

Feedback on Written Assessments in Universities: A Topography of Literature

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ABSTRACT

In higher education, the role of assessment has evolved from serving only the purpose of evaluation of the outcomes of the learning process to assessment as part of the learning purposes. Summative or formative, the potential of assessment to facilitate learning is now recognised. Feedback is one of the most influential factors on learning but is also one of the least satisfactory elements of the student experience. How has interest in, understanding of, and implementation of feedback changed over time? What are the general characteristics of feedback implementation found in literature? To what productive directions might future research feedback on assessment take? To gain these insights, a systematic quantitative review of literature on feedback on written assessment in higher education was undertaken, revealing that feedback as a field of inquiry, despite burgeoning interest, remains nascent, mostly ‘stuck in old ways’.

KEYWORDS

Assessment, Feedback, Higher Education, Literature Review, SQLR, Written Assessment

INTRODUCTION

In the learning process, feedback is highly influential (Hattie & Timperley, 2007). Unfortunately, providing effective and useable feedback on assessment is an ongoing, and major challenge for university educators. Significant levels of dissatisfaction with feedback on assessment practices are expressed by students and teachers (Henderson, Ryan, & Phillips, 2019). The reasons for dissatisfaction and poor quality feedback include: feedback provided too late, focus on justifying grades, complexities

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due to interdependence of feedback and assessment (Winstone & Boud, 2022), lecturers limited repertoire of feedback, limited understanding of the purpose of different feedback practices (Chan & Luo, 2022), lack of personalised, clear, constructive feedback (Ferguson, 2011).

Feedback practice is an ongoing field of educational inquiry. The growing volume of literature surrounding feedback practice in higher education is testament to importance and complexity of the phenomenon of giving and receiving feedback. To help identify a future direction in feedback practice, it is useful to take stock of the current state of literature and synthesize the key themes. Hence the authors undertook a systematic quantitative review of literature (SQLR). Written assessment is one of the most encountered forms of assessment, and therefore feedback to written assessments was the target of the SQLR. With increasing emphasis on student engagement and success in higher education, the SQLR was restricted to the domain of higher education. The aim of the SQLR was provide an ‘aerial view’ of how our interest, understanding and implementation of feedback on written assessment in higher education has evolved over time. Articles in peer-reviewed academic journals report on significant thinking within a field. Taken over time, academic journals effectively document the evolution of thinking and practices in a field. The SQLR was thus restricted to peer-reviewed literature in journal articles with the core purpose of reporting specifically on feedback on types of written assessment in higher education. The intent is to expose the key features of the ‘topography’ of the literature, thereby establishing directions for future research.

METHOD

The Systematic Quantitative Literature Review (SQLR) method (Pickering & Byrne, 2014) was used to assess the literature on feedback practices associated with written assessments in the tertiary education context. This method bridges the gap between a traditional narrative review and a meta-analysis. It is not intended to be a traditional narrative approach with an in-depth analysis of the findings and conclusions of each of the relevant publications. Rather, an SQLR systematically summarizes the status of the literature so that the results are reliable, quantifiable, and reproducible. An SQLR is most useful for identifying trends and biases in the literature. It also provides a commentary on the literature gaps and reasons why more research is needed to fill them.

Data collection

We searched four online databases commonly used for this field (Scopus, Proquest, Web of Science, and Google Scholar) for articles focusing on feedback practices on written assessments in tertiary education. Our initial search used the terms “feedback AND (assess* OR writ* OR essay OR report) AND education AND (university OR college OR tertiary) AND (strateg* OR method* OR practice*)” for articles published since 1995. We restricted our search to peer-reviewed journal articles (excluded grey literature, editorials, comments, reviews, white papers, books, and book chapters) published in English.

The search was conducted in June 2021. Only papers with publication dates between 1995-2021 (inclusive) were included. We entered the results from all four databases into a single Endnote library (n = 3870). We then excluded duplicate references (n = 812) to produce the initial Endnote library containing 3058 articles. The resulting Endnote library was manually searched to exclude unrelated or irrelevant articles. Examples of general exclusions are (i) articles where only title, abstract and key words are in English; (ii) non-academic articles, e.g. editorials, conference reviews, grey literature; (iii) articles where the topic used in the article does not match review topic; (iv) articles where the topic is only included in discussion as need for further research or might be applied to the review topic field; and (v) articles where the topic is only used in keywords and/or references.

More specific exclusions were those articles focusing on (i) feedback on practical activities, e.g. clinical practice, teaching practice, nursing practice, engineering design, architectural design, IT program design, (ii) feedback on oral presentations or oral exams, (iii) student feedback on academic

staff, courses, teaching, i.e. student satisfaction, (iv) feedback and assessment as part of University policy, faculty management, academic misconduct, (v) flipped classrooms, (vi) primary or secondary education level, (vii) importance of feedback for student engagement but no discussion of how to do it, and (viii) teaching and learning pedagogy or theory but no discussion of how to provide feedback. The final Endnote library for this study contained 92 publications on feedback practices or strategies for written assessments in tertiary education. The data collection methodology is summarized in Figure 1

Data analysis

These 92 articles were manually entered into an Excel spreadsheet for analysis of geographic and other thematic patterns. Key data entered included authors, article title, publication title, year of publication, journal discipline area, country of study, course level, course discipline, feedback strategies, feedback delivery, timing of feedback, and evaluation of feedback (see Table 1 for categories used). Data were summarized and analyzed using Pivot Tables and summary statistics in Excel.

