



A Bibliometric Analysis of Assessment as Learning in Higher Education

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Abstract

Assessment in higher education has been dominated by traditional practices that mainly focus on grades for student progression. However, there has been some transformation in assessment due to the advancement in education. Generally, assessment is viewed as central to student learning and experience. Assessment as learning is not just an addition to learning and teaching, but it presents an opportunity through which students' involvement in assessment could manifest as part of learning where assessment is learning-oriented. Assessment as Learning in Higher Education is about student empowerment. Hence, students take ownership of their own learning process. Furthermore, assessment as learning promotes constructivism through student engagement and knowledge construction. This bibliometric analysis analysed the trends evident from research on assessment as learning and implementation in Higher Education. Data were retrieved from the Scopus database and analysed using VOSviewer. The thematic analysis approach was also employed. The study reveals that self-assessment is important in promoting student empowerment, which is one of the benefits of assessment as learning. It is important that higher education institutions rethink assessment as learning because this might assist in achieving the 21st century educational goal of independent learning. The study's findings confirm that there is a need for constructive alignment of teaching, learning and assessment hence, assessment as learning becomes more significant. The findings provided an overview of key themes, research gaps and potential areas for future research. The insight that was gained from this bibliometric analysis will be valuable for lecturers, course designers, universities, assessors and researchers seeking to improve assessment in higher education.

Keywords: constructivism; learning-oriented assessment; students; teaching and learning; university

1. Introduction

Basically, teaching influences our assessment choices. However, assessment is also central to learning. In fact, assessment frames learning. The main argument of this paper is that all

assessments should focus on learning. In other words, learning should be the driving force in assessments. There is a great need for lecturers to change their assessments. Brown et al. (1997, cited in Orsmond & Merry, 2017:296) openly warn that “if you want to change student learning then change the methods of assessment”. This phrase or notion was taken further by Orsmond and Merry (2017:296) as they advised that ‘if one needs to change student learning, then one should change the learning context’. This shift of emphasis from assessment to learning, therefore, allows for learning to be seen in a broader context. The basic premise of this research paper is that assessment as learning is central to learning and education. Hence, Dann (2014) argues that assessment as learning (AaL) is the complex interplay of teaching, learning and assessment. According to Dann (2014), AaL is seen as the foundation for both assessment for learning and assessment of learning.

2. Literature review

2.1 Assessment practices

Wanner et al. (2024) noted that assessment practices in higher education are still controlled by lecturers or instructors despite the increasing focus on student-centred learning. Nieminen (2021) noted that the era is dominated by grading practices and teacher-driven assessment. Conversely, Boud and Falchikov (2005) also noted that, for assessment to assist learning, it should be based on standards, focused on specifics, be timely and also encourage students to make their own judgements. Furthermore, Lam (2016) also noted that assessment should be viewed as an aspect of learning whereby students are in charge of their learning and are making sense of feedback through self-regulation and self-reflection rather than confirming the learning outcomes as set externally or institutively.

On the other hand, Bain (2010) advised that a predominant focus on summative assessment could be problematic simply because too much energy and time might be devoted to the assessment taking place after students’ completion of their learning.

2.2 Assessment for Learning, of Learning and Assessment as Learning

Teaching, learning and assessment are inseparable. Depending on the teacher’s perception and experiences, assessment could serve many purposes. Hence, Deeley (2018) opines that assessment is for learning when its process contributes towards students’ learning.

Assessment of Learning (AoL) is commonly known and used for grading students’ performance or assessing students’ knowledge through formalised and timed examinations. However, the main aim of Assessment for Learning (AfL), according to Lam (2016), is to facilitate student learning through alternative or different assessments, which might include self-assessment, peer-assessment, observation or conferences. Nonetheless, these assessments are equally important as Rourke (2013) highlighted that peer-assessment provides an opportunity to promote teamwork and collaboration, ownership of the learning process and active learning and reflection.

