Feedback in distance education:

A content analysis of *Distance Education: An International Journal*, 1980-2013

By

Rongbin Wu

Dissertation submitted to the faculty of the
Virginia Polytechnic Institute and State University
in partial fulfillment of the requirements for the degree of

Doctor of Philosophy

In

Curriculum and Instruction
(Instructional Design and Technology)

Committee

John K. Burton, Chair
Barbara B. Lockee
Ken R. Potter
Katherine S. Cennamo

September 29, 2014
Blacksburg, Virginia

Keywords: feedback, distance education

Feedback in distance education:
A content analysis of Distance Education: An International Journal, 1980-2013

Rongbin Wu

ABSTRACT

The purpose of this study was to ascertain what has been written about feedback in *Distance Education: An International Journal*. Distance education has been dramatically developed in domestic and international education. It is a kind of education that concentrates on teaching methods and technologies, intending to deliver teaching to students who are not physically present in the traditional education setting such as the classroom. In distance education, students have fewer chances to get immediate responses from their teachers. Hence, in order to make sure that students have really learned and made progress, students and instructors should interact or communicate with each other frequently. The definition of feedback is that it is a reinforcer information given by different kinds of sources to help feedback receivers to make progress. Feedback serves as a useful learning tool with which to interact and communicate. In many cases, feedback may be the only learning communication between students and teacher in distance education courses. Content analysis methodology had been chosen for this research project in order to get a systematic and deep understanding of feedback in distance education. A coding form was utilized to support the objective observation. Predetermined themes were used to categorize the articles from the *Distance Education: An International Journal*. Six hundred and twenty peer reviewed articles were searched, and three hundred and fifty eight articles include the term feedback. The researcher read all these three hundred and fifty eight articles. One hundred and twenty four articles were about sources, sixty-two were about types of feedback, fifty-seven were about technology, and nineteen of them were about quality. There

were also some other kinds of topics appeared in the articles of this journal. In order to make the analysis much more clear, the researcher categorized topics into four specific themes: feedback types, feedback providers, ways to deliver feedback and feedback quality. Results and discussion were provided.

Acknowledgement

I do not know how to express my gratitude to my committee for their support and encouragement over the years. First of all, I would like to thank my advisor, Dr. John Burton, for all the kind help and support he has given me. I could not finish my doctoral study without him. I would also like to thank Dr. Barbara Lockee, who made me realize that I am interested in the field of distance education; Dr. Ken Potter, who always guided me to consider problems broader and deeper; and last but not least, Dr. Katherine Cennamo, who was my advisor when I was a master student, my first graduate study advisor in my life. This past three years of my Ph.D. study will surely be one of the most important eras in my life. I know in my heart that I couldn't do it without my committee.

In addition, I would like to thank my dearest husband, who took care of our two years old daughter and took care of our household chores while I worked on my thesis. Finally, I would like to thank my Mom and Dad, who always believe I am the best.

Thank you all very much.

Table of Contents

List of Tables

Lists of Figures

Chapter 1: Introduction and Need for the Study

Since the early 1980s, distance education has dramatically developed in domestic and international education. Distance learning is a kind of education that concentrates on teaching methods and technologies that are intended to deliver instruction to students who are not physically present in the traditional education setting such as the classroom. Students eager for a flexible instructional form stimulated the rapid growth of distance learning. According to "Going the Distance – 2013 Survey of Online Learning Report" (Sloan Survey Report), which is the eleventh annual report on the state of online learning in U.S. higher education and which is the leading barometer of online learning in the United States, 7.1 million of higher education students are taking at least one online course. With the rapid development of technologies, distance education is becoming more and more prevalent in today's leading colleges and universities. A variety of media are being used to deliver course materials to students in order to serve their variety of educational needs. Distance education provides more opportunities for more students to complete their bachelors, masters or doctorate degree programs on their own schedule.

Distance education could be considered as online education, online learning or distance learning. Distance education has been defined as, "… institution-based formal education where the learning group is separated, and where interactive telecommunication systems are used to connect learners, resources, and instructors" (Simonson et. al., 2006, p.32). In distance education, learning activities which occur when students and teachers are separated by place or by time often are supported by communication technology such as print materials, broadcast radio, broadcast television, computer conferencing, electronic mail, interactive video, satellite telecommunications, and multimedia computer technology (McIsaac, 2004), which are used to

provide necessary information to learners. Ko and Rossen (2001) reported that compared to students who have opportunities to communicate face-to-face in the class, students who are in online course have difficulties in getting immediate responses from their teachers and note that they lack feedback on their work. Hence, in order to make sure that students have really learned and made progress, students and instructors should interact or communicate with each other frequently. Feedback serves as a useful learning tool with which to interact and communicate. Simpson (2002) pointed out that feedback may be the only learning communication between students and teacher in distance education courses, so feedback can be much more important than ever before (Lynch, 2002).

Simonson et al. describes feedback as a mechanism that " allows the sender and receiver, teacher, and learner, to determine if the message was understood correctly" (2006, p.89). Many researchers have reported that feedback is an important issue in distance education: Cole, Coats and Lentell (1986) for example, emphasized the student's need to get suggestions from their teachers in order to make improvements; Price (1997) indicated that feedback may serve to facilitate critical thinking, to make students realize the challenge and acquire knowledge actively; Thorpe (2000) and Ivanic, Clark and Rimmershaw (2000) reported that students feel disappointed when receiving no feedback or receiving only grades without detailed information for improvement. Brown (2007) believed that different kinds of feedback influence the quality of a student's responses.

O'Lawrence stated, "Teaching online courses can be very challenging and time consuming and requires extensive preparation to ensure that things are done well and that students get feedback of posting their responses" (2006, p.49). When planning a distance

education course, feedback must be an integral part. Feedback should be given to students in order to help students make sure whether they have grasped the knowledge or not.

Statement of the Problem

With the development of distance education, more and more investigations about feedback have been conducted as a result. Mory (1992) stated that feedback is used to provide opportunities for learners to interact with their environments for influencing each other. The purpose of investigating feedback is to help students find solutions for questions in distance education. However, feedback can be different in the content and time of presentation (Vasilyeva et al., 2007). Ryan, Hodson and Ali (2005) indicated that design considerations of promoting knowledge construction and providing timely and explicit feedback are beneficial to students.

In addition, due to the growth of technologies, there are various media that can be used to deliver feedback, including print, audio and video media, radio and television, teleconferencing, and computer-based learning. Moreover, the widespread usage of the Internet and related technologies has created a platform for teachers to rethink the way they deliver their feedback to students. Teachers are expected to be monitored and coached when delivering feedback in the online classroom (Gallien & Oomen-Early, 2008). Identifying how feedback can be delivered in an effective manner is needed because of the growth of the online learning environment.

This analysis would be used to give guidance and support for teachers to design and provide feedback in distance education. Teachers could pay attention to the factors which may influence the students' effective learning.

Purpose of the Study

The purpose of this content analysis was to analyze articles focusing on feedback in distance education to get a systematic and deep understanding about it. More specifically, this

analysis will ascertain what is being written about feedback in *Distance Education: An International Journal* from 1980 to 2013.

Research Question

The general research question guiding this analysis was: what has been written about feedback in distance education in *Distance Education: An International Journal*? In addition, we also asked questions, such as what topics have been discussed, and what topics need to be explored in future research. Since the research is about feedback, the data collection used the following terms: feedback, feedback roles, feedback types, feedback functions, media and technologies to deliver feedback.

Delimitations

The following delimitations guided this study:

1. Only peer-reviewed articles published from 1980 to 2013, which contained the term feedback, were the focus of this study. Book reviews, introductions, commentaries and responses, and forwards were not included in this study.
2. Only the journal, *Distance Education: An International Journal*, was the sample for this analysis.

Chapter 2: Review of Literature

This study is intended to provide a systematic search on feedback in distance education. This chapter provides a review of the literature related to understanding the use of feedback in distance education which is organized into two topics: what is feedback and what we know about feedback in distance learning environment. Hence, one portion of this review is a comprehensive scholarly definition of feedback and the role feedback plays in supporting learning. The other portion discusses what we know about feedback with a focus on empirical research on feedback in distance learning environments.

Definition of Feedback

Feedback is one of the most important concepts in learning. One of the primary factors that could influence students' knowledge acquisition is feedback (Azevedo & Bernard, 1995; Bangert-Drowns, Kulik, Kuli, & Morgan, 1991; Epstein et al., 2002; Moreno, 2004). However, Kowitz and Smith (1985) mentioned that there were not too many practical and meaningful definitions of feedback.

Mory (1996) indicated that previous publications about feedback which are from different former and typical perspectives became the resources for researchers to do research on feedback which is used to promote learning, and most of these publications were much more about feedback's purpose. Furthermore, feedback in instruction developed and will continue to develop according to expansion of theories and paradigms, and rapid changes of instructional design in technologies (Mory, 2004).

In the eighteenth century, feedback emerged as an idea in Britain, but it was not formally recognized and did not have a specific name (Mayr, 1989). Until 1920, "feedback" was used as a term to describe the procedure of gaining information from outside to inside (Bennett, 1979).

Since then, the definition of feedback has varied according to different authors. In The American Heritage Dictionary of the English language (1976), feedback was generally defined as "any information about the result of process" (p.482). While in Webster's New World Dictionary (2001), feedback is defined as "a process in which the factors that produce a result are themselves modified, corrected, strengthened, etc. by that result" and "a response, as one that sets such a process in motion" (p. 520). The publication of Webster's New World Dictionary from 1984 to current edition has not changed the fundamental definition of feedback too much and this basic meaning could fit a variety of situations or systems.

Definition of feedback in instruction. Most educational researchers consider feedback in the context of instruction. Hattie and Timperley (2007) provided a point of view that feedback and instruction intertwined with each other in order to help researchers understand functions and purposes of feedback better. Feedback is a vital element in different learning procedures (Kowitz & Smith, 1985).

In purely instruction, simply speaking, feedback provides as a dialogue between instructor and learners to notify the learners of the correctness of their instructional questions (Cohen, 1985; Kulhavy, 1977). In Gagne's (1985) nine events of instruction, feedback is one of the steps used to communicate to the learner about the correctness and the degree of correctness of the performance. Cohen (1985) defined feedback as "one of the more instructionally powerful and least understood features in instructional design" (p.33). More broadly, a student's current performance can be compared with desired performance through feedback (Johnson & Johnson, 1993).

In technology-assisted instruction, feedback given to students is information helping them to monitor and facilitate themselves (Moreno, 2004; Wager & Wager, 1985). Hoska (1993)

pointed out that feedback is not just to determine the correctness of answers. Mory (2004) claimed that this kind of feedback also indicates the factors influencing students' learning, which are "precision, timeliness, learning guidance, motivation, advisement, critical comparison, and learning focus" (p.745). For others, feedback is mainly used to construct students' cognition and skills for improving their learning and performance (Shute, 2008). Such feedback, together with assessments, may form the learners' personal characteristics (Azevedo & Bernard, 1995; Narciss & Huth, 2004).

In computer-based instruction, feedback is considered as notes or illustration delivered by computer in response to a learner's action (Cohen, 1985; Wager & Wager, 1985). Computer-based instruction (including web-based instruction) has been widely used in education. Feedback is considered to be one of the vital effects of the ingredients on learning improvement in computer-based learning context (Clariana, Ross, & Morrison, 1991). Such feedback can help students to realize what kind of errors and misconceptions they made and how to make correction.

Definition of various types of feedback. Instructors should provide students with detailed, personal feedback on learning process, as feedback is very important in learning. Furthermore, instructors should be aware of the types of feedback that could be used appropriately in a particular distance learning setting. In addition, different types of feedback have their own definitions. The literature shows a lot of research on the types of feedback in the educational environments. Commonly, the types of feedback most often used to be discussed in the literatures (Dempsey & Wager, 1988; Graham et al, 2002; Kielty, 2004; Mory, 1992; Schwartz & White, 2000) include: acknowledgement feedback, informational feedback, formative feedback, immediate feedback, delayed feedback, and corrective feedback.

Acknowledgement feedback. Acknowledgement feedback is feedback that provided to students for the purpose of acknowledging that some action has taken place (Kielty, 2004). For example, the instructor sends a message to tell the student that their assignment was received after they submit it. This is very important, as in distance learning environment. Some students lack a sense of security and often worry if they have submitted the assignment successfully.

Informational feedback. Informational feedback is a response that provides information or an evaluation (Graham, et al, 2002). Answering students' questions and posting assignment grades or comments are examples of informational feedback.

Formative feedback. Formative feedback refers to information provided to students consistently to point out performance weaknesses for the purpose of achieving learning goals (Shute, 2008). Information within the formative feedback addresses the accuracy of the student's response to a problem (Azevedo & Bernard, 1995; Cohen, 1985; Kulhavy, 1977) and represents specific information for improved student performance. Other than that, Shute (2008) summarized from Schwartz and White's (2000) work and indicated that formative feedback may be further defined as "multidimensional, nonevaluative, supportive, learner-controlled, timely, specific, credible, infrequent, contingent, and genuine" (p.2).

Immediate feedback. Immediate feedback is defined as "informative feedback given to a learner as quickly as the computer's hardware or software will allow during instruction or testing" (Dempsey & Wager, 1988, p.22). For example, students can receive correct answers with an explanation of why it is correct directly after submitting their response of questions.

Delayed feedback. The definition of delayed feedback is "informative feedback given to a learner after a specified programming delay interval during instruction or testing" (Dempsey & Wager, 1988, p.22). Delayed feedback is not provided immediately, often occurring after hours,

weeks, or even months after students have finished the whole assignment. There is no consistent main effect of timing, namely there is no confirmation to say if immediate feedback is better or delayed feedback is better. Kulhavy and Anderson's (1972) famous delay-retention effect (DRE) hypothesis implied the superiority of delayed feedback. In contrast, Kulik and Kulik (1988) found the advantage or value of immediate feedback in classroom environments.

Corrective feedback. Mory (1992) indicates that researchers considered feedback primarily as serving to correct. Therefore, the first major type of feedback is corrective feedback, which is any comment or suggestion given to a student on any assignments, quizzes and exams. Corrective feedback not only informs the student if their answer to the question is correct, but also provides the student detailed information for answer improvement and for future guidance of learning (Kielty, 2004). According to Dempsey, Driscoll, and Swindell (1993), five types of feedback compose the corrective feedback: (a) no feedback, the learners answer the question without indication to know if their answer is correct; (b) simple verification feedback, which only informs learners if their answer is correct; (c) correct response feedback, which informs learners the knowledge of the correct answer; (d) elaborated feedback, which provide reasons why the answer is correct to let the students go back to review the instruction; and (e) try-again feedback, which provides opportunities for students to try again when their answer is incorrect.

Definition of feedback through functions. Feedback is an important component in learning processes and plays different roles in different contexts (Mory, 2004). In order to understand feedback in a comprehensive way, some researchers define feedback in terms of feedback functions.

Error analyses. The current research indicates that an error plays an important role in learning since it can help the learner to clarify errors or misunderstandings. Feedback serves to

correct errors which make error analyses important for understanding the corrective process (Mory, 2004). Phye and his colleagues (1976) introduced a pattern of pretest-posttest responses. According to this, an error analysis model was developed and used by several researchers. Their research helped to understand the usage of feedback in most experimental environments. The major consequence of Phye and his colleagues' pattern analysis work was to establish that feedback serves to confirm a correct answer at pretest in a confirmatory function; feedback serves to correct an error produced in pretest as a corrective function; and when errors occur on the posttest, it suggests that such feedback has no function. (Phye & Bender, 1989).

Motivation. In addition to correcting errors, feedback also provides motivation to stimulate the learner's confidence in his or her ability to complete the task successfully (Pyke & Sherlock, 2010). Some students are motivated by rewards for their performance. Mory (2004) modified Hoska's work about how feedback is used to motivate learners. He pointed out that feedback's motivational function is to let learners realize they made progress; create a relaxed learning environment; avoid the tendency of learners to be addicted to entertainment in computer-based instruction; convince learners that difficulties and challenges provide opportunities to develop their skills; increase learners' self-efficacy; and help learners conceive their success and failure are due to effort.

Interaction. Mory (1992) stated that feedback is used to provide opportunities for learners to interact with their environments for influencing each other. Feedback is one of the elements in communication model, which was initially developed by Shannon (1948). In the communication model, the system includes the sender, the receiver, signal transmission, noise and feedback. The information is delivered from the instructor (the sender) to the students (the receiver) in educational settings. The feedback between this processes forms an interactive circle

(Wagner, 1994). Feedback can be used to improve the connection through instructor-to-student interactions as well as student-to-student interactions. Besides, feedback is also useful to help define interaction (Wagner, 1994).

Definition of feedback from different viewpoints. Holding (1965) expressed that the importance of feedback makes it complicated in instruction. It has been considered to be one of the most significant activities a teacher or instructor can use to improve student achievement (Hattie, 2009). However, Hattie (2009) indicates that feedback is a two-way street. To be more specific, feedback is used not only to assist students' learning, but also to improve teachers' teaching. Tovani (2012) supports Hattie's statement. For example, she stated "the feedback students give is just as important as the feedback they get" (p.1). When students have chance to express their own ideas and needs, teachers may rethink and revise their instruction based on that student feedback (Tovani, 2012). Therefore, feedback can be conceptualized mainly from the student's perspective and the teacher's perspective.

From the student's perspective. Bloom (1976) suggests that the purpose of feedback provided to correct errors is to avoid students making the same mistake again. Likewise, Carlson (1979) stated that feedback students gained from their teachers help them make progress to obtain course goals. Lastly, feedback is used as a step for "collecting information about students' performance, their familiarity with the type of testor assessment method, and their background knowledge" (Schutz & Weinstein, 1990, p.1).

From teacher's perspective. Ovando (1991) believes that feedback is given to teachers to improve their skill and knowledge, which can help them to know what students need and to provide suggestions to students about what they need to do next. The result of this kind of feedback is to improve instructors' abilities and achieve learning goals finally (Ovando, 1991).

Role of Feedback

Theories must include feedback as a necessary component for influencing learning through instruction (Bangert-Drowns, Kulik, Kuli, & Morgan, 1991). They stated that "Any theory that depicts learning as a process of mutual influence between learners and their environments must involve feedback implicitly because, without feedback, mutual influence is by definition impossible. Hence, the feedback construct appears often as an essential element of theories of learning and instruction" (p.214). Feedback may play different roles in different learning contexts (Mory, 2004). It is developed in learning from behaviorism to cognitivism, then to constructivism. According to Kulhavy and Wager (1993), there was three defined roles of feedback: Motivation, reinforcement and information for error correction.

Feedback in behaviorism. In previous feedback studies, feedback was only used by instructors to encourage or praise students who answer questions correctly. The Skinner's behaviorism supports the idea of feedback serving as reinforcement, which was translated into a small lock-step, linear mode with programmed instruction (Wager & Wager, 1985). Skinner emphasized that feedback is important in instruction and serves to shape and maintain the learner's proper response. In the 1960's, the notion of reinforcement was supported and popularized by operant psychologists, who argued that it is hard to finish a task at one time, so the best way is to test the task and divide it into meaningful, small chunks in order to ensure successful learning (Cohen, 1985). The belief was that when a student was told that his or her answer is correct immediately, it is reinforcing and the student is more likely to remember the correct answers for future usage (Kulhavy, 1977).

Around 1970, doubt crept up on researchers about the view of feedback as reinforcement, and Kulhavy and Wager (1993) pointed out that there were no systematic effects for feedback

during 10 years of research in this paradigm. There is little evidence to support the connection between feedback following positive responses and reinforcements (Anderson, Kulhavy, & Andre, 1972; Bardwell, 1981; Barringer & Gholson, 1979; Kulhavy, 1977; Roper, 1977). R. C. Anderson and his colleagues did a series of studies and found that students will use feedback which is well provided (Anderson, Kulhavy, & Andre, 1971, 1972), otherwise, learners will just copy and paste the answer without grasping the information to be learned. Mory (2004) stated that feedback improves learning only when students see feedback after they provided their own responses.

Feedback in cognitivism. The investigation of feedback's role in education extended further since the emergence of information-processing theory in the 1970s to 1980s. New feedback definition include providing corrective information as a main function. Anderson and his colleagues' (1971, 1972) research expounded that error correction is feedback's primary function. In addition, there was a lot of research supporting this function (Anderson, Kulhavy, & Andre, 1971, 1972; Bardwell, 1981; Barringer & Gholson, 1979; Kulhavy, 1977; Kulhavy & Anderson, 1972; Roper, 1977). Feedback helps learners decide their performance expectation, evaluate their understanding of the content or concern about the misunderstanding, provide methods to correct mistakes and improve performance, which highlight the informational role of feedback (Mory, 1994).

Mory (2004) classified feedback into two different system which are: the reinforcement of correct responses and the information regarding error analysis. Kulhavy and Stock (1989) used the concept of servocontrol theory to compare each system as they are different. When feedback is an open-loop system, it acts as a reinforcement that only confirms students' correct responses and deemphasizes the correction. However, when feedback is a closed-loop system,

the errors of students' responses are emphasized. Analysis of errors provides different ways to correct students' errors. This system also allows students to make changes based on the feedback they received.

In social cognition theory, self-efficacy refers to one's ability to organize course actions to help attain learning goals. Modifying a learner's self-efficacy is one of the most important roles of feedback. Based on Hoska (1993), learners will "invest maximum levels of effort to achieve learning goals only when their goals and self-efficacy enable them to see the benefit of such effort" (p.107). Hence, feedback can be designed to provide positive learning experience and change the causes to learners' achievement. Providing positive learning experience means to help learners make progress consistently rather than just offering them success (Hoska, 1993).

Feedback is an "inherent catalyst" in self-regulated activity (Butler & Winne, 1995, p.246). Internal feedback is generated when learners evaluate their engagement with tasks. Such feedback provides information on effects and an understanding of the cognitive process. But in some cases, external feedback would be needed for self-regulated learners to compare their real performance with a desired standard performance to fix the gap (Butler & Winne, 1995). Research generally confirms that learning is more effective when students accept external feedback (Bangert-Drowns, Kulik, Kulik, & Morgan, 1991; Kulhavy & Stock, 1989). Traditionally, studies of feedback focused on external source, which were used to help the learner to facilitate the ability to solve test problems or complete assignments correctly. It was pointed out in Rumelhart and Norman (1978) that, in order to completely understand the role of feedback in knowledge construction, one has to develop a larger scope, more careful analysis, as well as an understanding of the temporal location of feedback's effect.

Feedback in constructivism. The above studies of feedback in behaviorism and cognitive information processing theory belonged to objectivist philosophy domain. Objectivists emphasize that humans live in the real world (Jonassen, 1991b), and instruction is used for students to fix real world problem and teachers determine whether students master the knowledge. Feedback should serve to correct the wrong information regarding the external reality (Mory, 2004). As discussed above, feedback can be treated as reinforcement or as information correction. Based on situated cognitive theory and constructivism (Brown, Collins, & Duguid, 1989; Jonassen, 1991a), there is no external reality that exists for students. Students acquire new knowledge through connecting it to their prior knowledge, and personal belief. This kind of knowledge is unique and students acquire knowledge based on interaction with external context. Feedback functions differently as a result.

Jonassen (1991a) claimed that if every learning activity happened in context, then feedback could be used to help students overcome difficulties within this kind of interactional environment. Students' communication helps them to fix problems, which yields natural, effective feedback. Mory (2004) provided an example about students learning to play a musical instrument to support this statement. They continuously receive feedback from hearing the sounds that are being made to make progress. In other words, feedback happens as the result of interaction between the students and the construction of their knowledge within the real learning environments. Jonassen (1991b) proposed the use of feedback in constructivism and stated that feedback should be used to guide and facilitate students to construct their own knowledge for future use. In other words, feedback should help students to establish marks and construct their internal reality. At the same time, the meaning of feedback was also influenced by students' internal understanding. Feedback occurs in the real world in constructivism and Table 1 listed

items of constructivism assumptions and suggested use of feedback. In real world activity, feedback is used as a guidance to solve problems rather than directly accepting the instructional sequences. Feedback is used as a self-analysis method (Jonassen, 1991a) to help monitor and support students for setting reasonable goals and accomplishing their objectives (Rieber, 1992).

Table 1

Assumptions of Constructivism and Suggested Use of Feedback

Constructivism	
Assumption	Feedback
Reality is determined by knower	Feedback is to guide learner toward internal reality; facilitates knowledge construction
Mind acts as builder of symbols	Feedback aids learner in building symbols
Thought grows out of human experience	Feedback in context of human experience
Meaning does not rely on correspondence to world; determined by receiver	Meaning within feedback information determined by internal understanding
Symbols are tools for constructing an internal reality	Feedback provides generative, mental construction "tool kits"

Note. Adapted from "Objectivism Versus Constructivism: Do We Need a New Philosophical Paradigm?" by D. H. Jonassen, 1991, Educational Technology Research and Development, 39(3), p.9. Copyright 1991 by the author.

Feedback in other theories. Feedback plays different roles in behaviorism, cognition and constructivism. There are also other theories which support the importance of feedback in

education, including: connectionism theory, operant conditioning theory, experiential learning theory, and conditions of learning theory.

Connectionism theory. The study of feedback in connectionism theory originated from E. L. Thorndikes's Law of Effect. Thorndike stated that feedback connects a student's response and stimuli (Mory, 1996). Students associate with each other, which leads to learning. For example, when a teacher replies to students' questions and exams (the stimuli) with corrective feedback (responses), learning occurs. The nature and frequency of the stimulus and response determines this association (*Theory into Practice*, 2003). Thorndike's connectionism theory led later researchers to continue studying feedback, and in more depth.

Operant conditioning theory. As discussed previously, feedback could be used as reinforcement in behaviorism. More specifically, reinforcement is the key element in Skinner's operant conditioning theory. Skinner's study of programmed instruction found that reinforcement and motivation are feedback's function (Mory, 2004). When students are presented with stimuli, response will follow simultaneously (*Theory into Practice*, 2003), and the use of positive reinforcement and punishment strengthens the stimulus and response.

Experiential learning theory. Tomei (2003) mentioned that the teacher is primarily a facilitator of learning. A traditional teacher takes full responsibility for the learning process, while the teacher in distance education shares the responsibility of learning with the students (*Theory into Practice*, 2003). The instructor should provide frequent, positive feedback to encourage students to be self-motivated. In addition, students should have the opportunities to practice their own skills and receive timely and quality feedback about their performance (Kulhavy, 1977).

