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A Bibliometric Analysis of the Proceedings of the Association for Educational Communications and Technology (AECT) for the 1979-2009 Period

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A Bibliometric Analysis of the Proceedings of the Association for Educational Communications and Technology (AECT) for the 1979-2009 Period

by
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Approval Page

This applied dissertation was submitted by Vandy Pacetti-Donelson under the direction of the persons listed below. It was submitted to the Abraham S. Fischler College of Education and approved in partial fulfillment of the requirements for the degree of Doctor of Education at Nova Southeastern University.

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Abstract

A Bibliometric Analysis of the Proceedings of the Association for Educational Communications and Technology (AECT) for the 1979-2009 Period. Vandy Pacetti-Donelson, 2018: Applied Dissertation, Nova Southeastern University, Abraham S. Fischler College of Education.
Keywords: Bibliometrics, citation analysis, citations (references), educational technology, conference proceedings, network analysis, knowledge domains, multidimensional scaling

Traditional journal analysis for the identification of diciplines is limited in developing areas of study due to the lack of journals specific to that area of study. Identifying knowledge domains worthy of study for the identification of developing disciplines has been difficult.

Conferences are at the forefront of building knowledge in scientific communities, particularly in technology related sectors, but less than 10% of conference proceedings are available in conventional knowledge databases. As a result, conference proceedings as a previously unconsidered knowledge domain, may provide the knowledge domain worthy of analysis to identify developmental and incremental change within developing areas of study.

This study proposed a bibliometric analysis of the Conference Proceedings of the Association of Educational and Communications Technology (AECT) from 1979 through 2009 as a knowledge domain that represented Instructional/Educational Technology. Bibliometric indicators were extracted and collected into custom databases for citation and cocitation analyses. Gephi 0.9.2 software was used to create multidimensional graphs to identify developmental and incremental change within the knowledge domain with the purpose of understanding the developmental pattern of Educational/Instructional Technology as a discipline.

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Chapter 1: Introduction

"The term 'academic discipline' has become a term for the organization of learning and the systematic production of new knowledge" (Krishnam, 2009). Practitioners and researchers expand the knowledge of disciplines through the establishment and repetition of domain specific behaviors and the communication of those behaviors within the knowledge domain. This term is applied when newly organized learning and systematically produced new knowledge do not find continuity within a pre-established knowledge domain and a new domain forms. These disciplines accumulate domain specific knowledge that is constantly expanding and should be shared within the knowledge community for further development.

Each year academics and professionals alike attend associational conferences. Conferences draw researchers and innovators interested in similar ideas to present research concepts, frameworks, theories, methods, and investigations to colleagues and add to a profession, field, or discipline through discourse. This discourse, referred to as conference proceedings, provides some of the most recent explorations and phenomena and provides researchers the opportunity to develop and disseminate new knowledge, make new intellectual connections, and develop intellectual theory. These collected works serve as a written record and are usually distributed to attendees and association members as a journal. Once distributed, these writings often relay the latest developments in a profession, field, or discipline and create a knowledge domain that may be considered the research front.

Instructional Technology, also referred to as Educational Technology, is a knowledge domain that quickly came to prominence with the rapid technological developments of the twentieth century. With the premise of effectively using technology to improve learner outcomes as the primary goal of the knowledge domain, Educational/Instructional Technology practitioners, researchers, and professionals struggle to codify the knowledge domain due to "the practical nature of the field" (Simonson, 2013, p. vii). Simonson (2013) indicates that while those professionals excel at problem solving, they do not do their best at documenting why activities are effective.

The Association for Educational Communications and Technology (AECT) is a professional association for educators who are focused on the improvement of instruction through technology. The AECT, founded in 1923, has provided support to professionals as the oldest association central to instruction through technology. Each year, the AECT holds an annual conference.

> "A yearly theme is chosen, and keynote speakers are selected from leaders in educational technology and related fields. The AECT's organizational structure includes a number of divisions as well as recognized affiliate organizations and chapters, division meetings, board of directors' meetings, and other needed governance meetings typically take place during the annual convention" (Flynt, 2014, p. 2).

A call for proposals is made each year and, after a blind review process, submitted research is compiled into a conference proceedings journal and distributed to membership and made available for purchase by non-members (Al-Saleh, 2000).

Statement of the Problem

The AECT has provided a home for academics and professionals delving into an area of study that is in a constant state of flux. Due to the rapid changes in technology, terminology changes, the changes in publication, and the growth of information, those who practice in this interdisciplinary area of study have faced the challenge of identifying the core knowledge domain and; therefore, legitimizing instructional technology as a profession, field, or discipline. Unfortunately, there is no clear method for differentiating between profession, field, and discipline.

Categorization of human behavior as a specialized activity begins at its most base level, the profession. Professions "are usually associated with an occupation" in a particular setting, "such as law with the court" (Czerniewicz, 2008, p. 172). "Professions [in their development to emerging fields] strive to improve their standards of responsibility and accountability [in order to] gain the confidence of the community they serve and those who empower and regulate them (Salam, Schepard, & Schlissel, 1996, p. 11). The concept of educational/Instructional Technology as a profession suffers for its duplicity of setting, i.e. universities, schools, training and other educational sites in health, the military, and corporate locales. "It is likely that professionals are [also] employed in universities in non-academic conditions of service, thus differentiating [from] those working as academics… Depending on the status of the practitioner's position, the work may be invisible and professionally acknowledge" (Czerniewicz, 2008, p. 172).

The duplicity of setting, on the other hand, may be a descriptor associated with a field. Further, Salam, Schepard, and Schlissel (2008) describe emerging fields as those that demonstrate a series of characteristics that include: a proliferation of practitioners, a market for products and services, an increase in development and research related to the profession, the development of legislation to regulate the profession, and an articulated desire for professional development, networking, and conversation by practitioners of the field (p. 10-11). As early as the 1950's, Finn defined the movement from field to discipline.

Finn (1953) offered that for this area of study now termed, "Instructional Technology," also referred to as "Educational Technology" and formerly known as "Audio-visual Instruction" to be recognized as a discipline it must in part have an intellectual technique, an application to human affairs, and an intellectual theory undergoing expansion through research. Much like the difficulties of Psychology practitioners at the turn of the 20th century in establishing a discipline, Educational/Instructional Technology practitioners are torn between a subject matter supplied by technological innovation, methodologies borrowed from education, and bastardization through publication in a number of interdisciplinary journals (White & McCain, 1998).

Godin (2006) chronicles the early efforts of scientists to legitimize the discipline of Psychology, recognizing that statisticians focused on measuring productivity as a measure of this science. If Educational/Instructional Technology is to be legitimized as a discipline through identification of Finn's criteria and practitioners are to use this

information to further the growth of Educational/Instructional Technology then a knowledge base focused primarily on Educational/Instructional Technology must be identified and analyzed to provide the necessary data to deduce its infrastructure, scientific productivity, and contribution to science. The conference proceedings of the AECT "are descriptive of the organization's work—they document the written discourse of this community and report the participants' current interests" (Breitenstein, 2003, p.20). Further, these proceedings have an added layer of consistency in that the proceedings have been, since 1979, compiled by one editor, Michael R. Simonson, who is currently a Program Professor and Instructor of Technology and Distance Education at Nova Southeastern University. Therefore, the conference proceedings provide the consistent knowledge base of the knowledge domain for analysis.

"AECT provides an archived, digital copy of the conference proceedings for members. Many of the proceedings are available for download through the Education Resource Information Center (ERIC) database" (Flynt, 2014, p. 5). All of the proceedings are available on the Technology, Research, and Evaluation Systems website in portable document format (PDF) files, which is maintained by the proceedings' editor, Michael R. Simonson.

Background/Justification

Bibliometrics, the science of statistically analyzing and measuring scientific activity through quantitative analyses of publications, may provide the data necessary to conduct an investigation, which may lead to the legitimization of Educational/Instructional Technology as a discipline. "Bibliometric methods offer well-

tested techniques for characterizing the physical and intellectual structure of a literature by subjecting the data to quantitative and qualitative methods of selection, summarization, and comparison, and analysis" (Breitenstein, 2003, p. 32). Researchers take the data, methodology, and the theory of Bibliometrics and make conclusions about productivity (documents per year), subjects of the documents (words or co-words), reception (readers of the documents), citation (emergence), and cocitations (importance) of individual documents, authors, institutions, academic journals, and regions of scientific activity to form structural maps of science and construct models of scientific growth or change (Jacobs, 2010). Since Cattell (1903) first used his bibliographical directory to produce statistics on scientists and their scientific productivity, researchers have developed legitimate methodologies for scientific evaluation relating to the theory and science of Bibliometrics. In fact, this method of measuring the properties of documents furnishes data to propose directions for future research. As an opportunity to study the intellectual evolution of a discipline, Bibliometrics provides an indispensable research tool (Jacobs, 2010).

"Conference proceedings are a source and a basis for the measurement of scientific knowledge ensuring a holistic and detailed perspective of current research" (Hofer, et al. 2010, p. 846). The AECT has maintained one constant during its growth, the recorded knowledge domain found in the organization's conference proceedings. Scholarly communication creates the literary footprint of scientific knowledge that delineates professions, disciplines, and fields of study. Scientists, academics, and their close partners, librarians, have historically recognized that codifying and classifying

scientific knowledge, applying bibliometric theories, and the recognition of knowledge structures make information useful and accessible for further development and provide information previously known only to experts within a knowledge domain (Shiffrin & Borner, 2004). “Defining something as complex as a field, even a relatively young field, requires an understanding of where the field has been in order to gauge its current state and make intelligent predictions concerning its future” (Luppicini, 2005, p. 108). This information may also reveal the interconnectedness among researchers, the import and export of research among fields, growth, maturity, and diversification of the field and economic factors as well, leading to field legitimacy (Shiffrin & Borner, 2004).

