IJACT 24-9-54

A Systematic Literature Review on Feedback Types for Continuous Learning Enhancement of Online Learners

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Abstract

This study conducted a systematic literature review using online databases to investigate the effective feedback types that enhance the learning experiences of online students. Feedback is a critical component for learner success. With the expansion of online education, the importance of feedback has become more evident due to the reduced interaction between instructors and learners. Instructors must provide high-quality feedback that motivates learners and supports their educational goals. This involves using automated tools appropriate for the environment and effective feedback strategies to deliver personalized feedback. The literature was gathered through an extensive search process, adhering to predetermined inclusion and exclusion criteria, and included a risk assessment of selected studies, drawing from sources such as Google Scholar, Elsevier, and other Scopus-indexed journals. The review adhered to the guidelines set forth by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA). Specific keywords related to the study's focus, including "Online learning," "Improving learning," "Learner performance," "Feedback type," and "Feedback," guided the database searches. The protocol for selecting systematic reviews on learning enhancement involved screening articles published from 2013 to 2021 based on their titles and abstracts according to established criteria. Analyzing and studying data on learning patterns in non-face-to-face educational environments can improve learners' needs and educational effectiveness. Selecting the right types of feedback, taking into account the learners' levels and educational objectives, is crucial for providing effective feedback. A variety of feedback types are essential for the continuous improvement of learners' learning.

Keywords : *Feedback, learning effects, online learning, feedback types*

1.lntroduction

1.1 Background and Objectives of the Study

Online learning is an educational modality that transcends spatial and temporal limitations, facilitated by digital tools such as web platforms, mobile devices, or smartphones. In the initial phases of online-based education deployment, instructors delivered pre-planned educational content through designated information and communication technologies. Concurrently, learners generally assumed a passive role, primarily absorbing the content provided (Lee, 2020)[1]. Remote instruction has evolved into various formats, including real-time interactive classes, content-focused learning, and assignment-driven sessions. The shift from one-directional online education to interactive classes now supports activities like remote discussions and the drafting of learning reports while participants engage with content[2].

Over recent years, online learning has seen significant growth as an alternative or complement to traditional face-to-face education. This expansion is supported by learners who actively utilize technology, often beyond basic requirements (Jones et al., 2010)[3]. According to Sung and Mayer (2012), the success of online learning can be attributed to its greater flexibility compared to conventional educational settings. It offers multiple educational benefits, one of which is temporal flexibility: online learning allows learners the autonomy to schedule their access to lectures and educational materials as it suits their personal and professional lives. In addition, spatial flexibility is a major advantage: it enables learners to engage in their educational pursuits from any location with internet access, thus overcoming geographical barriers and affording them the liberty to select their own learning environments. Online learning provides learners the flexibility to choose individualized pathways, enabling them to adjust the pace and content of their studies to suit their specific educational levels and needs. This adaptability meets the diverse educational requirements of learners and supports the delivery of a personalized learning experience. In addition, online learning offers social flexibility, allowing learners to engage in communication and collaboration with instructors and peers through online platforms. Such enhancements in learner interaction and support promote the exchange of diverse opinions and perspectives. To support these capabilities, various platforms such as Learning Management Systems (LMS) have been developed over recent decades (Ouadoud et al., 2017)[4,5]. The online learning environment in Korea has been evolving into a new educational paradigm, supported by digital technologies like social networking services (SNS), artificial intelligence (AI), big data technologies, and the use of LMS (Kim et al., 2017)[6].

In online learning contexts, feedback plays a crucial role due to limited interactions between instructors and learners (Ypsilandis, 2002)[7]. Given the spatial or temporal separation inherent in these environments, high-quality feedback from instructors is essential to support learners' motivation and educational advancement (Nicol & Macfarlane-Dick, 2006)[8]. Research by Tseng and Tsai (2007) indicates that enhanced feedback significantly improves the quality of learner projects within online peer assessment settings[9]. However, the substantial size of learner cohorts in online environments poses challenges in delivering useful and adequate feedback. To address this issue, various automated tools have been proposed to enhance feedback mechanisms (Belcadhi, 2016; Gulwani et al., 2014; Marin et al., 2017)[10-12]. These studies explore the enhancement of learning outcomes through the provision of personalized feedback via automated methods, rather than traditional individualized approaches. A recurring challenge in online learning is the difficulty in ensuring that feedback continuously promotes learning enhancement. Overcoming this challenge necessitates the use of automated tools or effective feedback strategies. Moreover, for ongoing improvement in learning, a

culture and attitude that actively incorporate feedback are required among learners. Recognizing the limitations and exploring potential improvements of feedback in online learning is critical.