Conditions of learning theory. Even though different instructions have similar activities, such activities are required to produce both learning processes and outcomes (*Theory into Practice*, 2003). Gagne's nine events (Gagne, 1985, p.246-255) are the necessary conditions for learning, including: (a) gaining attention, (b) informing learners of the objective, (c) stimulating recall or prior learning, (d) presenting the content, (e) providing learning guidance, (f) eliciting performance, (g) providing feedback, (h) assessing performance, and (i) enhancing retention and transfer. Gagne's theory suggests that when feedback is given, with all examples as correct or incorrect, the student is reinforced for a certain behavior. He supports not only the behavioral aspect, but also follows with assessing performance and enhancing retention and transfer, which are displayed in the eighth and ninth events (*Theory into Practice*, 2003).

Feedback in Distance Learning Environment

As mentioned before, feedback serves as a useful tool in distance learning environment. Knowles (1984) demonstrated that students use feedback to build their skill upon their previous knowledge. The relationship between the value of feedback in an online environment and design of learning activities cannot be ignored. Lynch (2002) asserted that students construct their knowledge based on feedback experience through online learning activities and assessments.

Theoretical Framework. Theoretical perspectives on cognitive psychology appeared in the educational technology literature in the early 1990s. This focus is on students' knowledge construction and active learning in real learning tasks (Duffy & Jonassen, 1992). This emphasis has implications for both the content of feedback and the activity of students in receiving and giving it. The primary focus was to explain how students learn, with potential for social learning tasks and feedback in social constructivism. Holmes and Gardner (2006) extended these concepts to constructivism to reflect the "hugely magnified opportunities for communal support for

learning --- and, most importantly, for providing a medium to store and make available the knowledge created by the learners" (p.85) through one-to-one, one-to-many, and many-to-many opportunities for interaction and feedback made available by e-learning environments, which draws on the community of practice. This highlights the nature of feedback in distance learning environments, extending beyond the roles of individual teacher and student to peers and other people and resources. This challenges the relationship between educator and student in providing and receiving feedback. It also raises the concept of transactional control in the use of social software (Dron, 2007) where knowledge builds through collaborative engagement, and feedback integrates as part of this engagement. In addition, transactional control is a useful notion for managing feedback in distance learning environments.

Functions of feedback. Most research about feedback in distance education focused on the functions of feedback. The researchers pointed out that feedback could be used as interaction, assessment, motivation, correction, reinforcement, etc. Previous research in this area focused on feedback as reinforcement, correction, and motivation. With the development of technology, recent research about feedback related to interaction and assessment has been launched.

Interaction and feedback. Shotsberger (1996) emphasized the value of interaction and feedback, since they both increased the quality and successful learning in distance education. Moore and Kearsley (1996) believed that both interaction and feedback can be used to motivate students to complete a course. Feedback can also be used for students and instructors to communicate. Distance cut off the interaction between students and instructor, which became a major issue in web-based learning environment (Mory, 2004). Swan (2002) supported that learner-instructor interaction is the most important type of interaction in distance education and the study on learner-instructor interaction mainly focused on feedback. This report comes from

an empirical study of correlation between student learning and interaction with instructors and peers. She reported, after collecting data from 73 online courses, that frequency and immediate feedback was vital to online interaction, especially asynchronous communication. What is more, feedback played an important role in meaningful communication.

Assessment and feedback. Most researchers agree that assessment is crucial in the learning process, and feedback students received about it also plays an important role. Effective feedback on assessment is the most crucial component in distance education courses, where comments on assignments provided through feedback may be the only learning communication between student and instructor (Simpson, 2002).

Correction and feedback. As early as 1984, Steinberg pointed out that interactive capability is considered one of the most important instructional characteristics in the computer-mediated learning cycle. Students are required to offer responses to questions and computers can be utilized to provide feedback to each individual. Here, feedback is not just expressing "Right" or "Wrong". The key feature of feedback is to inform the students detailed information when their answer is wrong (Steinberg, 1984). Information given through feedback consists of "right" or "wrong" and corrective information.

Motivation and feedback. In distance education, students are separated from instructor and peers. Feedback can be used to encourage students who lost confidence when meeting difficulties. Motivation influences learners performance on learning tasks (Hoska, 1993). Feedback provides motivation for the learners and encourages them to meet their instructional goals (Dempsey et al., 1993), and feedback serves as motivation to overcome the difficulties (Sales, 1993) in order to increase their learning confidence.

Designing aspects. Instructors use empirical results to guide feedback design in distance education (Mason & Bruning, n.d). Instructors must be concerned with providing adequate feedback in course design for distance learners (Howard, 1987; McCleary & Eagan, 1989). Howard (1987) proposed that feedback is the most important consideration in course design. Hence, instructors should consider many factors to make sure that the feedback they provide to students could help students to improve their learning. The factors include feedback source, feedback types, feedback elaboration, and strategies. In addition, there are also other issues which maybe include what those other issues are?

Feedback Source. Distance education is another choice for students who cannot take face-to-face classes and numerous courses are designed to cater to this need; feedback is essentially a form of communication between the students and instructors. Some researches indicated that students can get feedback externally by instructors, peers and internally by themselves. Perry and Edwards's (2006) qualitative research indicated that feedback given to graduate students through the internet shows positive effect in distance education. Roehler and Cantlon (1997) stated that students provide feedback to each other in the hope of learning from each other, co-constructing knowledge and understanding, and thus, making progress. Black (2005) also reported that peer feedback was used for sharing and comparing information. Moursund (2007) pointed out that when students read, they reflect on what they read; they test what it says against what they already know; And they connect what they read to what they have in their memory in order to acquire information. They read the materials again and again for better understanding. In this process, all the activities students did are a form of self-feedback. By providing self-feedback, students can reread, rethink, and react to improve their

understanding of the new materials and information. Unfortunately, there is little research about self-feedback.

Feedback types. They purpose of investigating feedback is to help students find solutions for questions in distance education. Feedback can be different in the content and time of presentation (Vasilyeva et al., 2007). These authors reported that feedback properties are especially important in application since students have different kinds of individual characteristics and goals. Types of feedback have been investigated broadly. Mory (2004) states that there are many empirical studies about feedback's usage in the learning process. In the literature, existing types of feedback are classified according to different parameters (Mory, 2004; Narciss & Huth, 2004). In distance course design, an instructor can choose appropriate types of feedback for different students according to specific situations.

Vasilyeva et al. (2007) stated that feedback classification's origins in studies of control systems categorized feedback into positive and negative. They were also motivated by Mory's (2004) statement and classified feedback into no feedback, knowledge of response feedback, knowledge of result or simple verification feedback, knowledge of correct response or correct response feedback, answer until correct or try-again feedback and elaborated feedback (p.8) according to how much and what kind of information it provides. Immediate feedback and delayed feedback are classified according to the time when students received feedback, namely getting feedback during learning or at the end of learning. (Vasilyeva et al., 2007). Furthermore, they classified feedback into immediate, continuous, and summative by the steps in which students are during learning. Grading information classified feedback into formative and summative. In 2005, Hancock et al. pointed out that objects of learning caused appearance of group and individual feedback.

Elaboration. According to Kulhavy and Stock (1989), feedback can be verification or elaboration. When compared to verification, elaboration has more information. Gilman (1969) pointed out that providing students with information about which answer is correct with the reasons why it is correct is much more valuable than only telling the students whether it is right or wrong. Feedback including both verification and elaboration can make learners aware of what mistakes they made and restore the correct answers (Mason & Bruning, n.d). Several studies (Merril; 1987; Mory, 1994; Park & Gittelman, 1992) have found that there is no difference for giving elaboration feedback in computer-based learning and instruction. While a larger number of researchers show that elaborated feedback enhances learning (Clariana, 1990; Gilman, 1969; Morrison et al., 1995; Priderman & Klein, 1991, 1995; Roper, 1977).

***Strategies*.** Providing feedback to students is important no matter whether it occurs in a traditional class or in a distance class, although it is more difficult in distance learning. Instructors often feel frustrated due to the ongoing multiple emails (Hismanoglun & Hismanoglun, 2009). Since students have no chance to receive an explanation from instructors about their assignment's problems, the provision of feedback can allow students to build a relationship with the instructor. Many factors, including students' personal characteristics, online course features, and available message delivery tools influence methods of providing feedback (Hismanoglu & Hismanoglu, 2009). In this sense, according to the critical reviews of Hismanoglu and Hismanoglu (2009) and the Illinois Online Network (2005), the only two types of feedback are described, information feedback and acknowledge feedback. Three strategies used for information feedback include the following: 1) setting up time lines for individuals to self-grade and return assignments, 2) arranging office hours for on-campus students, and 3) setting up time lines for discussion boards for distance learners. Technologies (e.g. PDF

scanners, Microsoft Word, Adobe Acrobat) also allow feedback, which offer strategies such as inserting electronic comments. Student developed tests and quizzes also offer venues to get feedback to students regarding their own learning. Comparatively, acknowledgement feedback is directed mainly towards distance learners. Therefore, exemplars of strategies include showing clear statements regarding the response policy in a syllabus, taking note of absent students, and reminding them privately to protect their identity. Also for distance learners, feedback should include establishing special assignment submission programs and notifying students about their assignment submission (*Illinois Online Network*, 2005).

Others. In distance learning environments, not all students and professors have the skills or computer equipment necessary to communicate (Hansen, Shinkle & Dupin, 1999). Even though the skills and equipment were available, students and instructors may use different computer programs or computer brand for communication, which means that students could not read the professor's material. These technical frustrations distracted from the learning process or even blocked the learning process.

Learner characteristics. In distance education, delivery methods change the course from instructor-centered to student-centered (Markel, 1999), so it is important to know the characteristics of the distance learners in order for instructors to understand the potential barriers when designing a distance course. Although it may not guarantee that students' characteristics are elements influencing their success, it may be a factor which hinders success (Galusha, 1997). Therefore, research is categorized by prior knowledge, students' attitude toward feedback, learner control, response certitude and gender in this section.

Prior knowledge. People learn with the help of their prior knowledge and abilities. The literature about feedback points out students' prior knowledge can be considered as a key

characteristic (Hannafin, Hannafin, & Dalton, 1993). Actually, many researchers agree that "to be effective, feedback needs to be compatible with students' prior knowledge" (Hattie & Timperley, 2007, p.104). Learners who have high prior knowledge spent less time on understanding feedback given by instructors, even though they have no chance to communicate with others at a specific time. They can use their previous information and rethink the problems. In contrast, learners with low prior knowledge need additional support. Krause, Stark and Mandl (2009) investigated the impact of feedback in relation to learners' prior knowledge. College students solve statistics problem in a computer-based learning environment. Data collected from 137 students who studied education and psychology indicated that prior knowledge has a significant relationship with feedback. Students with low prior knowledge can get higher score in posttest after learning from feedback.

Students' attitude toward feedback. According to Pridemore and Klein's (1991, 1995) research, students' attitude toward feedback is not necessarily related to learning outcomes. However, feedback's prominent function in distance education cannot be ignored even though students' attitude toward feedback cannot affect the importance of feedback. Students' expressed desire for more elaboration and more immediate feedback was found in studies by Pridemore and Klein (1991, 1995) and Waddick (1994). Furthermore, in Waddick's case study, students expressed that constant and immediate feedback is much more useful than classroom instruction in online learning. Comparing verification feedback with elaboration feedback, Pridemore and Klein (1991) found that students desire additional information when receiving verification feedback. In addition, research by Pridemore and Klein (1995) corroborated that it would be better for students to get more detailed feedback.

Learner control. In distance education, learner control's effect on feedback has not been well studied. In Waddick's case study (1994), learners were given the opportunity to access feedback at their own discretion in computer-based instruction. Without statistical data, the author only described positive views from the students. From the result of Pridemore and Klein's (1991) study, students who asked for feedback and who were given feedback exhibit the same behavior and learning ability. Schimmel (1988) recommends that learners who have prior knowledge and ability of self-learning should have a chance to choose what kind of feedback they want to receive.

Response certitude. Students' self-confidence about their performance of answering questions is one variable of affecting feedback in distance education, which can be named as response certitude. This term could also be referred to as response certainty, which is the estimate of the learner's basic feeling of how much they understand about a particular topic according to their own prior knowledge (Kulhavy & Stock, 1989). Response certitude is significant which demonstrates that students who answer questions correctly according to feedback do so because they either understand it or they just guess. On the other hand, an incorrect answer may result from different kinds of variables, from careless error to lack of understanding.

Mory (1994) examined response certitude in distance education from earlier studies (Kulhavy, 1977; Kulhavy & Stock, 1989; Kulhavy, Yelovich & Dyer, 1976) and found there are difference in how long students spend analyzing and learning from feedback. He also found that students with low certitude responses spent totally longer time in studying feedback than students with high certitude responses.

Gender. Gender is also a variable which influences feedback in distance learning environments. Hodes (1985) performed research on students who received either corrective or non-corrective feedback, by collecting data from subject sorted by gender. Study results show that both boys and girls received same non-corrective feedback, but boys' grades are much higher than girls'. Researchers could perform further research regarding gender in computer-based feedback in the future.

Role of the instructor. Distance learning instructors instruct students in their learning and offer assistance according to the needs of individuals and groups – they are not just a communicator (Sherry, 1996). The responsibility of the instructor includes providing course content and making sure the students understand the content (Willis, 2002). Instructors have been required to pay much more attention to existing methods of providing students with corrective feedback in distance learning environments. Exploration of teacher feedback practices supports the notion that teachers should study the factors influencing the choice of tools and strategies used to deliver feedback. Smaldino (2003) pointed out that teaching in distance learning environment eliminates most of the visual cues. The pattern of students-teacher interaction provided in a traditional classroom can no longer be used by distance learning instructors. Unlike the traditional face-to-face interaction, instructors in the distance learning environment lack the body language that is used in the communication process. In a distance learning environment instructors do not have eye contact with students to verify that students are engaged in the class and that students understand the course material (Smaldino, 2003). Therefore, feedback has been considered as a main element to affect distance learning facilitation. Providing prompt feedback to students is critical, especially for distance learners.

Instructor feedback in a distance learning environment is more like a guiding process, which requires instructors to provide students with consistent feedback.

Technologies and Media. Technologies offer various media to deliver feedback. Moreover, the wide usage of the internet and related technologies have created a platform for teachers to rethink the way they deliver their feedback to students. Commonly and recently used media are listed below.

Feedback through email. In distance education, students can receive feedback from instructors through email. Feedback could be well used as long as students understand its fundamental functions. It is indisputable that email is a new medium for information delivery (Yu & Yu, 2002). For example, they found "empirical evidence supporting the usefulness of email as a promising aid to promote student cognitive growth pertaining to computer knowledge and skills" (p.123). Tao and Boulware (2002) found that students could be motivated, promoted by email since it provides learning opportunities for students. Smith, Whiteley and Smith (1999) defined email is a "viable alternative means of course delivery" (p.24).

Feedback through blog. Usage of blogs has been extended significantly, providing a useful tool for collaboration, self-reflection and peer feedback (Dippold, 2009). Dippold examined whether blogs can improve peer feedback among students in modern language classes. Her qualitative findings suggested that BLOGS are useful in receiving feedback from both faculty and peers. Kitchakarn (2013) designed a pretest posttest study. She sent a survey to 34 students who enrolled in a course named English for Expressing Ideas to express their opinions about peer feedback. Besides the survey, students were also invited to take two writing tests, and post a text to share their experience of using a blog with others. The result of the study revealed that students' writing scores on the pretest and posttest were significantly different, which means

that peer feedback activity through blogs had a significant role in improving students' writing skill.

Feedback through ePortfolio. The use of portfolio-based assessment in higher education plays a valuable role in implementing feedback strategies (Lambert & Corrin, 2007). Lambert and Corrin (2007) and Tang, Lai, Arthur, and Leung (1999) both state that ePortfolio feedback provides student learning opportunities to develop students' capabilities of reflecting, self-discovery, critical thinking and document usage. However, they also pointed out there are limitations to ePortfolio feedback. For example, in large class size, this approach is time-consuming to assess.

Feedback through Facebook. Facebook is the most popular social networking service. Recently, using Facebook to provide feedback becomes a popular research direction. McCarthy (2010) explored the use of Facebook in a blended architecture program at the University of Adelaide, and found that it provided important and rewarding feedback for students, especially because Facebook provided a social connectedness for students to connect with other students, in-particular international students from China and Malaysia. Charlton, Devlin and Drummond (2009) reported another Facebook study of engineering students from Newcastle and Durham University, where Facebook was used as a medium for student work, submission of assignments and communicate with other peers. They developed a platform named "CommonGround" on Facebook, which make students engaged in this area. The outcome of this study showed that Facebook provided positive effects in communication, collaboration and feedback.

All these findings indicated that feedback is not a simple concept. In order to make feedback effective in distance education, instructor needs to consider many variables. This analysis could offer them some guidance.

Chapter 3: Methodology

This chapter explained the content analysis methodology selected for this research project. Content analysis was defined as "a research method that uses a set of procedures to make valid inferences from text" (Weber, 1990, p.9). The references were about the message sender, the message, and/or message receiver. Then in 2004, Krippendorff defined content analysis as a "research technique for making replicable and valid inferences from texts (or any other meaningful matter) to the contexts of their use" (p.18). Further, he said that it was intended to provide a deeper understanding of a phenomenon to support the inferences. Generally speaking, images and symbols may be defined as text; however, according to the purpose of this study, only written words were considered. Neuendorf (2002) indicated that content analysis methodology traces back to social and behavioral sciences and follows scientific research.

This research project is mainly a descriptive analysis, describing articles with the terms feedback, feedback roles, feedback types, feedback functions, media and technologies to deliver feedback. Classifying, coding and analyzing the data were operational phases for this study (Babbie, 2007). Key words and high-frequency topics from the targeted articles were recorded.

Sample

The purpose of the study was to ascertain what is being written about feedback in distance education, since the importance of feedback in distance education is indispurable. The sample for this content analysis was articles selected from issues found in *Distance Education* journal which focus on feedback. Articles, which included feedback content and published from 1980 to 2013, were used. The researchers utilized the following terms as guidance to filter appropriate articles about feedback: feedback, feedback roles, feedback types, feedback

functions, media and technologies to deliver feedback. Book reviews, introductions, commentaries and responses, and forwards were not included in this study.

Distance Education is the official journal of the Open and Distance Learning Association of Australia Inc. (ODLAA). ODLAA is a professional association for teachers, developers, researchers, consultants and administrators from Australia and overseas involved in open and distance learning. *Distance Education* is the journal of ODLAA Inc., which is a leading journal in the field of open and distance learning. It is edited by associate professor Som Naidu and published by Taylor & Francis.

Furthermore, *Distance Education* is a peer-reviewed journal. It publishes research and scholarly material in the fields of distance, open and flexible education. It was one of the first journals published which focused exclusively on this area of educational practice, and it remains a primary source of original and scholarly work in the field for practitioners, teachers and students.

Data Collection

In order to collect articles to do content analysis, the researcher searched all issues from the *Distance Education* journal published from 1980 to 2013 from Virginia Polytechnic Institute and State University library. This content analysis used data from articles related to feedback. However, some standards also needed to be applied to assist selecting articles. Articles not related to feedback, not written in English, and not peer-reviewed were excluded from the content analysis (Manganello & Blake, 2010). When reading each article, general question guided reading and analyzing.

Articles provided from Virginia Polytechnic Institute and State University library are in digital version. The researcher opened each article shown as PDF form and typed in the word

feedback in order to establish if the word was present in the article. If so, it was read and analyzed.

Categories for Coding

Content analysis is a kind of research methodology which is used to think about the real content and themes. In this study, the analysis of feedback was used to explain the popularity and the importance of feedback in distance education as reflected in *Distance Education: An International Journal*. In order to best observe the content, not only was manifest content analyzed, but latent content was analyzed as well. Potter and Levine-Donnerstein (1999) mentioned that manifest content is easy to observe, for instance written words or phrases in a text. The researcher scanned each issues of the *Distance Education: An International Journal* for the content of terms of written words related to feedback. Next, the selected articles that met the requirements were read and evaluated by the researcher. Latent content helped researchers gain a deeper understanding of the text (Babbie, 2007). Through reading the articles, the researcher understood the underlying meaning of the content and categorized the issues according to key words and phrases.

Coding is "the process of transforming raw data into a standardized form" (Babbie, 2007, p.325). To avoid the bias of the researcher, Neuendorf (2002) emphasized that the coding themes should be determined before observation begins. The Coding Form (Appendix A) was used to support the objective observation (Neuendorf, 2002). The Coding Form "provides spaces appropriate for recording the codes for all variables measured" and it "should stand alone as a protocol for content analysis messages" (Neuendorf, 2002, p.132). The articles were read and analyzed in the order in which they were published, which made the analysis process much more clear and organized. The main coding themes were roles, sources, functions, technology and

challenges. A category of "Other" was included in this research, in case some articles meeting the selected criteria were not suitable to other themes. The coding form included: name of the article, year of the article publication, predetermined coding categories, and emergent themes and topics.

Treatment of Data

The total articles that met the requirement were recorded to assist the researcher in seeing and understanding the frequency and percentage of publications related to feedback. The researcher also counted key words and phrases to note the frequency of them and record the popular terminology. The major part of this research, content themes, presented qualitatively. A Coding Form (Appendix A) guided the content analysis procedure; Appendix B listed the articles from *Distance Education: An International Journal*, which met the criteria of this research project.

Two independent coders read and analyzed the articles with the help of the Coding Form. The journal articles were repeatedly and thoroughly read and analyzed. These activities were meant to increase the validity of the coding as well.

Social Work Ethics

Other methods of collecting data such as interview, questionnaires, or surveys were not required in this analysis. Therefore, there is no personal information from participants included. Hence, there are no concerns with regards to confidentiality, anonymity, or ethical rights of human subjects as a result of this content analysis. Therefore, because no human subjects were used in this research, this study does not need to gain approval from the Virginia Polytechnic Institute and State University Institutional Review Board.

Chapter 4: Results and Discussion

Results

Descriptive analyses were utilized for the purpose of ascertaining what has been written about feedback in *Distance Education: An International Journal* from 1980 to 2013 that included content related to feedback, feedback roles, feedback functions, technology and media to deliver feedback. This chapter will discuss the results of this study in two formats: one is providing the manifest content through quantitative analysis, and the other is providing the latent content through qualitative analysis.

Quantitative content analysis. The manifest content, which is easy to codify and observe, is shown quantitatively. The number of articles from each year was recorded to provide a basic idea of percentages and frequencies of the occurrence of feedback articles within the thirty-four year time period (see Table 2). The total number of articles in the *Distance Education* journal from 1980 to 2013 was 620, which excluded book review, introductions, commentaries and responses, and forwards. In these 620 articles, 358 (58%) of them included the term feedback in its content. Table 2 also expressed the percentage of each year's occurrence of feedback articles.

Table 2

Number of Feedback Articles Published from 1980-2013 in Distance Education: An International Journal

Year (Volume)	Total Number of Articles	Total Number of Feedback Articles	Percentages
1980 (Volume 1)	17	4	23.5%
1981 (Volume 2)	18	7	38.9%
1982 (Volume 3)	18	6	33.3%

1983 (Volume 4)	16	5	31.3%
1984 (Volume 5)	21	11	52.4%
1985 (Volume 6)	17	9	52.9%
1986 (Volume 7)	19	8	42.1%
1987 (Volume 8)	18	8	44.4%
1988 (Volume 9)	21	4	19.0%
1989 (Volume 10)	19	9	47.3%
1990 (Volume 11)	16	6	37.5%
1991 (Volume 12)	18	7	38.9%
1992 (Volume 13)	19	7	36.8%
1993 (Volume 14)	21	17	80.9%
1994 (Volume 15)	17	9	52.9%
1995 (Volume 16)	17	5	29.4%
1996 (Volume 17)	20	9	45.0%
1997 (Volume 18)	20	15	75.0%
1998 (Volume 19)	18	14	77.7%
1999 (Volume 20)	17	9	52.9%
2000 (Volume 21)	20	13	65.0%
2001 (Volume 22)	17	13	76.4%
2002 (Volume 23)	14	13	92.8%
2003 (Volume 24)	13	8	61.5%
2004 (Volume 25)	13	11	84.6%
2005 (Volume 26)	20	12	60.0%

2006 (Volume 27)	21	16	76.2%
2007 (Volume 28)	19	13	68.4%
2008 (Volume 29)	21	16	76.1%
2009 (Volume 30)	19	17	89.4%
2010 (Volume 31)	16	15	93.7%
2011 (Volume 32)	20	14	70.0%
2012 (Volume 33)	20	12	60.0%
2013 (Volume 34)	20	16	80.0%
Total	620	358	58%

The number of articles in the *Distance Education* journal including the term feedback is displayed in table 2. There is no doubt that feedback is an inextricable part of distance education. However, not all these articles were concentrated on the study of feedback. The researcher read all of the 358 articles that included the term feedback. One hundred and one of these articles simply mentioned feedback once or twice to indicate that feedback was one of the important elements in distance learning, or feedback played a vital role in instructional design for distance learning. Two hundred and twenty three of the articles in this journal involved studies focused on answering the questions of how the feedback was provided, the challenges when it was provided, and what kind of technology or media were used to deliver feedback. The rest of the articles were related to students' characteristics or the comparison of feedback in distance education versus conventional education.

A scatter diagram displays the general trends of research on feedback in distance learning (see Figure 1). From Figure 1, even though the research about feedback did not continuously rise, the general trends of authors' attention to feedback research in distance learning resulted in

a steady, upward climb. Even to the extent that 93.7% of the articles included the term feedback in 2010.

