and "assessments in higher education," based on the journal or conference in which they were published, along with the corresponding keywords. Subsequently, data was extracted from the collected information. In order to scrutinize the contributions of each research study to assessment methods in higher education, data pertaining to analysis methodologies, window selection, and spatial aggregation features were meticulously extracted. Additionally, to gauge the interpretability of all the included research, information regarding the problem definition or study purpose and the inclusion of a theoretical framework or explanation was also systematically extracted. All these findings were then methodically categorized and consolidated under a unified framework, which will serve as the foundational structure for the subsequent discussion of the research findings.

RESULTS

An electronic search based on the above-mentioned criteria yielded a result of 38 electronic articles that was used for this article. Figure 1 illustrates the article selection criteria.
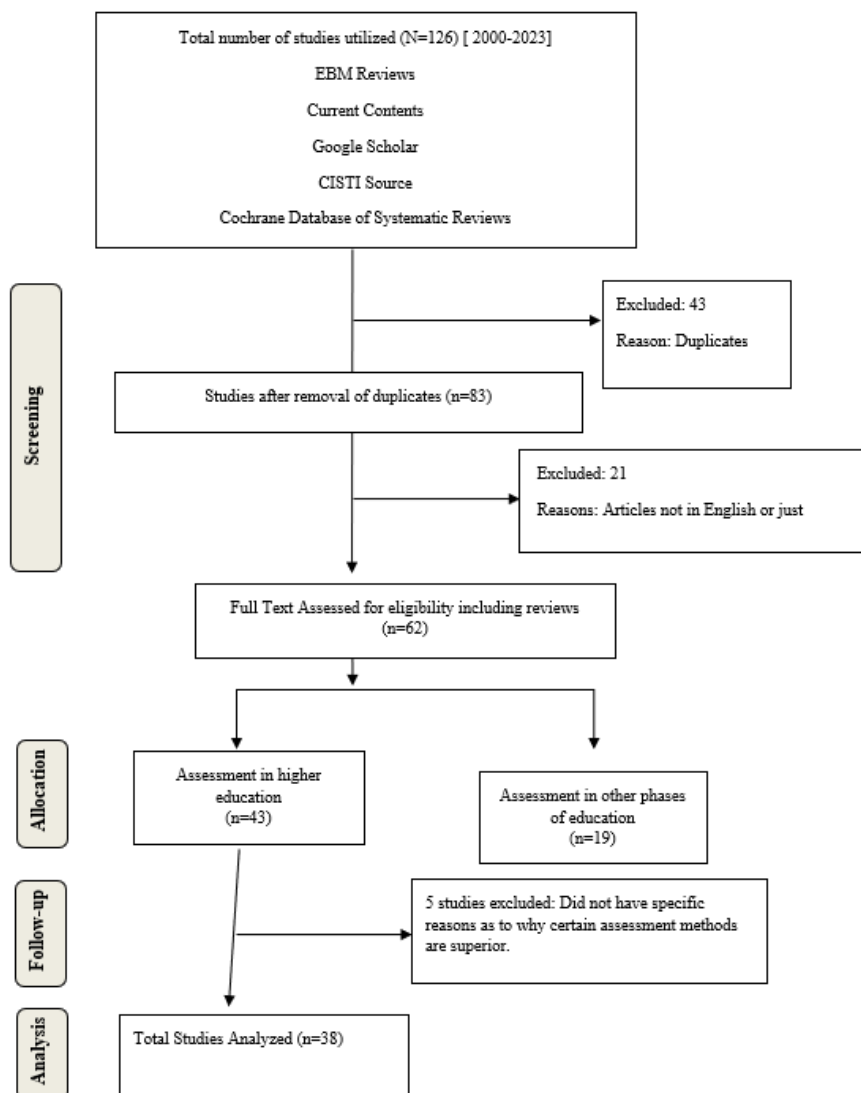

Figure 1: PRISMA Flow Chart of the study selection process

DISCUSSION

In the context of this review article, the primary objective of the investigation was to conduct a comprehensive examination of diverse assessment methodologies applicable to higher education. Furthermore, a critical analysis was performed to evaluate the alignment of current assessment practices within the author's specific academic field with the various assessment methods under scrutiny, as well as to assess their efficacy. The comprehensive examination of the assessment methods was performed in the literature review. This section will focus on evaluating the alignment of current assessment practices within the author's specific academic field.