Figure 1.
Preferred Reporting Items for Systematic Review Recommendations (PRISMA) flowchart outlining the process for compiling this review (modified from Moher et al. 2015). n = number of articles

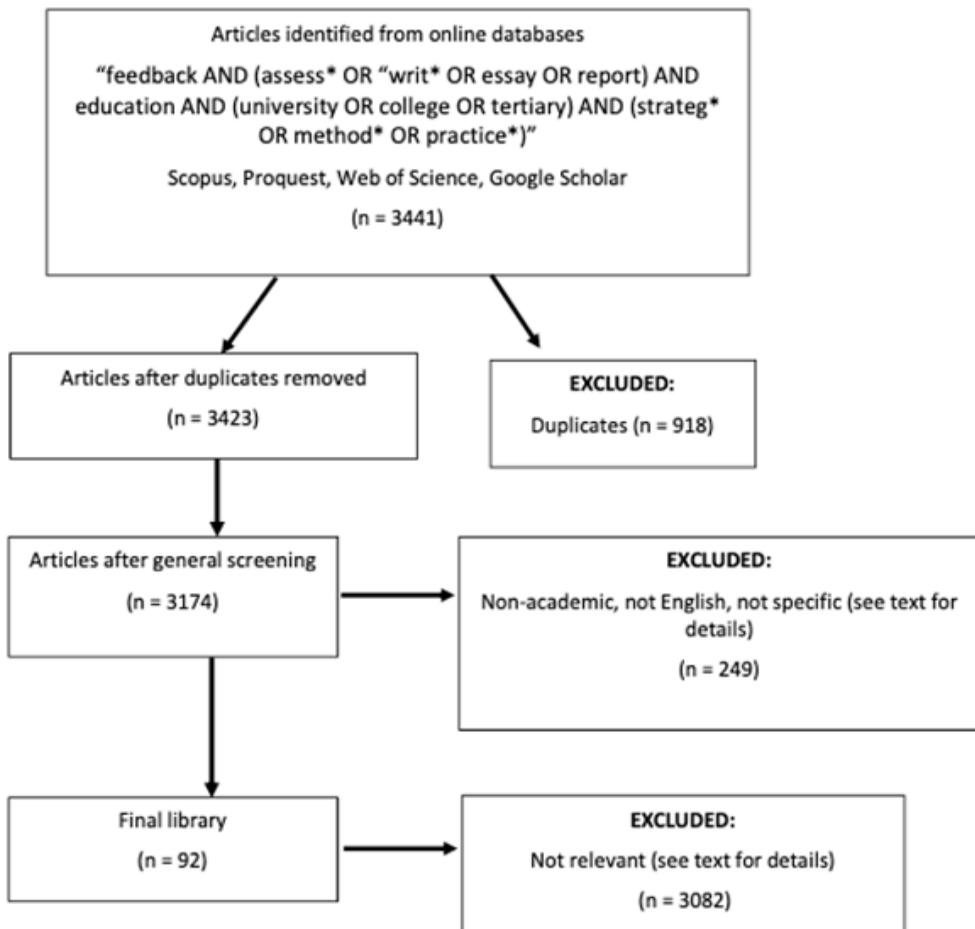


Table 1.
Summary of categories used to examine patterns in feedback practices for written assessments in tertiary education

Category type	Categories
Journal discipline	Subject area based on SCImago classifications*
Geographic region of study	Asia v Europe v North America v Oceania v South America v Global
Individual country of study	Individual country(ies) involved in study
Education level	First v second v third year; postgraduate
Subject discipline	Individual subject, e.g., engineering, science, health, language, etc.
Feedback type	Fed-up vs feedback vs feedforward
Timing of feedback	Before final assessment v on final assessment v after final assessment v continuous
Feedback delivery	Written v verbal v recorded video v recorded audio v face to face
Feedback strategy	Tutor/lecturer v peer review v rubrics v exemplars/templates
Evaluation of feedback	Online surveys v interviews v focus groups v performance comparisons
Strategy characteristic/target	Student-student coaching, self-regulation or metacognitive feedback, personal feedback, process related feedback, unspecified
Feedback initiator	Instructor, peer, industry expert, self
Scope	Individual, whole of class/general
Assessment type	Formative, summative, not specifically identified
Acknowledge socio-cultural aspects	Emotion, culture
Source of feedback	Automated, human generated

* <https://www.scimagojr.com/index.php>

RESULTS

General characteristics of the literature

Examined chronologically, there is an observable and rapid increase in the number of relevant articles from 2013 onwards. Papers published from 2013 – 2021 account for 81 of the 92 articles reviewed (Figure 2).