This study begins by conducting a conceptual analysis of the meaning of feedback and synthesizes evidence related to the impact of feedback on instructional improvement. Subsequently, the research examines the types of feedback that have significant effects on enhancing learning. Specifically, the paper discusses the effectiveness of feedback in facilitating education, outlines various methods learners use to manage feedback, and clarifies the relationship between assessment and feedback. Through a systematic literature review, the study aims to explore effective methods for utilizing feedback in online learning environments.

1.2 Research Methodology and Scope

The principal research method employed in this study is systematic literature review methodology. This approach involves comprehensively collecting and analyzing existing research materials to draw well-rounded conclusions about the research questions at hand. The method is characterized by a rigorous and objective protocol, which includes systematic and extensive literature searches, selection of literature based on predefined inclusion and exclusion criteria, and risk assessments of selected studies.

Literature Search Strategy: A strategic plan was implemented using major databases such as PubMed, Google Scholar, and Scopus to source relevant literature. Keywords used in the searches included "Online learning," "improving learning," "learner performance," "feedback type," and "feedback."

Systematic Literature Selection Criteria: Criteria were established to guide the selection of literature, clearly defining the study's scope. These criteria consider the quality of research, its applicability, and the publication year.

2. Theoretical Background

Before conducting the systematic literature review on feedback in online learning, the study examines the theoretical context concerning online learning and feedback.

2.1 Online Learning

The term "online learning" originated with the development of Web CT in 1995, a web-based system that was the first Learning Management System (LMS), later succeeded by Blackboard. Online learning typically involves the use of an LMS or the uploading of texts and PDFs online (Bates, 2014)[13].

Thurman et al. (2019) utilized a spreadsheet, depicted in Table 1., for an in-depth analysis of definitions using content analysis as a qualitative methodology. This method focuses on analyzing the contextual meanings of texts and linguistic features, thereby meeting the needs of the study (Budd, Thorp, & Donohew, 1967; Lindkvist, 1981; Tesch, 1990)[14-17]. The research documented 46 definitions and enumerated the articles featuring each term. Definitions of online learning were derived from publications spanning from 1988 to 2018, with e-learning appearing in 11 of these publications. An example is provided where e-learning is employed to define online learning.

Curtain (2002) defines online learning broadly as using the internet in various ways to enhance educational capabilities, incorporating both asynchronous and synchronous forms of delivery. This definition covers interactions such as the provision of assessment tools and web-based course materials, alongside synchronous interactions through emails, newsgroups, and chat groups. Online learning is alternatively termed 'web-based

education' and 'e-learning' [18]. The advent of new technologies has necessitated the introduction of terms to distinguish between forms of Distance Education (DE) such as online education, e-learning, and hybrid or blended learning (Moore et al., 2011; Spector, 2001)[20, 21]. While these terms cover a range of modalities, they are commonly understood to utilize web-based technologies to bridge the gap between instructors and learners (Lee, 2017; Moore et al., 2011; Ryan et al., 2016)[22, 20, 23].

Table 1. Terms Used to Define Online Learning, reconstructed based on Singh & Thurman (2019)

Terms Used in Defining Online Learning	Number of Articles Using Each Term
(1) Online Learning	15
(2) E-learning	11
(3) Blended Learning	8
(4) Online Education	9
(5) Online Course	6
(6) Distance Education	4
(7) Distance Learning	4
(8) Web-based Learning	3
(9) Computer-assisted Instruction	2
(10) Web-based Training	1
(11) Web-based Education	1
(12) Web-based Instruction	2
(13) Computer-based Training	2
(14) Web-enhanced Learning	2
(15) Resource-based Learning	1
(16) E-tutoring	1
(17) Computer-based Learning	1
(18) Distributed Learning	1
(19) Computer-assisted Learning	1

Singh et al. (2019) define online learning as an educational process in which learners interact with instructors and peers through the Internet or computers within synchronous classrooms that are independent of physical locations. In addition, online learning is characterized as an asynchronous environment where learners can communicate with instructors and peers at convenient times, without the requirement for being simultaneously online or in the same physical space [24].