Xiang et al. (2022) maintain that Assessment as Learning (AaL) has been introduced to broaden the idea of AfL, which is mainly enhancing the student-centred side of AfL. On the other hand, AaL emphasises students as active agents who are developing metacognitive capacity (in self-evaluating) and a critical inquiry stance. Hence, Rourke (2013) maintains that, in AaL, the goal is more about learner-centred education that is promoted through engaged active learning than assessment-driven curriculum. Generally, AaL possesses all the attributes of AfL (Deeley, 2018; Ng, 2018).

3. Research aims and objectives

The study aimed to answer the following main research question:

What are the major trends in the implementation of Assessment as Learning in Higher Education?

The main objectives of the study were:

1. To identify countries with the highest focus on Assessment as Learning (AaL) in Higher Education.
2. To map out research focusing on Assessment as Learning in Higher Education.
3. To identify the global trends of scientific research on Assessment as Learning in Higher Education.

4. Methodology

For the purpose of this study, the researcher conducted a bibliometric analysis to explore the studies' focus on Assessment as Learning in Higher Education. The researcher then performed a search in Scopus by using the search string "assessment as learning" OR "learning-oriented assessment" AND "higher education" OR "university". The year of publication was left open because 'Assessment as Learning', though not a new phenomenon, has not been fully explored in research. The researcher used Scopus because it is one of the databases that researchers broadly rely on when conducting bibliometric analyses in academic literature (Farooq, 2023). The initial search produced 106 documents.

The search was then restricted to social sciences, arts and humanities, articles and conference papers and the language was restricted to English. This refined search produced 59 documents. The researcher used VOSviewer to analyse data. VOSviewer is the Visualisation of Similarities software (Di Matteo et al., 2018). The results are also analysed in different themes that were formulated by the co-occurring keywords (based on VOSviewer).

5. Bibliometric analysis and results

5.1 Citation and countries

This section indicates the countries that have the most citations based on the number of citations received. Australia (737 citations) is the most influential country in publications on AaL in Higher Education with 737 citations as shown in Table 1. Other countries that also received on average high citations are Spain and Hong Kong with 153 and 150 citations, respectively. Conversely, the fourth influential country is the United Kingdom with 63 citations. Most of the other countries had less than 50 citations. Based on the results, Australia seems to be the most influential country in research on AaL in Higher Education.

Table 1: Citation and countries

Country	Documents	Citations
Australia	8	737
Spain	11	153
Hong Kong	6	150
United Kingdom	5	63
Iran	3	32
China	5	26
Indonesia	4	23
United States	3	18
Saudi Arabia	3	15
Portugal	3	8
Netherlands	3	6
South Africa	4	3

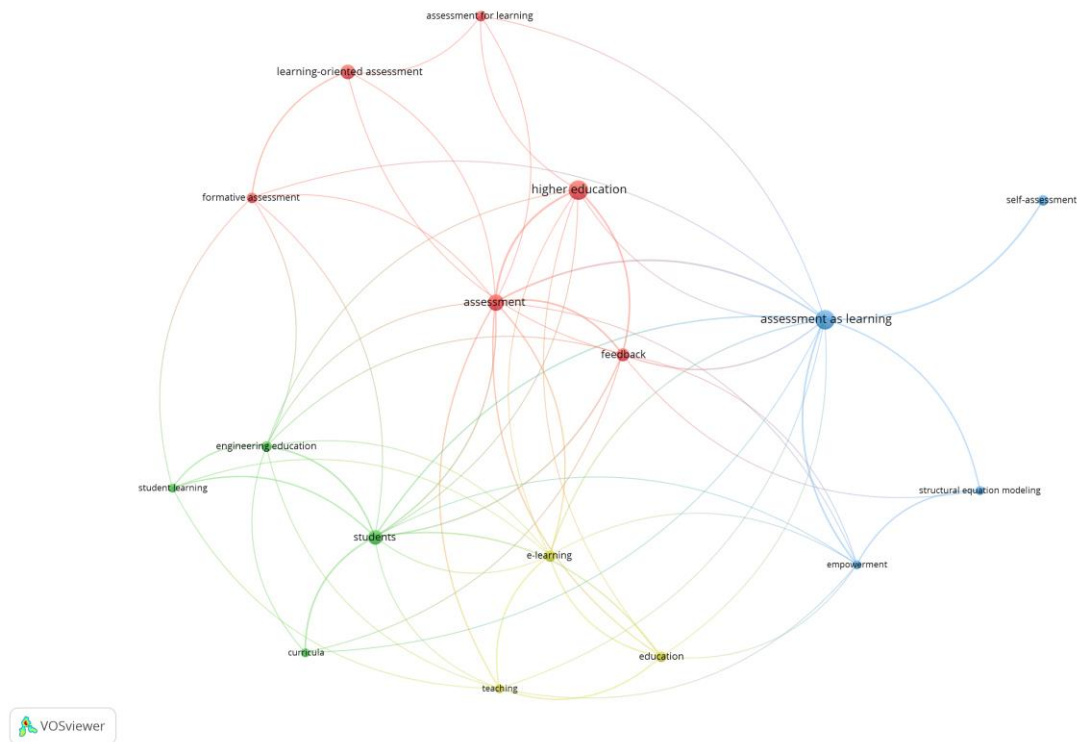
Source: VOSviewer (2024)