The disciplinary scope of the articles found is broad, ranging from the social sciences, STEM (sciences, technology, engineering, and mathematics), education and the arts. There is a concentration of publications in the STEM group of disciplines. Inclusive of medicine, more than one third (n=26) of articles relate specifically to the STEM disciplines (Figure 3). The larger portion of articles specific to feedback practices in STEM group of disciplines, particularly medicine (and engineering a close second) is observed as a consistent trend over the years of publication.

The articles are distributed over 58 journals (Figure 4). The *Assessment & Evaluation in Higher Education* journal has the most concentration of papers (n=15), while the other journals contribute with between 1 and 4 articles each on average.

Characteristics of feedback practice

Overwhelmingly, the feedback practices documented in the articles relate to undergraduate students (n=71, N=92). Six articles related to higher degree research students. For the remainder of articles, the level of education was unspecified (n=15, N=92).

Feedback strategies identified in the papers included peer feedback models, feedback checklists, self-assessment, use of rubrics, exemplars/templates, lists of frequent errors, and simply written

Figure 2.
Number of articles published each year

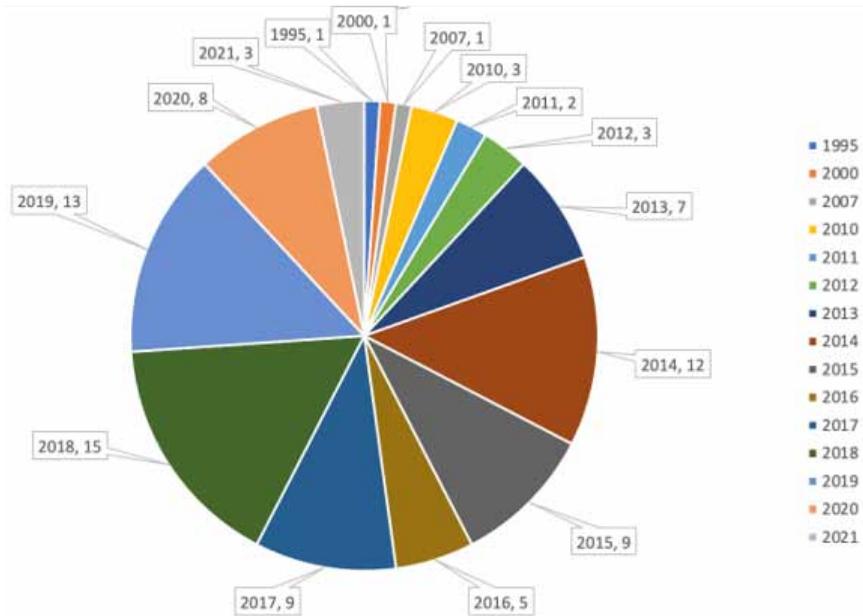
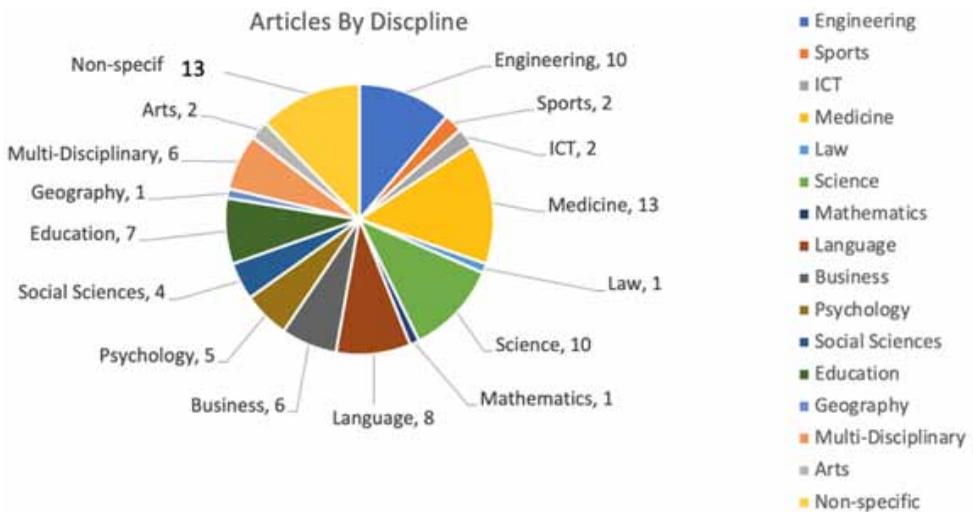
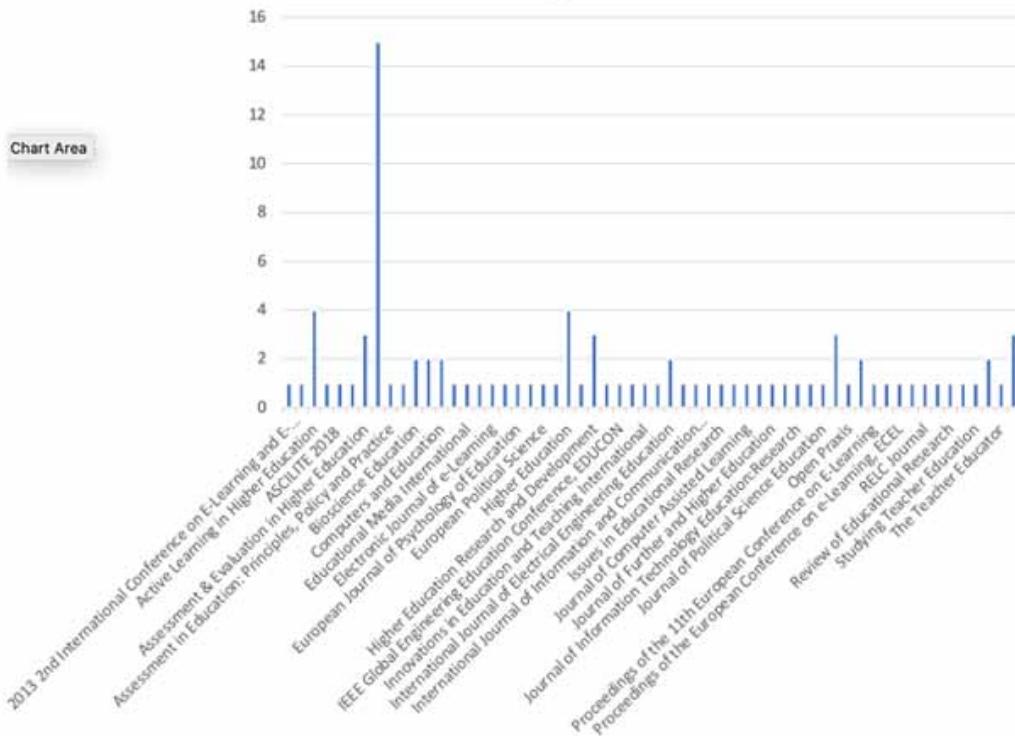