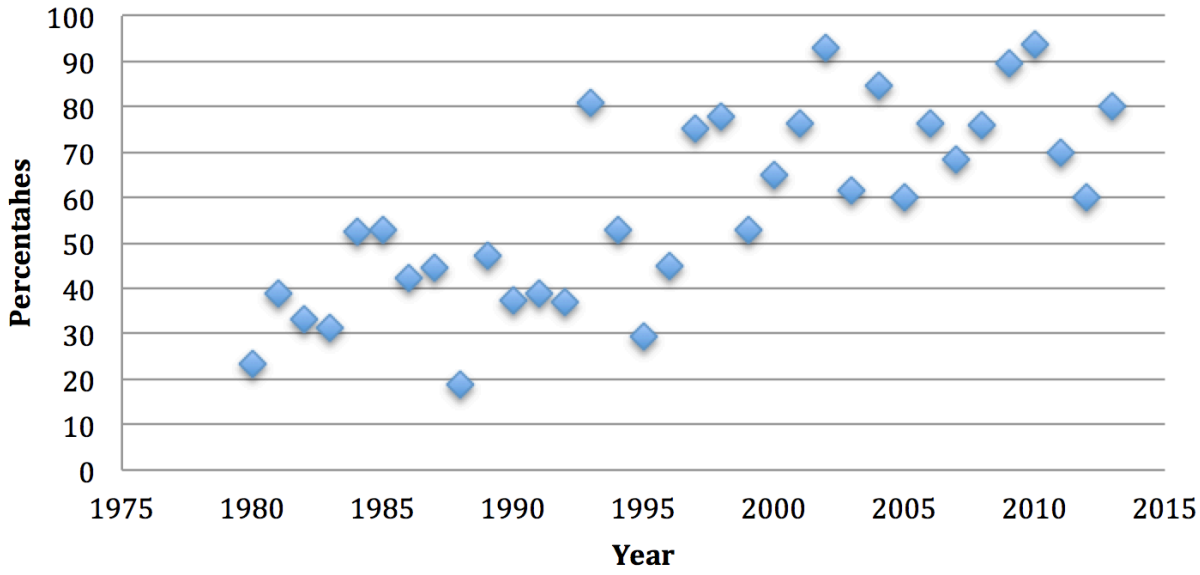

Figure 1

Qualitative content analysis. The general research question was kept in the researcher's mind, "What has been written about feedback in distance education in *Distance Education: An International Journal*", when reading and analyzing each article. Predetermined categories of roles, sources, functions, technology and challenges instructed the researcher to read and code articles' content, which included the term feedback.

The researcher and the independent coder had a meeting before they read and coded the materials separately to make sure the independent coder clearly understood the purpose of the study, research questions, and methods of data collection. Once the researcher and the independent coder analyzed the data, another meeting was conducted to discuss the coding results. The process of coding began with the researcher finding related articles through typing the term feedback in each digital version of the articles from each issue year by year. Three hundred and fifty eight articles were picked up. The researcher read each articles, recorded the

important information and decided what topic each article belongs to. At last, each article was put into the corresponding categories based on the topics (see Appendix C).

In Appendix C, it can be seen that some topics did not belong to the predetermined categories mentioned in methodology chapter. In those cases researcher put them into an "other" category and divided them into feedback types, articles that only mention feedback, importance of feedback, students' characteristic and etc. The percentage of topics appearing in the journal listed from high to low below:

- Sources: where students got feedback and students provide feedback (34%)
- Articles only mention feedback (18%)
- Types of feedback (17.3%)
- Technologies and media: way to deliver feedback (15%)
- Importance of feedback (10%)
- Challenges: students meet problem and quit or drop out because of feedback (8%)
- Functions: feedback to interact, motivate, correct (3%)
- Other: students' characteristics, comparison of feedback in DE and CE, roles (1.6%)

Figure 2 was provided by the researcher to show why different topics belonged to their corresponding categories. In addition to all this information, table 3 identified number of articles covered in six categories by year published in the journal from 1980 to 2013.

Reinforcement Feedback role	Roles
Feedback from tutors/teachers/instructors Feedback from students/peers/classmates Feedback from computers Feedback from log date	Sources
Interaction Motivation Correction	Functions
Different technologies/software/social network and etc. used to deliver feedback	Technologies and Media
Quality problem Cultural problem Difficulty/Obstacle Drop out problem	Challenges
Types of feedback Method to deliver feedback Only mention feedback Importance of (immediate) feedback Students' characteristics Comparison of feedback in DE and CE	Other

Figure 2

Table 3

Number of Articles Covered in Six Categories by Year Published in the Journal from 1980 to 2013

Year	Number of Articles in Six Categories					
	Roles	Sources	Functions	Technology	Challenges	Other
1980	0	0	0	0	0	3
1981	1	4	0	0	1	1
1982	0	3	0	1	0	3
1983	0	0	1	1	0	3
1984	0	0	0	2	3	6
1985	0	2	0	2	2	6
1986	0	1	0	2	1	5
1987	0	2	0	3	1	1
1988	0	0	0	1	1	2
1989	0	4	0	2	1	5
1990	0	4	0	0	0	2
1991	0	1	0	0	3	4
1992	0	1	0	3	0	4
1993	0	4	1	2	1	11
1994	0	3	0	1	1	6
1995	0	1	1	1	0	2
1996	0	3	0	5	0	3
1997	0	6	0	2	0	8

1998	0	4	1	5	0	6
1999	0	4	1	1	0	4
2000	0	6	2	1	0	5
2001	0	3	1	1	1	8
2002	0	9	0	0	1	3
2003	0	3	1	2	0	2
2004	0	3	1	3	1	5
2005	1	7	1	1	2	1
2006	0	7	0	5	0	5
2007	0	4	0	2	1	8
2008	0	4	0	2	0	11
2009	0	8	0	0	0	11
2010	0	9	0	2	2	4
2011	0	4	1	0	2	9
2012	0	4	0	1	2	6
2013	0	6	1	3	3	4

Through three times of completing the coding process by the researcher and the independent coder, the researcher decided to use some specific themes name to describe the results. Themes such as feedback types, feedback provider, ways to deliver feedback, and feedback quality were used in this analysis.

Feedback types. Feedback helps students learn more information, since it tells students what to revise and rethink after they receive comments and corrections about their work.

Feedback can be different depending on the content and time of presentation (Vasilyeva et al., 2007). The reason for investigating feedback types in distance education is that instructors could choose appropriate types of feedback for different students according to their situations. Hyland (2001) indicated that different types of feedback could meet students' real needs and learning contexts. There were many researchers who classified feedback into positive and negative, no feedback, knowledge of response feedback, knowledge of result or simple verification feedback, knowledge of correct response or correct response feedback, immediate and delayed, and formative and summative.

Among all of these types of feedback, immediacy of feedback is the most popular factor that many researchers emphasized as important. Sewart (1980) pointed out that the difference between distance learning and conventional learning was that swift feedback was almost entirely unavailable in distance learning. Coldeway and Spencer (1982) did a research study at Athabasca University using Keller's Personalized System of Instruction as a basic paradigm for distance education. The results of the study suggested we should not underestimate the importance of immediate feedback, because "it is quite possible that the delivery/management system which is necessary to provide students with immediate feedback was actually what caused the differential completion rates" (p.60). Students expressed their belief that immediate feedback enabled them to complete the course more quickly than they expected (Andrews & Strain, 1985). As late as 2011, there were still some researchers who reported that students would like to receive immediate feedback on their practice exercises or work to obtain effective learning.

External feedback and internal feedback were studied and pointed out by Furnborough and Truman (2009). External feedback refers to "the comments provided by tutors on students' assignments" and internal feedback "is generated when students interpret, construct, and

internalize external feedback" (p.401). Self-questioning techniques were good methods for students to provide their own feedback and evaluate their learning. From the conclusion of Nicol and Milligan's (2006) research, external and internal feedback could not be used separately; they are interrelated. This simply means that external feedback could not function effectively unless it stimulated internal feedback successfully.

Assignment feedback was discussed by Roberts (1996) and Furnborough and Truman (2009). It was widely used by instructors to tell students how they performed on the assignments they submitted. However, Roberts (1996) stated that assignment feedback was not often given much attention to as a skill in distance learning. To date, the Open University had hardly considered students actual needs in assignment feedback. This lack of consideration, it must be added, caused many problems, such as students' confusion about what constitutes effective feedback, differing feedback needs, and their preference for the feedback received on tutor-marked assignments or computer-marked assignment. Furnborough and Truman (2009) concluded in their research that assignment feedback is seen as "a means of supporting students and providing individualized tuition, but it can only do so if students understand its purpose and are aware of its potential" (p.413).

In 2013, some new types of feedback were presented and studied. Guasch, Espasa, Alvarez and Kirschner stated that Alvarez et al's (2011) study identified four types of feedback: corrective feedback, epistemic feedback, suggestive feedback, and epistemic + suggestive feedback. Corrective feedback has already been mentioned before. It is the first major type of feedback, as Mory (1992) indicated that researchers considered feedback primarily as serving to correct. Corrective feedback refers to "comments about the assignment requirements and the adequacy of the content" (p.326). Epistemic feedback refers to "requests for explanations and/or

clarifications in a critical way" (p.326). Suggestive feedback includes "advice on how to proceed or progress and invites exploration, expansion, or improvement of an idea" (p.326). Epistemic + suggestive feedback is "the combination of epistemic feedback and suggestive feedback" (p.326). Guasch et al (2013) did research on these types of feedback and discovered that students who received epistemic or epistemic + suggestive feedback produced a higher quality of writing than students who received either corrective feedback or, more importantly, suggestive feedback. Furthermore, students' interaction was promoted by epistemic feedback or epistemic + suggestive feedback to a higher level.

In addition, there are also some types of feedback that were only mentioned in researchers' articles but researchers did not provided detailed information about them, like evaluative feedback, explanatory feedback, constructive feedback, diagnostic feedback, periodic feedback, etc.

Feedback provider. Studies about feedback led to the research on tutors who were considered as a crucial factor in successful learning (White, 2005). They were also called instructors and teachers in the articles of this journal. In distance learning environments, the role of tutors changed from providing learning content to providing feedback (Sims, 2003). They were the link between the students and learning materials. They help students make progress through a course, and provide immediate feedback on their performance (Coldeway & Spencer, 1982). To date, the tutor's role is to "comment on students' written work, grade assignments, help students to understand the course materials, answer students' queries about the teaching system, help students to plan their work better, organize self-help groups, conduct face-to-face tutorials, lectures, supervise project work, provide the institution with feedback on course materials and student problems" (Rumble, 1981).

Among the many responsibilities of the tutor's, the tutor's feedback was considered more important than any other role. Feedback plays an important part in distance learning. There is a phenomenon that student dropout rate in distance learning was a little bit higher than face-to-face class. Feedback given from tutor to students and a quick turnaround time was considered as the factors for decreasing the dropout rate on a course study (Mann, 1998). Actually, tutor feedback could make students feel confident, motivate their learning enthusiasm, correct students mistakes that are made during learning, evaluate their own learning progress.

Tutors not only provided feedback to students, they also received feedback from students about problems with course materials. In distance learning, regular and effective feedback to a teacher could help the teacher rethink their instructional design materials and improve their performance and teaching skill. Cheung (1998) mentioned in his article that students gave tutor or instructional designer diagnostic feedback in order to improve course quality, such as course objectives, course delivery methods.

Students not only received feedback from tutors, but also received feedback from peers. Students regarded both receiving and providing feedback as a perfect enhancement to their learning because they could see the strengths and weakness of other people through the providing of feedback and see their own strengths and weaknesses through receiving feedback (Lou, 2004). A study from North Carolina Virtual Public School (NCVPS) showed that students desired "peer interaction, quick responses to their questions, and rapid feedback on submitted assignment" (Olive, Osborne & Brady, 2009, p.39). For international students, feedback and comments from their peers was useful as well (Samarawickrema, 2005).

> "I think it's good to have the chance to communicate with other students and your lecturer and teacher and the like because in school you need the

> chance to ask questions in an informal way. Especially if you are from another culture." (p.61)

However, another study expressed that students who received epistemic or epistemic + suggestive feedback preferred teacher feedback to peer feedback. They thought teacher feedback was much more reliable (Guasch et al., 2013).

Computer-generated feedback appeared in the articles of this journal. Roberts (1996) called it computer-marked assignments, which means that the feedback was provided by computer systems. In one study, researchers found that the majority students do not care whether the feedback is given from either the computer or the tutor. At the same time, two students expressed that they preferred feedback given from the computer since it was quick and comprehensive. Kanuka and Nocente (2003) responded positively to the function of computer-generated feedback on the assessment Web pages. In contrast, the Open University in the UK (UKOU) considered tutor-marked assignment as the primary method to communicate with students and provide feedback to students in their learning process.

Ways to deliver feedback. In distance learning, teachers and students are separated. Tutors need to provide learning materials to students, and provide feedback to students after students have submitted their assignment in order to let students realize that they are not alone.

The earliest methods used to fulfilled two-way communication in distance education were the printed document and the postal system, which could date back to 250 years ago (Garrison, 1985). Of course, this kind of method has a lot of shortcomings. For example, students who live in rural areas or areas with undeveloped postal system spend weeks or months to receive feedback from tutors. Students may lose patience in such situation and give up continuing their studies.

An additional consideration is the electronic transmissions involved in distance education. Coldeway and Spencer (1982) performed research to prove that it is possible to use Keller's Personalized System of Instruction (PSI) as a basic paradigm for distance learning. In this study, the question was answered of how to provide the students with immediate feedback. It mentioned that students were given feedback through PSI-Mail or PSI-Phone. The results of the study indicated that the telephone was successfully implemented in a PSI model to give immediate feedback to students. According to the research, mail and phone were used as the media to deliver tutor and student interaction and feedback. Actually, several researchers had also pointed out that mail and phone could be used as methods to deliver feedback. For instance, using the telephone was the main method to interact in distance learning in Sweden (Wille'n, 1983). Then print text, audiocassettes, fax, CD-ROM and video tapes were gradually used as methods to establish contact between teachers and students. In the 1990s, computers gradually became popular and were used for educational purposes, since this new type of technology provided better quality feedback. Holt and Thompson (2006) stated that "new technology developments are more quickly and strongly moved into the worlds of teaching and learning, and more continuously reviewed and revised in response to teacher and student feedback" (p.214).

Science courses have been greatly influenced by the development of computer technology (Shott, 1985). Examples were "computer simulations for video tapes, computer tutorials (passive or interactive), self-assessment programs, continuous assessment with feedback" (p.127). Halabi, Tuovinen and Smyrnios (2000) conducted research on providing students feedback via a computer-based learning model. During the research, a number of students expressed their positive attitudes about computer-based learning and indicated that material provided by computer was useful, they can understand instructor easily, and the feedback was good.

> "I am a novice to PCs, using one for the first time this year. I had no problems with the CBL package and thoroughly enjoyed it. Instant feedback is one of its greatest advantages – something we miss with DE…Many thanks," and, "The computer-based learning software and the feedback were excellent. The feedback…added a personal touch". (p.174)

Email was used as a consequence of developing computer technology. Ten authors brought up that instructors use email to provide immediate feedback to help students feel confidence in distance learning.

With the wide usage of computers in distance learning, some software, which was easy to use and could provide good feedback, was created by developers to support teaching and learning. Second Life is one of them, which is an online virtual world. Childress and Braswell (2006) constructed and used massively multiplayer online role-playing game (MMORPG) Second Life to improve communication and interaction in an online course. Second Life made educators and their students feel that they were learning in a vivid digital world. It can also help students think they are in a face-to-face class and overcome anxiety and upset. The conclusion of this article was that Second Life showed a positive impact in distance education. In addition to this, modern media like Twitter, Facebook, ePortfolios, on-line forum and chat tools were suggested as methods to provide feedback as well.

Feedback quality. In distance education, feedback built a bridge between instructor and students, students and students, students and learning environment. Hence, the importance of feedback is hard to overlook. Feedback quality directly impacts the learning outcomes. However,

Andrews and Strain (1985) stated that a problem which it is hard to control is the tutors' feedback quality and turn-around time of feedback given to students, since quality of feedback varies among different tutors. For students, it would be better for them to get continuous, objective and instructional feedback. Garrison (1985) cited Store and Armstrong's (1981) study and listed that "immediacy, regularity, explanation, conciseness and clarity" (p.234) are good feedback standard.

In Roberts (1996) assignment feedback's research, the question "what are the elements of effective feedback" was answered. According to students' response, he summarized that students often pointed out three elements of good feedback:

1. Students prefer to receive an encouraging, supportive feedback from the tutor.
2. Feedback from tutor apparently demonstrated where students made mistakes in their assignment.
3. Students would like to get feedback with an explanation of how and why they are correct from the tutor's comments or model answers when they chose the right answer.

Therefore, tutors should bear in mind several components when they provide feedback to promote meaningful learning in distance education. Components (Sageder, 1988, p.239) included:

1. evaluating comments on student's achievement,
2. exemplary task solution,
3. diagnostic commentaries on student's solution,
4. therapeutic hints at additional learning materials

Research on feedback was carried out many years ago. There were not too many practical and meaningful definitions of feedback at early stages. Since then, more and more research about

feedback has been explored. But there are still many aspects needing to be researched in the future because of the rapid development of learning environments and rapid development of technology.

Many researchers have investigated the importance of immediate feedback in distance learning. Students expressed the positive aspects of immediate feedback, which helps them to not feel isolated and lonely. However, Kulhavy and Anderson (1962) pointed out a situation: the delayed retention effect (DRE). After students submitted the wrong answer, delayed feedback may let them forget this wrong answer, and the new correct answer could be more easily learned and better remembered. Research about when to provide delayed feedback, in which situation delayed feedback could be provided can be studied and discussed in the future.

Generally speaking, feedback was used to help students make progress in their distance learning. Under certain circumstance, students received feedback that was formal; with a targeted purpose to show the correctness of their assignments. Hence, Cropley and Nahl (1983) compared face-to-face education and distance education and noted that learners' age, self-efficacy, capability and far-sightedness strongly influenced the effects of feedback. Research is mostly, however, performed about tutors and the part they play in supporting students and deliver feedback; tutor's can provide feedback for students to rethink their material and improve their performance. In the future, researchers could perform research from the student's perspective, such as considering students' age, their receptivity and prior knowledge when designing feedback.

Other than that, students' characteristic also raise another problem: whether it is possible or necessary to provide individual feedback. In Roberts (1996) research, some students expressed that they thought all students needed the same kind of feedback, while a few students guessed

that individual feedback to different students is needed. The reasons included "the marks attained, the degree of isolation of the student, level of confidence, previous knowledge and motivation for doing the course unit" (p.104).

From many of the research articles, most people thought that the combination of tutor and peer feedback would impact learning effectively. However, in Guasch et al. (2013) study, students expressed that they prefer tutor feedback to peer feedback, since they regarded the tutor feedback was much more reliable. But there was no evidence to say that peer feedback cannot improve students' learning independently.

Drop out problems in distance education happened from time to time. Institution and students alike were all interested in this issue. But, it is difficult to find out the reasons why students dropout. Some students thought it takes too much time to study (Ashby, 2004). Some thought that distance courses are easier than conventional ones (Nash, 2005). There were also some other reasons, such as lack of funding, lack of time, lack of patience, poor time management, and poor instructions. In addition, Angelino et al. (2007) stated that lack of timely feedback and feelings of isolation may have been reasons leading to students drop out. Roberts (1984) did the research about ways of reducing early student drop out rates and he believed that students quit because they do not receive much swift feedback and have no a peer group to measure their own performance; they have difficulties in receiving quick and meaningful feedback. Researchers could do some research to find out what kind of difficulties students have in receiving quick and meaningful feedback in order to reduce drop out rates or avoid the dropout problem if possible in the future.

However, feedback does not always improve learning, while it could also play the opposite way, namely, decrease the learning procurement. McGill, Volet and Hobbs (1997) collected data

through a student survey and found the result that because in distance education, it is hard to get face-to-face communication opportunities that provide immediate feedback for students, tutors could not provide early and appropriate assistance when students really need it. Some students far away from the instructors expressed that it was difficult for them to get in-depth feedback; while some expressed that delayed feedback made them feel anxiety since they thought delayed feedback may influence their learning process. For example, students registered for the wrong courses, obtained wrong learning materials because they could not contact the school or instructor to correct mistakes in time in distance learning (Nielsen, 1997). In sum, feedback is not always positive.

Discussion

To answer the general research question of what has been written about feedback in distance education in *Distance Education: An International Journal*, a content analysis was performed. The term feedback and related phrases were used to find out the criteria articles, and helped generate themes after analyzing the articles.

The importance of feedback in distance education has already been emphasized again and again not only in this journal but also in many other journals related to distance learning. Feedback encourages student learning. Moreover, some students considered feedback as instructor presence. But through this entire journal, two hundred and sixty-two articles concentrated only on feedback study even though researchers realized that feedback plays a vital part in distance learning. The majority of the articles that had the term feedback even once or twice made a contribution to categorizing the articles. Feedback types, feedback provider, ways to deliver feedback, and feedback quality were mainly discussed. Only were these old topics that appeared in literature review discussed and emphasized by researchers from this journal. There

were no new themes or interesting ideas that drew researchers attention when reading and coding the articles.

Feedback's functions are correcting students' mistakes, improving students' weaknesses, encouraging students, motivating students, guiding learning processing, interacting with students, enhancing learning environment, and evaluating their performance. Therefore, feedback may be considered as the only tool to communicate, to interact, and to establish contact between students and instructors, students and students, and students and learning environment. Researchers suggested instructors providing consistent, timely, high-quality and thorough feedback to students.

Distance education has existed for a long time. It helps students get information from outside of the conventional learning, as it was called external study in the early 1980s in Australia. Appearance of distance education makes some peoples' dream come true. Some adults have no chance to obtain higher education because of one reason or another. When they expected to go back to school to continue their study, work and family issues held them back. But distance education is not perfect. There are still many problem needed to be solved. From this content analysis study, the research studies about feedback in distance learning were not constructive and creative. Of course, it must be pointed out that the articles used in this content analysis were all from one international journal, which is a limitation of this study.

Reference

Alvarez, I., Espasa, A., & Guasch, T. (2011). The value of feedback in improving collaborative writing assignments in an online learning environment. *Studies in Higher Education*, 37, 387-400. doi: 10.1080/03075079.2010.510182

Anderson, R. C., Kulhavy, R. W. & Ander, T. (1971). Feedback procedures in programmed instruction. *Journal of Educational Psychology*, 62, 148-156.

Anderson, R. C., Kulhavy, R. W. & Ander, T. (1972). Conditions under which feedback facilitates learning from programmed lessons. *Journal of Educational Psychology*, 63, 186-188.

Andrewartha, G. (1996). Improving the presentation of printed text for tertiary level distance education: literature review and survey. *Distance Education*, 17(2), 387-411.

Andrews, J. & Strain, J. (1985). Computer-assisted distance education: off-line and on-line American experiences. *Distance Education*, 6(2), 143-157.

Angelino, L. M., Williams, F. K., & Natvig, D. (2007). Strategies to engage online students and reduce retention rates. *Journal of Educators Online*, 4(2), 1-14.

Ashby, A. (2004). Monitoring student retention in the Open University: Definition, measurement, interpretation and action. *Open Learning*, 19(1), 65-77.

Azevedo, R., & Bernard, R. M. (1995). A meta-analysis of the effects of feedback in computer-based instruction. *Journal of Educational Computing Research, 13*(2), 111–127.

Babbie, E. (2007). *The Practice of Social Research.* Belmont, CA: Thomson Higher Education.

Bangert-Drowns, R. L., Kulik, C. C., Kulik, J. A., & Morgan, M. T. (1991). The instructional effect of feedback in test-like events. *Review of Educational Research, 61*(2), 213–238.

Bardwell, R. (1981). Feedback: How does it function? *Journal of Experimental Education*, 50, 4-9.

Barringer, C., & Gholson, B. (1979). Effects of type and combination of feedback upon conceptual learning by children: Implications for in academic learning. *Review of Educational Research*, 49(3), 459-478.

Bennett, S. (1979). *A history of control engineering, 1800-1930*. New York: Peregrinus for the Institution of Electrical Engineers.

Black, A. (2005). The use of asynchronous discussion: Creating a text of talk. Retrieved October 3, 2005 from http://www.citejournal.org/vol5/iss1/languagearts/article1.cfm

Bloom, B. S. (1976). *Human Characteristics and School Learning*. New York, NY: McGraw-Hill.

Brown, J. (2007). Feedback: the student perspective. *Research in Post-Compulsory Education*, 12(1), 33-51.

Brown, J. S., Collins, A., & Duguid, P. (1989). Situated cognition and the culture of learning. *Educational Researcher*, 18(1), 32-42.

Butler, D. L., & Winne, P. H. (1995). Feedback and self-regulated learning: A theoretical synthesis. *Review of Educational Research*, 65(3), 245-281.

Carlson, C. R. (1979). Feedback for learning. In Milton, O (ed.). *On College Teaching* (pp. 125-152). San Francisco, CA: Jossey-Bass.

Charlton, T., Devlin, M., & Drummond, S. (2009). Using Facebook to improve communication in undergraduate software development teams. *Computer Science Education*, 19(4), 273-292.

Cheung, D. (1998). Developing a student evaluation instrument for distance teaching. *Distance Education*, 19(1), 23-42.

Childress, M. D., & Braswell, R. (2006). Using massively multiplayer online role-playing games for online learning. *Distance Education*, 27(2), 187-196.

Clariana, R. B. (1990). A comparison of answer-until-correct feedback and knowledge-of-correct-response feedback under two conditions of contextualization. *Journal of Computer-based Instruction*, 17(4), 125-129.

Clariana, R. B., Ross, S. M., & Morrison, G. R. (1991). The effects of different feedback strategies using computer-administered multiple-choice question as instruction. *Educational Technology Research and Development*, 39(2), 5-17.

Cohen, V. B. (1985). A reexamination of feedback in computer-based instruction: Implications for instructional design. *Educational Technology*, 25(1), 33-37.

Coldeway, D. & Spencer, R. E. (1982). Keller's Personalized System of Instruction: the search for a basic distance learning paradigm. *Distance Education*, 3(1), 51-71.

Cole, S., Coats, M., & Lentell, H. (1986). Towards good teaching by correspondence. *Open Learning*, 1(1), 16-22.

Cropley, A. J., & Kahl, T. N. (1983). Distance education and distance learning: some psychological considerations. *Distance Education*, 4(1), 27-39.

Dempsey, J. V., Driscoll, M. P., & Swindell, L. K. (1993). Text-based feedback. In J. V. Dempsey & G. C. Sales (Eds.), *Interactive instruction and feedback* (pp. 21-54). Englewood Cliffs, N.J.: Educational Technology Publications.

Dempsey, J. V., & Wager, S. U. (1988). A taxonomy for the timing of feedback in computer-based instruction. Educational Technology, 28(10), 20-25.

Dippold, D. (2009). Peer feedback through blogs: Student and teacher perceptions in an advanced German class. *European Association for Computer Assisted Language Learning*, 21(1), 18-36.