5.2 Keyword co-occurrence

The main purpose was to map out the research focus on Assessment as Learning in Higher Education. Keyword co-occurrence could explain the research hotspots in the field over a specific period of time (Qing et al., 2022). Furthermore, the co-word analysis undertakes that words that frequently appear together have a thematic relationship with each other (Donthu et al., 2021). Hence, these keywords would enable the identification of the significant themes in Assessment as Learning in Higher Education as well as observations around those trending concepts in AaL.

For the purpose of this study, the minimum number of occurrences of a keyword was set at three. Of the 276 keywords, 17 met the threshold. The results showed that Assessment as Learning was a widely used keyword when compared to other keywords. The results also indicate that Assessment as Learning had an average link of 23 and had 14 occurrences. Similarly, assessment as a keyword had a similar link of 23 with only 10 occurrences. Another important keyword was student, which also had a link of 21 with only 8 occurrences. The 17 co-occurring keywords are displayed in Figure 1 below. The list of the co-occurring keywords is presented in the four themes that the researcher has developed and analysed.

Figure 1: Network Visualisation of co-occurring keywords



Source: VOSviewer (2024)

5.3 Cluster 1: Assessment in Higher Education

This cluster consisted of six items, namely assessment, assessment for learning, feedback, formative assessment, higher education and learning-oriented assessment. Research reveals that most higher education institutions focus on formative assessment which included AfL and AoL.

The appearance of the keyword “Assessment for Learning’ emphasises the significance of formative assessment during teaching and learning. Ultimately, Assessment of Learning/for Learning might not be the opposite poles of assessment; however, one must view the two ends of the spectrum as follows, ‘a conception of knowledge as external to the student and fixed’, while on the other end ‘a conception of knowledge as constructed or co-constructed by the students’ (Hargreaves, 2005:224).

In addition, the appearance of the keyword “learning-oriented assessment” indicates the shift in focus that was taking place on assessment. In other words, assessment was now expected to be learning-focused. Hence, Carless (2015) defines learning-oriented assessment as an assessment where the main focus is on the potential of developing productive student learning processes. This is an approach to assessment that seeks to encourage and support students’ learning. It is worth noting that learning-oriented assessment requires a radical change in the way feedback is perceived with more emphasis given to students’ roles in the feedback process (Hernandez, 2012). Importantly, this cluster emphasises that understanding all assessments in terms of ‘for learning’ could change our perception of and approach to assessment and feedback. Accordingly, Hogg (2018) noted that peer assessment fits in the conceptualisation of assessment as sustainable assessment and learning-oriented assessment, which contributes to student empowerment.

5.4 Cluster 2: Curriculum and learning

This cluster had three items only, namely “curricula”, “student learning” and “students”. The appearance of the keyword “curricula” is not a surprise. Curriculum is one of the important concepts in teaching, learning and assessment. By implementing AaL, lecturers or teachers could foster a strong connection between teaching, learning and assessment. The results of this study are in line with Dann’s (2014) argument that teachers need not only understand the curriculum they teach but also need to understand how experiences that are produced in different domains and layers of everyday life give rise to the various ‘voices’ students use to give meaning to their own world.