Figure 3.
Number of articles by discipline (N=92)



feedback comments on the assessment item. Of these, approximately one third of articles (30) focused on written feedback comments while 12 articles explicitly focused on the use of rubrics to assist feedback. Peer feedback models show increasing popularity, the subject of 20 of the 92 articles. A prominent feature of the literature is that the initiator of feedback is usually the instructor (62 of 92 papers). Self-initiated feedback (self-reflection) was present in 8 papers and appeared in conjunction with instructor feedback or with peer-initiated feedback.

Figure 4.
 Distribution of the number of papers published by journal



The emphasis in the articles was on feedback – a term seemingly used generically rather than specifically identifying feed-up or feedforward approaches. Sixty-six articles referred to the concept of feedback generally without distinguishing between feed-up or feed-forward. Seventeen of the 92 articles mentioned feedback together with feed-up/feed-forward. Of the 92 articles, 8 attended specifically to feed-up components of feedback, and 19 attended to feed-forward components of feedback strategy.

In the SQLR, feedback strategy was categorised according to the developmental aspect (e.g., student coaching, self-regulation, task feedback or reflection) being targeted (Figure 6). Most commonly, the feedback strategy was discussed task related feedback (n=52). Just under one-quarter of articles (n=20) discussed the feedback strategy in general, without reference to what specific developmental aspect was being targeted. Of the remaining articles, the next most common target of the feedback strategy was development of self-regulation or metacognitive thinking (n=12). Targeting self-reflection (n=4), student coaching (n=7), emphasis on the process, not only the product (n=8), was much less common. The emphasis on task-based feedback remained steady over the timespan of publications. Over time, there is an observable trend towards addressing a greater diversity of developmental aspects in feedback, but discussion of task focused feedback remains prominent, as shown in Figure 6[REMOVED REF FIELD].

Within the surveyed literature, the timing of feedback was most commonly as only after the assessment item was submitted. Over half of the articles discussed feedback that was given after the submission of assessment. In only a small portion of the articles was feedback discussed as given prior to the final submission of the assessment item (Figure 7).

Figure 5.
Strategy characteristic - target of feedback within papers (more than one feedback target may be covered in a single paper)