Thus, online education is described as instruction delivered through an online environment that utilizes the Internet for educational purposes. This mode includes aspects of online learning that do not depend on the physical or virtual co-location of participants. Educational content is delivered online, and instructors are responsible for creating modules that facilitate learning and interaction, suitable for both synchronous and asynchronous formats.

Examples of educational modules are as follows:

(1) Online Materials: These are educational resources available in an online setting that learners can access as needed. Available in various formats, these materials can include text, videos, audio, and graphics.

(2) Online Discussions and Forums: These platforms enable learners to interact with instructors and other students, fostering an exchange of ideas. Participants can engage in these discussions either

asynchronously or in real-time.

(3) Online Quizzes and Exams: These modules allow learners to undertake quizzes and exams online, supporting the assessment of learners' understanding and the tracking of their progress.

(4) Learning Bulletin Boards and Announcements: These are spaces where instructors provide essential information and guidance on learning progress. Learners can utilize these boards to ask questions and express their opinions.

Moreover, educational modules may also include learning management systems that help learners track their educational progress and provide personalized learning pathways, along with online practical materials and group project tools. These modules are designed to offer learners a flexible and effective online learning experience.

2.2 Feedback

Feedback is pivotal in providing learners with accurate and clear information that enhances their understanding of educational content. This form of feedback helps learners identify and correct discrepancies between their responses and established knowledge, thereby facilitating improvement. Hattie (2007) defines feedback as information given to learners that evaluates their current performance and provides guidance for future improvement[25]. Feedback may come from instructors, peers, or other sources, involving the dissemination of performance-related information. Learners also have the opportunity to exchange feedback regarding the curriculum among themselves. Effective feedback is constructive, utilizing positive, future-oriented methods that aid in correcting errors and enhancing performance (Cole, 2006; Zsohar & Smith, 2009)[26,27]. In addition, feedback can be either informational or directive (Hattie & Timperley, 2007).

When feedback functions as a corrective measure, it assumes a directive nature. This indicates that the feedback points to specific objectives or goals and offers guidance for making corrections or improvements. Spink (1997) notes that feedback can be verbal or non-verbal and, in online settings, it can be delivered via documents, audio, video, or real-time synchronous web-based meetings[28]. The definition of online feedback encompasses inputs from instructors, peers, or others, presented in forms such as written words, audio files, videos, pre-programmed automated responses, or live web-based meetings.

Table 2 presents the structure of online feedback. Hattie and Timperley (2007) explore the definition, effectiveness, and types of feedback, highlighting its importance in the learning process and stating that its primary purpose is to foster the personal growth and development of learners. Nicol and Macfarlane-Dick (2006) discuss the aims and necessary conditions for feedback, defining its goals as enhancing learners' abilities for self-regulated learning and continuous improvement through formative assessment. They identify essential conditions for effective feedback to include clarity, timeliness, relevance, focus, self-regulatory feedback, personalization, and relationship building.

Table 2. Structured Content on Online Feedback

Hattie and Timperley (2007)	
Definition	Information that communicates to learners the gap between their current performance and their goals, including advice, guidance, and solutions to improve learning.
Purpose	To foster personal growth and development in learners.
Effects	Enhances learning outcomes, increases motivation, improves abilities for self-regulated learning, and encourages interaction among learners.

Nicol and Macfarlane-Dick (2006)	
Purpose	To enhance learners' self-regulated learning capabilities and encourage ongoing improvement through formative assessment.
Requirements	Clarity: Feedback must be clear and understandable. Timeliness: Feedback should be provided at an appropriate time. Relevance: Feedback must focus on critical aspects of learning. Focus: Feedback should target key areas for improvement. Self-regulatory Feedback: Learners must be able to receive and utilize feedback on their own. Personalization: Feedback should be tailored to the individual characteristics and needs of the learner. Relationship Building: A reciprocal relationship must be developed between the learner and the feedback provider.

Historically, research in educational contexts has depicted feedback as cognitive and constructive information provided to learners. This feedback is viewed as a process through which learners interpret the information received to bridge the gap between their current and desired performance levels [29-32]. This perspective holds that feedback in educational settings not only focuses on the outcomes but also encompasses it as a learning process involving both instructors and learners [33,34]. Traditionally, feedback roles positioned instructors primarily as providers of feedback, advising learners on their strengths and weaknesses and methods for improvement (Zacharias, 2007) [35]. Recently, however, feedback from learners has been recognized for its considerable potential in higher education, particularly in large-scale courses where instructors may lack the capacity to provide individualized feedback. This type of feedback has proven to significantly enhance instructional learning (Taghizadeh et al., 2022) [36]. Thus, feedback is seen as an outcome of performance, providing information related to learning tasks or processes. The strategic utilization of feedback to enhance learning is considered a crucial element.