5.5 Cluster 3: Assessment as Learning in Higher Education

This cluster contained three items, namely, “Assessment as Learning”, “empowerment” and “self-assessment”. Accordingly, Xiang et al. (2022) argue that the concept of AaL, which is related to AfL, places students at the centre of assessment and learning. Furthermore, this is well-articulated as AaL extends and re-enforces the role of AfL by making students take centre stage in learning and assessment. Furthermore, it highlights the student-centred level of AfL (Lee et al., 2019).

On the other hand, the appearance of the co-occurring keyword “self-assessment” emphasises the importance of ‘learner-centred’ or ‘peer-assessment’ in Assessment as Learning. This is important for learner agency. This concurs with Wang and Lee (2021) as they postulated that Assessment as Learning (AaL) underscores students as active agents, which in the learning process could serve as part of learning. Therefore, the results from Ng (2018) confirm that self-assessment indeed encourages students to take ownership of their own learning. Nieminen (2021) reports that student self-assessment promotes self-regulation and learning.

The co-occurring keyword “empowerment” confirms the argument that was made by scholars. According to Wang and Lee (2021), AfL was seen to be neglecting student empowerment so that they could take ownership of their learning. Meaning that, AaL does empower students during Assessment as Learning (which also translates to learning). Theoretically, AaL is guided by self-regulation, metacognition, autonomy and motivation, (Lee et al., 2019).

5.6 Cluster 4: Online learning

This cluster consisted of three co-occurring keywords, namely, “e-learning”, “education” and “teaching”. This suggests that assessment is not just an additional aspect of teaching. Hence, most scholars believe that “assessment is not just an adjunct or addition to teaching and learning but presents a process through which student involvement in assessment could appear as part of learning, which is assessment as learning” (Xiang, et al. 2022). Conversely, scholars like Deeley (2018) believe that feedback could also be improved by using technology. Worth noting in relation to this study is that online AaL could assist in achieving the 21st century educational goal of independent learning (He & Wang, 2024).