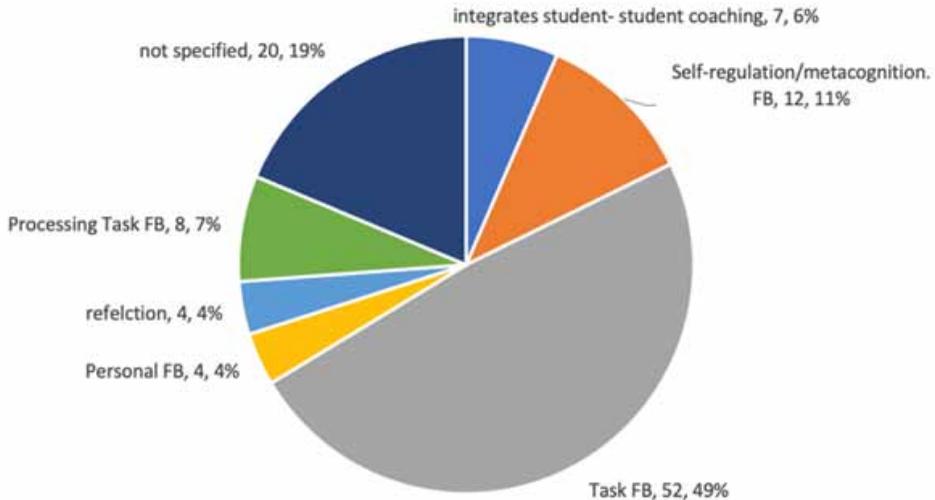
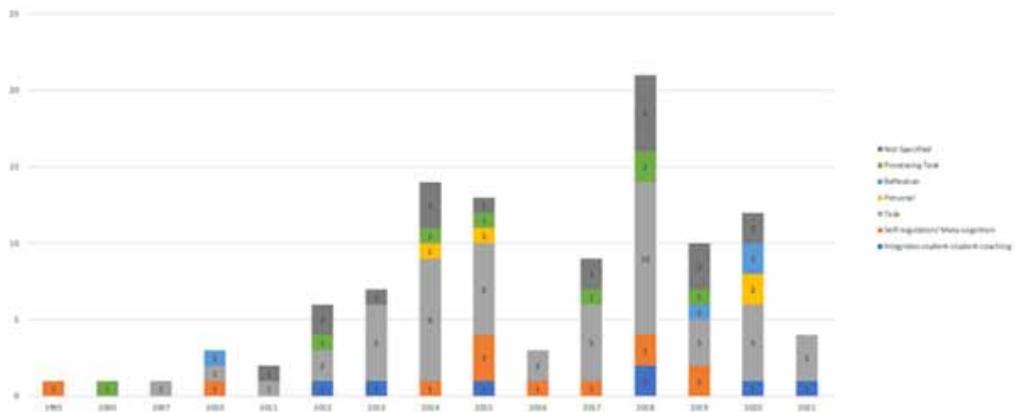


Figure 6.
Distribution of the papers containing feedback strategy target by year



In the surveyed literature, mention of continuous feedback throughout the time worked on the assessment or feedback given for staged assessments, does not appear in the literature until 2013. Continuous feedback appears from 2014 onwards. Feedback after the final submission of assessment clearly dominates the literature in the review period.

The mechanism of feedback delivery remains rooted in asynchronous, written type of feedback with 41 of the 92 papers specifying written feedback (11 did not specify the mechanism). Alternative media such as social media, recorded audio/video are much less common) (Figure 8).

Twenty-nine of the articles were predominantly theoretical or descriptive discussions of feedback rather than instances or cases of feedback practices applied to a specific classroom situation.

The evaluation of feedback was discussed in sixty-three of the ninety-two articles. The most common tool for evaluating feedback from the perspective of students was surveys (n=21), interviews (n=8) or focus groups (n=2). Another common approach was a comparison of group performance

Figure 7.
 Distribution of feedback timing in the sample

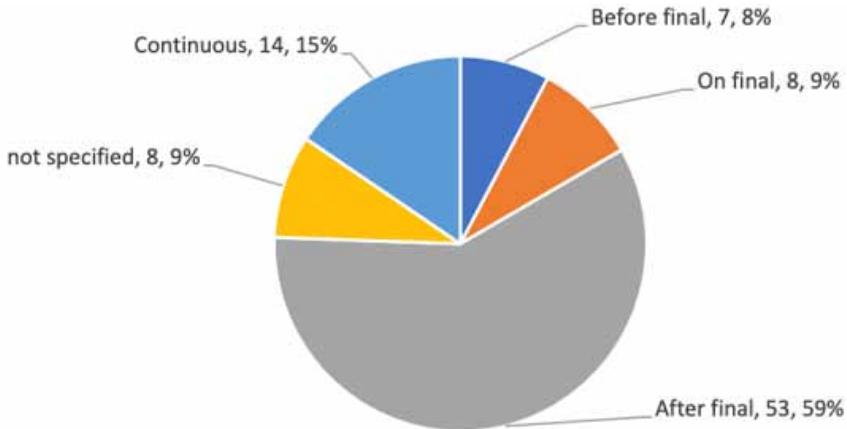
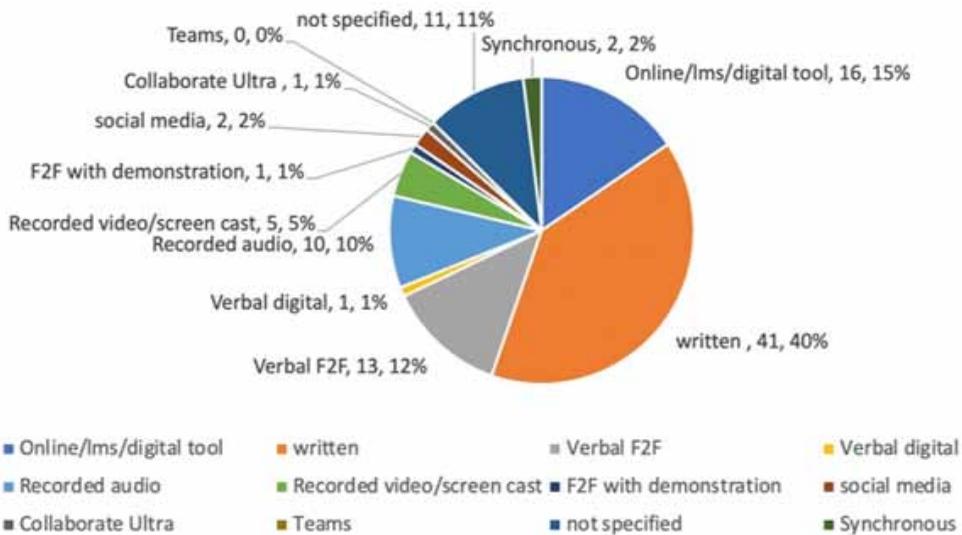