Deficiencies in the Evidence

In the last fifteen years, there have been many studies attempting to identify the parameters of Educational/Instructional Technology. These studies have one consistency; there is no clearly chosen knowledge domain that is studied among this research. No one study has provided the necessary data to define Educational/Instructional Technology as profession, field, or discipline. Czerniewicz (2008), who has made a study of the language of studies of Educational/Instructional Technology internationally, has acknowledged that Educational/Instructional Technology is most established in the USA where previous studies to identify the field parameters have been made. Continued analyses of Educational/Instructional Technology discourse may provide more data that will lend to further visualization and a historical paradigm.

Audience

With technology, the distribution of science has increased in speed, efficiency, and pervasiveness. A bibliometric analysis may describe the knowledge infrastructure and may identify major researchers, their interconnectedness, and social networks; most cited articles and books that may serve as reference works, and influential institutions and geographic concentrations that serve as the base of the discipline. Structural maps may depict ideologies, emerging trends and changes over time. "The value of mapping knowledge domains… extends to scientists, researchers, governmental institutions, industry, and members of society generally" (Shiffrin & Borner, 2004, p. 5183). Knowledge management provides a variety of functions for the strata of users identified by Shriffin and Borner (2004), but the extraction and organization of knowledge may form the scientific core of a discipline and provide the data necessary to this study to fulfill Finn's (1953) requirements.

Purpose of the Study

The purpose of this study is to examine the conference proceedings of the AECT as a knowledge domain using bibliometric methods, which could reveal the intellectual structure of Educational/Instructional Technology. "Librarians and sociologists have studied emerging scientific disciplines, and their work may provide a model" to construct a recent history of the instructional technology knowledge base through citation analysis (Innes, 2006, p.12). The results may offer valuable insights to the structure of the knowledge domain of the conference proceedings, which may formulate an identification

of Educational/Instructional Technology and may allow predictions on its future developments.

Definitions

Bibliographic coupling – Documents are said to be bibliographically coupled if they share one or more bibliographic references (Diodato & Gellatly, 2013, p.11).

Bibliometrics – "a field that uses mathematical and statistical techniques, from counting to calculus, to study publishing and communication patterns in the distribution of information" (Diodato & Gellatly, 2013, p.vii).

Citation Analysis – "a branch of Bibliometrics that examines the citations found in publications such as journal articles and books to look for patterns of use. This type of study typically involves recording the details of the reference lists of a number of publications to determine what materials are being consulted and then analyzing those materials by type, frequency, age, local holdings, or other factors" (Hoffman & Doucette, 2012, p. 321).

Cocitation Network Analysis – "the situation in which two (or more) authors, documents, or journals are simultaneously cited by another document" (Diodato & Gellatly, 2013, p. 42).

Conference Proceedings – The collected papers presented in the conference are published in a volume called a conference proceeding (Breitenstein, 2003).

Knowledge Domain – "an intellectually self-contained body of knowledge accumulated over a specified period of time" (Chen, 2008, p. 67).

Knowledge Community – an epistemological notion that a group of practitioners

"develop into a community with shared understandings" (Lindkvist, 2003, p.2).

Chapter 2: Literature Review

The literature reviewed in this chapter shows consideration for the many aspects of the projected research project. The review began with a general overview of the growth of information, the formation of knowledge domains and their knowledge communities, and proceeded into a discussion of the development of bibliometric theory and methodologies (content analysis, citation analysis, and cocitation analysis) and the mapping of science. A portion of this chapter covers the discourse of Educational/Instructional Technology as previously studied through university programs, and journal analyses, and the consideration of conference proceedings as an acceptable knowledge domain for analysis will be made. Finally, a content analysis of the AECT Conference Proceedings from a Systems Theory approach is presented and the chapter concludes with a summary.

Formation of Knowledge Domains

In the process of surviving, developing, and flourishing as a society, we have become interested in phenomena that affect our daily lives.

> "Once a phenomenon in society or in nature arouses scientists' interest, explanations of what this phenomenon is and why it occurs, which factors dominate its evolution and development, etc. are to be expected and usually happen. The phenomenon of interest attracts scientists' attention and make scientists want to learn more about it or to be involved in its investigation" (Liu & Rousseau, 2013, p.585).

Humans naturally seek to improve the human condition through sharing experiences with other humans. Communities of information sharing form around interesting phenomenon. Ideas and innovation of those ideas provide the changes that humanity desires for the improvement of life. The community and the information sharing grow. Information is collected. A collection of those ideas, here referred to as a knowledge domain, and defined as any given area of human experience, over time develops to a size unmemorable by one given mind or a collection of minds and must be recorded. The recorded information grows and then must be classified and structured in some way to provide repeated access to the information. The collection of information grows further, and some ideas are disproven or improved according to added human experience and more information is recorded, classified, and added to the collection of information (Borner, Chen, & Boyack, 2003) (Carnabucci & Bruggeman, 2009).

As time passes, for a given knowledge domain to continue to grow or exist, it must have the capacity for innovation, which is a "social phenomenon" where the dissemination of thought in the form of publication occurs (Chen & Lobo, 2006) (Furman, Porter, & Stern, 2002). Researchers develop ideas, test those ideas, and read the published works of others to theorize; and therefore, create new science. These researchers then publish and recognize the work of others through citation, and networks of connections are formed. These connections, or "conversations" are sustained through repetition and develop into "knowledge communities" within the knowledge domain that display some of the characteristics of that domain or of a discipline (Bruffee, 1993, p. 130).

Knowledge communities require continued communication of "ideas that lend themselves to sustained exploration" or innovative capacity, repeatable access to the knowledge domain, and a "critical mass of members" to further drive innovation and strengthen the linkages of the infrastructure created in the domain; and in doing so, they provide a body of content for analysis (Becher & Trowler, 2001, p.23) (Dirks, 1996, Introduction). The publications of a given knowledge domain, that is the "cumulative 'stock' of technological knowledge upon which new ideas are developed and commercialized, may provide the data for study of disciplines, fields, and/or professions" (Furman, Porter & Stern, 2002, p. 2).

Identification of knowledge communities in pursuit of their discourse--and therefore the infrastructure of a knowledge domain--has often hampered the identification of emergent fields and disciplines. The location of content for analyses, that is the knowledge community's knowledge base, may be the key to identifying knowledge domains; but where do researchers disseminate the publication of science? At no other time in history do researchers have more options in the selection of where to publish. Until the 1960's most research was published in journals created by academic institutions, academic consortiums, or professional organizations and societies. A researcher looked no further than what may have been recommended to him during his academic program. To further one's own research after embarking on a professional career, membership in a professional organization or society was a must, and publication within the group's publications was expected (DeBellis, 2012).

During the 1960's and 1970's, large publishing conglomerates began buying academic publications and developing new journals and other publications recognizing the opportunity to make these publications for-profit ventures that would serve the same audience. "Publication evolved from simply communication into a measure of a scientist's worth" (Innes, 2006, p.28). These new publications drew academics, who sought publication as required for tenure track positions. The "publish or perish mentality" created an environment where any new publications could thrive. The knowledge domains of science expanded exponentially. Between 1971 and 1991, 70,000 journals were founded (Chodorow, 2000, para. 14).

Other cultural phenomenon affected publication trends at this time as well. "Fear of the Cold War and technological advances coming out of the Soviet Union, such as the Sputnik satellite," which led to the Space Race, fueled a need for the creation of new scientific research (Flynt, 2014, p.21). Development of safe and affordable air transportation offered researchers more opportunities to travel. Researchers are able to meet, work in collaboration and to attend professional meetings and conferences to share research and "publish" in a new manner. No longer was information sharing a once in a lifetime event, but ongoing (DeBellis, 2012). The interdisciplinary conversations sustained by these continued opportunities to connect created growth in the formation of more conferences and therefore more knowledge within the domain. With these phenomena, the conference proceedings publication became a relevant and quick method of publishing and a new knowledge sub-domain developed.

The development of the World Wide Web and the Internet has expanded knowledge domains in ways that we could not have anticipated. Researchers have been able to establish new collaborations and connections with scientific communities around the world without travelling. An unprecedented level of access has been established and new forms of publication have been created as well. The Internet has broken the editorial control on the dissemination of information. Researchers may now self-publish research to a world-wide audience. New knowledge communities form as quickly as others disappear and we are dependent upon Google to identify our point of entry to many knowledge domains (DeBellis, 2012).

To further complicate identification of knowledge domains, researchers may not disseminate science in the same manner. Inhaber (1977) remarks that "interactions in science are made difficult by the fact that a researcher may be born in country A, be educated in country B, teach in C, be funded by D, do his research in E, present results at a conference in F, and publish in G" (p. 388). Numerous studies of knowledge communities have been made in pursuit of identifying disciplines.

Early Knowledge Communities

James McKeen Cattell, an American psychologist at Columbia University created a biographical directory in 1903 limited to men who conducted scientific research with the purpose of studying the productivity and performance of these researchers. Cattell's focus was the scientist. He collected information about each subjects' birthplace, education, position, associational membership, honors, subject of research, and output. Cattell made determinations about scientific productivity by country, city, university, and

was also able to measure the scientific productivity of scientists over the course of several studies. Cattell's research formed a methodology for creating a new type of statistics that could be used to measure the growth of science.

Buchner (1912) used this methodology in a series of annual reviews from 1904 to 1913 about the discipline of psychology that appeared in the *Psychological Bulletin.* He concluded that the discipline was established through the "steadiness of its literary output" (p.5). Godin (2006) notes that Cattell continued his studies on scientific men and their families well into the 1930s and his statistics would remain the body of this type of research until the 1960s.

Concerns with the measurement of scientific output lagged during the World War II era. During the 1950s and 1960s, the Space Race renewed national interest in scientific research and development. The scientific community began to lobby for funding (Innes, 2006, p.23). Public policy called for a determination of priorities and therefore, a motivation of and an investment in new research. The focus moved from who was producing science to what science was being produced. But how to measure it? The measurement of science moved from the analyses of scientists' lives to the analyses of the publications of science.

Bibliometrics

The conceptual origins of Bibliometrics were formed during the documentation movement of the twentieth century. Pritchard (1969) first coined the term Bibliometrics and its subsequent definition, "the application of mathematics and statistical methods to books and other media of communication," in the *Journal of Documentation* (p.348).