2.2.1 Types of Feedback

Jaehnig and Miller (2007) analyzed unpublished manuscripts and programming courses, focusing on three main components: diagnostic assessments, learning units, and feedback. For their study, they selected 34 pieces of literature [37].

Diagnostic assessments are tools used to evaluate a learner's current level of understanding, learning units are structured content segments designed for study, and feedback is provided to support and enhance learners' educational processes.

Diagnostic assessments are vital for accurately determining the necessary content that learners should study. They prevent redundant learning of already known material, saving time and sustaining learner motivation. Accurately assessing a learner's current level ensures the provision of content that is suitably challenging.

Learning units should be structured to contain an amount of content that is manageable for learners to process in a single session. Overloading learners with too much content at once can complicate the learning process and degrade outcomes. Therefore, it is crucial to design learning units that match the learner's capabilities and pace.

Feedback plays a critical role in the educational process by enabling learners to assess their progress and receive constructive guidance. Effective feedback is crucial for maintaining learner motivation and enhancing learning efficiency.

The strategic use of diagnostic assessments, learning units, and feedback is aimed at maximizing the educational impact on learners. The types of feedback, in particular, are categorized into four main groups as outlined in Table 3.

Table 3. Types of Feedback in Programmed Instruction based on Jaehnig & Miller (2007)

Availability of Feedback	
Availability of Feedback	Feedback Provided (KR, KCR, Elab, Delay)
	No Feedback (No FB)
Formality of Feedback	
Formal Feedback	KR, KCR, Elab
Informal Feedback	Review, Cons, Other
Timing of Feedback	
Immediate Feedback	KR, KCR, Elab
Delayed Feedback	Delay
Purpose of Feedback	
Accuracy in Learning	KR, KCR
Understanding of Learning	Elab
Motivation in Learning	Review, Cons, Other

(1) Availability of Feedback: Feedback is categorized as either provided or not provided. Not providing feedback often serves as a control condition in research studies that examine feedback effects.

(2) Form of Feedback: Feedback is classified into two forms: formal and informal. Formal feedback precisely informs learners about the correctness of their responses, offering clear and detailed information. Conversely, informal feedback fails to provide specific and detailed feedback on learners' responses.

(3) Timing of Feedback: The timing of feedback is divided into immediate and delayed categories. Immediate feedback is issued directly after a learner's response, while delayed feedback is delivered after a significant lapse of time from the initial response.

(4) Purpose of Feedback: Feedback purposes are segmented into three categories: ensuring the accuracy of learning, enhancing understanding of learning, and fostering motivation in learning. The accuracy of learning confirms whether learners have selected the correct answers. Understanding of learning evaluates whether learners have comprehended the material comprehensively. Motivation of learning aims to sustain learners' enthusiasm and engagement with the educational content.

While these classifications provide useful benchmarks for differentiating types of feedback, an accurate prediction of feedback effectiveness requires consideration of the feedback content, the learner's level, and specific learning objectives.

Regarding Table 4, among the various types of feedback outlined in instructional design, KR (Knowledge of Results) offers the least information to learners. While this minimal feedback can be useful when learners' options are narrowed down to a few responses, it generally offers little assistance to learners who are primarily guessing and is associated with a higher likelihood of errors.

The exclusive reliance on KR (Knowledge of Results) is not advisable, and future research should ideally explore various types of feedback. Notably, KR is often explicitly included in other feedback types and is implicitly present in all forms.

In the case of KCR (Knowledge of Correct Response), this approach provides substantially more information than KR by informing learners of the correct answers after incorrect responses. It is widely utilized in programmed instruction settings [38, 40, 48-54].

Delayed feedback, as characterized by Holland (1960), is described as "immediate reinforcement for the correct answer" (p. 276) [55]. Skinner (1968) also emphasized the importance of immediate feedback [56]. One significant advantage of delayed feedback is that it allows learners time to focus on instructions or questions during the delay. In certain situations, some feedback is intentionally postponed until the end of the instructions.