Dron, J. (2007). Control and constraint in e-learning: Choosing when to choose. Hershey, PA: Information Science Publishing.

Duffy, T. M., & Jonassen, D. H. (1992). *Constructivism: New implications for instructional technology*. Hillsdale, NJ: Lawrence Erlbaum.

Epstein, M. L., Lazarus, A. D., Calvano, T. B., Matthews, K. A., Hendel, R. A., Epstein, B. B., et al. (2002). Immediate feedback assessment technique promotes learning and corrects inaccurate first responses. *The Psychological Record, 52,* 187–201.

Furnborough, C. & Truman, M. (2009). Adult beginner distance language learner perceptions and use of assignment feedback. *Distance Education*, 30(3), 399-418.

Gagne, R. M. (1985). *The conditions of learning* (4th Ed.). New York: CBS College.

Gallien, T., & Oomen-Early, J. (2008). Personalized versus collective instructor feedback in the online courseroom: Does type of feedback affect student satisfaction, academic performance and perceived connectedness with the instructor**.** *International Journal on ELearning, 7*, 463-476. Retrieved from http://jolt.merlot.org/vol4no3/oomenearly_0908.htm

Galusha, J. M. (1997). Barriers to learning in distance education. Retrieved from http://www.infrastruction.com/articles.htm

Garrison, D. R. (1985). Three generations of technological innovations in distance education. *Distance Education*, 6(2), 235-241.

Gilman, D. A. (1969). Comparison of several feedback methods for correcting errors by computer-assisted instruction. *Journal of Educational Psychology*, 60(6), 503-508.

Graham, C., Cagiltay, K., Craner, J., Lim, B. and Duffy, T. (2002). Teaching in a web based distance learning environment: An evaluation summary based on four courses. Retrieved October 18, 2002, from http://crlt.indiana.edu/publications/crlt00-13.pdf

Guasch, T., Espasa, A., Alvarez, I. M., & Kischner, P. A. (2013). Effects of feedback on collaborative writing in an online learning environment. *Distance Education*, 34(3), 324-338.

Halabi, A. K., Tuovinen, J. E., & Smyrnios, K. X. (2000). Using CBL to improve cognitive load and reduce feedback redundancy in Accounting distance learning. *Distance Education*, 21(1), 162-182.

Hannafin, M. J., Hannafin, K. M., & Dalton, D. W. (1993). Feedback and emerging instructional technologies. In J. V. Demposey, G. C. Dales (Eds.), *Interactive instruction and feedback* (pp. 263–286). Englewood Cliffs, NJ: Educational Technology.

Hansen, B., Shinkle, A., & Dupin, P. (1999, December). Feedback in distance education: Broadening Electronic Communication Pathways. *Journal of Extension*, 37(6). Retrieved from http://www.joe.org/joe/1999december/iw3.php

Hattie, J. A. (2009). *Visible learning: A synthesis of over 800 meta-analyses relating to achievement*. London: Routledge.

Hattie, J., & Timperley, H. (2007). The power of feedback. *Review of Educational Research*, 77(1), 81-112.

Hismanoglu, M., & Hismanoglu, S. (2009). Providing feedback on student work in distance education in Turkey. *Turkish Online Journal of Distance Education*, 10(4), 91-104.

Hodes, C. L. (1985). Relative effectiveness of corrective and noncorrective feedback in computer assisted instruction on learning and achievement. *Journal of Educational Technology Systems*, 13(4), 249-254.

Holding, D. H. (1965). *Principles of training*. New York: Oxford University.

Holmes, B. & Gardner, J. (2006). *E-learning: Concepts and practice*. London: Sage.

Holt, D. M., & Thompson, D. J. (1998). Managing information technology in open and distance higher education. *Distance Education*, 19(2), 197-227.

Hoska, D. M. (1993). Motivating learners through CBI feedback: Developing a positive learner perspective. In J. V. Dempsey & G. C. Sales (Eds.), *Interactive instruction and feedback* (pp.105-132). Englewood Cliffs, NJ: Educational Technology.

Howard, D.C. (1987). Designing learner feedback in distance education. *The American Journal of Distance Education*, 1(3), 24-40.

Hyland, F. (2001). Providing effective support: Investigating feedback to distance language learners. *Open Learning*, 16(3), 233-247.

Illinois Online Network. (2005). Strategies for providing feedback. Retrieved August 30, 2005, from http://www.ion.uillinois.edu/resources/tutorials/pedagogy/feedback.asp

Ivanic, R., Clark, R., & Rimmershaw, R. (2000). What am I supposed to make of this? The messages conveyed to students by tutors' written comments. In M. R. Lea & B. Stierer (Eds.), *Student Writing in Higher Education* (pp. 47-67). Suffolk: Open University Press.

Jonassen, D. H. (1991a). Context is everything. *Educational Technology*, 31(6), 33-34.

Jonassen, D. H. (1991b). Objectivism versus constructivism: Do we need a new philosophical paradigm? *Educational Technology Research and Development*, 39(3), 5-14.

Johnson, D. W., & Johnson, R. T. (1993). Cooperative learning and feedback in technology-based instruction. In J. V. Dempsey & G. C. Sales (Eds.), *Interactive instruction and feedback* (pp.133-157). Englewood Cliffs, NJ: Educational Technology.

Kanuka, H. & Nocente, N. (2003). Exploring the effects of personality type on perceived satisfaction with web-based learning in continuing professional development. *Distance Education*, 24(2), 227-244.

Kielty, L. S. (2004). *Feedback in distance learning: Do student perceptions of corrective feedback affect retention in distance learning*? (Educational specialist's thesis). Retrieved from http://scholarcommons.usf.edu/etd/1114/

Kitchakarn, O. (2013). Peer feedback through blogs: an effective tool for improving students' writing abilities. *Turkish Online Journal of Distance Education*, 14(3), 152-164.

Knowles, M. (1984). *Andragogy in action*. San Francisco, CA: Jossey-Bass.

Ko, S., & Rossen, S. (2001). *Teaching Online: A Practical Guide.* Boston, MA: Houghton-Mifflin.

Koshy, K., Bonato, J., & Faasalaina, T. (1994). Chemistry through distance teaching – A South Pacific experiment. *Distance Education*, 15(2), 291-299.

Kowitz, G. T., & Smith, J. C. (1985). The dynamics of successful feedback. *Performance & Instruction Journal*, 4-6.

Krause, U.-M., Stark, R., & Mandl, H. (2009). The effects of cooperative learning and feedback on e-learning in statistics. *Learning and Instruction,* 19*,* 158–170. doi:10.1016/j.learninstruc.2008.03.003

Kulhavy, R. W. (1977). Feedback in written instruction. *Review of Educational Research, 47*(2), 211–232.

Kulhavy, R. W., & Anderson, R. C. (1972). Delay-retention effect with multiple-choice tests. *Journal of Educational Psychology*, 63(5), 505-512.

Kulhavy, R. W., & Stock, W. A. (1989). Feedback in written instruction: The place of response certitude. *Educational Psychology Review*, 1(4), 279-308.

Kulhavy, R. W., & Wager, W. (1993). Feedback in programmed instruction: Historical context and implications for practice. In J. Dempsey & G. Ales (Eds.), *Interactive instruction and feedback* (pp. 3–20). Englewood Cliffs, NJ: Educational Technology Publications.

Kulhavy, R. W., Yekovich, F. R., & Dyer, J. W. (1976). Feedback and response confidence. *Journal of Educational Psychology*, 68(5), 522-528.

Kulik, J. A., & Kulik, C. L. C. (1988). Timing of feedback and verbal learning. *Review of Educational Research*, 58(1), 79-97.

Lambert, S., & Corrin, L. (2007). Moving towards a university wide implementation of an ePortfolio tool. *Australasian Journal of Educational Technology*, 23(1), 1-16.

Lou, Y. (2004). Learning to solve complex problems through between-group collaboration in project-based online course. *Distance Education*, 25(1), 49-66.

Lynch, M. M. (2002). *The Online Educator: A Guide to Creating the Virtual Classroom*. NewYork: RoutledgeFalmer.

Manganello, J., & Blake, N. (2010). A study of quantitative content analysis of health messages in U.S. media from 1985 to 2005. *Health Communication,* 25, 387-396.

Mann, C. C. (1998). Quality assurance in distance education: The surrey MA (TESOL) experience. *Distance Education*, 19(1), 7-22.

Markel, M. (1999). Distance education and the myth of the new pedagogy. *Journal of Business & Technical Communication*, 13, 208-222.

Mason, B. J., & Bruning, Roger. (n/a). Providing feedback in computer-based instruction: What the research tell us. Retrieved from http://dwb.unl.edu/Edit/MB/MasonBruning.html

Mayr, Otto. (1989). *Authority, liberty, & automatic machinery in early modern Europe*. Johns Hopkins University Press.

McCarthy, J. (2010). Blended learning environments: Using social networking sites to enhance the first year experience. *Australasian Journal of Educational Technology*, 26(6), 729-740.

McCleary, I. D., & Eagan, M. W. (1989). Program design and evaluation: Two-way interactive television. *The American Journal of Distance Education*, 3(1), 50-60.

McGill, T. J., Volet, S. E., & Hobbs, V. J. (1997). Studying computer programming externally: Who succeeds? *Distance Education*, 18(2), 236-256.

McIsaac, M. S. (2004). Distance education. In D. H. Jonassen (Ed.), *Handbook of research for educational communications and technology* (pp. 355–395). New York: MacMillan Library Reference.

Merril, J. (1987). Levels of questioning and forms of feedback: Instructional factors in courseware design. *Journal of Computer-based Instruction*, 14(1), 18-22.

Moore, M. & Kearsley, G. (1996). *Distance Education*. New York: Wadsworth Publishing Company.

Moreno, R. (2004). Decreasing cognitive load for novice students: Effects of explanatory versus corrective feedback in discovery-based multimedia. *Instructional Science, 32*, 99–113.

Morrison, G. R., Ross, S. M., Gopalakrishman, M., & Casey, J. (1995). The effects of feedback and incentives on achievement in computer-based instruction. *Contemporary Educational Psychology*, 20, 32-50.

Mory, E. H. (1992). The use of informational feedback in instruction: Implications for future research. *Educational Technology Research & Development*, 40(3), 5-20.

Mory, E. H. (1994). Adaptive feedback in computer-based instruction: Effects of response certitude on performance, feedback-study time, and efficiency. *Journal of Educational Computer Research*, 11(3), 263-290.

Mory, E. H. (1996). Feedback research. In D. H. Jonassen (Ed.) *Handbook of research for educational communications and technology.* New York: Simon & Schuster Macmillan.

Mory, E. H. (2004). Feedback research revisited. In D. H. Jonassen (Ed.), *Handbook of research for educational communications and technology* (pp. 745–783). New York: MacMillan Library Reference.

Moursund, D. (2007). Computer-assisted and distance learning. A College Student's Guide to Computer in Education (pp.49-56). Retrieved from http://iae-pedia.org/College_Student%E2%80%99s_Guide_to_Computers_in_Education/Chapter_5:_Computer-Assisted_and_Distance_Learning

Narciss, S., & Huth, K. (2004). How to design informative tutoring feedback for multimedia learning. In H. M. Niegemann, D. Leutner, & R. Brunken (Ed.), Instructional design for multimedia learning (pp. 181-195). Munster, NY: Waxmann.

Nash, R. D. (2005). Course completion rates among distance learners: Identifying possible methods to improve retention. Online Journal of Distance Learning Administration, 8(4). Retrieved from http://www.westga.edu/~distance/ojdla/

Neuwndorf, K. A. (2002). *The Content Analysis Guidebook.* Thousand Oaks, CA: Sage Publications.

Nicol, D. J., & Milligan, C. (2006). Rethinking technology-supported assessment practices in relation to the seven principles of good feedback practice. In C. Bryan & K. Clegg (Eds.), *Innovative assessment in higher education* (pp.64-77). Abingdon: Routledge.

Nielsen, H. D. (1997). Quality assessment and quality assurance in distance teacher education. *Distance Education*, 18(2), 284-317.

O'Lawrence, H. (2006). The influence of distance learning on adult learners. *Techniques*, 81(5), 47-49.

Oliver, K., Osborne, J., & Brady, K. (2009). What are secondary students' expectations for teachers in virtual school environments? *Distance Education*, 30(1), 23-45.

Ovando, M. N. (1991). Adjunct faculty teaching needs: meeting these needs through a faculty development program. *The International Journal of Educational Management*, 5(3), 13-17.

Park, O. & Gittelman, S. S. (1992). Selective use of animation and feedback in computer-based instruction. *Educational Technology Research and Development*, 40(4), 27-38.

Perry, B., & Edwards, M. (2006). Using photographic images as an interactive online teaching strategy. *The Internet and Higher Education*, 9(3), 229-240.

Phye, G. D., & Bender, T. (1989). Feedback complexity and practice: Response pattern analysis in retention and transfer. *Contemporary Educational Psychology, 14,* 97–110.

Phye, G. D., Gugliamella, J., & Sola, J. (1976). Effects of delayed retention on multiple-choice test performance. *Contemporary Educational Psychology, 1,* 26–36.

Potter, W. J., & Levine-Donnerstein, D. (1999). Rethinking validity and reliability in content analysis. *Journal of Applied Communication Research, 27,*258-284.

Price, B. (1997). Defining quality feedback in distance learning. *Journal of Advanced Nursing*, 26, 154-160.

Pridemore, D. R. & Klein, J. D. (1991). Control of feedback in computer-assisted instruction. *Educational Technology Research and Development*, 39(4), 27-32.

Pridemore, D. R., & Klein, J. D. (1995). Control of practice and level of feedback in computer-based instruction. *Contemporary Educational Psychology*, 20, 444-450.

Pyke, J. G., & Sherlock, J.J. (2010). A closer look at instructor-student feedback online: A case study analysis of the types and frequency. *Journal of Online Learning and Teaching*, 6(1), 110-121.

Rieber, L. P. (1992). Computer-based microworlds: A bridge between constructivism and direct instruction. *Educational Technology Research and Development*, 41(1), 93-106.

Roberts, D. (1984). Ways and means of reducing early student drop-out rates. *Distance Education*, 5(1), 50-71.

Roberts, D. (1996). Feedback on assignments. *Distance Education*, 17(1), 95-116.

Roehler, L. R., & Cantlon, D. L. (1997). Scaffolding: A powerful tool in social constructivist classroom. In K. Hogan & M. Pressley (Eds.), *Scaffolding Student Learning: Instructional Approach and Issues* (pp.6-42). Cambridge, MA: Brookline.

Roper, W. R. (1977). Feedback in computer-assisted instruction. *Programmed Learning and Educational Technology*, 14, 43-49.

Rumble, G. (1981). Evaluating autonomous multi-media distance learning systems: a practical approach. *Distance Education*, 2(1), 64-90.

Rumelhart, D. & Norman, D. (1978). Accretion, tuning and restructuring: Three modes of learning. In. J.W. Cotton & R. Klatzky (Eds.), Semantic Factors in Cognition. Hillsdale, NJ: Erlbaum.

Ryan, M., Hodson-Carlton, K. & Ali, N. (2005). A model for faculty teaching online: Confirmation of a dimensional matrix. Journal of Nursing Education, 44(8), 357-365.

Sageder, J. (1988). Tests as means for promotion of learning from distance teaching. *Distance Education*, 9(2), 234-249.

Sales, G. C. (1993). Adapted and adaptive feedback in technology-based instruction. In J. V. Dempsey & G. C. Sales (Eds.), *Interactive instruction and feedback* (pp. 159-175). Englewood Cliffs, N.J.: Educational Technology Publications.

Samarawickrema, R. G. (2005). Determinants of student readiness for flexible learning: Some preliminary findings. *Distance Education*, 26(1), 49-66.

Schimmel, B. J. (1988). Providing meaningful feedback in courseware. In D. H. Jonassen (Eds.), Instructional Design for Microcomputer courseware, (pp. 183-196). Hillsdale, HJ: Lawrence Erlbaum Associates.

Schutz, P. A. & Weinstein, C. E. (1990). Using test feedback to facilitate the learning process. *Innovation Abstracts NISOD*, 12(6), 1-2.

Schwartz, F., & White, K. (2000). Making sense of it all: Giving and getting online course feedback. In K. W. White & B. H. Weight (Eds.), *The online teaching guide: A handbook of attitudes, strategies, and techniques for the virtual classroom* (pp. 57–72). Boston: Allyn and Bacon.

Sewart, D. (1980). Creating an information base for an individualized support system in distance education. *Distance Education*, 1(2), 171-187.

Shannon, C. E. (1948). The mathematical theory of communication. *The Bell System Technical Journal, 27*, 379-42.

Sherry, L. (1996). Issues in distance learning. *International Journal of Educational Telecommunications*, 1(4), 337-365.

Shotsberger, P. G. (1996). Instructional uses of the World Wide Web: exemplars and precautions. Educational Technology, 36(2), 47-50.

Shott, M. (1985). Teaching Physics at a distance. *Distance Education*, 6(1), 102-127.

Shute, V. J. (2008). Focus on formative feedback. *Review of Educational Research*, 78(1), 153-189.

Sim, R. (2003). Interactivity and feedback as determinants of engagement and meaning in e-learning environment. In S. Naidu (Ed.), *Learning & teaching with technology: Principles and practice*. London: Kogan Page.

Simonson, M., Smaldino, S., Albright, M., & Zvacek, S. (2006). *Teaching and learning at a distance: Foundations of distance education* (3rd Ed.). New Jersey: Pearson.

Simpson, O. (2002). *Supporting students in online, open and distance learning.* (2th Ed.). London: Kogan Page.

Smaldino, S. (2003). Instructional design for distance education. *TechTrends*, 43(5), 9-13.

Stare, R., & Armstrong, J. (1981). Personalizing feedback between teacher and student in the context of a particular model of distance teaching. *British Journal of Educational Technology*, 12(2), 140-157.

Steinberg, E. R. (1984). *Teaching computers to teach*. Hillsdale, NJ: L. Erlbaum Associates.

Swan, K. (2002). Building Learning Communities in Online Courses: The importance of interaction. *Education, Communication & Information, 2*(1), 23-49.

Tang, C., Lai, P., Arthur, D., & Leung, S. (1999). How do students prepare for traditional and portfolio assessment in a problem-based learning curriculum? *Themes and Variation in PBL*, 1, 206-217.

Tao, L., & Boulware, B. (2002). Issues in technology email: Instructional potentials and learning opportunities. *Reading and Writing Quarterly*, 18, 285-288.

The American Heritage Dictionary of the English language (1976). Boston: Houghton Mifflin Company.

Theory into Practice. (2003). Theories. Tip Database. Retrieved June 18, 2003, from http://tip.psychology.org/theories.html

Thorpe, M. (2000). Encouraging students to reflect as part of the assignment process. *Active Learning in Higher Education*, 1(1), 79-92.

Tomei, L. (2003). Learning theories – A primer exercise. *University of Southern California*. Retrieved February 23, 2003, from http://www.duq.edu/~tomei/ed711psy/h_rogers.htm

Tovani, Cris. (2012). Feedback is a two-way street. *Feedback for Learning*, 70(1), 48-51.

Vasilyeva, E., Puuronen, S., Pechenizkiy, M., & Rasanen, P. (2007). Feedback adaptation in web-based learning systems. *Int. J. Continuing Engineering Education and Life-Long Learning*, 17(5), 337-357.

Waddick, J. (1994). Case study: The creation of a computer learning environment as an alternative to traditional lecturing methods in chemistry. *Educational and Training Technology International*, 31(2), 98-103.

Wager, W., & Wager, S. (1985). Presenting questions, processing responses, and providing feedback in CAI. *Journal of Instructional Development*, 8(4), 2-8.

Wagner, E. D. (1994). In support of a functional definition of interaction. *American Journal of Distance Education, 8*(2), 6-29.

Weber, R. P. (1990). *Basic content analysis*. Newbury Park, CA: Sage Publications.

Webster's New World Dictionary of the American language, 4th ed., (2001). Foster City, CA: IDG Books Worldwide.

White, C. (2005). Contribution of distance education to the development of individual learners. *Distance Education*, 26(2), 165-181.

Wille'n, B. (1983). Distance education in Swedish universities. *Distance Education*, 4(2), 211-222.

Willis, B. (2002). Distance education at a glance. *University of Idaho*. Retrieved October 15, 2002, from http://www.uidaho.edu/evo/dist9.htm

Yu, F. Y., & Yu. H. J. (2002). Incorporating email into the learning process: Its impact on student academic achievement and attitudes. *Computer and Education*, 38, 117-126.

Appendix A

Name of Article: _____

Year of the Article Publication: _____

Categories for Coding:

Roles _____ Sources _____

Function _____ Technology _____

Challenge _____ Other _____

Emergent Themes and Topics:

_____

_____

_____

_____

_____

Appendix B

Articles for Qualitative Analysis

Akbulut, Y., Kuzu, A., Latchem, C., & Odabasi, F. (2007). Change readiness among teaching staff at Anadolu University, Turkey. *Distance Education*, 28(3), 335-350.

Alexander, J. W., Polyakova-Norwood, V., Johnston, L. W., Christensen, P., & Loquist, R. S. (2003). Collaborative development and evaluation of an online nursing course. *Distance Education*, 24(1), 41-56.

Alvino, S., Asensio-Perez, J. I., Dimitriadis, Y., & Hernandez-Leo, D. (2009). Supporting the reuse of effective CSCL learning designs through social structure representations. *Distance Education*, 30(2), 239-258.

Amarsaikhan, D., Lkhagvasuren, T., Oyun, S., & Batchuluun, B. (2007). Online medical diagnosis and training in rural Mongolia. *Distance Education*, 28(2), 195-211.

Amundsen, C. L., & Bernard, R. M. (1989). Institutional support for peer contact in distance education: an empirical investigation. *Distance Education*, 10(1), 7-27.

Andrade, M. S., & Bunker, E. L. (2009). A model for self-regulated distance language learning. *Distance Education*, 30(1), 47-61.

Andrews, J., & Strain, J. (1985). Computer-assisted distance education: off-line and online American experiences. *Distance Education*, 6(2), 143-157.

Bahlman, G. W., & Robertshaw, M. (1989). The development of a distance-taught introductory Computing course in the South Pacific. *Distance Education*, 10(1), 28-40.

Balasubramanian, K., Thamizoli, P., Umar, A., & Kanwar, A. (2010). Using mobile phones to promote lifelong learning among rural women in Southern India. *Distance Education*, 31(2), 193-209.

Baran, E., & Correia, A. (2009). Student-led facilitation strategies in online discussions. *Distance Education*, 30(3), 339-361.

Bates, A. W. (1997). The impact of technological change on open and distance learning. *Distance Education*, 18(1), 93-109.

Bawane, J., & Spector, J. M. (2009). Prioritization of online instructor roles: implications for competency-based teacher education programs. *Distance Education*, 30(3), 383-397.

Beckett, G. H., Amaro-Jimenez, C., & Beckett, K. S. (2010). Students' use of asynchronous discussions for academic discourse socialization. *Distance Education*, 31(3), 315-335.

Beckmann, E. A. (2010). Learners on the move: mobile modalities in development studies. *Distance Education*, 31(2), 159-173.

Belawati, T. (1998). Increasing student persistence in Indonesian post-secondary distance education. *Distance education*, 19(1), 81-108.

Beldarrain, Y. (2006). Distance education trends: integrating new technologies to foster student interaction and collaboration. *Distance Education*, 27(2), 139-153.

Benson, R., & Rye, O. (1996). Visual reports by video: an evaluation. *Distance Education*, 17(1), 117-131.

Benson, R., & Samarawickrema, G. (2009). Addressing the context of e-learning: using transactional distance theory to inform design. *Distance Education*, 30(1), 5-21.

Bernard, R., Abrami, P., Lou, Y., & Borokbovski, E. (2004). A methodological morass? How we can improve quantitative research in distance education? *Distance Education*, 25(2), 175-198.

Bernard, R. M., Brauer, A., Abrami, P. C., & Surkes, M. (2004). The development of a questionnaire for predicting online learning achievement. *Distance Education*, 25(1), 31-

47.

Bernard, R. M., & de Rubalcava, B. R. (2000). Collaborative online distance learning: issues for future practice and research. *Distance education*, 21(2). 260-277.

Bernt, F. M., & Bugbee Jr, A. C. (1993). Study practices and attitudes related to academic success in a distance learning programme. *Distance Education*, 14(1), 97-112.

Berry, J., & O'Shea, T. (1984). Mathematical modeling at a distance. *Distance Education*, 5(2), 163-173.

Bethel, E. C., & Bernard, R. M. (2010). Developments and trends in synthesizing diverse forms of evidence: beyond comparisons between distance education and classroom instruction. *Distance Education*, 31(3), 231-256.

Beuchot, A., & Bullen, M. (2005). Interaction and interpersonality in online discussion forums. *Distance Education*, 26(1), 67-87.

Biner, P., Barone, N., Welsh, K., & Dean, R. (1997). Relative academic performance and its relation to facet and overall satisfaction with interactive telecourses. *Distance education*, 18(2), 318-326.

Bishop, A. (2002). Come into my Parlour said the spider to the fly: critical reflections on Web-based education from a student's perspective. *Distance Education*, 23(2), 231-236.

Bjorck, U. (2002). Distributed problem-based learning in social economy – key issues in students' mastery of a structured method for education. *Distance Education*, 23(1), 85-103.

Bollettino, V., & Bruderlein, C. (2008). Training humanitarian professionals at a distance: testing the feasibility of distance learning with humanitarian professionals. *Distance Education*, 29(3), 269-287.

Bolliger, D. U., & Halupa, C. (2011). Student perceptions of satisfaction and anxiety in an online doctoral program. *Distance Education*, 33(1), 81-98.

Bolliger, D. U., & Shepherd, C. E. (2010). Student perceptions of ePortfolio integration in online courses. *Distance Education*, 31(3), 295-314.

Bolliger, D. U., & Wasilik, O. (2009). Factors influencing faculty satisfaction with online teaching and learning in higher education. *Distance Education*, 30(1), 103-116.

Bolton, G. (1986). The opportunities of distance. *Distance Education*, 7(1), 5-22.

Bonk, C. J., & Zhang, K. (2006). Introducing the R2D2 Model: online learning for the diverse learners of this world. *Distance Education*, 27(2), 249-264.