"Studies of Bibliometrics attempt to reconstruct the history and fundamental doctrines and dogmas of various fields of sciences by analyzing the nature of previous academic works" (Kim, 2012, p.6). The body of scientific knowledge can be found in the publications of science, which we commonly refer to as journal articles, conference proceedings, and books. These objects of communication have points of identification, which may be counted and considered statistically to form interpretations about the formation of science. "The main form used for identifying concrete concepts in scholarly discourse is the bibliographic citation" (Breitenstein, 2003. P. 34). Bibliometrics employs statistical methods that measure "the flow of information among countries, disciplines, and groups of individuals and is used to assess the productivity of a number of different entities based on citations, number of publications, and other text-based data" (Kurtz & Bollen, 2011).

This information is applied to four areas of analysis according to data and purpose: performance analysis, mapping science, information retrieval, and library management (McIntire, 2006). Performance analysis is a form of analysis that institutions use to measure activity, performance, and impact of researchers and their publications. Mapping science seeks to uncover structures within knowledge domains and how those structures change over time. Information retrieval provides researchers the opportunity to identify bodies of literature passed on qualitative data. Bibliometrics in library management allows for more effective selection of materials and allocation of resources based on activity and impact.

Three scientists established the primary laws of Bibliometrics upon which theory development in Bibliometrics has been based.

> "Samuel Bradford was very concerned in the 1930s that scientists and engineers were missing important information because the abstracting and indexing services could not include every journal that might have articles of possible relevance. He investigated further and found that articles on a specific topic tended to cluster in a relatively small number of journals" (Kellerman, 1997, p.8).

Bradford's Law of Distribution of Scattering provides information specialists the "ability to track excellence in the jungle of literature [of a knowledge domain's publications]. Approximately 90% [of all new research], no matter the discipline, is published in a small nucleus of core journals" (Smiraglia, 2014, pp.9-10). Identification of these core journals allows the practitioner and information specialist alike, access to most of the writings of a given discipline.

While Bradford's Law focuses on core journals, Lotka's Law concentrates on the production of the individual scientists. Lotka's Law of Scientific Productivity stipulates an algorithm on the distribution of scientific papers among contributing authors (Egghe, 2005). "Lotka's Law states that the number of authors publishing n papers is about $1/n^2$ of the number publishing one paper. In samples larger than ten years and when the author size is quite large (about five thousand authors) that Lotka's distribution should approximate the empirical data" (McIntire, 2006, p. 21-22). Potter (1981) concluded in a study that author productivity followed a nearly universal pattern in all knowledge

domains. Therefore, a close correlation exists between the quantity of scientific publication and the achievement of eminence as contributors, or simply according to Lotka's calculations about sixty percent of authors in a given data set will publish once and the remainder of the authors, forty percent or less, will provide the body of the scientific output of a given knowledge domain.

Zipf's Law of Distribution is concerned with the words used in a given scientific publication. "Zipf's law is stated as rf = c where r is the rank of the word by its frequency in a document or aggregate of documents, f is the frequency count of the word and c is a constant computed from the number of all words being analyzed" (McIntire, 2006, p. 22). Zipf's Law of Distribution proposes that the occurrence of words in a given amount of text can be algorithmically identified (Piantadosi, 2014). According to Potter (1981), this law has important applications in anthropology, library management, linguistics, and bibliometrics since it broadly postulates that humans have a drive to reduce the number of unique words used during communication and seek common keyword formulation within a knowledge domain.

> "Lotka, Bradford, and Zipf used simple mathematical statements and graphical devices to express the empirical relation between sources and the items they produce. Their common denominator is a striking inequality in the pattern of information processes under observation: a few authors turn out to be responsible for the largest portion of scientific literature in a given research field" (DeBellis, 2012, pp.76-77).

Together, these laws of bibliometrics provide a theoretical framework to make conclusions about the structure of scientific communication.

On the whole, the science of bibliometrics provides a pragmatic methodological paradigm used in library science to identify core knowledge bases and patterns of usage for more informed purchasing decisions in the process of providing resources for patron use in libraries and information networks, and reliable data for informed science policy decisions (Corrall, Kennan, & Afzal, 2013; Russell & Rousseau, 2002). These "studies of communication within scholarly communities in a variety of contexts" are particularly interested in the age of documents, how often documents are cited and how often the document or publication is considered (circulated) in use (Smiraglia, 2014, p. 8). The by-product of this type of research is the identification of structure within the formation of the statistics.

Library scientists naturally consider the identification of structure a key element in providing services to the patrons who will most use the information provided within those structures. A natural consequence was "the shift in knowledge organization toward classification of knowledge in historical, social, and cultural contexts" (Smiraglia, 2014, p.3). Further, the analysis of these structures, more commonly referred to as domain analysis has become an established theoretical approach with its roots in social constructivist theory.

Bjurstrőm (2011) credits Hjőrland and Albrechtsen (1996) for "formulating the epistemological foundation" of domain analysis.

"The social constructivist theory of semantics implies that objects are

> ‘special constructs’ and meanings are constructed in social discourse, most often in ways that are unconscious for the agents involved. Research articles—as well as other documents—are seen as social constructs and as ways of arguing” (Hjőrland, 2002, p.437).

The focus of this paradigm is the analyzed social behavior of the knowledge community or domain as demonstrated by the participants of the knowledge community through the structure of citation. “The domain analytic perspective emanates in the practical work of the information specialist” whose “objective is to study the structure of the domain, i.e. to outline the knowledge production of the domain and how it is communicated, changes in knowledge production and communication, mapping the different paradigms, and to put the domain in its context” (Bjurstrőm, 2011, p.8). In this manner, Bibliometrics may demonstrate the historical formulation of Educational/Instructional Technology as a discipline.

Content Analysis—Identifying the Research Front. In its infancy, the measurement of scientific output began as content analysis, and is commonly referred to as descriptive Bibliometrics (Jacobs, 2010). The discourse of science, in whatever manner delivered—book, manual, textbook, journal paper, conference proceedings individually or in sets—is examined for the presence and distribution of certain keywords, phrases, or topics to determine a description of the meaningful progress of science. “Keywords reflect the researcher’s intention of the study directly; it is believed that keyword analysis and keyword co-occurrence analysis can… identify which trends of research are of most concern to researchers” (Kim, 2012, p.8).

Content analysis also provides a description of a knowledge domain through the measurement of productivity by individual, geographic area, time period, department, field, or discipline in raw counts of collected data at the moment measured and is "the most frequently used indicator of the research impact of publications" (Archambault & Gagné, 2004, p.33). Content analysis may show us what the current conversation is about and where that conversation is taking place, but "does not take into account the linking structure of citing journals, citing authors, or citing articles" (Yan & Ding, 2012, p.1314).

Citation Analysis—Influencers within the Field. Citation analysis, on the other hand, commonly referred to as relational bibliometrics, seeks to identify connections and cognitive structures among science (Borgman & Ferner, 2002). "The essence of citation is the interaction between different ideas or perspectives on a phenomenon that is addressed in the citing and cited articles" (Liu & Rousseau, 2012, p.585). "A citation is an action that refers to a document; thus, a document, or a group of documents can have a citation rate which may be analyzed" (Kurtz & Bollen, 2011). This methodology for measuring scientific behavior was developed during the 1960's. "Within library science, citation analysis has matured as a methodological approach during the previous two decades, resulting in the creation of tools and methodologies that could measure, describe, and analyze a body of literature in a meaningful way that was increasingly accepted within the wider research community" (Innes, 2006, p. 3). "Citation analysis assumes that heavily cited articles tend to have greater influence on the field compared to less frequently cited references" (Kim, 2012, p.13).

Eugene Garfield (1972) first proposed that citation demonstrates a connection between ideas and in that using citations analysis is a means to identify structure within science. He was inspired by H. G. Wells (1938) who envisioned a world information center or a "World Brain" where all intellectual material could be accessed. Garfield's (1970, 1972, 1977, 1979a, 1979b, 1980, 1983, 1989) work in the 1970s and 1980s gave the study and measurement of science new theories, methodologies, and scope. His original intention was to provide a method by which science could be shared through a system of easy access, namely the citation index, which gave rise to new theories of measuring output and predicting the course of science. Today, "The most popular analytical tool for citation analysis is frequency analysis examining how many times the reference is cited and patterns of frequency of citations have evolved during a certain period" (Kim 2012, p. 13).

> "Citation analysis is used to describe social and intellectual networks, the transfer of ideas between fields, the impact of an individual on peers, career trajectories, the degree of trustworthiness between scholars, new research fonts and relationships among authors, articles, journals and concepts" (Innes, 2006, p, 40).

Cocitation Analysis—Fundamental Literature within the Field. While citation analysis may define the influencers within a knowledge domain, cocitation may identify the knowledge base of the domain. Researchers acknowledge the influential work of others through citation and the arrangement of documents according to cocitation counts "produce patterns of cognitive relationships" that demonstrate the structure of knowledge

domains (Jacobs, 2010).

> "The primary utility of cocitation analysis is as a research tool for studying the sociology and history of science and scientists. More specifically, cocitation analysis is a tool for understanding the specialty structure of science. The cluster of works which are connected by being co-cited are indirect indicators of the birth, growth, and death of scientific specialties and their social and cognitive structure… The clusters may represent subject areas, basic concepts, or theories" (Bellardo, 1980, p. 232).

"A pioneering bibliometric technique, author cocitation analysis (ACA), is used to discover how scientists in a particular subject field are intellectually interrelated as perceived by authors in their scientific publications" (Lee & Chen, 2012, p. 2).

> "The general process for cocitation analysis is to (1) identify a set of reference papers, (2) calculate the similarity between pairs of reference papers using cocitation counts, (3) calculate cocitation clusters of reference papers using similarity values, and (4) fractionally assign the current (or research front) papers to the cocitation clusters based on location of their references" (Boyack & Klavens, 2010, p.2394).

Since cocitation analyses may focus on documents, journals, institutions, keywords, or authors, author cocitation analysis has been the commonly accepted "unit" for this type of analysis since the 1970's. "As author cocitation normally studies a research field by examining a set of authors highly cited in this field, the structure that is revealed by author cocitation analysis represents the field's knowledge base. Cocitation

patterns change as the interests and intellectual patterns of the field change" (Small, 1973, p.265).