Table 4. Categorization of Feedback Types, reconstructed based on Jaehnig & Miller (2007)

Researcher	No FB	KR	KCR	Elab.	Delay	Review	Cons	Other
Rosa & Leow (2004)	X	X		X				
Munson & Crosbie (1998)							X	
Lalley (1998)				X				
Kelly & Crosbi (1997)			X		X	X		
Pridemore & Klein (1995)	X		X	X				
Morrison et al (1995)	X		X			X		
Crosbie & Kelly (1994) Exp. II					X			
Crosbie & Kelly (1994) Exp. I					X			
Nagata (1993)				X				
Dempsey et al (1993)			X	X		X		
Pridemore & Klein (1991)		X		X				
Kim & Phillips (1991)			X	X				
Clariana et al (1991)	X		X		X	X		
Terrell (1990)				X		X		
McKendree (1990)		X		X				
Clariana (1990)			X			X		
Thorkildsen & Reid (1989)							X	
Merrill (1987)			X	X				
Collins et al (1987)			X	X				
Waldrop et al (1986)		X		X		X		
Albertson (1986)								X
Roberts & Park (1984)		X		X				
Grant et al (1982)	X		X	X				
Gaynor (1981)	X		X		X			
Roper (1977)	X	X	X					
Anderson et al (1972)	X		X					
Sullivan et al (1971)		X			X		X	
Anderson et al (1971) Exp.II	X		X		X	X		
Anderson et al (1971) Exp. I	X		X		X	X		X
Pysh et al (1969)	X		X				X	
Gilman (1969)	X	X	X	X				
Moore & Smith (1964)	X	X	X				X	

Rankin and Trepper (1978) observed that delayed feedback involves presenting the stimulus a second time, unlike immediate feedback, which only provides the correct response. They hypothesized that the additional

exposure to the stimulus might make delayed feedback more effective [57].

Studies comparing immediate KCR, KCR with Area Under the Curve (AUC), and conditions that allow participants to choose whether to view KCR after each response found no significant differences. Sullivan, Schutz, and Baker (1971) discovered that immediate KR at the start of subsequent sessions was more effective than delayed KR [58]. Similarly, Gaynor (1981) did not find significant differences among immediate KCR, 30-second delayed KCR, end-of-lesson KCR, and no feedback conditions [52]. Clariana et al. (1991) determined that immediate KR, KR with AUC, and end-of-lesson KCR, where all questions were immediately repeated, were superior to not providing feedback at all, although these types of feedback did not differ significantly in post-tests and retention tests [49].

In summary, imposed delays in programmed instruction prove beneficial, and their advantages seem to stem from additional exposure to the instructional frame and feedback, rather than from punitive effects. Additional research is required to determine if elaborated feedback, which offers more information during the delay period, is also effective. Furthermore, studies by Crossbie and Kelly (1994, Exp. I and II) and Kelly and Crosbie (1997) indicated that participants rated the delays as similar to or better than having no delay. Investigating shorter delays using this technique could thus be valuable in potentially enhancing the efficiency of instruction.

3. Enhancing Learning

Existing literature on instructors' feedback highlights its significant impact on learners' academic performance. Instructors often face uncertainty about whether their feedback fulfills the academic needs of learners, who are expected to exert effort to improve after receiving feedback. Consequently, establishing a correlation between instructors' feedback and learners' performance is essential. Feedback not only emphasizes learners' strengths to guide the development and adjustment of their learning strategies but also provides opportunities for addressing current weaknesses.

This study presents a comprehensive review of prior research on the impact of feedback on learning. Utilizing a Systematic Literature Review (SLR), the study explores the relationship between learners' academic performance and instructors' feedback. Analysis reveals that feedback plays a crucial role in motivating learners towards academic independence. However, feedback, particularly in written form, can also negatively impact learning or act as an impediment.

Feedback is crucial for explaining the significance of instructors' evaluations of learners' academic achievements [60-64]. It serves an essential function by providing updates on academic progress and is vital in formative assessments, where it helps identify learners' weaknesses and delivers information that enhances learning.

Instructors recognize that feedback significantly enhances learners' educational progress; however, Carver (2017) observed that they often feel overwhelmed by the responsibility to provide and apply essential feedback to learners [65]. In an educational setting, where learners are considered consumers, it is imperative for instructors to offer tailored and precise feedback that aligns with the learners' needs and interests. Instructors need to be aware of the extent of learners' progress and the subsequent steps necessary for advancement, thereby enriching the educational experience.