Figure 8.
 Mechanism of feedback delivery (more than one mechanism may be present in each paper)



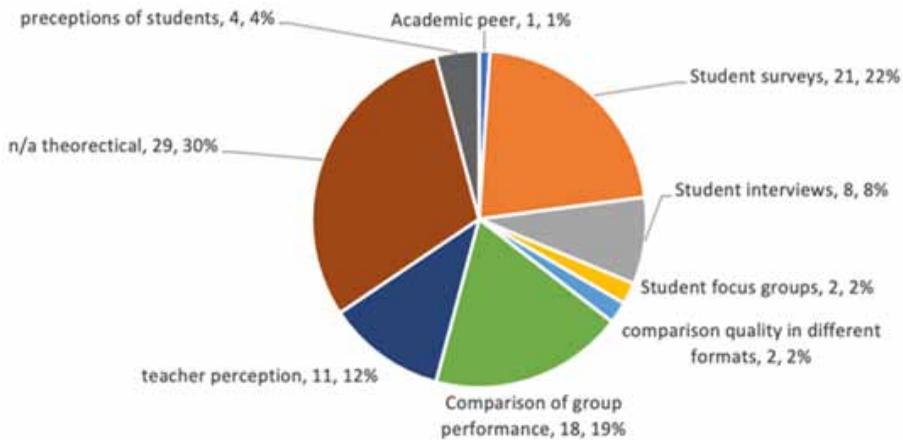
based on different approaches to feedback. Teacher perceptions of feedback were less examined with only 12% of the papers discussing this explicitly (Figure 9).

DISCUSSION

The breadth and depth of the literature around feedback reveals a great interest and motivation towards exploring better ways to provide effective feedback to assessment. The results revealed four main findings that are further explored below.

Finding 1: Feedback as an emergent field of inquiry: Necessity of positioning feedback in pedagogical paradigms and of adopting the mindset of ‘feedback by design’.

Figure 9.
Methods to evaluate feedback



The most evident feature of the literature surveyed is the increase in the volume of literature surrounding feedback since 1995. There was a noticeable and ongoing increase in articles targeting in feedback practices from 2013 onwards. One possible explanation for this trend are the pedagogical and economic events triggered by the advent of the internet. The advent of the internet, the world wide web in the mid-1990's enabled the infusion of technology into education and eventually created triggered a shift in pedagogical paradigms in higher education. Among educators, there was much excitement about the potential of technology to catalyse transformation of learning and teaching in higher education (Matzen & Edmunds, 2007).

As the first decade of 2000's progressed, the discourse of technology shifted from the initial question of whether technology should be used, to exploration how technology could be exploited to create more effective learning environments. One fallout of educators grappling with how to use technology was a renewed focus on teaching paradigms. Educators' reflection on how to best use technology catalysed a re-direction of pedagogical paradigm from the traditional instructivist paradigm of university teaching towards the student-centred approaches of constructivism and socio-constructivism (Girvan & Savage, 2010). Inevitably the shift to constructivist paradigms in higher education teaching led to increased focus on learning process rather than only on learning outcomes. Guided by constructivist principles that learners are active in constructing their own knowledge and the role of the teacher as facilitator, assessment and associated feedback began to be more firmly positioned as an integral part of the learning process. However, it was not only the apparent opportunities of new technologies which drove the move constructivist paradigms and encouraged re-consideration assessment and feedback as part of the learning process. There were economic factors at play that put pressure on universities to retain students and increase student success.

At about the same time that digital technology was permeating education, the globalized economy was also being vigorously enabled by digital connectivity, leading to global competitiveness and tough economic times. Many governments also were reducing funding to higher education. As for most organizations in the now globalized economy, competitive pressures began bearing down on higher education. Under competitive and economic pressures, universities now needed to compete more than ever to get, retain and successfully graduate students (Siemens & Matheos, 2010). A strong strategic focus on the student experience, and quality in learning and teaching emerged. There came pressure from the 'top' to change learning and teaching practices from teacher-centred, instructivist to student-centred and constructivist paradigms which were seen to

create more positive student experiences (Torrise-Steele & Davis, 2000; Holmes, 2019). The impact of shift to student-centred approaches that was triggered by the advent of the internet is apparently reflected in the literature around feedback.