> "Author cocitation sums up the record by mapping the author as a single point among other selected author points on the basis of the repeated co-occurrences. Authors with similar profiles of co-occurrences are displayed close together. If the same authors are mapped for more than one period, one can look for trends and discontinuities. Such is the history of a field as told by author cocitation analysis" (White & McCain, 1998, p.329).

Bibliographic Coupling—Retrospective Analysis. Bibliographic coupling is a deeper analysis of the citations among pairs of documents. "If documents share one or more bibliographic references (already published, of course), they are said to be bibliographically coupled" (Eom, 2009, p.9). The more shared citations, the stronger the bond between the two documents. Garfield (2001) considered bibliographic coupling a retrospective analysis in that it is a look back at what two authors considered the most important documents to cite comparatively. Author bibliographic coupling examines researchers active during the same period and should be conducted over longer periods of time; therefore, it is outside the scope of this study.

Mapping Science. According to Small (1999), "a map of science is a spatial representation of how disciplines, fields, specialties, and individual papers or authors are related to one another as shown by their physical proximity and relative locations, analogous to the way geographic maps show the relationships of political or physical features on the Earth" (p. 799). By extracting relationships among a set of documents, a

map or visual representation of the structure may be created. “Visualization mapping is used to explore large amounts of data and to derive new insights by identifying trends, or clusters, in the data associated with a field of study” (Lee & Chen, 2012, p. 2). Simple visualizations, such as Word Clouds, may be used to quickly visualize some general patterns in text or a more complex visualization technique may be employed to show the relationships within a knowledge domain (McNaught & Lam, 2010). A number of studies demonstrate this more complex methodology (Small, 1999; Leydesdorff, 1994; McIntire, 2006; Rosvall & Bergstrom, 2008; Yan & Ding, 2012). Maps or graphs are created “wherein a node usually denotes an academic entity, such as an article, a journal, or an author, and a link usually denotes relationships such as citation, co-authorship, cocitation, or bibliographic coupling” (Yan & Ding, 2012, p.1313). The graphs as visualizations may provide insights into past scientific research, such as influential documents and authors, the structure of a knowledge domain, and the direction of future developments.

These visualizations are created from data usually found in commercial databases. In order to analyze science not stored in commercial databases, a custom database must be created so that the data can be computed in the correct format to be read by visualization software. Eom (2009) defined a process to create a custom database for knowledge domains not traditionally indexed in commercial databases for the purposes of author cocitation analysis. Eom (2009) described the process to create a custom database as:

1. Select a source of the information to be included in the database.
2. Collect data from the source and enter the data into a custom database.

3. Convert the data into tables and matrices for analysis.

Once the database is complete, any number of visualization software may be selected to conduct an analysis of the data. Eom (2009) used Statistical Analysis Software (SAS). The analysis included the following steps in Eom's (2009) study:

4. Preparation of the input file for compatibility with the software.
5. Multivariate statistical analysis of the correlation matrix, which includes selecting an algorithm for the analysis.

Cocitation visualization is created in an undirected graph with straight-line edges. "A force-directed algorithm models the graph as a system of bodies, with forces (cocitation) acting between them" (Hu, 2010, p. 1). "The Yifan Hu layout algorithm pairs adjacent nodes to reduce complexity and employs "a graph coarsening technique that groups vertices and builds tighter, smaller graphs from these groups" (Khokhar, 2015, p.85).

6. Preparation of the analysis output.

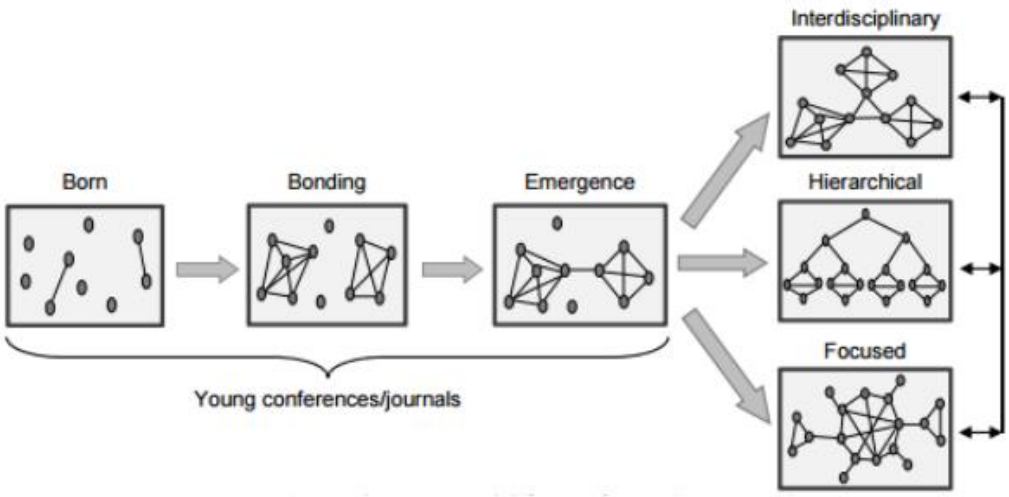
While visualization software establishes a set of presets as a beginning for mapping, those settings may be adjusted to enhance the information revealed in the visualization.

7. Format the results to produce final visualization.

Results may be enhanced with any number of graphical design elements, such as weighted lines according to number of cocitations, node sizing, and color gradient according to citation weights.

Eom's (2009) methodology revealed a way to create a visualization of previously unexamined knowledge domains. Pham, Derntl, and Klamma (2012) proposed and

demonstrated the use of a model to characterize the citation behavior within a knowledge domain to explain its developmental pattern.



Developmental Model for Conference Communities

Figure 1. The stages through which knowledge domains develop. Adapted from "Development Patterns of Scientific Communities in Technology Enhanced Learning," by M. C. Pham, M. Derntl, and R. Klamma, 2012, *Educational Technology & Society*, 15 (3), p. 325. Copyright 2012 by the International Forum of Educational Technology & Society (IFETS).

The model in Figure 1 was applied to conference proceedings in different areas of computer science. In the model, the nodes represent papers or literature cited by the papers given as proceedings of a particular conference series. The authors note that in the beginning of development connections between nodes are limited, representing the beginning of fundamental literature and over time bonds develop. "The citing and cited relations between the articles of a related field may be in the formation of chain, tree, and network structure" (Lee & Chen, 2012, p. 3). New nodes emerge, until the larger map of citations over time may be recognized as interdisciplinary, hierarchical, or focused depending on the pattern of connections displayed in the representative map. Though the

model was designed for a specific knowledge domain, it may serve to identify the development of other knowledge domains as well (Lee & Chen, 2012).

The Discourse of Educational/Instructional Technology

The study of science, if it is to be conducted, must begin somewhere. Indeed, early studies of the field of Educational/Instructional Technology, as in other fields, began with content analysis. DeVaney and Butler (1996) analyzed an amalgamation of the "socially constructed messages" that formed the first educational processes in the field of educational technology that constitute discourse which included audio-taped oral histories in the beginning and through research reports, manuals, journal articles, and textbooks to "books that addressed theory, pedagogy, and application" (Section 1.2.4.2, Textual Sources). Their purpose was to identify how the knowledge base of educational technology was formed.

These discourses were examined for repeated statements that could be determined as the formulation of concepts, theories, and pedagogy. While these researchers were concerned with the beginning themes of the knowledge domain and its origins, Saettler (2004) was concerned with why the knowledge base formed as it did. Saettler provided a history of the field in his work, *The Evolution of American Educational Technology* that is concerned with tracing the history of the process of Educational/Instructional Technology. Neither work distinguished Educational Technology or Instructional Technology as a discipline.

Products of the University Programs

Researchers in pursuit of identifying disciplines often turn to universities and the analyses of dissertations, course catalogs, and textbooks to identify emerging fields and specialties as we accept teaching as the practice of "acculturating others to that conversation" (Bruffee, 1993, p. 128). These programs identify elements of the knowledge domain of any given field or specialty in the very discourse chosen to present to students. As curriculum designers intend to offer the most fundamental aspects of a knowledge domain to students, the resulting curriculum is worthy of study.

Caffarella (2000) performed a content analysis of the doctoral dissertations in the field of educational technology from 1977 through 1998 to discover how research themes, methodologies, and research trends have changed over time. Data was collected from a directory of dissertations previously identified with the descriptors, instructional design and technology. Caffarella found within this data set a general increase in qualitative studies over the time period. Key words were grouped into categories and then were given a theme identifier. Themes identified were research on computers, instructional systems and design, game development, and television and video.

Ma (2000) also conducted a content analysis of doctoral dissertations in educational technology between 1977 and 1999 but limited the study to dissertations completed in the educational technology program at the University of Wisconsin at Madison to identify prevalent methodologies, theories, and topics. Methodologies identified were experimental, case study, interview, and survey. Theories identified were behavioral, cognitive constructivism, and situated learning. Topics identified were

audiovisual centers, educational computers, and interactive video.

West (2003) analyzed course titles for a consensus among instructional technology programs. University programs with master's degrees in instructional technology were identified from one volume of the Educational Media and Technology Yearbook. Catalogs were collected from the identified university programs. The instructional technology programs were classified into three categories according to how the program was identified in the course catalogs—a "program within a department", a "complete department", or a "specialization through coursework". Further, course lists from the "complete department" and "program within a department" classifications were created. Educational technology and instructional systems courses were specifically included. The sample was reduced to thirty-two (32) catalogs. The course titles from the catalogs were coded into nine (9) key concepts and forty-eight (48) content areas. West postulated that "if a discipline is a branch of knowledge…studied in higher education, the academic courses offered to prospective entrants into that discipline should be fairly consistent across different academic programs" (p.86). The conclusion made was that the programs offered courses in the theoretical foundations and courses in practical applications.