Hattie and Timperley (2007) defined feedback as knowledge conveyed by teachers, peers, parents, or through personal experience about how a task is performed or understood [14], typically occurring after a

learner responds or when opinions about a task are expressed (Henderson et al., 2019) [66]. Instructors systematically utilize feedback to transition the focus of learners from merely achieving grades to understanding the importance of mastering assigned tasks. Moreover, feedback reaches its highest effectiveness when it transcends being merely a list of comments and is customized to meet the specific needs of learners. Nevertheless, the impact of feedback on learners varies depending on its type, timing, and delivery method. In practice, instructors use feedback to update learners on their progress throughout the learning process (Chalmers, Mowat & Champman, 2018) [67]. As a result, learners gain insight into their current status, aim to achieve their learning objectives, and assess their performance relative to their peers.

Sadler (1989) highlights the critical role of feedback in shaping and enhancing learners' academic development. He argues that formative feedback is most effective when integrated with the learning process, which he considers central to the overall educational experience. In addition, he notes that feedback assists in assessing learning [31]. Echoing this view, Lefroy et al. (2015) and Rossiter (2016) suggest that when instructors' feedback fails to elicit a response, learners use this feedback to pinpoint areas requiring improvement, demonstrating that feedback alone is not inherently self-improving. They assert that formative feedback is beneficial only when it serves to bridge the gap between learners' current academic achievements and their goals [68,69]. Sadler (1989) also contends that learners are responsible for developing their own knowledge and skills, and should not rely exclusively on instructors to indicate what is correct, how to correct mistakes, or what actions to take for improvement [31].

With feedback, instructors make necessary adjustments to meet learners' needs, while learners adjust their goals and learning strategies (Hattie & Timperley, 2007) [14].

3.1 Systematic Literature Review on Feedback and Learning Outcomes

Omer and Abdularhim (2017) propose that for education and learning to be successful, assessment-based feedback must be constructive and appropriate [70]. Wisniewski, Zierer, and Hattie (2020) analyzed 435 studies on the effectiveness of feedback and its impact on learners' academic achievements, reaffirming Hattie's (2009) meta-analysis that emphasizes the necessity of feedback in all educational settings due to its cognitive benefits [14,71]. Feedback proves most effective when administered during the learning process, as it helps learners adapt to new strategies and improve their learning and academic performance. Forsythe and Johnson (2017) argue that feedback not only enhances learners' understanding but also productively and effectively transforms their learning, thereby facilitating robust academic growth [72]. This viewpoint aligns with the findings of Brown et al. (2014), who observed that learners' appreciation of feedback supports their academic pursuits. Moreover, earlier work by Evans (2013) validates the significant effects of feedback on learners' academic excellence and motivation, which is also supported by Orsmond and Merry (2011) and Alderman et al. (2014) [73-75]. Feedback serves as a reflective tool in educational planning for instructors, and when delivered to learners, it aims explicitly to enhance learning.

Shin et al. (2017) note that instructors can effectively use feedback to assist learners in setting achievement goals and boosting their motivation [64]. Hattie and Timperley (2007) recommend that for feedback to be considered constructive, it must address three critical questions: 1) What are the goals? 2) How can these goals be achieved? 3) What steps are necessary to advance? Known as feed-up, feedback, and feed-forward, this model helps instructors narrow the gap between learners' current understanding and their goals or achievements. The effectiveness of feedback is confirmed when it comprehensively addresses these critical

questions.

3.1.1 Objectives and Methodology

The main goal of this study is to examine the relationship between instructors' feedback, learners' educational processes, and their academic achievements. Conducting a Systematic Literature Review (SLR) requires a thorough and repeated review of articles to ensure their reliability and validity. This study focused on the correlation between instructors' feedback and its impact on learners' academic progress. Data were collected from multiple databases, including Google Scholar, Elsevier, and other Scopus-indexed journals. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines were utilized for the systematic analysis of the literature. The selection protocol involved:

Screening articles published from 2013 to 2021 based on pre-established inclusion and exclusion criteria, with particular focus on titles and abstracts. Selected articles were required to meet the following inclusion criteria:

(1) Research that focuses on the relationship between feedback and learners' academic achievements.

(2) Studies that explore the benefits of instructors' feedback and its impact on learners.

Articles underwent additional scrutiny to confirm whether they met the specified inclusion criteria. To prevent duplication, relevance was assessed based on titles and abstracts.