Borokhovski, E., Tamim, R., Bernard, R. M., Abrami, P. C., & Sokolovskaya, A. (2012). Are contextual and designed student-student interaction treatments equally effective in distance education? *Distance Education*, 33(3), 311-329.

Borup, J., West, R. E., & Graham, C. R. (2013). The influence of asynchronous video communication on learner social presence: a narrative analysis of four cases. *Distance Education*, 34(1), 48-63.

Boshier, R., Mohapi, M., Moulton, G., Qayyum, A., Sadownik, L., & Wilson, M. (1997). Best and worst dressed web courses: strutting into the 21st century in comfort and style. *Distance education*, 18(2), 327-349.

Bossu, C., Bull, D., & Brown, M. (2012). Opening up down under: the role of open educational resources in promoting social inclusion in Australia. *Distance Education*, 33(2), 151-164.

Boucher, T. A., & Barron, M. H. (1986). The effects of computer-based marking on completion Rates and student achievement for students taking a secondary-level distance education Course. *Distance Education*, 7(2), 275-280.

Bowser, D., & Race, K. (1991). Orientation for distance education students: what is its worth? *Distance Education*, 12(1), 109-122.

Brace-Govan, J., & Clulow, V. (2000). Varying expectations of online students and the implications for teachers: findings from a journal study. *Distance education*, 21(1), 118-135.

Brew, A., & Wright, T. (1990). Changing teaching styles. *Distance Education*, 11(2), 183-212.

Broadbridge, A., & Davies, K. (1993). Management education at a distance and its effects on career progression: the case of MBA in retailing and wholesailing students. *Distance Education*, 14(1), 6-26.

Brown, S., & Nathenson, M. (1981). Designing instructional materials: guesswork or facts? *Distance Education*, 2(1), 7-22.

Bruno, J. E., & Pedroza, H. A. (1994). Designing distance learning programmes for Limited English Proficient (LEP) students in large urban areas: an application of perceptual mapping and conjoint analysis methods. *Distance Education*, 15(2), 196-216.

Burke, C., Lundin, R., & Daunt, C. (1997). Pushing the boundaries of interaction in videoconferencing: a dialogical approach. *Distance education*, 18(2), 350-361.

Bynner, J. (1986). Master teaching in education by distance methods. *Distance Education*, 7(1), 23-37.

Catchpole, M. (1986). A guide to producing and hosting a live-interactive telecourse. *Distance Education*, 7(1), 129-142.

Chabon, S. S., Cain, R. E., & Lee-Wilkerson, D. (2001). Facilitating those dreaded discussions on diversity, through threaded discussions: an inter-institutional, internet-based model. *Distance education*, 22(1), 137-143.

Chen, T., Bennett, S., & Maton, K. (2008). The adaptation of Chinese international students to online flexible learning: two case studies. *Distance Education*, 29(3), 307-323.

Cheung, D. (1998). Developing a student evaluation instrument for distance teaching. *Distance education*, 19(1), 23-42.

Childress, M. D., Braswell, R. (2006). Using massively multiplayer online role-playing games for online learning. *Distance Education*, 27(2), 187-196.

Chinnappan, M. (2006). Using the productive pedagogies framework to build a community of learners online in Mathematics education. *Distance Education*, 27(3), 355-369.

Cho, M., & Shen, D. (2013). Self-regulation in online learning. *Distance Education*, 34(3), 290-301.

Clayton, D., & Arger, G. (1989). Computers in the instructional process in distance education – examining relationship between usage, expectations and software acquisition. *Distance Education*, 10(2), 242-257.

Coldeway, D. O., & Spencer, R. E. (1982). Keller's personalized system of instruction: the search for a basic distance learning paradigm. *Distance Education*, 3(1), 51-71.

Compton, L., Davis, N., & Correia, A. (2010). Pre-service teachers' preconceptions, misconceptions, and concerns about virtual schooling. *Distance Education*, 31(1), 37-54.

Coniam, D. (1993). Coordinating survey's distance learning Master's programme in HongKong: principles and problems. *Distance Education*, 14(1), 113-126.

Conrad, D. (2002). Inhibition, integrity, and etiquette among online learners: the art of Niceness. *Distance Education*, 23(2), 197-212.

Correia, A., Davis, N. (2008). Intersecting communities of practice in distance education: the program team and the online course community. *Distance Education*, 29(3), 289-306.

Cresswell, R., & Hobson, P. (1996). Fallacies and assumptions in the use of student evaluation of distance teaching materials. *Distance Education*, 17(1), 132-144.

Cropley, A. J., & Kahl, T. N. (1983). Distance education and distance learning: some psychological considerations. *Distance Education*, 4(1), 27-39.

Cross, R. F. (1996). Video-taped lectures for honours students on international industry based learing. *Distance Education*, 17(2), 369-386.

Daniel, J. S., & Stroud, M. A. (1981). Distance education, a reassessment for the 1980s. *Distance Education*, 2(2), 146-163.

Darabi, A., & Jin, L. (2013). Improving the quality of online discussion: the effects of strategies designed based on cognitive load theory principles. *Distance Education*, 34(1), 21-36.

Darabi, A. A., Silorski, E. G., & Harvey, R. B. (2006). Validated competencies for distance teaching. *Distance Education*, 27(1), 105-122.

Dean, A. M., & Webster, L. (2000). Simulations in distance education: progress towards an evaluation instrument. *Distance education*, 21(2), 344-360.

Dennen, V. P., Darabi, A. A., & Smith, L. J. (2007). Instructor-learner interaction in online courses: the relative perceived importance of particular instructor actions on performance and satisfaction. *Distance Education*, 28(1), 65-79.

Dickey, M. D. (2003). Teaching in 3D: pedagogical affordances and constraints of 3D virtual worlds for synchronous distance learning. *Distance Education*, 24(1), 105-121.

Dillenbourg, P. (2008). Integrating technologies into educational ecosystems. *Distance Education*, 29(2), 127-140.

Dillon, C. L., Gunawardena, C. N., & Parker, R. (1992). Learner support: the critical link in distance education. *Distance Education*, 13(1), 29-45.

Ding, X. (1994). China's higher distance education – its four systems and their structural characteristics at three levels. *Distance Education*, 15(2), 327-346.

Dobrovolny, J. (2006). How adults learn from self-paced, technology-based corporate training: new focus for leaners, new focus for designers. *Distance Education*, 27(2), 155-170.

Donald, C., Blake, A., Girault, I., Datt, A., & Ramsay, E. (2009). Approaches to learning design: past the head and the hands to the HEART of the matter. *Distance Education*, 30(2), 179-199.

Dray, B. J., Lowenthal, P. R., Miszkiewicz, M. J., Ruiz-Primo, M. A., & Marczynski, K. (2011). Developing an instrument to assess student readiness for online learning: a validation study. *Distance Education*, 32(1), 29-47.

Duignan, P. A., & Teather, D. C. B. (1985). Teaching educational administration externally at post-graduate level at the University of New England. *Distance Education*, 6(1), 34-55.

Dunbar, R. (1991). Adapting distance education for Indonesians: problems with learner heteronomy and a strong oral tradition. *Distance Education*, 12(2), 163-174.

Dymock, D., & Hobson, P. (1998). Collaborative learning through audioconferencing and voicemail – a case study. *Distance education*, 19(1), 157-171.

Earl, K. (2013). Student views on short-text assignment formats in fully online courses. *Distance Education*, 34(2), 161-174.

Eastmond, D. V. (1994). Adult distance study through computer conferencing. *Distance Education*, 15(1), 128-152.

Edwards, M., Perry, B., & Janzen, K. (2011). The making of an exemplary online educator. *Distance Education*, 32(1), 101-118.

Eisenberg, E., & Dowsett, T. (1990). Student drop-out from a distance education project course:

A new method of analysis. *Distance Education*, 11(2), 231-253.

Falck, A. K., Kronlund, H. T., Kynaslahti, H., Salminen, J., & Salonen, M. (1997). Testing virtual classroom in the school context. *Distance Education*, 18(2), 213-224.

Ferman, T., & Page, M. (2000). Beyond product: materials development as a vehicle for professional growth. *Distance education*, 21(2), 323-343.

Fields, B. A. (1989). Minimal intervention in-service teacher education: a strategy for training teachers at a distance. *Distance Education*, 10(2), 184-195.

Field, J. (1995). Globalisation, consumption and the learning business. *Distance Education*, 16(2), 270-283.

Finkel, A. (1985). Teaching History at a distance. *Distance Education*, 6(1), 56-67.

Fulcher, G., & Lock, D. (1999). Distance education: the future of library and information services requirements. *Distance education*, 20(2), 313-329.

Furnborough, C. (2012). Making the most of others: autonomous interdependence in adult beginner distance language learners. *Distance Education*, 33(1), 99-116.

Furnborough, C., & Truman, M. (2009). Adult beginner distance language learner perceptions and use of assignment feedback. *Distance Education*, 30(3), 399-418.

Garland, M. R. (1993). Student perceptions of the situational, institutional, dispositional and epistemological barriers to persistence. *Distance Education*, 14(2), 181-198.

Garrison, D. R. (1985). Three generations of technological innovations in distance education. *Distance Education*, 6(2), 235-241.

Garrison, D. R. (1987). Researching dropout in distance education. *Distance Education*, 8(1), 95-101.

Garrison, D. R. (1993). A cognitive constructivist view of distance education: an analysis of

Teaching-learning assumptions. *Distance Education*, 14(2), 199-211.

Garrison, D. R. (1995). Constructivism and the role of self-instructional course materials: a reply. *Distance Education*, 16(1), 136-140.

Gee, T. W. (1991). Program equity in Alberta's small rural schools. *Distance Education*, 12(2), 175-190.

Gillies, D. (2008). Student perspectives on videoconferencing in teacher education at a distance. *Distance Education*, 29(1), 107-118.

Goodfellow, R., Lea, M., Gonzalez, F., & Mason, R. (2001). Opportunity and e-quality: intercultural and linguistic issues in global online learning. *Distance education*, 22(1), 65-84.

Goodyear, P., & Ellis, R. A. (2008). University students' approaches to learning: rethinking the place of technology. *Distance Education*, 29(2), 141-152.

Goyen, M., & Roome, W. (1998). Economics for distance learners and the promise of new communications technologies. *Distance education*, 19(2), 319-336.

Graham, M., & Scarborough, H. (2001). Enhancing the learning environment for distance education students. *Distance Education*, 22(2), 232-244.

Green, N. C. (2006). Everyday life in distance education: one family's home schooling experience. *Distance Education*, 27(1), 27-44.

Gregory, J., & Salmon, G. (2013). Professional development for online university teaching. *Distance Education*, 34(3), 256-270.

Griffiths, D., Beauvior, P., Liber, O., & Barrett-Baxendale, M. (2009). From reload to recourse: learning from IMS learning design implementations. *Distance Education*, 30(2), 201-222.

Guasch, T., Espasa, A., Alvarez, M., & Kirschner, P. (2013). Effects of feedback on

collaborative writing in an online learning environment. *Distance Education*, 34(3), 324-338.

Gunawardena, C. N., Ortegano-Layne, L., Carabajal, K., Frechette, C., Lindemann, K., & Jennings, B. (2006). New model, new strategies: instructional design for building online wisdom communities. *Distance Education*, 27(2), 217-232.

Gunawardena, C. N., Nolla, A. C., Wilson, P. L., Lopez-Islas, J. R., Ramirez-Angel, N., & Megchen-Alpizar, R. M. (2001). A cross-cultural study of group process and development in online conferences. *Distance education*, 22(1), 85-121.

Hagel, P., & Shaw, R. N. (2006). Students' perceptions of study modes. *Distance Education*, 27(3), 283-302.

Halabi, A. K., Tuovinen, J. E., & Smyrnios, K. X. (2000). Using CBL to improve cognitive load and reduce feedback redundancy in Accounting distance learning. *Distance education*, 21(1), 162-182.

Hall, D., & Knox, J. (2009). Issues in the education of TESOL teachers by distance education. *Distance Education*, 30(1), 63-85.

Halverson, L. R., Graham, C. R., Spring, K. J., & Drysdale, J. S. (2012). An analysis of high impact scholarship and publication trends in blended learning. *Distance Education*, 33(3), 381-413.

Hannum, W. H., Irvin, M. J., Lei, P., & Farmer, T. W. (2008). Effectiveness of using learner-centered principles on student retention in distance education courses in rural schools. *Distance Education*, 29(3), 211-229.

Harden, T., Barnard, I., & Hong, E. (1991). An innovative on-shore/off-shore science programme. *Distance Education*, 12(1), 123-131.

Harley, M. F. (1985). An alternative organizational model for early childhood distance education programs. *Distance Education*, 6(2), 158-168.

Harman, C., & Dorman, M. (1998). Enriching distance teaching and learning of undergraduate mathematics using videoconferencing and audiographics. *Distance education*, 19(2), 299-318.

Hase, S., & Saenger, H. (1997). Videomail – a personalized approach to providing feedback on assessment to distance learners. *Distance education*, 18(2), 361-368.

Hawkins, A., Graham, C. R., Sudweeks, R. R., & Barbour, M. K. (2013). Academic performance, course completion rates, and student perception of the quality and frequency of interaction in a virtual high school. *Distance Education*, 34(1), 64-83.

Hayford, J. (1996). The open learning initiative: a successful marketing strategy or a devaluation of the Australian system of higher education? *Distance Education*, 17(1), 159-180.

Hedberg, J., & Ping, L. C. (2004). Charting trends for e-learning in Asian schools. *Distance Education*, 25(2), 199-213.

Henderson, L., & Putt, I. (1993). The Remote Area Teacher Program (RATEP): cultural contextualization of distance education through interactive. *Distance Education*, 14(2), 212-231.

Herrington, J., Reeves, T. C., & Oliver, R. (2006). Authentic tasks online: a synergy among learner, task, and technology. *Distance Education*, 27(2), 233-247.

Hiemstra, A., Hummel, H., & Sint, M. (1996). An audio practical for a distance course on expert systems: a situated learning perspective. *Distance Education*, 17(1), 181-195.

Higgins, K., & Harreveld, R. E. (2013). Professional development and the university casual academic: integration and support strategies for distance education. *Distance Education*,

34(2), 189-200.

Hilton III, J. L., Graham, C., Rich, P., & Wiley, D. (2010). Using online technologies to extend a classroom to learners at a distance. *Distance Education*, 31(1), 77-92.

Hockings, C., Brett, P., & Terentjevs, M. (2012). Making a difference – inclusive learning and teaching in higher education through open educational resources. *Distance Education*, 33(2), 237-252.

Hockridge, D. (2013). Challenges for educators using distance and online education to prepare students for relational professions. *Distance Education*, 34(2), 142-160.

Holmberg, B. (1981). Independent study for university degrees distance education compared with the Keller Plan. *Distance Education*, 2(1), 39-53.

Holmber, R. G., & Bakshi, T. S. (1982). Laboratory work in distance education. *Distance Education*, 3(2), 198-206.

Holt, D., Petzall, S., & Viljoen, J. (1990). Unleashing the forces: face-to-face study groups at a distance. *Distance Education*, 11(1), 125-149.

Holt, D. M., & Thompson, D. J. (1998). Managing information technology in open and distance higher education. *Distance education*, 19(2), 197-227.

Holt, M. D. (1993). Changing conceptions and practices of management: professional learning from an MBA experience by distance education. *Distance Education*, 14(2), 232-259.

Hosie, P. (1988). Realistic uses of AUSSAT for distance education in Western Australian Australian primary and secondary schools. *Distance Education*, 9(1), 27-47.

Hough, M. (1984). Motivation of adults: implications of adult learning theories for distance education. *Distance Education*, 5(1), 7-23 .

Howard, D. C. (1985). Reading and study skills and the distance learner. *Distance Education*,

6(2), 169-188.

Howland, J. L., & Moore, J. L. (2002). Student perceptions as distance learners in internet-base courses. *Distance Education*, 23(2), 183-195.

Hurd, S. (2006). Towards a better understanding of the dynamic role of the distance language learner: learner perceptions of personality, motivation, roles, and approaches. *Distance Education*, 27(3), 303-329.

Inglis, A. (1999). Is online delivery less costly than print and is it meaningful to ask? *Distance education*, 20(2), 220-239.

Irlbeck, S., Kays, E., Jones, D., & Sims, R. (2006). The phoenix rising: emergent models of instructional design. *Distance Education*, 27(2), 171-185.

Jackson, L. C., Jackson, A. C., & Chambers, D. (2013). Establishing an online community of inquiry at the Distance Education Centre, Victoria. *Distance Education*, 34(3), 353-367.

James, R., & Beattie, K. (1996). Postgraduate coursework beyond the classroom: issues in Implementing flexible delivery. *Distance Education*, 17(2), 355-368.

Jamtsho, S., & Bullen, M. (2007). Distance education in Bhutan: improving access and quality through ICT use. *Distance Education*, 28(2), 149-161.

Jegede, O. J. (1994). Distance education research priorities for Australia: a study of the opinions of distance educators and practitioners. *Distance Education*, 15(2), 234-253.

Jegede, O., Taplin, M., Fan, R. Y. K., Chan, M. S. C., & Yum, J. (1999). Differences between low and high achieving distance learners in locus of control and metacognition. *Distance education*, 20(2), 255-273.

Jelfs, A., Richardson, J. T. E., & Price, L. (2009). Student and tutor perceptions of effective tutoring in distance education. *Distance Education*, 30(3), 419-441.

Jennings, P. J., & Atkinson, R. J. (1982). Learning computer programming at a distance. *Distance Education*, 3(1), 157-169.

Jonassen, D., Prevish, T., Christy, D., & Stavrulaki, E. (1999). Learning to solve problems on the Web: aggregate planning in a business management course. *Distance education,* 20(1), 49-63.

Joughin, G., & Johnston, S. (1994). The experience of collaboration: writing and instructional design in distance education. *Distance Education*, 15(1), 6-22.

Junor, L. (1992). Teaching by tape: some benefits, problems, and solutions. *Distance Education*, 13(1), 93-107.

Kahl, T. N., & Cropley, A. J. (1986). Face-to-face versus distance learning: psychological Consequences and practical implications. *Distance Education*, 7(1), 38-48.

Kanuka, H. (2002). Guiding principles for facilitating higher levels of Web-based distance teaching and learning in post-secondary settings. *Distance Education*, 23(2), 163-182.

Kanuka, H., & Nocente, N. (2003). Exploring the effects of personality type on perceived satisfaction with web-based learning in continuing professional development. *Distance Education*, 24(2), 227-244.

Kaufman, D. (1984). Practice and theory of distance education: course blueprint. *Distance Education*, 5(2), 239-251.

Keegan, D. J. (1980). On defining distance education. *Distance Education*, 1(1), 13-36.

Kehrwald, B. (2008). Understanding social presence in text-based online learning environments. *Distance Education*, 29(1), 89-106.

Kelly, M. E. (1987). Course teams and instructional design in Australian distance education: a Replay to Shaw and Taylor. *Distance Education*, 8(1), 106-120.

Kember, D. (1982). External science courses: the practical problem. *Distance Education*, 3(2), 207-225.

Kember, D. (1989). An illustration, with case studies, of a linear-process model of drop-out from distance education. *Distance Education*, 10(2), 196-211.

Kember, D. (1994). The teacher is more important than the medium: pre-packaged instructional materials are not axiomatic with surface learning. *Distance Education*, 15(1), 153-159.

Kember, D., & Mezger, R. (1990). The instructional designer as a staff developer: a course team approach consistent with the Concerns-Based Adoption Model. *Distance Education*, 11(1), 50-70.

Kennepohl, D., & Last, A. M. (2000). Teaching Chemistry at Canada's Open University. *Distance education*, 21(1), 183-197.

Kim, C. (2008). Using email to enable e^3 (effective, efficient, and engaging) learning. *Distance Education*, 29(2), 187-198.

Kirkwood, A. (1998). New media mania: can information and communication technologies enhance the quality of open and distance learning? *Distance education*, 19(2), 228-241.

Kirschner, P., Meester, M., Middelbeek, E., & Hermans, H. (1993). Learning objectives for science practicals at traditional and distance universities. *Distance Education*, 14(2), 260-282.

Kirschner, P., Valcke, M. M. A., & Vilsteren, P. v. (1997). Business game learning environment: design and development of a competency-based distance education business curriculum at the Open universiteit. *Distance Education*, 18(1), 153-177.

Klingsieck, K. B., Fries, S., Horz, C., & Hofer, M. (2012). Procrastination in a distance university setting. *Distance Education*, 33(3), 295-310.

Kloeden, P. E., & McDonald, R. J. (1981). Student feedback in teaching and improving an external mathematics course. *Distance Education*, 2(1), 54-63.

Knox, D. M. (1997). A review of the use of video-conferencing for actuarial education – a three-year case study. *Distance education*, 18(2), 225-235.

Koseoglu, S., & Doering, A. (2011). Understanding complex ecologies: an investigation of student experiences in adventure learning programs. *Distance Education*, 32(3), 339-355.

Koshy, K., Bonato, J., & Faasalaina, T. (1994). Chemistry through distance teaching – a South Pacific experiment. *Distance Education*, 15(2), 291-299.

Koszalka, T., & Ganesan, R. (2004). Designing online courses: a taxonomy to guide strategic use of features available in course management systems (CMS) in distance education. *Distance Education*, 25(2), 243-256.

Koszalka, T. A., & Ntloedibe-Kuswani, G. S. (2010). Literature on the safe and disruptive learning potential of mobile technologies. *Distance Education*, 31(2), 139-157.

Kuboni, O. (2009). Role of the local center in strengthening student support in UWI's distributed learning programmes. *Distance Education*, 30(3), 363-381.

Kuboni, O., & Martin, A. (2004). An assessment of support strategies used to facilitate distance students' participation in a web-based learning environment in the University of the West Indies. *Distance Education*, 25(1), 7-29.

Kuffner, H. (1984). Computer-assisted applications in distance teaching and evaluation. *Distance Education*, 5(1), 38-49.

Laaser, W. (1993). Design, production and evaluation of computer-based courseware in distance education. *Distance Education*, 14(2), 283-296.

Lange, J. C. (1986). New technology and distance education: the case of Australia. *Distance*

Education, 7(1), 49-67.

LaPointe, D. K., & Gunawardena, C. N. (2004). Developing, testing and refining of a model to understand the relationship between peer interaction and learning outcomes in computer-mediated conferencing. *Distance Education*, 25(1), 83-106.

Lappia, A., & Lappia, A. (1989). Audio-cassette tapes in distance teaching: student evaluation. *Distance Education*, 10(2), 277-284.

Latchem, C. (2007). A framework for researching Asian open and distance learning. *Distance Education*, 28(2), 133-147.

Lawrence, B., & Lentle-Keenan, S. (2013). Teaching beliefs and practice, institutional context, and the uptake of web-based technology. *Distance Education*, 34(1), 4-20.

Lehtinen, E. (2002). Developing models for distributed problem-based learning: theoretical and methodological reflection. *Distance Education*, 23(1), 109-117.

Leong, P. (2011). Role of social presence and cognitive absorption in online learning environments. *Distance Education*, 32(1), 5-28.

Lester, N. C. (1993). Can a degree in visual arts be taught at a distance? *Distance Education*, 14(1), 27-39.

Li, N., Lee, K., & Kember, D. (2000). Towards self-direction in study methods: the ways in which new students learn to study part-time. *Distance education*, 21(1), 6-28.

Liao, L. (2006). A flow theory perspective on learner motivation and behavior in distance education. *Distance Education*, 27(1), 45-62.

Librero, F., Ramos, A. J., Ranga, A. I., Trinona, J., & Lambert, D. (2007). Uses of the cell phone for education in the Philippines and Mongolia. *Distance Education*, 28(2), 231-244.

Lobry de Bruyn, L. (2004). Monitoring online communication: can the development of

convergence and social presence indicate an interactive learning environment? *Distance Education*, 25(1), 67-81.

Lockwood, F., & Latchem, C. (2004). Staff development needs and provision in Commonwealth countries: finding from a commonwealth of learning training impact study. *Distance Education*, 25(2), 159-173.

Lou, Y. (2004). Learning to solve complex problems through between-group collaboration in project-based online courses. *Distance Education*, 25(1), 49-66.

Luschei, T. F., Dimyati, S., & Padmo, D. (2008). Maintaining e^3-learning while transitioning to online instruction: the case of the Open University of Indonesia. *Distance Education*, 29(2), 165-174.

Macdonald, J., & Hills, L. (2005). Combing reflective logs with electronic networks for professional development among distance education tutors. *Distance Education*, 26(3), 325-339.

Macdonald, J., & Poniatowska, B. (2011). Designing the professional development of staff for teaching online: an OU (UK) case study. *Distance Education*, 32(1), 119-134.

Macpherson, C., & Smith, A. (1998). Academic authors' perceptions of the instructional design and development process for distance education: a case study. *Distance education*, 19(1), 124-141.

Malbran, M, del C., & Villar, C. M. (2001). Incorporating cultural relevance into online courses: the case of VirtualMente. *Distance education*, 22(1), 168-174.

Mann, C. C. (1998). Quality assurance in distance education: the Surrey MA (TESOL) experience. *Distance education*, 19(1), 7-22.

Marland, P., Patching, W., & Putt, I. (1992). Thinking while studying: a process tracing study of

distance learners. *Distance Education*, 13(2), 193-217.

Marland, P. W., & Store, R. E. (1982). Some instructional strategies for improving learning from distance teaching materials. *Distance Education*, 3(1), 72-106.

Marland, P., Patching, W., Putt, P., & Store, R. (1984). Learning from distance-teaching materials: a study of students' mediating responses. *Distance Education*, 5(2), 215-236.

Marsden, R. (1996). Time, space and distance education. *Distance Education*, 17(2), 222-246.

Martens, R., Bastiaens, T., & Kirschner, P. A. (2007). New learning design in distance education: the impact on student perception and motivation. *Distance Education*, 28(1), 81-93.

Martens, R. L., Valcke, M. M. A., Portier, S. J., Weges, H. G., & Poelmans, P. H. A. G. (1997). Research with interactive learning environments in three content domains: descriptive statistics, continuous mathematics and substantive criminal law. *Distance Education*, 18(1), 44-58.

Masterman, E., Jameson, J., & Walker, S. (2009). Capturing teachers' experience of learning design through case studies. *Distance Education*, 30(2), 223-238.

McAlpine, I. (2000). Collaborative learning online. *Distance education*, 21(1), 66-80.