Carr-Chellman (2006) surveyed volunteers from a list of leaders in the field compiled in the *2003 Educational Media and Technology Yearbook.* Those educational leaders who gained tenure were asked to submit their publication record for analysis. The study found that each scholar averaged fifteen (15) articles in their pre-tenure period and these articles were published in seven or more outlets on average. One hundred twenty

(120) unique journals published at least one (1) paper identified in the study indicating that the literature of Educational/Instructional Technology is not centrally located in a handful of journals.

Sen (2011) conducted a content analysis of a set of articles and books recommended by a group of IT professors. A group of IT professors, identified as experts in the field, were surveyed to nominate foundational works of the field of Instructional Technology. The works were then subjected to content analysis with the intent to identify primary themes to develop a descriptive narrative.

At colleges and universities across the country, dissertations, coursework, textbooks, and associated materials indicate a need to educate for informed professional practice. These studies identify what has become acceptable practice and doctrine of professionals engaging in a given specialty and may not definitively identify an emerging research front, a field, or discipline. If not the university, where do researchers turn to find a knowledge community with a sufficient membership creating a quality discourse?

Journal Analysis to Identify Instructional/Educational Technology

Most researchers have turned to journals that specifically focus on the field to identify structure within the knowledge domain. Early in the formation of the field, Mayo (1976) and Torkelson (1977) performed content analyses of *Audio-Visual Review*, the first journal of the Association for Educational communications and Technology (AECT). Mayo (1976) notes that this journal came into being to provide a venue for communication among the members of the organization as suggested by Finn (1953). Finn, the first editor of *Audio-Visual Review,* proposed that the journal would be “a

means for specialists within the field to construct theory and critically analyze problems within the field" (As cited in Mayo, 1976, p.3).

Mayo (1976) examined 450 articles published in *Audio-Visual Review*, spanning the years from 1953 to 1972. The researcher completed a content analysis to provide descriptive characteristic of the research. The analysis was made difficult by a lack of keyword descriptors demonstrating stable terminology within the field. Mayo overcame this difficulty by creating keywords where existing terms may not have accurately depicted the content of the article or in lieu of the absence of keyword descriptors. Despite the initial difficulty in conducting the study, Mayo found the research of the field represented in the first 25 years of *Audio-Visual Review* to be growing and increasing in complexity of design, methodology, and analyses.

At nearly the same time, Torkelson (1977) also conducted a content analysis of *Audio-Visual Review*, spanning the years from 1953 to 1977, but the analysis focused on identifying which issues make the greatest influence on developments in the field. Torkelson cited Mayo's (1976) keyword construction as an aid to his analysis and indicated that more appropriate research methods are needed for the field to grow.

Anglin, Wagner, Adams, and Unakhalu (1999) conducted a content analysis of four journals specifically to identify major topical trends and to identify authors contributing theoretical works. In that same year, Driscoll and Dick (1999) conducted a content analysis of one journal, *Educational Technology of Research and Development (ETR&D)* from 1992 to 1996 looking for changes in research paradigms. The researchers determined that not many empirical studies were conducted and concluded that more

developmental research must take place for the field to develop. In these journal studies, a knowledge structure could not be identified.

In similar content analysis studies, Klein (1997) and Masood (2004) looked for emerging and diminishing themes in the field of educational technology through an examination of the journal, *Educational Technology of Research and Development (ETR&D).* Klein (1997) performed an analysis of articles from 1989 to 1997, but also interviewed editors asking for recommendations as to what they believed the published material was missing. The intent was to guide future studies, but the analysis also serves to show what is present in this publication.

Much like Klein, Masood (2004) examined articles published in the same journal, *Educational Technology of Research and Development* and another AECT publication, *Tech Trends,* from 1993 through 2002 to again identify trends or themes in the field. Masood noted an increase in the studies concerned with instructional design for distance learning. These journal studies were able to identify an emerging trend, but not the overall structure of the field.

West (2003) conducted a content analysis to identify the evolutionary state of instructional technology wherein an analysis of the scholarly communication imparted in four (4) journals was analyzed. *American Journal of Distance Education, ETR&D, Journal of Research on Technology in Education,* and *Performance Improvement Quarterly* were selected using criteria from previous studies of the field made ten years prior. The criteria eliminated any publication from inclusion that was not specific to the field of instructional technology no matter how relevant an article therein contained may

be. This redaction limited the investigation of this applied field in that most published research of the field may share its knowledge base with other fields and consequently be published in journals not specifically geared toward instructional technology. In short, key research to the field may have been inadvertently eliminated from the analysis. The conclusion of the study was that instructional technology was still an emergent field.

Hew, Kale, and Kim (2007) made a content analysis to examine and classify instructional technology research in three journals: *Educational Technology Research and Development, Instructional Science,* and the *Journal of Education Computing Research* from 2000 to 2004. While authors especially note that previous studies do not include an analysis of educational setting in which the studies take place, they do find that the topics of *psychology of learning and instruction* and *media of study* were the focus of all three journals with descriptive studies being the primary methodology. Suggestions for future research were also made.

This type of analysis is not exclusive to U.S. publications. Gulbahar and Alper (2009) researched the direction of instructional technology in Turkey through a content analysis of five journals: *The Journal of Ankara University Faculty of Educational Sciences, Journal of Hacettepe University Faculty of Education, Journal of Gazi University Faculty of Education,* the *Turkish Online Journal of Educational Technology* and the *Turkish Online Journal of Distance Education*. The analysis focused on research methodologies and topical issues with the intent to track any changes in the field. The study found that the majority of the studies were quantitative studies, with fifty percent having no theoretical considerations, and only thirty percent employing literature

reviews. The authors noted that references to international publications were the norm.

Hsu, et al. (2012) conducted a content analysis of five journals with the intent to identify research trends in technology-based learning. A collection of 2,976 articles from the *British Journal of Education Technology, Computers & Education, Educational Technology Research & Development, Educational Technology & Society,* and the *Journal of Computer Assisted Learning* spanning the years from 2000 to 2009 was made. The articles were examined to identify research topic, sample group, and learning domain. The study found that *pedagogical design* and *theoretical studies* were the most used research topic, *higher education* was the most used sample group, and *engineering/computer sciences* was the most referenced learning domain. The authors concluded that technology-based learning has become the dominant instructional delivery system at all academic levels and in all settings, and studies of *motivations, perceptions, and attitudes* were on the rise in the last five years of the study.

West and Borup (2014) analyzed research papers in ten journals from 2001 to 2010 to identify trends in research methodologies, topics, citations, and authorship. The journals were specifically selected to represent the "breadth of work in the field" and included *Educational Technology Research & Development,* the *American Journal of Distance Education,* the *British Journal of Educational Technology, Contemporary Issues in Technology and Teacher Education, Distance Education, Internet and Higher Education,* the *Journal of Learning Services,* the *Journal of Research on Technology in Education,* the *Journal of Technology and Teacher Education,* and *Performance Improvement Quarterly.* The papers were coded into the following paper types:

descriptive research, inferential, interpretative, theoretical/philosophical, content/discourse analysis, and *combined or mix methods*. Citation patterns were analyzed using Google Scholar to identify the most cited papers. The authors noted a balance between quantitative and qualitative methods. The most interesting result was the "strong history of theoretical inquiry in the field" (West & Borup, 2014, p.554).

All of these studies employing content analysis show that this method cannot accurately portray the structure of a knowledge domain. Content analysis alone may only render results that answer specific questions of trends of authorship, topic, method, and locale of document sets. In combination with another bibliographic method, content analysis may lend a more meaningful result.

Some studies of journal citation analysis have been completed as well. Anglin and Towers (1992) used raw citations counts to compile a rank-ordered list of authors from three journals: *ETR&D, Educational Communication and Technology Journal,* and the *Journal of Instructional Development* to identify predecessors, scholars, and researchers within the field. It was noted that the data may be affected by what was trending among professionals—the areas of inquiry, theory, or design—of whom chose to submit to these journals. The study addressed the issue that certain journals may develop a following of a subset of researchers, which due to their similarity of interests; their location, funding, or research may produce a limited scope in the publication.

Gall, et al (2010) examined citations from and to *ETR&D.* Citations from 359 core articles from 1990 to 2004 were extracted using SSCI database and classified according to "input (cited, but not citing), output (not cited, but citing), and symbiotic

(frequently cited and citing of ETR&D)" (Gall, et al, 2010). The study identified nine (9) journals through citation analysis with a symbiotic relationship: *Contemporary Educational Psychology, Educational Psychologist, Instructional Science, Journal of Computer-Based Instruction, Journal of Educational Computing Research, Journal of Educational Psychology, Journal of Educational Research, Journal of Research in Science Teaching,* and the *Review of Educational Research.* The identified journals showed Educational/Instructional Technology's dependence on non-technology journals at the time of the study.

Cho, Park, Jo, and Suh (2013) conducted a citation analysis to examine the evolution of educational technology in the past twenty (20) years. The study examined articles published in one journal, ETR&D, from 1989 to 2011 using Publish or Perish Software. The most influential authors and papers were tabulated. The most frequently cited authors together were Kozma (1994) and Clark (1994), with regard to the media debate at the time of publication. Five key research themes were identified: instructional design, learning environments, the role of technology, educational technology research, and psychological foundations.

Kinshuk, Sampson, and Chen (2013) completed a citation analysis of the *Journal of Educational Technology and Society* (ET&S) to examine research trends among highly cited articles published during 2003-2010. The study articles were divided into two groups by publication year and any article cited less than fifteen times was omitted from the study. Data about the articles was collected to form a description of the research trends. The authors concluded that Educational/Instructional Technology continues to

undergo a rapid evolution.

Though no studies of Educational/Instructional Technology through mapping that meet the demands of Pham, Dernstl, and Klamma's (2012) model exist, Shimp (2008) conducted a study of a related area, Distance Education, to determine what 2000 Institute for Higher Education Policy (IHEP) benchmarks were addressed to guide further research and practice. The sample was also subjected to cocitation analysis to create a cluster map displaying the literature connections of the most cited articles in distance education. The majority of the articles were published in four journals: *The American Journal of Distance Education, Journal of Distance Education, Distance Education,* and *Open Learning.* The cluster map identified twelve focal points that covered topics in the following areas: interaction, critical thinking, collaborative learning, and communities of practice.