Aligning with the pedagogical shift catalysed by digital technologies, the data from the SQLR are suggestive of the first decade of 2000 being a turning point for exploration of feedback on assessment. Within constructivist teaching paradigms, feedback on assessment practices is integral to the learning process, serving a purpose far beyond simply evaluating or providing a grade. Evidence of the connection between feedback practices for learning (rather than just evaluation) and the paradigm shift to constructivism is present in the earlier analysed articles. For example, Butler and Winne (1995, p. 246) conceptualise the effects of feedback as “necessary to capture feedback’s role in knowledge construction” and tie feedback to the development of self-regulation in learners. Topping (1998) early exploration of the use of technology for facilitating peer feedback is similarly linked to constructivism and discusses feedback in the context of the negotiation of understanding that occurs through social interaction.

Much of the literature uncovered in the SQLR focused on reporting use-cases of feedback practices. These cases may serve as a launching point for the further evolution of the field of assessment feedback. What these cases clearly show is that to realise the power of feedback for learning, the mindset of feedback as incidental to assessment needs to evolve into a mindset of feedback *by design*. Developing the feedback by design mindset rests on strengthening the presence of feedback as a field of inquiry in educational practice. There is an ongoing need for research alongside practical exploration and development of underpinning theoretical frameworks on how to holistically design assessment feedback.

Finding 2: Feedback practice is, for the most part, ‘stuck in old ways: The necessity of generating theory and practice frameworks as basis of pedagogical innovation

A feature of the literature landscape of feedback practice is limited diversity and innovation of feedback practices across disciplines and over time. Seemingly stuck in ‘old ways’, most feedback remains instructor-initiated feedback, in written form and task focused. Feedback practices targeting other developmental aspects such as coaching, self-regulation and feedback were under-represented. Task related feedback is by far the most common (> 50% of articles). Furthermore, there is very limited exploration of practices such as peer feedback and other efforts to innovate or explore possibilities for feedback designs beyond ‘tried and true’ methods. These observations are consistent with anecdotal evidence from some of the authors’ experiences as university educators. It is apparent from the surveyed literature that feedback tends to be incidental to assessment. While in the process of course design, thought is given to assessment design, little thought is given to how the feedback on assessment is to be given. The reasons for this situation may relate to the rate of diffusion of constructivist paradigms and to a lack of clarity and understanding of the nature of assessment feedback.

The slow diffusion of constructivist, student-centred paradigms in higher education (Wang & Torrise-Steele, 2015) may well contribute to limited exploration and implementation of feedback by design since educators are yet to form the constructivist teaching philosophies to support a view of assessment and feedback as integral to the learning process. Despite institutional investment and effort into initiatives such as active learning, the learning environment is not transformed from the ‘most usual one’ of lecture based, passive learning (Roberts, 2019).

Further constraining the development of assessment feedback by design practices is the lack of agreement alongside a lack of systematic investigation on what assessment feedback means (Evans, 2013). There is much work to be done on ‘deconstructing feedback’ to reveal its purposes and predict and explain its influence on learning (Evans, 2013). The literature is dominated by cases and reports of approaches to assessment and feedback in individual classes. Apparently, although some

empirical research to understand the nature of feedback on assessment is undertaken there is little progress towards transformation of how feedback is designed and implemented. The lack of theory and frameworks constrains transformation of feedback practices. Works such as that by Hattie and Timperley (2007), Hannafin, Hannafin and Dalton (1993 cited in Evans (2013)) contribute greatly to understanding assessment feedback.

Understanding of feedback, its design and its influence is far from complete. Much of the most influential knowledge about feedback on assessment is pinned to the educational context of more than a decade ago. The insights and premises of this research and theoretical basis *do* remain valuable. However, feedback practice is inextricable from learning and the dynamic context in which learning is embedded. It is imperative to increase focus on feedback practices within the context of contemporary and future learning, and importantly to develop theory to inform practice.

Finding 3: Traditional feedback mechanisms dominate: Necessity of exploration of technology for feedback guided by principles of constructivist alignment, consideration of accessibility and usability.

The mechanism of feedback delivery remains rooted in traditional written approaches with technologies pre-dominantly used for delivering traditional written feedback. For example, most papers focus on written comments on assessment submitted via an LMS but there is a dearth of literature exploring multimodal methods of feedback. What little research there is, is showing promise for the use of technologies and especially for multi-modal feedback (Crews & Wilkinson, 2010). Audio feedback, for example is shown in some studies to be more personal and to potentially encourage a dialogic approach to feedback (Deeley, 2018). In exploring the use of technologies for providing feedback, investigators are mindful of the experience both the instructor and that of the student. Authors, such as Anson (Anson, 2015), point out that lack of time is one of the reasons why, although educators recognise the importance of feedback, they are unable to achieve desired quality of feedback. Anson (2015) discusses how technologies such as screen capture commentary technology can create more efficient avenues for giving feedback that are also better received by students (Crook et al., 2012).