McConnell, D. (2002). Action research and distributed problem-based learning in continuing professional education. *Distance Education*, 23(1), 59-83.

McDonald, R., Sansom, D., & White, M. (1981). Flexible pacing of external study. *Distance Education*, 2(2), 189-198.

McGill, T. J., Volet, S. E., & Hobbs, V. J. (1997). Studying computer programming externally: who succeeds? *Distance education*, 18(2), 236-256.

McLinden, M., McCall, S., Hinton, D., & Weston, A. (2006). Participation in online problem-

based learning: insights from postgraduate teachers studying through open and distance education. *Distance Education*, 27(3), 331-353.

McLoughlin, C. (2001). Inclusivity and alignment: principles of pedagogy, task and assessment design for effective cross-cultural online learning. *Distance education*, 22(1), 7-29.

McLoughlin, C. (2002). Learner support in distance and networked learning environments: the dimensions for successful design. *Distance Education*, 23(2), 149-162.

McLoughlin, C., & Oliver, R. (1998). Planning a telelearning environment to foster higher order thinking. *Distance education*, 19(2), 242-264.

Meintjes, L. J. (1987). Program development: plan for success – take time to succeed. *Distance Education*, 8(2), 162-175.

Menchaca, M. P., & Bekele, T. A. (2008). Learner and instructor identified success factors in distance education. *Distance Education*, 29(3), 231-252.

Merrill, M. D., & Gilbert, C. G. (2008). Effective peer interaction in a problem-centered instructional strategy. *Distance Education*, 29(2), 199-207.

Miao, Y., van der Klink, M., Boon, J., Sloep, P., & koper, R. (2009). Enabling teachers to develop pedagogically sound and technically executable learning designs. *Distance Education*, 30(2), 259-276.

Mihkelson, A., & Klease, G. (1993). 'Unilearn Chemistry' – an Australian initiative for the independent learner. *Distance Education*, 14(2), 297-302.

Milne, H. J. O. (1987). Designing a distance education model for preparation of teachers of gifted children: an Australian perspective. *Distance Education*, 8(2), 227-250.

Moore, M. G. (1981). John Baath's correspondence education in the light of a number of contemporary teaching models. *Distance Education*, 2(1), 91-97.

Moore, M. G. (1987). Distance learning in the United States: the near future. *Distance Education*, 8(1), 38-46.

Morgan, A. (1984). A report on qualitative methodologies in research in distance education. *Distance Education*, 5(2), 252-267.

Morgan, C. J., Dingsdag, D., & Saenger, H. (1998). Learning strategies for distance learners: do they help? *Distance education*, 19(1), 142-156.

Morgan, C. K., & Tam, M. (1999). Unravelling the complexities of distance education student attrition. *Distance education*, 20(1), 96-108.

Motteram, G., & Forrester, G. (2005). Becoming an online distance learner: what can be learned from students' experiences of induction to distance programmes? *Distance Education*, 26(3), 281-298.

Muilenburg, L. Y., & Berge, Z. L. (2005). Student barriers to online learning: a factor analytic study. *Distance Education*, 26(1), 29-48.

Murphy, A. (2013). Open educational practices in higher education: institutional adoption and challenges. *Distance Education*, 34(2), 201-217.

Murphy, K. L., & Cifuentes, L. (2001). Using Web tools, collaborating, and learning online. *Distance Education*, 22(2), 285-305.

Murphy, K. L., Mahoney, S. E., Chen, C., Mendoza-Diaz, N. V., & Yang, X. (2005). A constructivist model of mentoring, coaching, and facilitating online discussions. *Distance Education*, 26(3), 341-366.

Murphy, L. M., Shelley, M. A., White, C. J., & Baumann, U. (2011). Tutor and student perceptions of what makes an effective distance language teacher. *Distance Education*, 32(3), 397-419.

Naidu, S. (1994). Applying learning and instructional strategies in open and distance learning. *Distance Education*, 15(1), 23-41.

Naidu, S. (1997). Collaborative reflective practice: an instructional design architecture for the Internet. *Distance education*, 18(2), 257-283.

Naidu, S., & Bernard, R. M. (1992). Enhancing academic performance in distance education with concept mapping and inserted uestions. *Distance Education*, 13(2), 218-233.

Nandi, D., Hamilton, M., & Harland, J. (2012). Evaluating the quality of interaction in asynchronous discussion forums in fully online courses. *Distance Education*, 33(1), 5-30.

Nichols, M. (2010). Student perceptions of support services and the influence of targeted interventions on retention in distance education. *Distance Education*. 31(1), 93-113.

Nielsen, H. D. (1997). Quality assessment and quality assurance in distance teacher education. *Distance education*, 18(2), 284-317.

Nikoi, S., & Armellini, A. (2012). The OER mix in higher education: purpose, process, product, and policy. *Distance Education*, 33(2), 165-184.

Nyirenda, J. E. (1983). Distance education at the secondary level: a Zambian study. *Distance Education*, 4(1), 80-94.

Nyirenda, J. E. (1989).Organization of distance education at the University of Zambia: an Analysis of the practice. *Distance Education*, 10(1), 148-156.

Oliver, K., Kellogg, S., Townsend, L., & Brady, K. (2010). Needs of elementary and middle school teachers developing online courses for a virtual school. *Distance Education*, 31(1), 55-75.

Oliver, K., Osborne, J., & Brady, K. (2009). What are secondary students' expectations for teachers in virtual school environments? *Distance Education*, 30(1), 23-45.

Oliver, R. (1999). Exploring strategies for online teaching and learning. *Distance education*, 20(2), 240-254.

Orrill, C. H. (2002). Supporting online PBL: design considerations for supporting distributed problem solving. *Distance Education*, 23(1), 41-57.

Ostman, R. E., & Wagner, G. A. (1987). New Zealand management students' perceptions of communication technologies in correspondence education. *Distance Education*, 8(1), 47-63.

Otoole, S. (1999). Barriers to professional education of NSW correctional officers: a case of distance learning. *Distance education*, 20(2), 295-312.

Painte, C., Coffin, C., & Hewings, A. (2003). Impacts of directed tutorial activities in computer conferencing: a case study. *Distance Education*, 24(2), 159-173.

Panda, S. K. (1992). Distance educational research in India: stock-talking, concerns and prospects. *Distance Education*, 13(2), 309-326.

Paulus, T. M. (2005). Collaborative and cooperative approaches to online group work: the impact of task type. *Distance Education*. 26(1), 111-125.

Paz Dennen, V. (2005). From message posting to learning dialogues: factors affecting learner participation in asynchronous discussion. *Distance Education*, 26(1), 127-148.

Paz Dennen, V., & Wieland, K. (2007). From interaction to intersubjectivity: facilitating online group distance processes. *Distance Education*, 28(3), 281-297.

Persico, D., Pozzi, F., & Sarti, L. (2010). Monitoring collaborative activities in computer supported clooaborative learning. *Distance Education*, 31(1), 5-22.

Peruniak, G. (1983). Interactive perspectives in distance education: a case study. *Distance Education*, 4(1), 63-79.

Phelan, L. (2012). Interrogating students' perceptions of their online learning experiences with Brookfield's critical incident questionnaire. *Distance Education*, 33(1), 31-44.

Philip, R., & Nicholls, J. (2007). Theatre online: the design and drama of e-learning. *Distance Education*, 28(3), 261-279.

Phillips, C. (1990). Making friends in the 'electronic student lounge'. *Distance Education*, 11(2), 320-333.

Pincas, A. (2001). Culture, cognition and communication in global education. *Distance education*, 22(1), 30-51.

Pittenger, A., & Doering, A. (2010). Influence of motivational design on completion rates in online self-study pharmacy-content courses. *Distance Education*, 31(3), 275-293.

Pittenger, A. L., & Olson-Kellogg, B. (2011). Leveraging learning technologies for collaborative writing in an online pharmacotherapy course. *Distance Education*, 33(1), 61-80.

Porras-Hernandez, L. H. (2000). Student variables in the evaluation of mediated learning environment. *Distance education*, 21(2), 385-405.

Portier, S. J., Hermans, H. J. H., Valcke, M. M. A., & van den Bosch, H. M. J. (1997). An electronic workbook to study statistics: design and evaluation. *Distance Education*, 18(1), 59-75.

Potter, C., & Naidoo, G. (2009). Evaluating large-scale interactive radio programmes. *Distance Education*, 30(1), 117-141.

Potter, C., & Naidoo, G. (2006). Using interactive radio to enhance classroom learning and research schools, classrooms, teachers, and learners. *Distance Education*, 27(1), 63-86.

Pugh, H. L., Parchman, S. W., & Simpson, H. (1992). Video telecommunications for distance education: a field survey of systems in US public education, industry and the military.

Distance Education, 13(1), 46-64.

Ramos, F., Taju, G., & Canuto, L. (2011). Promoting distance education in higher education in Cape Verde and Mozambique. *Distance Education*, 32(2), 159-175.

Rassmussen, K. L., Nichols, J. C., & Ferguson, F. (2006). It's a new world: multiculturalism in a virtual environment. *Distance Education*, 27(2), 265-278.

Redding, R. E. (1995). Cognitive task analysis for instructional design: applications in distance education. *Distance Education*, 16(1), 88-106.

Renner, W. (1995). Post-Fordist visions and technological solutions: educational technology and the labour process. *Distance Education*, 16(2), 284-301.

Rennie, F. (2003). The use of flexible learning resources for geographically distributed rural students. *Distance Education*, 24(1), 25-39.

Reushle, S. E. (1995). Design considerations and features in the development of hypermedia courseware. *Distance Education*, 16(1), 141-156.

Richter, T., & McPherson, M. (2012). Open educational resoruces: education for the world? *Distance Education*, 33(2), 201-219.

Roberts, D. (1984). Ways and means of reducing early student drop-out rates. *Distance Education*, 5(1), 50-71.

Roberts, D. (1996). Feedback on assignments. *Distance Education*, 17(1), 95-116.

Roberts, D. W. (1998). Effective use of distance education materials for on-campus learning. *Distance education*, 19(2), 358-374.

Roberts, D., Boyton, B., Buete, S., & Dawson, D. (1991). Applying Kember's Linear-Process Model to distance education at Charles Sturt University-Riverina. *Distance Education*, 12(1), 54-84.

Roberts, D. W., Jackson, K., Osborne, J., & Vive, A. S. (1994). Attitudes and perceptions of academic authors to the preparation of distance education materials at the University of Tasmania. *Distance Education*, 15(1), 70-93.

Roberts, N., & Vanska, R. (2011). Challenging assumptions: mobile learning for Mathematics project in South Africa. *Distance Education*, 32(2), 243-259.

Robertson, B. (1987). Audio teleconferencing: low cost technology for external studies networking. *Distance Education*, 8(1), 121-130.

Robinson, B. (1999). Open and distance learning in the Gobi Desert: non-formal education for nomadic women. *Distance education*, 20(2), 181-204.

Robson, J. (1996). The effectiveness of teleconferencing in fostering interaction in distance education. *Distance Education*, 17(2), 304-334.

Ronteltap, F., & Eurelings, A. (2002). Activity and interaction of students in an electronic learning environment for problem-based learning. *Distance Education*, 23(1), 11-22.

Ros i Sole, C., & Hopkins, J. (2007). Contrasting two approaches to distance language learning. *Distance Education*, 28(3), 351-370.

Ros i Sole, C., & Truman, M. (2005). Feedback in distance learning programmes in language; attutudes to linguistic faults and implications for the learning process. *Distance Education*, 26(3), 299-323.

Rothe, J. P. (1985). Audio teleconferencing and distance education: towards a conceptual synthesis. *Distance Education*, 6(2), 199-208.

Rumble, G. (1981). Evaluating autonomous multi-media distance learning systems: a practical approach. *Distance Education*, 2(1), 64-90.

Rumble, G. (2000). Student support in distance education in the 21st century: learning from

service management. *Distance education*, 21(2), 216-235.

Russo, T. C., & Campbell, S. (2004). Perceptions of mediated presence in an asynchronous online course: interplay of communication behaviors and medium. *Distance Education*, 25(2), 215-232.

Sageder, J. (1988). Tests as means for promotion of learning from distance teaching. *Distance Education*, 9(2), 234-249.

Samarawickrema, G., & Stacey, E. (2007). Adopting web-based learning and teaching: a case study in higher education. *Distance Education*, 28(3), 313-333.

Samarawickrema, R. G. (2005). Determinants of student readiness for flexible learning: some preliminary findings. *Distance Education*, 26(1), 49-66.

Scales, K. (1984). A study of the relationship between telephone contact and persistence. *Distance Education*, 5(2), 268-276

Schell, B. H., & Thornton, J. A. (1985). A media course commitment study in a Canadian university: empirical validation of an exchange model. *Distance Education*, 6(2), 209-222.

Schwittmann, D. (1982). Time and learning in distance study. *Distance Education*, 3(1), 141-156.

Segrave, S., & Holt, D. (2003). Contemporary learning environments: designing e-Learning for education in the professions. *Distance Education*, 24(1), 7-24.

Sewart, D. (1980). Creating an information base for an individualized support system in distance education. *Distance Education*, 1(2), 171-187.

Shott, M. (1985). Teaching Physics at a distance. *Distance Education*, 6(1), 102-127.

Sibanda, B., & Northcott, P. (1989). Policy issues for distance education in the Southern Africa

coordination Conference region. *Distance Education*, 10(2), 212-229.

Simich-Dudgeon, C. (1998). Developing a college web-based course: lessons learned. *Distance education*, 19(2), 337-357.

Simpson, H., Pugh, H. L., & Parchman, S. W. (1991). An experimental two-way video teletraining system: design, development and evaluation. *Distance Education*, 12(2), 209-231.

Simpson, H., Pugh, H. L., & Parchman, S. W. (1993). Empirical comparison of alternative Instructional TV technologies. *Distance Education*, 14(1), 147-164.

Sims, R. (2003). Promises of interactivityL aligning learner perceptions and expectations with strategies for flexible and online learning. *Distance Education*, 24(1), 87-103.

Sims, R. (2008). Rethinking (e)learning: a manifesto for connected generations. *Distance Education*, 29(2), 153-164.

Sims, R., Dobbs, G., & Hand, T. (2002). Enhancing quality in online learning: scaffolding planning and design through proactive evaluation. *Distance Education*, 23(2), 135-148.

Singh, G. (2011). An online abstract mentoring programme for junior researchers and healthcare professionals. *Distance Education*, 32(2), 229-242.

Slagter van Tryon, P. J., & Bishop. M. J. (2009). Theoretical foundations for enhancing social connectedness in online learning environments. *Distance Education*, 30(3), 291-315.

Slagter van Tryon, P. J., & Bishop. M. J. (2012). Evluating social connectedness online: the design and development of the social perceptions in learning contexts instrument. *Distance Education*, 33(3), 347-364.

Smith, K. C. (1980). Course development procedures. *Distance Education*, 1(1), 61-67.

Smith, P. J. (2000). Preparedness for flexible delivery among vocational learners. *Distance*

Education, 21(1), 29-48.

Smith, P. J., & Smith, S. N. (1999). Differences between Chinese and Australian students: some implications for distance educators. *Distance education*, 20(1), 64-80.

Smith, R. O. (2008). The paradox of trust in online collaborative groups. *Distance Education*, 29(3), 325-340.

Sparkes, J. J. (1983). The problem of creating a discipline of distance education. *Distance Education*, 4(2), 179-186.

Stack, A. (1990). Administrative problems associated with regionalization. *Distance Education*, 11(1), 92-115.

Steinkuehler, C. A., Derry, S. J., Hmelo-Silver, C. E., & Delmarcelle, M. (2002). Cracking the resource nut with distributed problem-based learning in secondary teacher education. *Distance Education*, 23(1), 23-39.

Stewart, A. R., Harlow, D. B., & DeBacco, K. (2011). Students' experience of synchronous learning in distributed environments. *Distance Education*, 32(3), 357-381.

Swan, K. (2001). Virtual interaction: design factors affecting student satisfaction and perceived learning in asynchronous online courses. *Distance Education*, 22(2), 306-331.

Tait, A. (1993). Systems, values and dissent: quality assurance for open and distance learning. *Distance Education*, 14(2), 303-314.

Taplin, M. (2000). Problem-based learning in distance education: practitioners' beliefs about an action learning project. *Distance education*, 21(2), 278-299.

Taylor, J. C. (1986). Student persistence in distance education: a cross-cultural multi-institutional perspective. *Distance Education*, 7(1), 68-91.

Taylor, J. D., Dearnley, C. A., Laxton, J. C., Coates, C. A., Treasure-Jones, T., Campbell, R. &

Hall, I. (2010). Developing a mobile learning solution for health and social care practice. *Distance Education*, 31(2). 175-192.

Telg, R. W. (1996). How television production specialists learn distance education skills and knowledge. *Distance Education*, 17(2), 289-303.

Thompson, G. (1984). The cognitive style of field-dependence as an explanatory construct in distance education drop-out. *Distance Education*, 5(2), 286-293.

Thorpe, M. (1998). Assessment and 'third generation' distance education. *Distance education*, 19(2), 265-286.

Treagust, D. F., Waldripd, B. G., & Horley, J. F. (1993). Effectiveness of ISDN video-conferencing: a case study of two campuses and two different courses. *Distance Education*, 14(2), 315-330.

Tsay, M., Morgan, G., & Quick, D. (2000). Predicting students' ratings of the importance of strategies to facilitate self-directed distance learning in Taiwan. *Distance education*, 21(1), 49-65.

Tu, C., & Corry, M. (2001). A paradigm shift for online community research. *Distance Education*, 22(2), 245-263.

Tynan, B., & O'Nell, M. (2007). Individual perseverance: a theory of home tutors' management of schooling in isolated settings. *Distance Education*, 28(1), 95-110.

Valcke, M. M. A., & Martens, R. L. (1997). An interactive learning and course development environment: context, theoretical and empirical considerations. *Distance Education*, 18(1), 7-23.

Valcke, M. M. A., Martens, R. L., Poelmans, P. H. A. G., & Daal, M. M. (1993). The actual use of embedded support devices in self-study materials by students in a distance education

setting. *Distance Education*, 14(1), 55-84.

Velasquez, A., Graham, C. R., & Osguthorpe, R. (2013). Caring in a technology-mediated online high school context. *Distance Education,* 34(1), 97-118.

Vlachopoulos, P., & Cowan, J. (2010). Reconceptualising moderation in asynchronous online discussion using grounded theory. *Distance Education*, 31(1), 23-36.

Vivian, V. (1986). Electronic mail in a children's distance course: trial and evaluation. *Distance Education*, 7(2), 237-260.

Vyas, R., Albright, S., Walker, D., Zachariah, A., & Lee, M. Y., (2010). Clinical training at remote sites using mobile technology: an India-USA partnership. *Distance Education*, 31(2), 211-226.

Wade, C. E., Cameron, B.A., Morgan, K., & Williams, K. C. (2011). Are interpersonal relationships necessary for developing trust in online group projects? *Distance Education*, 32(3), 383-396.

Wagemans, L., & Dochy F. (1991). Principles in the use of experiential learning as a source of prior

knowledge. *Distance Education*, 12(1), 85-108.

Walker, J. (1989). Mark's story: a disabled-student's case study in distance education. *Distance Education*, 10(2), 289-297.

Walker, J. (1994). Open learning: the answer to the government's equity problems? A report of a study on the potential impact of the Open Learning initiative on people with disabilities. *Distance Education*, 15(1), 94-111.

Walker, K., & Hackman, M. (1992). Multiple predictors of perceived learning and satisfaction: The importance of information transfer and non-verbal immediacy in the televised course.

Distance Education, 13(1), 81-92.

Wang, C., Shannon, D. M., & Ross, M. E. (2013). Students' characteristics, self-regulated learning, technology self-efficacy, and course outcomes in online learning. *Distance Education*, 34(3), 302-323.

Wang, X., Dannenhoffer III, J. F., Davidson, B. D., & Spector, J. M. (2005). Design issues in a cross-institutional collaboration on a distance education course. *Distance Education*, 26(3), 405-423.

Warner, L. (1993). WIST – a science and technology access programme for rural women: the determinants of success. *Distance Education*, 14(1), 85-96.

Watson, S. (2013). Tentatively exploring the learning potentialities of postgraduate distance learners' interactions with other people in their life contexts. *Distance Education*, 34(2), 175-188.

Weges, H. G., & Portier, S. J. (1997). Demand driven education through the delivery of interactive learning materials within the domain of Environment Law: design and research findings. *Distance Education*, 18(1), 76-92.

Wertsch, J. V. (2002). Computer mediation, PBL, and dislogicality. *Distance Education*, 23(1), 105-108.

Whelan, R. (2008). Use of ICT in education in the South Pacific: findings of the Pacific eLearning observatory. *Distance Education*, 29(1), 53-70.

White, C. (2005). Contribution of distance education to the development of individual learners. *Distance Education*, 26(2), 165-181.

White, C. J. (1997). Effects of mode of study on foreign language learning. *Distance Education*, 18(1), 178-196.

Wiesenberg, F., & Stacey, E. (2005). Reflections on teaching and learning online: quality program design, delivery and support issues from a cross-global perspective. *Distance Education*, 26(3), 385-404.

Wikeley, F., & Muschamp, Y. (2004). Pedagogical implications of working with doctoral students at a distance. *Distance Education*, 25(1), 125-142.

Wille'n, B. (1983). Distance education in Swedish university. *Distance Education*, 4(2), 211-222.

Willen, B. (1988). What happened to the Open University: briefly. *Distance Education*, 9(1), 71-83.

Williams, K. C., Morgan, K., & Cameron, B. A. (2011). How do students define their roles and responsibilities in online learning group projects? *Distance Education*, 32(1), 49-62.

Williams, S. W., Watkins, K., Daley, B., Courtenay, B., Davis, M., & Dymock, D. (2001). Facilitating cross-cultural online discussion groups: implications for practice. *Distance education*, 22(1), 151-167.

Willmott, G., & King, B. (1984). Professional development courses in distance education. *Distance Education*, 5(1), 116-130.

Wilson, M. S. (2001). Cultural considerations in online instruction and learning. *Distance education*, 22(1), 52-64,

Wright, C., & Conroy, C. (1988). Preparing CBI print-based support materials: an information/ instructional design perspective. *Distance Education*, 9(1), 84-94.

Xiao, J. (2012). Tutor's influence on distance language students' learning motivation: voice from learners and tutors. *Distance Education*, 33(3), 365-380.

Yasmin, Dr. (2013). Application of the classification tree model in predicting learner dropout

behavior in open and distance learning. *Distance Education*, 34(2), 218-231.

Yildiz, S., & Bichelmeyer, B. A. (2003). Exploring electronic forum participation and interaction by efl speakers in two web-based graduate-level courses. *Distance Education*, 24(2), 175-193.

Youngblood, P., Trede, F., & Corpo, S. D. (2001). Facilitating online learning: a descriptive study. *Distance Education*, 22(2), 264-284.

ZajkowskiDale, M. E. (1993). Business students learning at a distance: one form of pre-enrollment counseling and its effect on retention. *Distance Education*, 14(2), 331-353.

Zembylas, M. (2008). Adult leaners' emotions in online learning. *Distance Education*, 29(1), 71-87.

Zembylas, M., & Vrasidas, C. (2007). Listening for silence in text-based, online encounter. *Distance Education*, 28(1), 5-24.