These studies looked for a knowledge base existing in a traditional medium of delivery, i.e. academic journals. With the rapid fluctuation in growth and changes in terminology of Educational/Instructional Technology, the focus must not be a traditional medium of delivery, but one that speaks to rapid development and provides "a community of agreeable scholars" (Finn, 1953). Conference proceedings may fulfill this need.

Impact of Conference Proceedings

Conference proceedings of the leading association of Educational/Instructional Technology may be the knowledge base that others have yet to identify, since less than ten percent of conference proceedings are indexed in journal databases. "Scholarly

communication in the sciences – particularly physics, mathematics, and computer science -- is moving increasingly toward a new publishing model that emphasizes conference papers, preprint archives, and the online availability of articles" (Goodrum, et al., 2001, p.2). For example, "the most cited computer scientist (Hector Garcia-Molina) shows results in more than 20,000 citations in Google Scholar, with most of his papers being published and cited in conference proceedings" (Harzing & van der Wal, 2008, p.62). While some fields rely heavily on conference proceedings, only a few studies have been completed on the impact of conference proceedings and their role in scholarly discourse (Drott, 1995, Visser & Moed, 2005, and Glanzel, Schlemmer, Schubert, & Thijs, 2006, Lisee & Lariviere, 2008, and Montesi & MacKenzie-Owen, 2008).

Drott (1995) suggests that the primary functions of conference proceedings are to provide researchers an opportunity for feedback on research, to provide a vehicle for application reports and other difficult to publish information, and to stimulate discourse within the field on emerging topics and conceptual shifts. Visser and Moed (2005) studied the process of the development of conference papers into published journal articles. Editors from twenty-two major journal publications in software engineering were interviewed about accepting articles that were developed from conference proceedings. Recently, Montesi and Mackenzie Owen (2008) agreed that conference proceedings can stimulate discourse.

Lisee, Lariviere & Archambault (2008) examined the scientific impact and aging of conference proceedings as compared to other literature. Thomson Scientific *Science Citation Index* (SCI), *Social Sciences Citation Index* (SSCI), and *Arts and Humanities*

Citation Index from 1980 through 2005 were used to identify conference proceedings cited in articles, notes, and review articles. Based on the data collected from the indexes, the researchers found that 2% of references were made to conference proceedings and concluded that conference proceedings are not a significant portion of the scientific literature. Despite this conclusion, the findings did show that conference proceedings related to computer sciences and engineering were significant to their perspective fields and should be included in bibliometrics studies. In fact, the data also indicated an increase in citation of conference proceedings over the last ten years. While Lisee, Lariviere & Archambault (2008) concluded that in some fields conference proceedings are not only becoming the final point of scientific research but are also more important to the research front for development.

Yet other studies indicate that a fields rate of change may offer a proposal for the importance of conference proceedings. Hofer, et al (2010) conducted a keyword analysis of the conference proceedings of the Academy of International Business (AIB) since the conference "was seen as an incubator for emerging research areas" in an attempt to identify scientific development (p.846). The study was limited to an analysis of three years of conference proceedings where topical interest was identified by the keywords supplied by contributing authors. Articles were grouped according to keywords and described according to cluster content to detect and reflect upon developing structures and patterns of communication within the research of the AIB community. The results did indicate a clear structure with three concentrations of interest that were strongly linked. Hofer, et al (2010) acknowledges that this study in its limitation to three years

may only show development, not the existence of a scientific domain.

Bunker (1998) conducted a content analysis of the conference proceedings of the International Council of Distance Education (ICDE) spanning the years from 1938 to 1995 to identify publication characteristics to determine how the conference had changed over time. The researcher employed that a specialized vocabulary with its own abbreviations and mechanics to examine the topic and themes of the conference proceedings. The study did reveal a core set of people participated in publication, but a more in-depth analysis of this aspect was not made.

Chen and Carr (1999) conducted an author cocitation analysis of the Association for Computing Machinery (ACM) conference proceedings from 1987 to 1998 with the purpose of mapping the literature of hypertext. Two sets of data were collected from the proceedings. Titles and abstracts were collected for content similarity analysis and author cocitation counts were collected for analyses as well. The study identifies key contributors to hypertext literature, their interconnectedness, and content keywords of hypertext. A clear structural representation of the knowledge domain is identified. Semantic graphs also demonstrated how the literature changed over time. These studies demonstrate the validity of using conference proceedings as a source of data for knowledge management decisions.

Pham, Klamma, Cao, and Jarke (2011) specifically note that without consideration of conference proceedings a study of the computer science discipline would be incomplete since computer scientists share information in the more rapidly developing area of the domain represented in conference proceedings. The authors concluded that the

computer science discipline was becoming more interdisciplinary and this could not be determined without the inclusion of conference proceedings in the analysis. The authors also concluded that experts in the field were more likely to present at conference and were a key factor in sustainability.

Pham, Derntl, and Klamma (2012) analyzed the conference proceedings of five major conferences in the Technology Enhanced Learning field to understand the developmental patterns of communities within this field. The authors base their study on the conclusion that there were significantly more conferences in the field than journals so that to make an analysis of social network or citation patterns would reveal more insights about the Technology Enhanced Learning field. The authors made determinations of the developmental stage of each conferences portion of the knowledge domain based on nodal network mapping. The authors determined that conferences grow through retaining authors and experts from previous events, which in time develop into a core authorship group that is supplemented with new authors each year demonstrating a sustaining, but growing, knowledge domain.

Content Analysis of AECT Proceedings

Articles in conference proceedings indicate a field's current research front and reflect the most current interests, ideas, and research of the period represented (Flynt, 2014, p.6). The Association for Educational Communications and Technology (AECT) may provide the "linear progression" in which Dirks (1996) describes.

> "There is no question that the Association has made many significant contributions to the field of educational technology since the earliest days

> of its founding. Certainly, it has remained the oldest and strongest support of educational technology through the years and has served a vital function in its development through this century. Through its many publications and national conferences, and its efforts in providing a national clearing house and a collective voice for educational technology, it has continued to serve as a catalyst for advancing the technology of instruction" (Saettler, 2004, p. 505).

It is "a community of agreeable scholars" in that its membership is composed of thousands of educators and others from the public and private sectors employed by the military, museums, libraries, schools, and industry that "coalesce around the central premise" of improving instruction through technology. The members participate in "a uniquely defined practice of inquiry" into designing instruction and systemic approaches to learning as they promote quality scholarship and practice in the use of instructional/educational technology as a central organization of the field. The AECT's "specialized structures to support the community", namely its divisions, affiliates, assemblies, and conferences, provide an opportunity to identify "shared areas of interest, focus, approach and projects" which may demonstrate an "internal consistency within the field" (Czerniewicz, 2008, 177).

"As a discipline matures, research interests become more specialized, resistance to change increases, and isolation from other disciplines and lay influences occurs" (Innes, 2006, p.17). "The AECT has helped to build a more complete picture of the field of Educational/Instructional Technology by refining ethics, describing current

technologies, and providing strong international connections" (Carr-Chellman, 2006). This organization which began in 1923 may provide the historical perspective and core values of the knowledge community through its conference proceedings of the research front and its changes over time, and as such has created in its conference proceedings a knowledge domain worthy of study.

Al-Saleh (2000) conducted a content analysis of a five-year period of the annual proceedings of the AECT from 1996 to 2000 with the purpose of identifying areas of study for future research. Seven characteristics of 293 papers were collected. 64.50 % of the published papers were research studies. 45.70 % of papers dealt with computer mediated communications as the major topic. The most prevalent study types were experimental (24.50 %) and qualitative (23.8 %). In this five-year period, Nancy Nelson Knupfer was the most published author among the papers studied and three universities, Arizona State University, Indiana University, and Pennsylvania State University, exceeded others in contributed papers. Only 5.4 % of the published papers were contributed from outside the United States. The study recommended further research that would organize the information into subject clusters and analyze publication origins given the expanse of resources present in the data (Al-Saleh, 2000). A brief description of the knowledge domain of the AECT at the time of the study was made but does not denote structure since relational and evaluative bibliometric analyses were not applied.

Recently, Flynt (2014) completed a content analysis of the conference proceedings of the AECT, spanning the years from 1979 to 2013. The researcher focused on a systems approach, which employs a "conceptual framework to simplify the study of

complex systems by examining parts, their interactions, and functions" to observe what effect that cited theories in the research presented in the conference proceedings had on the changing definition of the field given by the organization (Flynt, 2014, p. 8). Although "previous researchers," in Flynt's (2014) view, "had noted gaps between theory and practice," the author intended "to establish a firmer link between theory and practice in the field of educational technology" (p. 8).

Flynt examined 2,635 articles produced in the thirty-five-year span for the inclusion of the word, "theory", keywords that were synonymous with an established or evolving theory and conceptualized theoretical approaches and found that an average of 48% of the articles included a theory or multiple theories. The sample was divided into three chronological sets of twelve conference proceedings groups and further examined for a general branch of theory employed or a named theory. Of the 521 observed uses of the word "theory" in the sample, 34 referred to the general category of theory while 487 referred to named theories.

This analysis further revealed that the top three theories in frequency of occurrence over the entire data set were systems theory, dual code theory, and elaboration theory (Flynt, 2014, p. 129). During the first chronological set (1979-1990), the most frequent theories by category were *Instructional theory, Learning Theory,* and *Instructional Design Theory.* The most used individual theories in the first data segment were *Elaboration Theory* and *Schema Theory.*

The second data set (1991-2001) revealed the top theory categories as *Instructional* and *Instructional design*. This data set also revealed a high point in theory

development and convergence of multiple theory categories *(Instructional Theory, Instructional Design Theory, Constructivist Theory, Learning Theory, Design Theory, Cognitive Theory, Critical Theory, Information Processing Theory, Behaviorism, cognitive Learning theory, Educational Theory, and Grounded Theory). "*The top named theories of this period were *Systems Theory and cognitive Flexibility Theory" (Flynt, 2014, p. 85).*

In the third chronological data set (2002-2013), *Education, Grounded, Instructional,* and *Instructional-Design Theories* were used in all twelve conference proceedings. The top theories of the third segment were focused on social theories (*Social Capital, Social Cognitive, Social Comparison, Social Constructivist, Social Dominance, Social Identity, Social Interdependence, Social Media Communication, Social Network, Social Presence,* and *Socio-cultural*) (Flynt, 2014, p.102-111).