3.1.2 Data Extraction

The primary research method employed was the Systematic Literature Review. Searches were conducted using the search engines of well-known digital libraries such as ERIC (Education Resources Information Center), Google Scholar, Elsevier, and other Scopus-indexed journals. Searches were based on titles and abstracts, and the analysis was conducted using keywords and phrases related to instructors' feedback and learners' academic performance.

Table 5. Keywords and Phrases for Searching Academic Achievement

Keywords and Phrases Included in the Database (2013–2021)	
Keywords and Phrases	Inquiry Topics
Instructor Feedback	Impact of feedback on learning, feedback types; psychological effects of feedback
Learners' Academic Achievement	Relationships between academic achievement and instructor feedback, learners' perceptions of instructor feedback

The initial search identified 35 articles, which underwent further review based on their titles during the inclusion process. Six articles were eliminated due to duplication, and ten that did not focus on issues related to instructors' feedback and learners' academic achievement were also excluded, leaving 20 articles. The second inclusion process utilized abstracts to refine the selection further, ultimately narrowing down the list to 18 publications dated between 2013 and 2021. The primary data collected included: (i) authors' names, (ii) region, (iii) type, (iv) sample characteristics such as gender and age, (v) data analysis methods, and (vi) key findings. The PRISMA flowchart, depicted in Figure 1, illustrates the processes of identifying, screening, and finalizing the number of selected publications.

Upon categorization, the literature can be divided into four types. Examination of the contents reveals variations in the impact of instructors' feedback on learners' learning enhancement, as evidenced in several

studies (Ahmad et al., 2013; Nez-Pea et al., 2015; Al-Bashir et al., 2016; Shin et al., 2017; Masantiah et al., 2020) [76-79, 64].
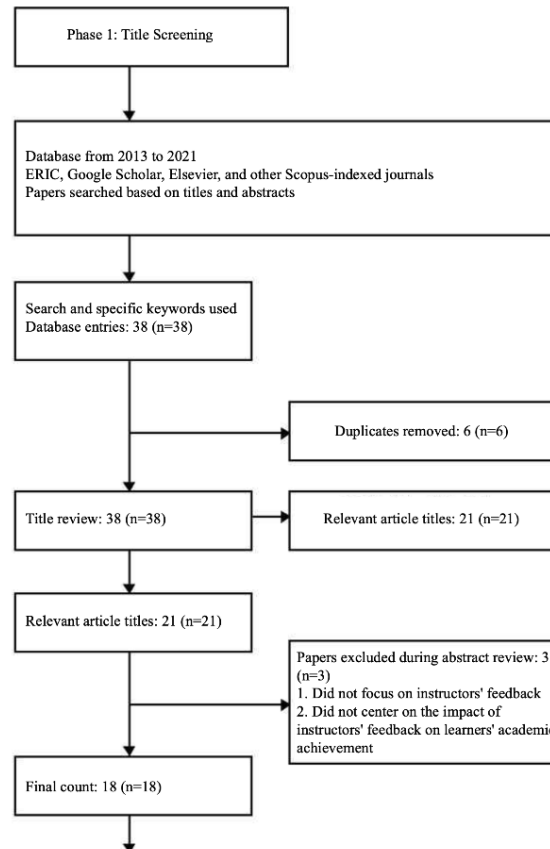

Figure 1. Stages of Literature Selection for Feedback Practices and Learners'
Academic Achievement

This research investigates and analyzes whether the feedback provided to learners is associated with enhancements in academic performance. Moreover, it examines the types and effects of feedback, exploring how various feedback modalities impact learners' academic outcomes and motivation. Five studies have yielded insights into how feedback can enhance understanding of learning processes and improve learners' academic performance and motivation.

The research delves into how learners perceive and interpret instructors' feedback, their understanding and reflection on this feedback, and the differences in perceptions regarding the types of feedback and their effects (Murtagh, L., 2014; Carvalho et al., 2014; Afzal and Afzal, 2017; Saidon et al., 2018; Chalmers et al., 2018; Tan, F. D. et al., 2019) [80-85]. Discussions in the literature address the relationship between self-directed learning and feedback, analyzing how learners autonomously utilize feedback and engage with feedback on learning tasks.