Appendix C

Feedback Content, topics and Categories Present in Related Articles from 1980-2013

Authors and Years of the Articles	Feedback Content Example	Topics	Categories
Akbulut, Y., Kuzu, A., Latchem, C., & Odabasi, F. (2007)	"Authors expressed that it is important to provide extrinsic feedback".	External feedback	Other
Alexander, J. W., Polyakova-Norwood, V., Johnston, L. W., Christensen, P., & Loquist, R. S. (2003)	"The faculty serve as facilitators and leaders to provide feedback to students"	Feedback from tutor	Sources
Alvino, S., Asensio-Perez, J. I., Dimitriadis, Y., & Hernandez-Leo, D. (2009)	"An interview was used to collect teacher's feedback"	Method to collect feedback	Other
Amarsaikhan, D., Lkhagvasuren, T., Oyun, S., & Batchuluun, B. (2007)	"Insufficient feedback is a common flaw in medical trials"	Only mention feedback	Other
Amundsen, C. L., &	"Telephone feedback was	Method to deliver	Technology

Bernard, R. M. (1989)	incorporated as a support element in distance education programs". "Quality of feedback to students varies among makers."	feedback. Quality problem	and Media Challenge
Andrade, M. S., & Bunker, E. L. (2009)	"Assessment feedback helps learners review their progress and provide meaningful interaction". "Feedback from tutors has been proven effectively in distance learning".	Assessment feedback Feedback from tutor	Other Sources
Andrews, J., & Strain, J. (1985)	"Provide students with consistent, objective instructional feedback … have rarely been able to control the quality or turn-around time of comment" "Immediate feedback enables students to complete course more quickly".	Quality feedback Immediate feedback Computer support	Challenges Other Technology and Media

	"Computer-assisted communication enhanced teacher and learner interaction".		
Bahlman, G. W., & Robertshaw, M. (1989)	"Feedback from students indicated …"	Feedback from students	Sources
Balasubramanian, K., Thamizoli, P., Umar, A., & Kanwar, A. (2010)	"Participants' feedback has encouraged developing a learning management system for mobile phones".	Only mention feedback	Other
Baran, E., & Correia, A. (2009)	"Text-based information lacks immediate instructors' verbal feedback".	Immediate feedback	Other
Bates, A. W. (1997)	"Newer technologies (World Wide Web), which including computer conferencing provide better quality feedback,"	Technology	Technology and Media
Bawane, J., &	"The instructor's social	Feedback from	Sources

Spector, J. M. (2009)	role involves creating a friendly environment …, and provide effective feedback to motivate students".	instructor	
Beckett, G. H., Amaro-Jimenez, C., & Beckett, K. S. (2010)	"International students were unfamiliar with American ways of giving feedback"	Cultural problems	Challenge
Beckmann, E. A. (2010)	"Since the postal service is unreliable, … (student responds to request feedback)".	Feedback from students	Sources
Belawati, T. (1998)	"Feedback support distance education systems".	Only mention feedback	Other
Beldarrain, Y. (2006)	"The 21st-century learner wants to stay connected to peers and receive prompt feedback from the instructor". "Instructor is required to	Feedback from peer Feedback from instructor Technologies used	Sources Technology and Media

	provide personalized feedback via phone calls and emails".		
Benson, R., & Rye, O. (1996)	"Students receive response by telephone from their supervisor".	Telephone used to deliver feedback	Technology and Media
Benson, R., & Samarawickrema, G. (2009)	"The view is supported by the idea of structure as including activities with automatic feedback programmed …".	Automatic feedback	Other
Bernard, R., Abrami, P., Lou, Y., & Borokbovski, E. (2004)	"Haughey and Anderson (1998) suggest instructors collecting summative feedback".	Summative feedback	Other
Bernard, R. M., Brauer, A., Abrami, P. C., & Surkes, M. (2004)	"Timely feedback serves as interaction with an instructor and other students". "Students needed more help and feedback from the instructor".	Timely feedback Feedback from instructor	Other Sources

Bernard, R. M., & de Rubalcava, B. R. (2000)	"Distance education relies on learning material accompanied by minimal feedback …".	Minimal feedback	Other
Bernt, F. M., & Bugbee Jr, A. C. (1993)	"Adult learners may need more evaluative feedback".	Evaluative feedback	Other
Berry, J., & O'Shea, T. (1984)	"Students got feedback on their quality of the project and notes on any obvious pitfalls".	Only mention feedback	Other
Bethel, E. C., & Bernard, R. M. (2010)	"Interaction led to effective learning only if the developers gain formative feedback".	Formative feedback	Other
Beuchot, A., & Bullen, M. (2005)	"Interactivity requires messages, while reactivity can be assimilated to one-way feedback".	Only mention feedback	Other
Biner, P., Barone, N., Welsh, K., & Dean, R. (1997)	"Negative student feedback help to quickly identify and modify	Feedback from students	Sources

	programmed components".		
Bishop, A. (2002)	"The tutors were generally supportive and provided prompt feedback and responses to questions".	Feedback from tutor	Sources
Bjorck, U. (2002)	"Students exchange feedback that is given the discussion list".	Feedback from peers	Sources
Bollettino, V., & Bruderlein, C. (2008)	"Preliminary feedback from interviews suggests that other factors account for low completion rates".	Preliminary feedback	Other
Bolliger, D. U., & Halupa, C. (2011)	"Researcher reported that online learners uncounted confusing instructor feedback which caused anxiety".	Quality of feedback	Challenge
Bolliger, D. U., & Shepherd, C. E. (2010)	"Others use ePortfolios to facilitate student collaboration". "Authors stated that the use of peer and instructor	Technology Feedback from instructor and peers	Technologies and Media Sources

	feedback allowed for enhanced reflection and deeper learning outcomes".		
Bolliger, D. U., & Wasilik, O. (2009)	"Barriers to online learning include delays in feedback from instructors".	Feedback from instructor	Sources
Bolton, G. (1986)	"It is important to raise our sights from the immense detail of feedback techniques, and preparation of course materials".	Quality of feedback	Challenges
Bonk, C. J., & Zhang, K. (2006)	"One of learning activity for online course is providing feedback on papers".	Method used to deliver feedback	Technologies and Media
Borokhovski, E., Tamim, R., Bernard, R. M., Abrami, P. C., & Sokolovskaya, A. (2012)	"Motivational feedback used to encourage interpersonal exchange".	Motivational feedback	Other

Borup, J., West, R. E., & Graham, C. R. (2013)	"Asian students prefer audio feedback to text".	Audio used to deliver feedback	Technology and Media
Boshier, R., Mohapi, M., Moulton, G., Qayyum, A., Sadownik, L., & Wilson, M. (1997)	" … , there was no potential for students to provide feedback".	Feedback from students	Sources
Bossu, C., Bull, D., & Brown, M. (2012)	"The participants will provide feedback on findings of the survey …".	Feedback from peers	Sources
Boucher, T. A., & Barron, M. H. (1986)	"Students taking the computer-marked course with prescriptive feedback experienced marginal gains …".	Prescriptive feedback	Other
Bowser, D., & Race, K. (1991)	"The aim of the questionnaire is to gain feedback."	Method to gain feedback	Other
Brace-Govan, J., &	"Journal entries and staff	Feedback from journal	Sources

Clulow, V. (2000)	commentary could give students important feedback on developing skill".	entries and staff commentary	
Brew, A., & Wright, T. (1990)	"Feedback from students can help the teacher to see if everyone is taking part in discussion".	Feedback from students	Sources
Broadbridge, A., & Davies, K. (1993)	"Participants complained there were little or no feedback"	Importance of feedback	Other
Brown, S., & Nathenson, M. (1981)	"Evaluation team collected feedback from students on all aspects of the course".	Feedback from students	Sources
Bruno, J. E., & Pedroza, H. A. (1994)	"A list of basic questions was used in order to get feedback from participating subjects".	Feedback from other subjects	Sources
Burke, C., Lundin, R., & Daunt, C. (1997)	"Online feedback from students at the end of each videoconference …".	Feedback from students	Sources

Bynner, J. (1986)	"Students receive feedback from tutor on their mastering of the skill".	Feedback from tutor	Sources
Catchpole, M. (1986)	"Getting immediate feedback can help students to link new materials to their previous knowledge base". "Feedback makes students learn more"	Immediate feedback Importance of feedback	Other
Chabon, S. S., Cain, R. E., & Lee-Wilkerson, D. (2001)	"The instructors monitored the discussions …, and provided respectful feedback".	Feedback from instructor	Sources
Chen, T., Bennett, S., & Maton, K. (2008)	"Most students see the lack of interaction and immediate feedback as impediments of effective learning".	Importance of feedback	Other
Cheung, D. (1998)	"Students provide the course team with	Feedback from students	Sources

	diagnostic feedback". "Tutors provide feedback to lecturers for improvement of course".	Feedback from tutor	
Childress, M. D., Braswell, R. (2006)	"The use of Second Life adds a visual feedback element that serves to enhance the interaction".	Software to deliver feedback	Technologies and Media
Chinnappan, M. (2006)	"Forum was used to provide constructive feedback".	Method to deliver feedback	Technologies and Media
Cho, M., & Shen, D. (2013)	"Online teachers should provide positive feedback to students".	Feedback from teachers	Sources
Clayton, D., & Arger, G. (1989)	"Teacher's main expectation was to provide immediate feedback".	Immediate feedback Feedback from teachers	Other Sources
Coldeway, D. O., & Spencer, R. E. (1982)	"Tutors help students make progress by providing immediate feedback". "Telephone can be used to	Feedback from tutors Telephone used to deliver feedback	Sources Technologies and Media

	provide immediate feedback".		
Compton, L., Davis, N., & Correia, A. (2010)	"Many participants expressed worries that the delay in teacher feedback would affect the learning process".	Feedback from teacher Importance of immediate feedback	Sources
Coniam, D. (1993)	"Author mentioned audio recorded feedback and instant feedback to help students learning".	Different feedback	Other
Conrad, D. (2002)	"A student prefers to channel her feedback to colleagues".	Feedback from peers	Sources
Correia, A., Davis, N. (2008)	"Not everyone felt comfortable with anonymous course feedback".		
Cresswell, R., & Hobson, P. (1996)	"Attention has been paid to the relevance of student feedback in monitoring tertiary performance".	Feedback from students	Sources
Cropley, A. J., &	"Effects of feedback in	Students'	Other

Kahl, T. N. (1983)	DE strongly depend on learners' maturity, far-sightedness, internal motivation, and ability to plan".	characteristics	
Cross, R. F. (1996)	"Verbal feedback was obtained via casual interactions with the students".	Verbal feedback	Other
Daniel, J. S., & Stroud, M. A. (1981)	"Students are happier when learning system includes consistent feedback".	Quality of feedback	Challenges
Darabi, A., & Jin, L. (2013)	"Preservice teachers were prompted to provide feedback on …".	Feedback from teachers	Sources
Darabi, A. A., Silorski, E. G., & Harvey, R. B. (2006)	"One member writes a first draft and sends it to the next member for their feedback".	Feedback from peers	Sources
Dean, A. M., & Webster, L. (2000)	"The feedback provided at the end of the simulation enhanced my	Summative feedback	Other

	performance".		
Dennen, V. P., Darabi, A. A., & Smith, L. J. (2007)	"Instructor needs to provide feedback on assignments in a timely manner".	Feedback from instructor Importance of immediate feedback	Sources
Dickey, M. D. (2003)	"The advantage of having a synchronous chat tool is that it affords learners immediate feedback".	Chat tool used to deliver feedback	Technologies and Media
Dillenbourg, P. (2008)	"Teacher provide feedback to ask students to clarify the relationships they have expressed, and …".	Feedback from teachers	Sources
Dillon, C. L., Gunawardena, C. N., & Parker, R. (1992)	"Some student indicated that the instructor did not provide the remote students with the same materials as the campus students",	Feedback from instructor Teachers' responsibilities	Sources
Ding, X. (1994)	"Getting feedback from face-to-face tutors in conventional class".	Feedback from tutor	Sources

Dobrovolny, J. (2006)	"Another difficult aspect of developing effective feedback is including …, and the learners' prior experiences".	Learners characteristics	Other
Donald, C., Blake, A., Girault, I., Datt, A., & Ramsay, E. (2009)	"Each member of the community shares ideas, provide critical feedback …".	Feedback from peers	Sources
Dray, B. J., Lowenthal, P. R., Miszkiewicz, M. J., Ruiz-Primo, M. A., & Marczynski, K. (2011)	One question to measure learners' characteristics is if they are good at giving constructive and proactive feedback to others.	Feedback from learners	Sources
Duignan, P. A., & Teather, D. C. B. (1985)	"There is no instant feedback to help clear the air and clarify meanings".	Only mention feedback	Other
Dunbar, R. (1991)	"In Indonesia, course writers are not involved in	Cultural difference	Challenges

	in any of the feedback processes".		
Dymock, D., & Hobson, P. (1998)	"Voicemail proved a very useful way of providing feedback to students".	Voicemail used to delivered feedback	Technologies and Media
Earl, K. (2013)	"Grade achievement and assignment feedback may prompt students to ask questions". "Maintaining students' confidence and trust … can be supported by timeliness and quality of feedback".	Assignment feedback Feedback quality	Other Challenges
Eastmond, D. V. (1994)	"Timely feedback is thought to be an important advantage of computer conferencing".	Importance of feedback	Other
Edwards, M., Perry, B., & Janzen, K. (2011)	"Lack of feedback from instructors, … , is one of the major problems learners are faced with in online instruction".	Importance of feedback	Other

Eisenberg, E., & Dowsett, T. (1990)	"More frequent feedback can make more staff/students contact to assess progress".	Frequent feedback	Other
Falck, A. K., Kronlund, H. T., Kynaslahti, H., Salminen, J., & Salonen, M. (1997)	"Documents, including …, examination results and answers to feedback questionnaires were collected".	Only mention feedback	Other
Ferman, T., & Page, M. (2000)	"An important phase in the project was for the participants to learn from and act on the evaluation feedback". "Student feedback improves lecturer's teaching skills".	Evaluative feedback Feedback from students	Other Sources
Fields, B. A. (1989)	"Feedback is one of the five elements regarded as essential to effective training aimed at changing teachers' classroom	Feedback to teachers	Sources

	instructional behavior".		
Field, J. (1995)	"Instant feedback was offered in much-parodied movement".	Instant feedback	Other
Finkel, A. (1985)	"The feedback that students receive on their essays is extremely important in a distance course in history".	Importance of feedback	Other
Fulcher, G., & Lock, D. (1999)	"The tutor provides appropriate feedback to learners".	Feedback from tutor	Sources
Furnborough, C. (2012)	"Feedback strategically served as a learning tool".	Only mention feedback	Other
Furnborough, C., & Truman, M. (2009)	"Formative feedback emphasizes the learning process …". "External feedback is comments …". "Internal feedback is generated …".	Formative feedback External feedback Internal feedback	Other
Garland, M. R.	"Tutor provides written	Feedback from tutor	Sources

(1993)	feedback and telephone support”. “The timeliness and quality of feedback on assignment was also problematic in some cases”.	Quality of feedback	Challenges
Garrison, D. R. (1985)	“In computer-based instruction, feedback can be immediate and regular”.	Computer used to delivered feedback	Technologies and Media
Garrison, D. R. (1987)	“The speed and regularity of feedback, … are variables that should be studied in method of distance delivery”.	Speed feedback	Other
Garrison, D. R. (1993)	“A behavioral approach provides simple feedback, while a cognitive approach may provide explanatory feedback”.	Explanatory feedback Simple feedback	Other
Garrison, D. R. (1995)	“Examples and arguments are used to provide	Method to provide feedback	Technologies and Media

	feedback".		
Gee, T. W. (1991)	"Positive, quick feedback is a must in the use of distance education network".	Quick feedback	Other
Gillies, D. (2008)	"Listening to feedback was often disengaging".	Feedback delivered by audio or video	Technologies and Media
Goodfellow, R., Lea, M., Gonzalez, F., & Mason, R. (2001)	"Academic conventions may be constructed over the question of feedback".	Feedback used for interaction	Functions
Goodyear, P., & Ellis, R. A. (2008)	"Some feedback come from self-monitoring of results, while some come via other people (teachers)".	Internal feedback Feedback from teachers	Other Sources
Goyen, M., & Roome, W. (1998)	"Feedback from end of semester evaluations".	Summative feedback	Other
Graham, M., & Scarborough, H. (2001)	"Informal feedback from email and telephone conversations …".	Informal feedback Email and telephone used to deliver feedback	Other Technologies and Media

Green, N. C. (2006)	"The school of distance education teachers guided Louise by giving feedback".	Feedback from teachers	Sources
Gregory, J., & Salmon, G. (2013)	"Feedback from many participants shares skills, knowledge, and resources".	Feedback from peers	Sources
Griffiths, D., Beauvior, P., Liber, O., & Barrett-Baxendale, M. (2009)	"The Reload LD team provided extensive informal feedback, …".	Informal feedback	Other
Guasch, T., Espasa, A., Alvarez, M., & Kirschner, P. (2013)	"Two specific support mechanisms that can be used are teacher feedback and peer feedback".	Feedback from teacher Feedback from peer	Sources
Gunawardena, C. N., Ortegano-Layne, L., Carabajal, K., Frechette, C., Lindemann, K., &	"The community provides the opportunity for participants to interact, receive feedback, and learn and grow together".	Feedback from peers	Sources

Jennings, B. (2006)			
Gunawardena, C. N., Nolla, A. C., Wilson, P. L., Lopez-Islas, J. R., Ramirez-Angel, N., & Megchen-Alpizar, R. M. (2001)	"Lack of feedback makes online conferences difficult".	Importance of feedback	Other
Hagel, P., & Shaw, R. N. (2006)	"The engagement benefits of web-based study are likely to be greater when its capacity for feedback exploited more effectively".	Web-based deliver feedback	Technologies and Media
Halabi, A. K., Tuovinen, J. E., & Smyrnios, K. X. (2000)	"Computer-aided instruction provide automatic feedback for individual learners".	Computer deliver feedback	Technologies and Media
Hall, D., & Knox, J. (2009)	"Marker feedback is less common in the literature".	Marker feedback	Other

Halverson, L. R., Graham, C. R., Spring, K. J., & Drysdale, J. S. (2012)	"Technology supported good feedback practice".	Technology	Technologies and Media
Hannum, W. H., Irvin, M. J., Lei, P., & Farmer, T. W. (2008)	"Students in successful programs were well supported by frequent feedback".	Frequent feedback	Other
Harden, T., Barnard, I., & Hong, E. (1991)	"Communication and feedback to students may help to improve students' writing ability".	Importance of feedback	Other
Harley, M. F. (1985)	"Regular and effective feedback to the teacher is received both from the parent and the child".	Feedback from parent and child	Sources
Harman, C., & Dorman, M. (1998)	"External students might benefit from an interactive environment, with access	Only mention feedback Feedback from	Other Sources

	to immediate feedback and reinforcement both from the teacher and student peers".	teacher and peers	
Hase, S., & Saenger, H. (1997)	"Videomail-a personalized approach to providing feedback on assessment to distance learners".	Videomail used to deliver feedback	Technologies and Media
Hawkins, A., Graham, C. R., Sudweeks, R. R., & Barbour, M. K. (2013)	"Quality of interaction was subdivided into three constructs representing feedback, procedural, and social interaction".	Quality of feedback	Challenges
Hayford, J. (1996)	"Australian students who have access to a computer and modem could send assignments and receive feedback".	Computer used to deliver feedback	Technologies and Media
Hedberg, J., & Ping, L. C. (2004)	"The new e-learning technologies may diminish the need to have	Technology improve learning	Technologies and Media

	repetitious feedback".		
Henderson, L., & Putt, I. (1993)	"Feedback is used to solve problems".	Only mention feedback	Other
Herrington, J., Reeves, T. C., & Oliver, R. (2006)	"Distance education literature was studied to tease out the effects of individual variables: feedback, delivery mode, media, etc.".	Only mention feedback	Other
Hiemstra, A., Hummel, H., & Sint, M. (1996)	"Audio worked as information, instruction, or feedback".	Audio used to deliver feedback	Technologies and Media
Higgins, K., & Harreveld, R. E. (2013)	"Authors were reminded that professional development programs require careful planning …, (and) tailored feedback processes.	Importance of feedback	Other
Hilton III, J. L., Graham, C., Rich, P., & Wiley, D. (2010)	"Learners at a distance could receive feedback from the instructor".	Feedback from instructor	Sources

Hockings, C., Brett, P., & Terentjevs, M. (2012)	"User review and evaluation of the video clips in the pre-release stage provided helpful feedback".	Only mention feedback	Other
Hockridge, D. (2013)	"In distance education, teaching practice is designed for individual communication, feedback and modeling".	Only mention feedback	Other
Holmberg, B. (1981)	"Feedback served to provide information, correction, and comments".	Feedback roles	Roles
Holmber, R. G., & Bakshi, T. S. (1982)	"In conventional laboratories, one of potential advantages is providing immediate feedback".	Comparison of feedback in DE and CE	Other
Holt, D., Petzall, S., & Viljoen, J. (1990)	"Group members can give support and encourage each other when they	Feedback from peers	Sources

	receive assignment feedback".		
Holt, D. M., & Thompson, D. J. (1998)	"New technology developments are more quickly and strongly moved into the worlds of teaching and learning, and more continuously reviewed ad revised in response to teacher and student feedback".	Technology improved and deliver teacher and student feedback	Technologies and Media
Holt, M. D. (1993)	"MBA study documentary sources include student assignment submissions and assessor feedback".	Feedback from assessor	Sources
Hosie, P. (1988)	"Instruction delivered by satellite has great potential for promoting diversity of instructional delivery".	Satellite used to deliver feedback	Technologies and Media
Hough, M. (1984)	"Using feedback to guide adult learning activities".	Only mention feedback	Other
Howard, D. C. (1985)	"Students are likely to confront obstacles to	Obstacles Importance of	Challenges Other

	learning because of delayed feedback".	immediate feedback	
Howland, J. L., & Moore, J. L. (2002)	"Self-reliance students expected to get structure and continuous feedback". "Some students expect immediate feedback".	Different kinds of feedback	Other
Hurd, S. (2006)	"Tutor's feedback is considered more important than any other tutor role".	Feedback from tutor Importance of tutor feedback	Sources
Inglis, A. (1999)	"Email has been used extensively to provide assignment feedback".	Email used to deliver feedback	Technologies and Media
Irlbeck, S., Kays, E., Jones, D., & Sims, R. (2006)	"The role of the teacher moves from providing content to providing feedback".	Tutor feedback	Sources
Jackson, L. C., Jackson, A. C., & Chambers, D. (2013)	"Students observe their teacher facilitating the inquiry process and giving feedback".	Feedback from students	Sources
James, R., & Beattie,	"Reduction in feedback	Feedback from	Sources

K. (1996)	from students is dissatisfying and disconcerting to the extent that it undermines teaching performance".	student Importance of feedback	Other
Jamtsho, S., & Bullen, M. (2007)	"One serious area of concern for the students was the turnaround of assignments with appropriate feedback from the tutors".	Immediate feedback Feedback from tutors	Other Sources
Jegede, O. J. (1994)	"70% of subjects agreed to concentrated on systems for the provision of feedback to student".	Importance of feedback	Other
Jegede, O., Taplin, M., Fan, R. Y. K., Chan, M. S. C., & Yum, J. (1999)	"People with high need for achievement have a strong desire for performance feedback".	Performance feedback	Other
Jelfs, A., Richardson, J. T. E., & Price, L. (2009)	"The tutor's role is to mark assignments with detailed formative	Feedback from tutor	Sources

	feedback".		
Jennings, P. J., & Atkinson, R. J. (1982)	"Action on feedback from students has been facilitated by the small scale of the courses".	Feedback from students	Sources
Jonassen, D., Prevish, T., Christy, D., & Stavrulaki, E. (1999)	"Students should be expected to grade and provide feedback to other students".	Feedback from peers	Sources
Joughin, G., & Johnston, S. (1994)	"The teacher received positive informal feedback from campus students".	Feedback from students	Sources
Junor, L. (1992)	"Tape used to deliver learning materials and feedback".	Tape used to deliver feedback	Technologies and Media
Kahl, T. N., & Cropley, A. J. (1986)	"Inconsistent feedback can raise students anxiety".	Importance of feedback	Other
Kanuka, H. (2002)	"Feedback from focus group members in the previous step helped to revise the principles and	Feedback from peers	Sources

	constructs of the solution".		
Kanuka, H., & Nocente, N. (2003)	"The computer generated feedback was helpful".	Feedback from computer	Sources
Kaufman, D. (1984)	"Self-assessment questions with feedback will …".	Internal feedback	Other
Keegan, D. J. (1980)	"Feedback expanded form of teaching by correspondence with feedback".	Importance of feedback	Other
Kehrwald, B. (2008)	"A student expressed that she is glad to give feedback".	Feedback from peers	Sources
Kelly, M. E. (1987)	"Students will provide negative feedback when materials and teaching strategies are inadequate".	Feedback from students	Sources
Kember, D. (1982)	"Isolated students who meet with colleagues can share their experiences, and tutor receive	Feedback from peers Feedback to tutors	Sources

	considerable feedback about problems".		
Kember, D. (1989)	"Students need more prompt deliveries of assignments and more direct and explanatory feedback".	Only mention feedback	Other
Kember, D. (1994)	"Behaviorists need for feedback in addition to message transmission".	Importance of feedback	Other
Kember, D., & Mezger, R. (1990)	"Feedback from students can help writers become more open to innovative and creative ideas".	Feedback from students	Sources
Kennepohl, D., & Last, A. M. (2000)	"Feedback from instructor may be very slow".	Feedback from instructor	Sources
Kim, C. (2008)	"The preservice teachers were trained in advance to provide strategic student feedback via email".	Email used to provide feedback	Technologies and Media
Kirkwood, A. (1998)	"Electronic submission has been introduced with	Speed feedback	Other

	the aim of improving the turnaround time for feedback to learner".		
Kirschner, P., Meester, M., Middelbeek, E., & Hermans, H. (1993)	"Constructive feedback is often lacking in laboratory work".	Constructive feedback	Other
Kirschner, P., Valcke, M. M. A., & Vilsteren, P. v. (1997)	"Students receive feedback provided by the system itself, the tutors and the experts".	Feedback from tutors and experts	Sources
Klingsieck, K. B., Fries, S., Horz, C., & Hofer, M. (2012)	"The feedback concentrated on the learning strategies"	Feedback for learning strategies	Sources
Kloeden, P. E., & McDonald, R. J. (1981)	"Student feedback together with other data can give useful information on the process of learning".	Feedback from students	Sources
Knox, D. M. (1997)	"The visits also provide the Melbourne lecture with valuable feedback on	Only mention feedback	Other

	students' progress".		
Koseoglu, S., & Doering, A. (2011)	"Student feedback was analyzed using the constant comparison method".	Feedback from student	Sources
Koshy, K., Bonato, J., & Faasalaina, T. (1994)	"Satellite tutorials are now becoming more extensively used for the purpose of more rapid feedback".	Satellite used to deliver feedback	Technologies and Media
Koszalka, T., & Ganesan, R. (2004)	"The course management systems allow developers to use feedback mechanisms to guide learning".	Only mention feedback	Other
Koszalka, T. A., & Ntloedibe-Kuswani, G. S. (2010)	"Each member of community shares ideas and provides critical feedback".	Feedback from peers	Sources
Kuboni, O. (2009)	"Tutors are expected to moderate discussions…, provide feedback on learning activities".	Tutors role	Sources

Kuboni, O., & Martin, A. (2004)	"Instructors collect post-course informal, as well as summative, feedback".	Summative feedback	Other
Kuffner, H. (1984)	"Student receives a detailed computer printed letter as feedback".	Print material as method to deliver feedback Computer used	Technologies and Media
Laaser, W. (1993)	"Students react very positively, especially to the immediate feedback given to each step in their learning".	Importance of immediate feedback	Other
Lange, J. C. (1986)	"Computer models provide instantaneous feedback to student".	Computer used to deliver feedback	Technologies and Media
LaPointe, D. K., & Gunawardena, C. N. (2004)	"The correlation was strong when learners received feedback from classroom".	Feedback from classmates	Sources
Lappia, A., & Lappia, A. (1989)	"Direct and constructive feedback to an instructor can be of assistance for improving teaching	Direct and constructive feedback Feedback to instructor	Other Sources

	behaviors".		
Latchem, C. (2007)	"It is hard to provide any feedback to support future projects".	Obstacle	Challenges
Lawrence, B., & Lentle-Keenan, S. (2013)	"Web-based tools were used to provide feedback between teachers and students".	Web-based tools used to deliver feedback	Technologies and Media
Lehtinen, E. (2002)	"The students' task was to give feedback on how the teachers presented in the video cases could improve their lessons".	Feedback from students	Sources
Leong, P. (2011)	"Researchers found out that a lack of immediate feedback from the instructor may cause students' frustration".	Importance of immediate feedback	Other
Lester, N. C. (1993)	"Tutors would allow for providing immediate feedback".	Feedback from tutor	Sources
Li, N., Lee, K., & Kember, D. (2000)	"Students indicated actions to seek feedback	Feedback from peers	Sources

	or ideas from others".		
Liao, L. (2006)	"Discussion between students is a significant difference from the feedback of teachers".	Difference of feedback from peers and teachers	Sources
Librero, F., Ramos, A. J., Ranga, A. I., Trinona, J., & Lambert, D. (2007)	"Immediate feedback is encouraged wherever possible".	Importance of immediate feedback	Other
Lobry de Bruyn, L. (2004)	"Difficulties may be encountered since there is no clear feedback to indicate whether their point is clear".	Quality of feedback	Challenges
Lockwood, F., & Latchem, C. (2004)	"Training Impact Study provides feedback on training events".	Only mention feedback	Other
Lou, Y. (2004)	"Students received prompt individual feedback from instructor on their work".	Feedback from instructor	Sources
Luschei, T. F., Dimyati, S., &	"Feedback is one of crucial elements of DE".	Importance of feedback	Other