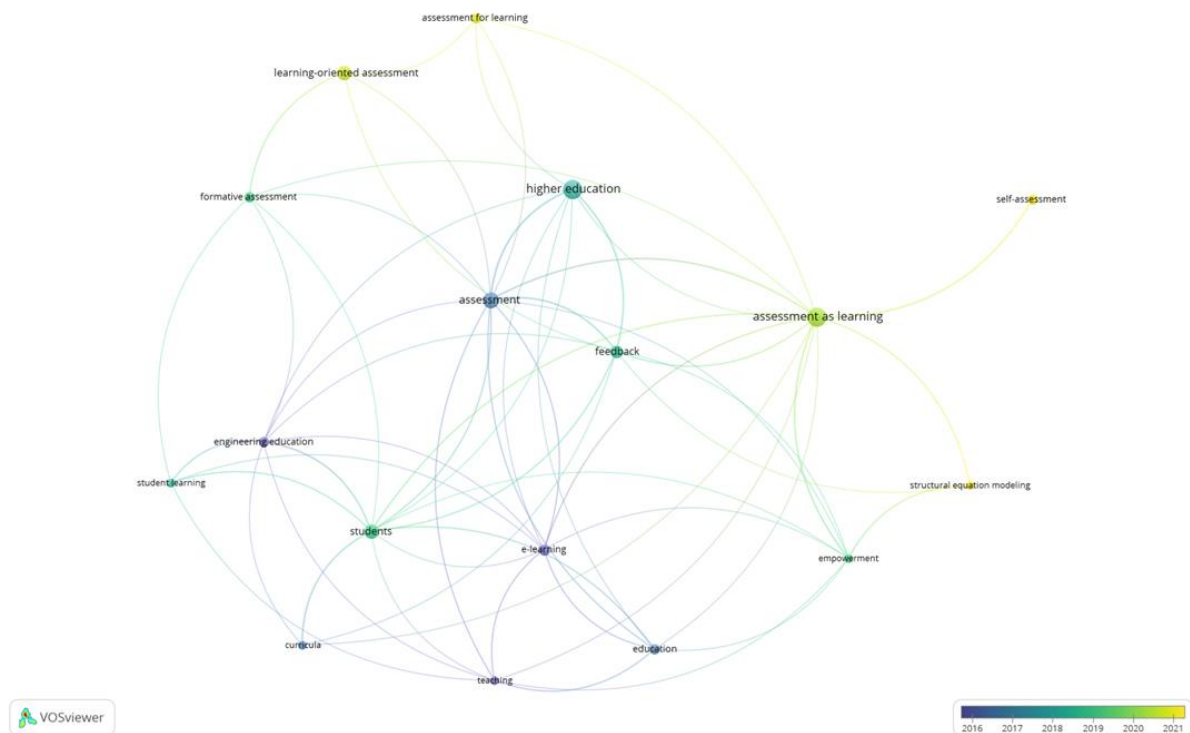
5.7 Research trends

This section relates to the third objective of this study, namely, to identify the global trends of scientific research on Assessment as Learning in Higher Education.

Importantly, the study revealed that research has focused on formative assessment, feedback, assessment, teaching, curricula, students, student learning and higher education

between 2016 and 2018. In addition, the overlay visualisation network (Fig. 2) revealed that Assessment as Learning (AaL) gained attention in research around 2019 and 2020. Hence, Lee et al. (2019) argue that AaL offers great potential for improving and reforming teaching, assessment and learning and needs research attention. Progressively, this study also reveals that in 2021 research focused on self-assessment, assessment for learning and learning-oriented assessment. This confirms the findings of other studies concluding that learning-oriented assessment has not yet been explored in detail or conceptualised (Carless, 2015). This indicates that not much around these keywords or items has been covered. Moreover, these identified gaps are opportunities for future research.

Figure 2: Overlay visualisation network



Source: VOSviewer (2024)

6. Discussion

Based on the purpose of this study, one major question moving forward is how we navigate the teaching and learning process to produce effective assessments. Hence, assessment cannot be understood in isolation from learning (Hernandez, 2012). Practically, as a co-occurring keyword, formative assessment suggests that, in teaching, one cannot separate Afl and AaL from formative assessment processes.

Self-assessment as a co-occurring keyword suggests that, not only self-monitoring but self-assessment is also integral to the development of student autonomy in AaL. This also confirms the argument that constructive alignment of teaching and assessment could harness student self-assessment skills, which is one major aspect of AaL (Lam, 2016). Similarly, Boud and Falchikov (2005) underscore that constructive alignment of learning, teaching and assessment is significant. According to Lam (2016), assisting students in developing self-reflective capacity and self-monitoring in learning is very important since higher-order thinking skills are required for their future learning as well as career development. This is one

of the most significant benefits of AaL that also makes the study valuable and critical. Hence, Bain (2010) suggests that students should be trained in self-assessment for formative assessment to be productive. On the other hand, Rourke (2013) highlighted that as an assessment method, self and peer assessment provide students with the opportunity to develop attributes like empathy for others, and through this experience, students could understand themselves through understanding others. Similarly, Lin and Lin (2019) maintain that AaL promotes self-assessment and the assessment of others on a continuous basis to provide and obtain feedback. Hence, Nieminen (2021) maintains that transformative self-assessment promotes sustainable peer assessment.

The appearance of the co-occurring keyword “empowerment” confirms the notion that AaL promotes student empowerment, teacher empowerment and the constructive alignment of teaching and assessment in AoL dominated settings (Lam, 2016). Nonetheless, Lee and Mark (2014) maintain that in an AaL focused learning environment, student empowerment should allow them to act as learning resources for one another within that supportive learning community. Hence, many researchers called for Assessment as Learning (AaL), which sees students as active agents who could develop an inquiry habit and become their own assessors moving forward (Wang & Lee 2021). Progressively, Ibarra-Sáiz et al. (2020) noted that Assessment as Learning and empowerment demonstrate the collaborative nature of assessment through student participation in decision-making at every stage of the assessment process. Moreover, the successful implementation of AaL is dependent upon students’ metacognition and motivation (Ng, 2018). Conversely, Wanner et al. (2024) argue that flexible teachers are ‘empowering teachers’.