Research by Fernandez-Toro and Hurd (2014), Al-Bashir et al. (2016), and Masantiah et al. (2018) explores the value and effectiveness of feedback, learners' preferences for feedback, and learners' trust and anxiety related to learning and feedback [86-88]. These studies enhance understanding of how learners accept and utilize feedback. Finally, the research focuses on learners' perceptions of feedback and anxiety, challenges in

online education, and the supportiveness of instructors (Martin and Alvarez, 2017; Abdullah, Hussin & Shakir, 2018; Rajab, MH, 2020; Schussler, E. et al., 2021) [89-92]. Moreover, these studies investigate how feedback received through online tools can either induce or alleviate learning anxiety.

The findings suggest that instructors ought to provide feedback that motivates and inspires learners in their educational pursuits. The focus of the analysis was on examining the feedback provided by instructors concerning learners' academic achievements. The results revealed that feedback could influence learners in several ways: 1) enhancing academic achievement, 2) boosting academic motivation, 3) fostering independent learning capabilities, and 4) alleviating learning-related anxiety, as outlined in Table 6.

Instructors' feedback aims to guide learners to enhance their educational experience while addressing existing challenges. As presented in Table 6, this feedback significantly affects learners' academic achievements. Learners depend on feedback for their personal development. Nonetheless, feedback from instructors may present challenges, particularly when delivered without consideration of the learners' prior knowledge and emotional state.

Table 6. Selection of Literature on Feedback Practices and Academic Achievement of Learners

Systematic Literature Review of the Impact of Instructors' Feedback on Learners' Achievement		
NO	Instructors' Feedback and Learners' Achievement	Content	Researcher
1	The impact of instructors' feedback on enhancing learners' educational progress.	Positive correlation between the provision of feedback and learners' academic achievement.	Ahmad et al. (2013), Nez-Peaet al.(2015) Al-Bashir et.al. (2016), Shin et al. (2017), Masantiah et.al (2012)
2	Instructors' feedback approaches can either enhance or inhibit learners' motivation.	Positive correlation between instructors' feedback and the potential impact on learners' motivation and perception.	Murtagh, L. (2014), Carvalho et al.,(2014), Afzal and Afzal(2017), Saidon et al.(2018), Chalmers et al.(2018), Tan, F. D. et al.(2019)
3	Instructors' feedback encourages learners to develop as independent learners.	Positive correlation between instructors' feedback and learners' ability to regulate their own learning.	Fernandez-Toro and Hurd (2014), Al-Bashir et.al (2016), Masantiah et.al (2018)
4	Instructors' feedback assists in reducing anxiety among learners when they encounter challenging subjects.	Correlation between instructors' feedback and a reduction in anxiety levels.	Martin and Alvarez (2017), Abdullah, Hussin & Shakir (2018), Rajab, MH (2020) Schussler, E. et.al(2021)

In the analyzed literature, feedback is presented not merely as a motivator but through the critical and rigid characteristics typical of summative assessments. Such rigidity can impede learning as it focuses on comparing learners' performance with their peers through grades, thus determining their academic progression. Conversely, when feedback is formative, it assists learners in recognizing their strengths and weaknesses, moving away from competition based on grades. This awareness helps learners understand the necessary steps to bridge the gap between their current achievements and future goals, thus motivating them to enhance their learning.

4. Discussion and Conclusion

4.1 Utilization of Effective Feedback

Instructors' feedback is crucial in emphasizing learners' strengths and guiding the improvement of their

educational outcomes while addressing their current weaknesses. Content analysis underscores the importance of feedback in advancing learners' education. It is highly effective in tailoring courses at higher education levels. Nonetheless, feedback remains a challenging issue within this domain. Many instructors continue to use traditional forms of feedback, which often fail to meet the needs for enhancing learners' education. There is a pressing need for instructors to reevaluate their approach to delivering feedback. Selecting the appropriate type of feedback is essential, considering the learners' levels and educational goals.

4.2 Significance and Limitations of the Study

This research is academically significant as it conducts a systematic literature review focusing on the essential role of feedback in enhancing learners' education and its impact on academic achievements. The study analyzes various feedback types, addressing learners' competencies and issues, and proposes these as tools for encouraging continuous educational improvement. This approach provides foundational data applicable in educational contexts. Moreover, in the digital era, the potential to generate diverse types of feedback using big data and artificial intelligence (AI) in online environments has emerged. This shift highlights the need for further empirical research and comprehensive case studies. In response, additional studies are planned to examine the effectiveness and relationship between AI-generated feedback and learners, aiming to bolster the reliability of these findings.

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