Padmo, D. (2008)			
Macdonald, J., & Hills, L. (2005)	"Tutors are responsible for providing detailed formative feedback".	Tutors' responsibility	Sources
Macdonald, J., & Poniatowska, B. (2011)	"The structure of VLE choice intentions includes assignment feedback".	Assignment feedback	Other
Macpherson, C., & Smith, A. (1998)	"A broader study would generate unique feedback regarding author perceptions".	Only mention feedback	Other
Malbran, M, del C., & Villar, C. M. (2001)	"The Monitor Triarchic Test provides immediate feedback".	Only mention feedback	Other
Mann, C. C. (1998)	"All assignment are given feedback either on audio cassette or in written form". "… invite feedback from tutees on the quality of feedback they receive".	Audio used to deliver feedback Quality of feedback	Technologies and Media Challenges

Marland, P., Patching, W., & Putt, I. (1992)	"Practice interviews were videotaped to be analyzed and corrective feedback provided".	Corrective feedback	Other
Marland, P. W., & Store, R. E. (1982)	"Feedback increases the subject's intentional learning".	Importance of feedback	Other
Marland, P., Patching, W., Putt, P., & Store, R. (1984)	"It is profitable to examine the frequency of feedback".	Frequency feedback	Other
Marsden, R. (1996)	"With written words, students can understand content without feedback". (Feedback's negative aspect)	Only mention feedback	Other
Martens, R., Bastiaens, T., & Kirschner, P. A. (2007)	"The coach provides students with feedback".	Feedback from coach	Sources
Martens, R. L., Valcke, M. M. A.,	"Questions with feedback were used in an interactive	Only mention feedback	Other

Portier, S. J., Weges, H. G., & Poelmans, P. H. A. G. (1997)	learning environments".		
Masterman, E., Jameson, J., & Walker, S. (2009)	"Students need more controlled tasks … for the teacher to check their work and provide feedback".	Feedback from teacher	Sources
McAlpine, I. (2000)	"Students provide feedback on an online questionnaire".	Feedback from students	Sources
McConnell, D. (2002)	"The work of the group allows members to re-draft their stories based on members' feedback".	Feedback from peers	Sources
McDonald, R., Sansom, D., & White, M. (1981)	"Slow assignment feedback makes students enroll in the two-semester option".	Assignment feedback	Other
McGill, T. J., Volet, S. E., & Hobbs, V. J. (1997)	"Lack of immediate feedback makes it impossible to provide	Importance of feedback	Other

	early appropriate assistance".		
McLinden, M., McCall, S., Hinton, D., & Weston, A. (2006)	"An anonymous questionnaire was used to collect feedback from the participants".	Only mention feedback	Other
McLoughlin, C. (2001)	"The teacher should consider what forms of feedback will be most motivating for students".	Feedback from teacher	Sources
McLoughlin, C. (2002)	"Effective support requires interaction and extension of ideas with feedback from peers and mentors".	Feedback from peers and mentors	Sources
McLoughlin, C., & Oliver, R. (1998)	"Telephone, computer and fax can be used to provide immediate feedback".	Technology used to provide feedback	Technologies and Media
Meintjes, L. J. (1987)	"Feedback from students is usually in response to tutor's letters".	Feedback from students	Sources
Menchaca, M. P., &	"Students comments	Importance of	Other

Bekele, T. A. (2008)	immediate feedback is crucial". "Students were more likely to comment on each other's work". "Faculty plays a major role in providing feedback".	immediate feedback Feedback from peers Faculty role	Sources
Merrill, M. D., & Gilbert, C. G. (2008)	"Application is effective only when learners receive corrective feedback".	Importance of feedback	Other
Miao, Y., van der Klink, M., Boon, J., Sloep, P., & koper, R. (2009)	"Candidates further improve assignment outcomes and even require elaborate feedback".	Elaborate feedback	Other
Mihkelson, A., & Klease, G. (1993)	"Feedback provide guidance and motivation to students".	Motivation	Functions
Milne, H. J. O. (1987)	"Mail and telephone were used to deliver feedback in personalized system of	Technologies used to deliver feedback	Technologies and Media

	instruction".		
Moore, M. G. (1981)	"Teacher's delicate task is to provide feedback at the right moment".	Feedback form teachers Teacher's role	Sources
Moore, M. G. (1987)	"Feedback can be received and processed by the computer".	Computer used to deliver feedback	Technologies and Media
Morgan, A. (1984)	"Use of feedback to improve course presentation".	Only mention feedback	Other
Morgan, C. J., Dingsdag, D., & Saenger, H. (1998)	"The respondents developed learning and essay writing strategies relying on feedback from previous efforts".	Only mention feedback	Other
Morgan, C. K., & Tam, M. (1999)	"Insufficient feedback on assignment is one of barriers".	Importance of feedback	Other
Motteram, G., & Forrester, G. (2005)	"The rapidity of electronic communication has raised student expectations of getting fast feedback from tutors".	Electronic communication helps provide feedback Feedback from tutors	Technologies and Media Sources

Muilenburg, L. Y., & Berge, Z. L. (2005)	"One barrier for students is the lack of timely feedback from the instructor".	Barrier of students	Challenges
Murphy, A. (2013)	"The respondents were given an open comment field to provide additional feedback".	Feedback from respondents	Sources
Murphy, K. L., & Cifuentes, L. (2001)	"Students assessed their own learning gains through peer and instructor feedback using tools".	Feedback from peer and instructor	Sources
Murphy, K. L., Mahoney, S. E., Chen, C., Mendoza-Diaz, N. V., & Yang, X. (2005)	"Coaching may be unsolicited when the coach provides feedback".	Feedback role	Roles
Murphy, L. M., Shelley, M. A., White, C. J., & Baumann, U. (2011)	"Provided feedback was rated highly". "Students and tutors agreed that it should	Importance of feedback Individual feedback Feedback from	Other Sources

	provide individualized feedback on assignments". "Tutor should receive students feedback and provide prompt feedback".	students and tutors	
Naidu, S. (1994)	"It is not easy to provide discussion and immediate and direct feedback in DE contexts compared to conventional class"	Comparison of DE and CE	Other
Naidu, S. (1997)	"The course team sought feedback from students to improve the design of electronic teaching".	Feedback from students	Sources
Naidu, S., & Bernard, R. M. (1992)	"The presence of feedback is an important addition to the use of inserted questions in text".	Importance of feedback	Other
Nandi, D., Hamilton, M., & Harland, J. (2012)	"The main motivator for participation in online discussion forums is to seek feedback from	Feedback from instructor	Sources

	instructors".		
Nichols, M. (2010)	"The lack of timely feedback and feeling of isolation is the reason for students dropping out".	Dropping out problem	Challenges
Nielsen, H. D. (1997)	"Delayed feedback and flawed feedback influence the students' ability to use past results".	Delayed feedback	Other
Nikoi, S., & Armellini, A. (2012)	"Feedback can be extremely useful to inform ongoing design and development of OER".	Only mention feedback	Other
Nyirenda, J. E. (1983)	"Providing the learner with a chance to obtain feedback is a consideration for developing learning materials".	Only mention feedback	Other
Nyirenda, J. E. (1989)	"Print is main medium of instruction".	Print text and postal system used to deliver feedback	Technologies and Media
Oliver, K., Kellogg,	"One recommendation for	Feedback from peers	Sources

S., Townsend, L., & Brady, K. (2010)	better supporting teachers in course development is to provide designers with comprehensive feedback from peers and experts".	and experts	
Oliver, K., Osborne, J., & Brady, K. (2009)	"Students expect online instructors to provide immediate feedback". "It is critical for teachers to monitor student progress and provide timely feedback".	Importance of immediate feedback Teachers' role	Other Sources
Oliver, R. (1999)	"Cognitive support offered by Web FAQ includes access to direct feedback on problems and tasks and to access to feedback from other learners' difficulties".	Interaction	Functions
Orrill, C. H. (2002)	"Positive feedback was given when a student offered a summary".	Positive feedback	Other
Ostman, R. E., &	"Educational technology	Drop out problem	Challenges

Wagner, G. A. (1987)	cannot be thought of so much as causes of dropout".		
Otoole, S. (1999)	"Motivation and regular feedback which is timely and detailed is directly attributed to regular student-teacher contact".	Only mention feedback	Other
Painte, C., Coffin, C., & Hewings, A. (2003)	"Feedback on student contributions was useful to refine the students' understandings".	Improvement	Functions
Panda, S. K. (1992)	"Most of the students and teachers …, opined favorably for the use of necessity for continuous feedback through assignments".	Continuous feedback Importance of feedback	Other
Paulus, T. M. (2005)	"One member writing a first draft and sending it to the next member for their feedback or development".	Feedback from peers	Sources

Paz Dennen, V. (2005)	"Students were asked to read and comment on peer work". "The instructor feedback plays an important part in students' motivation to participate in courses".	Feedback from peers Instructor feedback	Sources
Paz Dennen, V., & Wieland, K. (2007)	"The instructor provided feedback to student via private email".	Email used to deliver feedback	Technologies and Media
Persico, D., Pozzi, F., & Sarti, L. (2010)	"Outcomes of the field test are based on feedback from the tutors who used the model".	Feedback from tutors	Sources
Peruniak, G. (1983)	"Positive feedback in the subject would help to motivate to improve assignment".	Motivation	Functions
Phelan, L. (2012)	"When the model was tested in online tutor's training situations, positive feedback was provided".	Only mention feedback	Other

Philip, R., & Nicholls, J. (2007)	"Insufficient feedback is an ongoing complaint from many students, particularly in distance courses".	Importance of feedback	Other
Phillips, C. (1990)	"Students could have ready access to feedback from their peers and from the teaching staff".	Feedback from peers and teaching staff	Sources
Pincas, A. (2001)	"Assessment practice provides timely, constructive feedback that results in congruence between course aims and learning outcomes".	Timely feedback Constructive feedback	Other
Pittenger, A., & Doering, A. (2010)	"Satisfaction facilitated by successfully fostering attention, relevance, and confidence with timely instructor feedback".	Timely feedback Instructor feedback	Other Sources
Pittenger, A. L., & Olson-Kellogg, B. (2011)	"Feedback provision support student not to become frustrated and	Support Drop out problem	Functions Challenges

	give up".		
Porras-Hernandez, L. H. (2000)	"Self-oriented feedback was identified as one of three common features in spite of theoretical orientations".	Self-oriented feedback	Other
Portier, S. J., Hermans, H. J. H., Valcke, M. M. A., & van den Bosch, H. M. J. (1997)	"Students express a need for individual feedback from their teacher".	Individual feedback	Other
Potter, C., & Naidoo, G. (2009)	"Classroom-based contact with teachers provided opportunities for critical reflection as well as feedback to the project team".	Only mentioned feedback	Other
Potter, C., & Naidoo, G. (2006)	"School-based contact with teachers would provide one level of reflection and feedback".	Only mentioned feedback	Other
Pugh, H. L., Parchman, S. W., &	"Many of the sites surveyed reported	Audio used to deliver feedback	Technologies and Media

Simpson, H. (1992)	problems with telephone, audio feedback, …”.		
Ramos, F., Taju, G., & Canuto, L. (2011)	“Feedback fails to address the needs of the distance learner”.	Only mention feedback	Other
Rassmussen, K. L., Nichols, J. C., & Ferguson, F. (2006)	“Providing feedback prompts understanding and encourages participants”.	Importance of feedback	Other
Redding, R. E. (1995)	“Feedback is given to student by experienced instructors”.	Feedback from instructors	Sources
Renner, W. (1995)	“Immediate feedback encouraged engagement in the subject matter”.	Reinforcement	Functions
Rennie, F. (2003)	“Students’ feedback indicates telephone instruction is ideal for use in combination with other formats”.	Telephone used to deliver feedback	Technologies and Media
Reushle, S. E. (1995)	“Information may be provided by some form of feedback mechanism”.	Only mentioned feedback	Other

Richter, T., & McPherson, M. (2012)	"Literacy is a skill to better control direct feedback by people".	Only mentioned feedback	Other
Roberts, D. (1984)	"Students drop out because of lacking swift feedback".	Drop out problem	Challenges
Roberts, D. (1996)	"The use of telephone and audio-cassettes to provide feedback has been championed by researchers". "Three elements of good feedback mentioned most frequently". "Half of the students believe that all students look for the same kind of feedback, while ten mentioned that feedback needs vary".	Telephone and audio-cassettes used to deliver feedback Standard of good feedback Individual feedback	Technologies and Media
Roberts, D. W. (1998)	"The ambivalence in the feedback from students	Feedback from students	Sources

	reflects …”.		
Roberts, D., Boyton, B., Buete, S., & Dawson, D. (1991)	“The academic staff provided quality feedback with assignments”. “Assignment feedback is recognized as being vitally important”.	Quality of feedback Assignment feedback	Challenges Other
Roberts, D. W., Jackson, K., Osborne, J., & Vive, A. S. (1994)	“The instructional designer might address how to provide for effective and constructive feedback”.	Only mentioned feedback	Other
Roberts, N., & Vanska, R. (2011)	“Learners received immediate feedback on practice exercise”.	Immediate feedback	Other
Robertson, B. (1987)	“Instructor depends on audio signals and questioning to get feedback form students”.	Audio signal used to deliver feedback Feedback from students	Technologies and Media
Robinson, B. (1999)	“Visiting teachers provide feedback to provincial and district coordinating committees”.	Feedback from visiting teachers	Sources

Robson, J. (1996)	"Teleconferencing does facilitate interaction between teacher and students and can encourage feedback".	Teleconferencing encourage feedback between students and teacher	Technologies and Media
Ronteltap, F., & Eurelings, A. (2002)	"Students were asked to give feedback on the work of others".	Feedback from students	Sources
Ros i Sole, C., & Hopkins, J. (2007)	"Different types of feedback can be more responsive to students' real needs". "The tutor marked assignments is the main tool for teacher to give individual feedback to students".	Types of feedback Tutor marked assignment used to deliver feedback	Other Sources
Ros i Sole, C., & Truman, M. (2005)	"Tutors can give students feedback more quickly and easily". "Feedback may foster students focus on the cognitive and autonomous	Feedback from tutor Feedback's encouragement	Sources Functions

	learning in DL".		
Rothe, J. P. (1985)	"Lack of visual feedback appears in distance education".	Only mentioned feedback	Other
Rumble, G. (1981)	"The tutors' role is to provide feedback on course materials and students problems".	Tutors' role	Sources
Rumble, G. (2000)	"… giving feedback to the individual on non-academic aptitudes and skills".	Only mentioned feedback	Other
Russo, T. C., & Campbell, S. (2004)	"Teacher-student interaction supported by individual email with feedback and evaluation".	Email used to deliver feedback	Technologies and Media
Sageder, J. (1988)	"Designing feedback includes some components".	Quality of feedback	Challenges
Samarawickrema, G., & Stacey, E. (2007)	"Off-campus student-teacher interaction was mainly through phone technologies, individual	Phone and email used to deliver feedback	Technologies and Media

	email".		
Samarawickrema, R. G. (2005)	"The international students felt that feedback and comment from their peers was equally useful".	Feedback from peers	Sources
Scales, K. (1984)	"Mail and telephone were used as feedback models".	Mail and telephone used to deliver feedback	Technologies and Media
Schell, B. H., & Thornton, J. A. (1985)	"Lack of instructional and assignment feedback from the instructor may influence students satisfaction with the media program".	Importance of feedback Feedback from instructor	Other Sources
Schwittmann, D. (1982)	"Providing regular feedback on the learning process is considered as a learning prerequisites in the target group".	Only mention feedback	Other
Segrave, S., & Holt, D. (2003)	"During the stimulations students receive feedback on key decision events".	Only mention feedback	Other
Sewart, D. (1980)	"Swift feedback is almost	Only mention	Other

	entirely absent in distance education".	feedback	
Shott, M. (1985)	"Different levels of feedback can include remedial teaching comments …".	Different types	Other
Sibanda, B., & Northcott, P. (1989)	"… give students some immediate feedback about question with answers".	Only mention feedback	Other
Simich-Dudgeon, C. (1998)	"Several experienced web-site developers browsed the site and gave feedback to the technical designer".	Only mention feedback	Other
Simpson, H., Pugh, H. L., & Parchman, S. W. (1991)	"Both classes received individual feedback on results from the instructor".	Feedback from instructor	Sources
Simpson, H., Pugh, H. L., & Parchman, S. W. (1993)	"Audio problems prevent inadvertent transmission of noise and control feedback".	Audio used to deliver feedback	Technologies and Media
Sims, R. (2003)	"The importance of	Importance of	Other

	feedback to the learning process cannot be underestimated".	feedback	
Sims, R. (2008)	"Providing feedback is seen as a benefit, and an improvement in teaching quality".	Importance of feedback	Other
Sims, R., Dobbs, G., & Hand, T. (2002)	"Anecdotal feedback is suggesting a rebellion against online materials".	Anecdotal feedback	Other
Singh, G. (2011)	"The mentors provided feedback on the draft abstracts using collaboratively developed guidelines"	Feedback from mentors	Sources
Slagter van Tryon, P. J., & Bishop. M. J. (2009)	"Panel members received feedback about the previous round".	Only mention feedback	Other
Slagter van Tryon, P. J., & Bishop. M. J. (2012)	"The panel of expert offered extensive qualitative feedback for each item".	Quality of feedback	Challenges

Smith, K. C. (1980)	"Students can obtain some immediate feedback relating to their understanding of the subject to that point".	Only mention feedback	Other
Smith, P. J. (2000)	"Using feedback to modify goals or procedures".	Correction	Functions
Smith, P. J., & Smith, S. N. (1999)	"Off-campus delivery of programs to Chinese learners may require considerable attention to the use of feedback from peers in study groups and from instructors".	Feedback from peers and instructors	Sources
Smith, R. O. (2008)	"Students expressed that she give the kind of feedback which help to create a safe environment".	Only mentioned feedback	Other
Sparkes, J. J. (1983)	"Problem in distance study is lack of immediate feedback".	Importance of immediate feedback	Other

Stack, A. (1990)	"Making results visible and providing units with regular feedback about their performance is help create a productive tension".	Only mention feedback	Other
Steinkuehler, C. A., Derry, S. J., Hmelo-Silver, C. E., & Delmarcelle, M. (2002)	"Group feedback from both group members and tutors can be completed at the end of their collaboration and then post to the discussion board".	Feedback from group and tutor	Sources
Stewart, A. R., Harlow, D. B., & DeBacco, K. (2011)	"Synchronous video can support student-instructor interaction, such as providing interactive feedback".	Interactive feedback	Other
Swan, K. (2001)	"Clear feedback can support effective design of web-based instruction".	Quality of feedback	Challenges
Tait, A. (1993)	"One of long-lasting quality assurance	Feedback from students	Sources

	activities is the collection of feedback from students".		
Taplin, M. (2000)	"Students evaluate their own work and get feedback from others about progress".	Feedback from peers	Sources
Taylor, J. C. (1986)	"In using the microcomputer, students receive immediate diagnostic feedback on their performance".	Microcomputer used to deliver feedback	Technologies and Media
Taylor, J. D., Dearnley, C. A., Laxton, J. C., Coates, C. A., Treasure-Jones, T., Campbell, R. & Hall, I. (2010)	"Students had positive perceptions of getting web- and mobile-based feedback".	Web and mobile technology used to deliver feedback	Technologies and Media
Telg, R. W. (1996)	"The television production specialists received feedback from students and instructors that …".	Feedback from students and instructors	Sources

Thompson, G. (1984)	"Varied levels of teacher feedback and encouragement led to drop outs in correspondence study".	Quality of feedback Drop out problem	Challenges
Thorpe, M. (1998)	"Feedback from the tutor is vital". "Feedback crucial not only…, but also in relation to student motivation". "More advanced technology means learning-better because of more interactive, more dialogue, more feedback".	Feedback from tutor Motivation Technology deliver feedback	Sources Functions Technologies and Media
Treagust, D. F., Waldripd, B. G., & Horley, J. F. (1993)	"Feedback for students enrolled in distance education".	Only mentioned feedback	Other
Tsay, M., Morgan, G., & Quick, D. (2000)	"Adult educators need to provide considerable support and positive feedback to strengthen	Motivation	Functions

	students' learning motivation".		
Tu, C., & Corry, M. (2001)	"Another component of the model, feedback, suggests that …".	Only mentioned feedback	Other
Tynan, B., & O'Nell, M. (2007)	"Home tutors engaged more with the teacher and sought frequent feedback and support".	Frequent feedback	Other
Valcke, M. M. A., & Martens, R. L. (1997)	"Course developers can facilitate the testing of mastery of the content by embedding questions with feedback".	Only mention feedback	Other
Valcke, M. M. A., Martens, R. L., Poelmans, P. H. A. G., & Daal, M. M. (1993)	Author mentions feedback in learning activities, learning process.	Only mention feedback	Other
Velasquez, A., Graham, C. R., & Osguthorpe, R. (2013)	"Feedback provided by Twitter and Facebook".	Social network used to deliver feedback	Technologies and Media

Vlachopoulos, P., & Cowan, J. (2010)	"When the model was tested in online tutor's training situations, positive feedback was received".	Only mention feedback	Other
Vivian, V. (1986)	"Teacher's feedback provided to pupil within a time scale".	Only mention feedback	Other
Vyas, R., Albright, S., Walker, D., Zachariah, A., & Lee, M. Y., (2010)	"Collected log data enable preceptors to provide student-specific feedback".	Feedback from log data	Sources
Wade, C. E., Cameron, B.A., Morgan, K., & Williams, K. C. (2011)	"Females were more likely to provide constructive feedback in chat".	Only mention feedback	Other
Wagemans, L., & Dochy F. (1991)	"One criteria for the assessment of the suitability of standards is adequacy of feedback"	Quality of feedback	Challenges

Walker, J. (1989)	"What is vital with distance education students are the amount and the rapidity of feedback".	Importance of immediate feedback	Other
Walker, J. (1994)	"Academic staff helps academics improve feedback on work in progress".	Only mention feedback	Other
Walker, K., & Hackman, M. (1992)	"The design of the telecommunication system may convey immediate feedback".	Telecommunication system used to deliver feedback	Technologies and Media
Wang, C., Shannon, D. M., & Ross, M. E. (2013)	"The quality of the feedback provided on graded assignment may satisfied students".	Quality of feedback	Challenges
Wang, X., Dannenhoffer III, J. F., Davidson, B. D., & Spector, J. M. (2005)	"Remote students found it was difficult to get in-depth feedback from remote professors".	Difficult	Challenges

Warner, L. (1993)	"This group provided direct feedback on the programme by teleconference".	Teleconference used to deliver feedback	Technologies and Media
Watson, S. (2013)	"Getting feedback on assignment drafts leading to the acquisition of ancillary factual and conceptual knowledge".	Improvement	Functions
Weges, H. G., & Portier, S. J. (1997)	"Within the complete printed version of the course the exercise are all open-ended questions and no differentiated feedback can be provided".	Only mention feedback	Other
Wertsch, J. V. (2002)	"There is no clear feedback to allow participants to discern whether their point is clear".	Quality of feedback	Challenges
Whelan, R. (2008)	"The survey instrument was developed in a collaborative process of	Only mention feedback	Other

	selection, testing, feedback and refinement".		
White, C. (2005)	"Student feedback does not necessarily inform and influence change …".	Feedback from student	Sources
White, C. J. (1997)	"One example of social strategy is working with others to solve a problem, share information or gain feedback on a task".	Feedback from peers	Sources
Wiesenberg, F., & Stacey, E. (2005)	"Use student feedback as teachers' courses proceed".	Feedback from student	Sources
Wikeley, F., & Muschamp, Y. (2004)	"Using email as a method of giving feedback on written work".	Email used to deliver feedback	Technologies and Media
Wille'n, B. (1983)	"Using the telephone has been the main method to establishing contact".	Telephone used to establish contact	Technologies and Media
Willen, B. (1988)	In Open university, the systematic using types of feedback makes the	Only mention types of feedback	Other

	instructional approach and the teaching more open".		
Williams, K. C., Morgan, K., & Cameron, B. A. (2011)	"Students need to be helped to understand the benefits of constructive feedback".	Only mention feedback	Other
Williams, S. W., Watkins, K., Daley, B., Courtenay, B., Davis, M., & Dymock, D. (2001)	"Facilitators are expected to play a vital role in assisting and supporting participants by sending feedback".	Only mention feedback	Other
Willmott, G., & King, B. (1984)	"Many students, by their supportive comments and by their feedback on particular parts …".	Only mention feedback	Other
Wilson, M. S. (2001)	"Communication feedback loops are often more limited in online situations".	Communication feedback	Other
Wright, C., & Conroy, C. (1988)	"Positive feedback is best".	Positive feedback	Other

	"Time of receiving feedback is before the students write the final examination".		
Xiao, J. (2012)	"Teachers should be able to provide accurate feedback, encouragement and support for the student".	Feedback from teachers Quality of feedback	Sources Challenges
Yasmin, Dr. (2013)	"Feedback from alumni is often a significant demotivating factor for enrolled students".	Only mention feedback	Other
Yildiz, S., & Bichelmeyer, B. A. (2003)	"Students answer instructor's questions, also give feedback to peers".	Feedback form peers	Sources
Youngblood, P., Trede, F., & Corpo, S. D. (2001)	"Providing encouraging, constructive feedback may foster contributions".	Only mention feedback	Other
ZajkowskiDale, M. E. (1993)	"Feedback was not sought from inquirers who …".	Only mention feedback	Other

Zembylas, M. (2008)	"Some students expressed their feelings about online learning, including getting feedback".	Only mention feedback	Other
Zembylas, M., & Vrasidas, C. (2007)	"A teacher expressed that it is hard to get feedback from students".	Only mention feedback	Other