The use of technologies and various media to deliver feedback is under-explored but there is growing interest. Firstly, in investigating the potential of technology as a platform for more effective and efficient feedback, it is necessary to bear wary of technological determinism. The implementation of technologies must be driven by pedagogical need of learning situations within contexts. The nature of the assessment on which feedback is given, the nature of the discipline and the nature and context of students must be taken into consideration when determining the most effective and efficient methods of using technologies for feedback. Taking up constructivist alignment as explicated by Biggs and Tang's (2011), any technological method of feedback must adhere to principles of constructive alignment with assessment and feedback requirements in the context of learning within the course (Deeley, 2018). Secondly, we must consider accessibility and usability and be conscious of the physical abilities such as hearing and sight of both staff and students, as well as their technical contexts (Deeley, 2018). Finally, with respect to efficiency, using technologies and multimodal delivery may have a steep learning curve for some and be time consuming, at least initially. As Deeley (2018) cautions, using technology for feedback delivery "can be challenging and risky" and it is wise to take incremental steps in its implementation.

Finding 4: Teachers usually initiate and provide feedback: Necessity of realizing student agency through peer-feedback, self-feedback within the frame of feedback literacy

Perhaps a legacy from teacher-centred paradigms approaches to education, feedback is still mostly thought of as something that teachers give or initiate. Although there is an obvious shift in higher education towards student-centred paradigms, the shift is yet to fully manifest. Strategies such as active learning are progressively being adopted in universities. However, implementing active learning is challenging and hence implementations tend to be limited and piecemeal (Aksit, Niemi, & Nevgi, 2016). Subsequently, student agency remains unrealized although the developing approaches to participatory learning and learning partnerships are promising directions for higher education. Nonetheless, the dominance of teacher as initiator or sole provider of feedback in the literature is an indicator that feedback practices tend to lag classroom practices and socio-constructivism is barely enacted in feedback practices (O'Donovan, Rust, & Price, 2016).

Literature provides evidence of the effectiveness of peer and self-reflection approaches to feedback (e.g., Carless, 2019; Deeley & Bovill, 2017; Taylor, Ryan, & Pearce, 2013)). Realizing the potential of feedback to positively influence learning necessitates the deeper exploration of non-teacher exclusive feedback pathways, especially on how the feedback strategy is designed and on what supports the strategy may require.

Giving and receiving feedback is a developed capability. Merely involving students in feedback strategies without attending to the necessary capabilities for giving and receiving feedback can result no influence, or even worse, negative influence that is counterproductive to learning. Research shows that usually it is the higher achieving students that engage in feedback and that the ability to act on feedback is a key component of students' feedback literacy (Carless, 2019). Feedback literacy, like other literacies, needs to be supported and developed and must be integrated into any exploration or development of feedback strategies. Students' feedback literacy as an intrinsic factor in the success or failure of feedback strategies was noticeably under-represented in most papers of the present SQLR and the necessity of integrating feedback literacy with exploration of feedback practices is self-evident.

CONCLUSION

Part of the phenomena of learning, feedback on assessment is complex and difficult to unravel. The SQLR reported in the present paper reveals opportunities for continued development of feedback as a field of educational inquiry. There is a trend towards more prolific research in feedback practices, however theoretical basis of the field is limited and reliant on a very few conceptual frameworks. The inertia of teacher-centred approaches and 'old ways' of giving feedback are yet to be overcome. The affordances of technology for feedback mechanisms that are effective and efficient are yet to be properly explored from a pedagogical perspective. And finally, but not least, the concept of feedback literacy and what it entails within various discipline and contextual settings is yet to be properly defined.

With the massification of higher education, tertiary educators are challenged now more than ever before. They must work with large and diverse cohorts of students, respond to social pressures, and meet the expectations of digital learners. At the same time educators must grapple with institutional pressures for creating positive students' experiences and high levels of graduate success and, also respond to industry pressure to equip students with the skills, knowledge and capabilities needed for successful contribution to 21st century society.

As the headway is made into learning in higher education, a more holistic, design-centred view of teaching and curriculum is emerging. Not so long ago, assessment served only the purpose of evaluating knowledge, but most would agree now that assessment is also for learning and therefore must be designed to be constructively aligned. If assessment is designed to be part of the learning situation, then feedback is indispensable. Feedback can no longer be incidental to assessment or something that is done 'just to stop students asking why they received a particular mark'. The typography of literature as revealed by the present SQLR shows feedback on written assignment as a nascent field

and shows that there is much to be done feedback by design. Looking towards future directions in feedback research, it is critical that the design of feedback is not inadvertently separated from the learning and teaching context to which it is inextricably bound.

COMPETING INTERESTS

All authors of this article declare there are no competing interests.

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