In the domain of sports science, the acquisition of practical, experiential knowledge is of paramount importance. This necessity arises from the expectation that graduates must effectively collaborate with athletes or patients upon departing the educational institution. Consequently, the field of sports science predominantly employs work-integrated learning (WIL) as a fundamental component of its assessment methodologies. WIL affords students the opportunity to engage in supervised interactions with patients and evaluate their performance against predefined criteria outlined in a comprehensive handbook, with the aid of meticulously crafted rubrics. This assessment approach aligns with the principles of Assessment for Learning (AfL) as elucidated by McDowell et al. (2011) and Sambell et al. (2012). It bears the hallmark of genuine, real-world assessments, in contrast to purely theoretical evaluations. Furthermore, this pedagogical approach fosters active student involvement in the learning process, with a reduced emphasis on conventional grading systems, as advocated by Sambell et al. (2012). It not only facilitates the application of previously acquired skills and knowledge but also enables students to receive immediate feedback from their on-site supervisors (McDowell et al. 2011; Sambell et al. 2012).

Like many other academic disciplines, sport science actively engages in research endeavours, which are integrated into its curriculum through specialized modules. These modules impart theoretical knowledge through summative assessments, such as class tests. However, the most substantial evaluation components are practical in nature. These practical assessments encompass the formulation of research proposals, their subsequent presentation, the composition of scientific articles following specific journal guidelines, and the oral presentation of the articles' findings to the department. This assessment framework adheres to the principle of assessments as integral elements of the learning process. Integral to this pedagogical philosophy is the notion of task authenticity, as elucidated by Carless (2015). Authentic assessment, a subcategory of extended performance assessment as expounded by Gronlund (2005), embodies an evaluative approach characterized by heightened realism and complexity. It integrates both knowledge and skills and fosters deeper learning experiences (Gronlund, 2005). The assessment methods employed in the research module within the sport science discipline are meticulously designed to mirror the demands and expectations typically encountered in pursuing advanced degrees or academic careers, aligning with the discipline's overarching goals.

In striving to achieve the assessment objectives across all modules within the sport science discipline, a deliberate emphasis is placed on the promotion of peer and self-assessment, particularly in advanced, exit-level modules. The rationale for this pedagogical approach stems from the recognition that sport scientists often collaborate within teams in their professional careers. Consequently, it is imperative that they possess the skills necessary for evaluating the work of their peers, as this evaluation can significantly impact their own methodologies. Moreover, fostering the ability for self-reflection and adaptation is deemed essential. Given the sizable class sizes typically encountered in our programs, the utilization of peer and self-assessment methods is also operationally practical. Drawing from personal experience, one approach involves tasking students with creating presentations to demonstrate their grasp of specific topics. Subsequently, comprehensive rubrics are provided to both the presenting group and their peers, facilitating the peer and self-assessment processes. This approach aligns with the findings of Gibson and Shaw (2011) and Pantiwati and Husamah (2017), who assert that authentic assessment modes promote active student participation and enhance the learning experience. These methods are meticulously designed to encourage students to critically evaluate their own work and that of their peers (Sambell et al., 2012; Yucel et al., 2014; Carless, 2015). It has been observed that students in the sport science discipline gain valuable insights into their own capabilities and the relative depth of their knowledge in comparison to their peers. Consequently, they develop the capacity to make informed judgments and choices, a skillset that proves invaluable in preparing them for future assignments and assessments (Boud and Falchikov, 2007; Thomas et al., 2011; Sambell et al., 2012; Carless, 2015), a benefit that has been empirically validated through my instructional approach.

CONCLUSION

This review highlights the critical need for diverse and effective assessment methodologies within Sport Science departments in higher education. The findings suggest that while traditional assessment methods are still prevalent, there is a growing recognition of the benefits of incorporating formative, authentic, and peer assessment practices. These methods not only enhance student learning but also better prepare graduates for real-world challenges. Sport Science departments could consider adopting more work-integrated learning opportunities, such as practical placements and research-based assessments, to bridge the gap between academic learning and professional readiness. Additionally, fostering a culture of self-reflection and peer evaluation may empower students to develop critical thinking and adaptability skills. Future research could explore the long-term impacts of these alternative assessment strategies on student outcomes and employability, providing valuable insights for further curriculum development.

Epilogue

This article emphasizes the significance of employing diverse assessment methods in the field of Sport Science, acknowledging its inherently practical nature and the subsequent relevance in professional settings. Specifically, the adoption of assessment for learning, tasks of learning, and peer and self-assessment methods is highlighted. The integration of these assessment approaches is advocated not only for their theoretical underpinnings but, crucially, for their practical application within the Sport Science domain. The article underscores the importance of aligning assessment methodologies with the dynamic and hands-on nature of the field, ensuring graduates are well-prepared for the challenges they will encounter in the workplace.

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