Flynt (2014) then examined the data for trends through linear forecasting. The forecasts were then submitted to analysis using Gartner's Hype Cycle, which contends that "innovation typically follows a pattern, or lifecycle" (p. 97). Through this analysis, the researcher revealed that *Behaviorism, Systems Theory,* and *Communication Theory* peaked as innovative theories before 1979. *Cognitivism* peaked in 1987 as an innovative theory in the conference proceedings and *Constructivism* peaked in 2005 (Flynt, 2014, pp. 97-99).

Since Educational/Instructional Technology practice occurs in a number of different settings, the researcher also examines the chronological data sets by setting. The AECT identifies membership from six educational settings: higher education institutions,

K-12 educational systems, business and industry, medical facilities, branches of the military, and international settings. The researcher discerned only minor differences in theory by setting. Some noted preferences of theory to setting were behaviorism to the government setting, cognitivism to the health setting, constructivism to the business setting, and systems theory and communication theory to the health setting.

Finally, the four changes in the field definition of Educational/Instructional Technology in 1972, 1977, 1994, and 2008 were compared to the analysis of theories. Flynt (2014) concluded that the "data from the study showed that the definition reflects what has previously happened', rather than driving the innovation in the field (p. 154). The researcher also noted a gradual decline in the use of theories in the research of the conference proceedings across the thirty-five-year span. Flynt surmised that this finding may indicate a need for refocus on theory; however, no other conclusions were offered for this observation.

Flynt (2014) concluded that while this study has offered a "what" is happening with theory development in Educational/Instructional Technology, the study does not indicate a "who" or "why", Flynt does offer the idea for future research to include analysis of the conference proceedings with other theoretical frameworks which may be used to provide insights about Educational/Instructional Technology, and in comparison, with the results from this study may yield further understanding of the field.

Summary

Knowledge domains form as the result of the continuing activity of knowledge communities. The connections within knowledge communities display the characteristics

of the domain. Identification of the infrastructure of a given knowledge domain may demonstrate evidence of or a change in emergent fields and disciplines (Shriffin & Borner, 2004). Traditionally, journals and journal databases have been used to perform investigations of knowledge domains. With the changes in the places in which authors choose to publish, new knowledge domains have resulted. Bibliometrics provides a theoretical framework in which to examine and make conclusions about the structure of scientific communication (De Bellis, 2009).

> "Among the different aspects analyzed, these indicators show the researchers, the themes, institutions, knowledge areas, more fertile or more productive countries, as well as the research front of a knowledge field, collaboration networks among scientists, groups, institutions or countries and citation and cocitation networks" (Oliveira & Grácio, 2013, p. 15).

The first studies of the knowledge domain of Educational/Instructional Technology began with "socially constructed messages" and moved to the first journal articles and textbooks in the field (DeVaney & Butler, 1996, Section 1.2.4.2., Textual Sources). Study of the knowledge domain moved to the products of university programs, i.e. catalogs, textbooks, dissertations (Brufee, 1993; Caffarella, 2000; Ma, 2000; West, 2003; Carr-Chellman, 2006; and Sen, 2011). As the field began to grow, a number of investigations in the form of content analysis of field journals were conducted (Mayo, 1976; Torkelson, 1977; Anglin, Wagner, Adams & Unakhalu, 1999; Driscoll & Dick 1999; Klein, 1997; Masood 2004; West, 2003; Hew, Kale, & Kim, 2007; Gulbahar &

Alper, 2009; Hsu, et al., 2012; and West & Borup, 2014). During this time, other studies employing citation analysis were performed to offer a different perspective on the field of Educational/Instructional Technology (Anglin & Towers, 1992; Cho, et al., 2013; Gall, et al., 2010; and Kinshuck, Sampson, & Chen 2013). Only one study which attempted to visually map a related area of study, Distance Education, was discovered and included a cluster map of the cocitations with twelve focal points (Shimp, 2008).

New knowledge domains form as researchers find more methods to publish. Another domain, which provides a dataset for study is conference proceedings, though few studies consider the quality of this domain (Drott, 1995; Glanzel, et al. 2006; Lisee, Lariviere & Armchambault, 2008; and Visser & Moed, 2005). Conference proceedings are providing valuable information about the knowledge domain of other fields (Visser & Moed, 2005). Some studies of conference proceedings have been made in peripheral fields to Educational/Instructional Technology (Bunker, 1998; Chen & Carr, 1999; Pham, Klamma, Cao, & Jarke, 2011; Pham, Derntl, & Klamma, 2012), while only two studies with any methodology of the conference proceedings of the AECT, content analysis, has been made (Al-Saleh, 2000; Flynt, 2014). Conference proceedings provide a knowledge domain yet to be fully explored for the field of Educational/Instructional Technology. This study is therefore planned to provide a more comprehensive picture of the knowledge domain of Educational/Instructional Technology through “a combination of cocitation-based mapping, analysis of output (articles), and analysis of impact (citations)” (Archambault & Gagné, 2004, p.41).

Research Questions

This research investigated the following questions:

1. What researchers, main themes, individuals, institutions, and geographic areas of production have influenced instructional technology as evidenced in the conference proceedings of the AECT for the period 1979-2009 and what portion of the knowledge base may be derived from these analyses?

2. What authors, research, academic publications, and reference works may be identified through citedness in the conference proceedings of the AECT for the period 1979-2009 and what portion of the knowledge base may be derived from these analyses?

3. What intellectual structure may be identified through author co-citedness in the conference proceedings of the AECT for the period 1979-2009?

Chapter 3: Methodology

Librarians and policy makers have used bibliometrics for library collection building and management, and to the allocation of funding to further scientific development. Researchers attempt to "mathematically model certain regularities in textual or bibliographic statistical distributions" of the publication of research for a variety of functions, including the identification of knowledge structures such as disciplines (White and McCain, 1998, p. 336). During scientific activity, knowledge is created, and we may examine it for intellectual linkages in each knowledge domain for structure and future developments.

Bibliometric analysis begins with the collection of quantifiable data from an acquired data set. The data processing may require several sub-processes, which may include clustering, measuring significances of distributions, computing parameters, and mapping visual interpretations (Chen, 2003). Each analysis technique plays a different role in the examination of the bibliometric data and should be integrated to promote more meaningful and insightful analysis of the knowledge domain (Kim, 2012, p.13). Finally, the analyst must interpret the formulated data to draw conclusions from the results.

Bibliometric analysis allows the analyst to view the work of the researcher from multiple perspectives. The first view is that of the contributing researcher, their origins, and their choices of keyword descriptors of the published research in terms of productivity, which may indicate the developers, innovations, and research front of the domain over the course of time. The second view is from the shoulder of the researcher

to identify impact, where the analysis of cited documents provides a look at scholars, seminal works, academic publications, and geographic concentrations of the knowledge base of the domain. Author cocitation analysis, which is a further development in bibliometric analysis, provides a third view of the domain identifying the structure or communication between scientists, which "seeks to uncover the principle components of a domain; the relative importance of the components; the relatedness of the components, and how these three attributes of the domain have changed over time" (McIntire, 2006, p. 19).

Since the goal of the dissertation was to gain an understanding of the knowledge domain presented in the conference proceedings of the AECT, three data sets were collected to address the three views represented in the domain. Each data set was further subdivided into six chronological subsets (1979-1984, 1985-1989, 1990-1994, 1995-1999, 2000-2004, and 2005-2009) for discerning change over time. The length of the chronological subsets was made to "ensure that the [subsequent] analysis would be relevant…and yield reliable results" (Archambault & Gagné, 2004, p. 43).

Research Question 1

What researchers, main themes, individuals, institutions, and geographic areas of production have influenced instructional technology as evidenced in the conference proceedings of the AECT for the period 1979-2009 and what portion of the knowledge base may be derived from these analyses?

Sample

The sample (Data Set 1) included all complete papers published in the conference proceedings of the AECT during the years 1979-2009 and extracted bibliometric descriptive data.

Instruments

Data Set 1 was collected and segmented by publication year (1979-1984, 1985-1989, 1990-1994, 1995-1999, 2000-2004, and 2005-2009) into six custom databases.

Procedures

Data Set 1 was compiled from the primary sources—the papers themselves. The Annual Conference Proceedings of the AECT were made available on the organization's website, through the founding editors consulting firm's website, www.tresystems.com, and the ERIC database and were downloaded for the data collection. Descriptive data was collected about all complete papers appearing in the conference proceedings for the period, 1979-2009. The complete papers were referred to as the "citing documents". Figure 2 shows a sample of the layout of the citing documents databases that were developed for each chronological segment of Data Set 1.

Doc No	Author	A Title	A Dis	Inst Aff	Geo Area	Title	Keywords	NoCit
01031	Smith, T	Professor	Information Systems	NOVA	US-MS	A Case for Cocitation	Cocitation ACA bibliometrics	

Figure 2. Citing Documents Databases Sample

Descriptive data included:

- Doc No = The document number is a coded combination where the first two digits are indicative of the conference number (01), and digits three

through five indicate the citing document number (031).

- Author = Last name and initials, as provided by the citing document's author. Post name identifiers, such as Jr. and III. Were included where provided.
- A Title = Professional Title of the Author, as provided by the citing document's author.
- A Dis = Degree field or Reference Discipline of the Author, as provided by the citing document's author.
- Inst Aff = Institutional Affiliation of the Citing Document's Author, as provided by the citing document's author.
- GeoArea = Geographic area of Author, as provided by the citing document's author.
- Title = Title of citing document
- Keywords = Keyword Descriptors used to describe the citing document's focus as included by author, editor, or extracted from title.