Generally, feedback is one of the significant elements of assessment. In terms of feedback, AaL requires providing guidance on how to improve future work, which refers to a ‘feed-forward’ process (Deeley, 2018). The concept of ‘feed-forward’ is therefore introduced in Assessment as Learning. Notably, ‘feed-forward’ focuses on the responses of learners to feedback (Hernandez, 2012). Feed-forward, as a process, is also important in assessment. Garvis (2013) has re-emphasised the notion by Hattie and Timperley that effective feedback answers three orienting questions, firstly ‘where am I going’ (feed-up); secondly, ‘how am I going’ (feed-back); and thirdly, ‘where to next’ (feed-forward). In their study, Wanner et al. (2024) also reveal that more immediate and personalised feedback for tasks was greatly appreciated by students as it assisted them in improving their academic skills.

Moreover, one aspect that distinguishes AaL is that it is underpinned by social constructivism (Wang & Lee, 2021) meaning that, learning is constructed socially when students are taking full responsibility for learning. Accordingly, AaL extends and reinforces the role of AfL by considering students as “critical connectors” between the assessment and learning process (Wang & Lee, 2021). It is noteworthy that, in AaL, students assume a ‘learner-as-assessor’ identity alongside teacher assessment (Lam, 2016).

This study reveals the importance of AaL if its processes are well-conceptualised and understood. Hence, scholars like Lee et al. (2019) argue that the ultimate goal of AaL is to develop students’ self-regulating abilities to facilitate their lifelong learning and personal development. According to Carless (2015), effective assessment practices should focus on enhancing student learning processes. However, a complex argument is recognising that in AaL, learning and assessment become inextricably interlinked so that their processes serve each other (Dann, 2014). Similarly, this is also emphasised by Boud and Falchikov (2005) who suggest that there is a need to modify the rigid divides between teaching and learning activities and assessment activities. They suggest a holistic view to assess the impact of these rigid divide on student learning in the long term.

The findings of this study confirm the findings of Ibarra-Sáiz et al. (2020) who maintained that their primary tenet is that learning should be at the centre of education and that the success of higher education should be measured by the quality of student learning and not the quality of teaching that is offered by the departments, courses, lecturers or institutions. Nieminen (2021:1261) highlighted that transformative self-assessment could “contribute to creating student-centred assessment cultures that give a voice to students who have been traditionally silenced in assessment”.

This study has some limitations. One of the limitations is that data were retrieved from the Scopus database only. For future research, databases such as WOS, EBSCOhost, ProQuest and Google Scholar, which were excluded, would be included. Another limitation is that the study was based on articles from different journals, and conference papers and documents from other sources such as books, book chapters and conference reviews were excluded. Furthermore, only documents written in English were considered for the analysis and articles that were not written in the English language were excluded.

7. Conclusion

Based on the results of this study, teachers or lecturers need to take on active roles as facilitators as AaL does not mean that students learn completely on their own with no support or guidance or assistance from anyone else (Ng, 2018). Moreover, studies reveal that AaL in Higher Education calls for more professional development on the side of university teachers or lecturers. On the other hand, research and this study, reveal that it is more beneficial to integrate AaL into AoL at a classroom level (Lam, 2016). It is important to note that most scholars believe that AaL deserves further research attention because it has great potential to foster autonomy and self-regulated learning among students (Wang & Lee, 2021).

Most significant is that the study reveals that AaL has great potential to foster in students' skills such as critical thinking and independent learning, which are educational goals in the 21st century (Wang & Lee, 2021). Therefore, this study reveals that bibliometric analysis could play a significant role in the review and summarising of existing studies and in exploring critical research issues and trends.

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