All data was entered into a custom database. The conference papers were entered into the table in published order and numbered in that sequence. Bibliometric characteristics (document number, author name, author's discipline, author's institutional affiliation, author's geographic area, title of document, keyword descriptors, and number of citations) for each segment was computed. All authors were entered into the database. The relative eminence of publishing authors in the conference proceedings were determined in terms of citedness. Prominence of major institutions, reference disciplines

and geographic areas of production were traced through affiliations of publishing authors and determined in terms of citedness (raw counts). Descriptive statistics were reported.

Keyword descriptors and or the nouns from the titles of citing documents where keyword descriptors were not provided also were entered into the database to form a preliminary list. Counts (frequencies) of the keyword descriptors and/or title words were used to determine main themes, or research front. A word cloud of the keyword descriptors for the entire data set was created with Wordle, an online word cloud formation tool.

Limitations

Not all data about each individual author was available in the publication, and therefore, was excluded from the study.

Authors writing about similar topics may not have employed the same keyword descriptors to describe similar publications; therefore, keyword descriptors may not accurately describe similar publications.

Research Question #2

What research, academic publications, and reference works may be identified through citedness in the conference proceedings of the AECT for the period 1979-2009 and what portion of the knowledge base may be derived from these analyses?

Sample

The initial sample referred to as Data Set 2 included reference lists from all complete papers (citing documents) published in the conference proceedings of the

AECT for the period 1979-2009.

Instruments

Data Set 2 was collected and segmented by publication year (1979-1984, 1985-1989, 1990-1994, 1995-1999, 2000-2004, and 2005-2009) into six custom databases.

Procedures

Data was collected about the cited documents from all complete papers (with reference lists) appearing in the conference proceedings of the AECT for the period 1979-2009. All data were entered into a custom database. The cited documents in the conference papers were entered into the table in reference order and numbered in that sequence. The data set included all authors. Citation characteristics were collected. Figure 3 shows a sample of the layout of the cited documents databases that was developed for each segment of Data Set 2.

Doc No	Author	Pub Yr	Cited Doc Name	Doc Type	Source B or J
01031014	Smith, T	1985	A Case for Cocitation	Journal	J of Info Sci

Figure 3. Cited Authors Databases Sample

Descriptive data included:

- Doc No = The document number was a coded combination where the first two digits are indicative of the conference number (01), digits three through five indicate the citing document number (031), and digits six through eight indicate the cited document (014).
- Author = Last name and First initial of the cited author, as provided by the citing document's author

- Cit No = Position of the cited document in the list of citations of the citing document, as provided by the citing document's author.
- Pub Yr = Cited document's publication year, as provided by the citing document's author.
- Cited Doc Name = Title of cited document, as provided by the citing document's author.
- Doc Type = Document type of cited document. B = Book, J = Journal, C = Conference, D = Dissertation, T = Thesis, or O = Other noted document source.
- Source B, J = Name of Book or Journal in which cited document is published.

All citations, including self-citations were included. The relative eminence of cited authors within the cited documents was determined in terms of citedness. The core reference works and journals were determined in terms of citedness.

A comparative analysis of citing authors from Data Set 1 and cited authors from Data Set 2 was made to determine established and emerging scholars. Descriptive statistics were reported to indicate mean number of papers per conference per segment, mean citations per paper per segment, percentage of citations per document type, and percentage of citation age by decade. Descriptive statistics were reported.

Limitations

Not all reference works were cited correctly by citing authors, and therefore, the results may be affected.

Research Question #3

What intellectual structure may be identified through author co-citedness in the conference proceedings of the AECT for the period 1979-2009?

Sample

The sample included citing documents from authors with five or more citing documents within the Dataset 1. Cocitations was tabulated for authors with ten or more citations identified in Dataset 2.

Instruments

Data Set 3 were collected and segmented by publication year (1979-1984, 1985-1989, 1990-1994, 1995-1999, 2000-2004, and 2005-2009,) into six citation count worksheets and factored into six custom cocitation matrices.

Procedures

Author cocitation analysis (ACA) was conducted for each segment. The citing documents of authors with five or more authorships from Dataset 1 were divided into six data subsets and examined for ACA. Dataset 2 includes thousands of authors who have been cited only once within each data subset and many others with only marginally higher citation counts (frequencies). Author cocitation data was collected about the top cited authors with ten or more citations.

The most cited authors and their cocitations were used to create a visual representation of interconnectedness based on raw cocitation counts. An Excel spreadsheet was created for each segment of the data set constructing a chart of cited author counts (frequencies). A cocitation matrix was created for each data subset.

AUTHORS	**CITING DOCUMENTS**				
	001001	001002	001003	001004	001005
Apple	4				2
Benard		2		1	
Shepard			4		
Simonson	10				

Figure 4. Raw Cocitation Counts

Each row of the spreadsheet contained a name of one most cited authors in alphabetical order in the first column. When the author was cited in a document it was noted in the corresponding article column. Authors with no author cocitations were omitted from the dataset. The raw cocitation counts were converted into a correlation matrix. The author-author counts showed the relationship of authors cited in more than one document and the number of documents in which the authors were cited. The threshold of authors (five or more citations) from the cocitation matrix were entered into the correlation matrix. In the axis cell, the mean of the values for that author's co-citedness were entered.

AUTHORS	Apple	Benard	Shepard	Simonson	
Apple	121	16	25	66	
Benard	16	62.5	13	25	
Shepard	25	13	118	53	
Simonson	66	25	53		

Figure 5. Transposed Correlation Matrix

Each data subset matrices were then converted into an ARC list and saved as a Comma Delimited file (CSV) for input into the visualization software. Multi-dimensional visualizations of the cocitations in each segment were made with Gephi 9.2.1 software. The CSV output file for each data subset were imported into the software. Multivariate statistical analysis of the correlation matrices was made with the Yifan Hu algorithm. A composite map was graphed. Cocitation connections were displayed with weighted lines between the nodes, with a line weight scale set to five levels. Nodes were weight-sized

according to cocitation rate, with a node weight scale set to 1 to 100 degrees. A description of each node was made.

Limitations

Not all authors were cited correctly by citing authors, and therefore, the results may be affected.

All authors were considered equal with no distinction between primary author and secondary authors, and therefore, the results may be affected.

Summary

This methodology sought to describe and understand the field of Educational/Instructional Technology. An analysis of a knowledge domain, in this case the conference proceedings of the AECT, was made. To obtain a dynamic view of Educational/Instructional Technology, the study spanned a thirty-year period. Metadata was collected from the articles within the conference proceedings and descriptive statistics were formulated. Those descriptive statistics were used to conduct author cocitation analysis and domain mapping to form models of scientific growth and change which demonstrate evolution within the knowledge domain. Assumptions about the field of Educational/Instructional Technology were made based on the analyses.

Chapter 4: Findings

Bibliometrics allows the researcher "to identify significant patterns and frequencies of use over time" (Koshnick, 2013, p. 127). The conference proceedings of the Association for Educational and Communications Technology (AECT) was selected as a knowledge domain for analysis because it represented a sampling that was unique to Instructional/Educational Technology. This study examined a knowledge domain of Instructional/Educational Technology to determine the origins, the researchers, and contributors and their connections, and the development of ideas through the research front of Instructional/Educational Technology. Statistical data was collected from the conference proceedings and subjected to content analysis, author cocitation analysis, and multi-dimensional mapping to provide the origins, history, and development of Instructional/Educational Technology. Three research questions were considered:

1. What researchers, main themes, individuals, institutions, and geographic areas of production have influenced instructional technology as evidenced in the conference proceedings of the AECT for the period 1979-2009 and what portion of the knowledge base may be derived from these analyses?
2. What authors, research, academic publications, and reference works may be identified through citedness in the conference proceedings of the AECT for the period 1979-2009 and what portion of the knowledge base may be derived from these analyses?
3. What intellectual structure may be identified through author co-citedness in the conference proceedings of the AECT for the period 1979-2009?

The research design included three different methodologies: content analysis, citation

analysis, and multi-dimensional mapping through author cocitation. This chapter provides a descriptive summary of the conducted analyses.

Description of AECT Conference Proceedings Papers

To begin a description of the knowledge domain, descriptive statistics were collected. The first research question asked, "What researchers, main themes, institutions, and geographic areas of production, have influenced instructional technology as evidenced in the conference proceedings of the AECT for the period 1979-2009 and what portion of the knowledge base may be derived from these analyses?" Descriptive statistics (frequency counts) of all authors and their published documents in the conference proceedings of the AECT from 1979 through 2009 were collected.

The conference proceedings were grouped into six chronological subsets (1979-1984, 1985-1989, 1990-1994, 1995-1999, 2000-2004, and 2005-2009) for discerning change over time. The total number of published papers, 2,353 documents, were examined in these chronological subsets. Table 1 summarizes the conference proceedings by year, the location of the conferences, and the number of documents per year.

Table 1

Association for Educational Communications and Technology Conference Proceedings by Year

Conf. No.	Year	Location	No. of Documents
1	1979	New Orleans	32
2	1980	Denver	31
3	1981	Philadelphia	31
4	1982	Dallas	47
5	1983	New Orleans	35
6	1984	Dallas	31
7	1985	Anaheim	44
8	1986	Las Vegas	47
9	1987	Atlanta	47
10	1988	New Orleans	50
11	1989	Dallas	46
12	1990	Anaheim	47
13	1991	Orlando	58
14	1992	Washington, D. C.	74
15	1993	New Orleans	73
16	1994	Nashville	76
17	1995	Anaheim	67
18	1996	Indianapolis	77
19	1997	Albuquerque	56
20	1998	St. Louis	55
21	1999	Houston	65
22	2000	Long Beach & Denver	137
23	2001	Atlanta	163
24	2002	Dallas	126
25	2003	Anaheim	136
26	2004	Chicago	211
27	2005	Orlando	143
28	2006	Dallas	108
29	2007	Orlando	93
30	2008	Orlando	51
31	2009	Louisville	96

Note. Two conferences were held in 2000. These were treated as one and appear as conference no. 22.

The conference proceedings demonstrate a relative steady growth in publication with a surge in publication during the first decade of the 21st century. Figure 6 shows this growth in publication through the number of published papers within the conference proceedings.

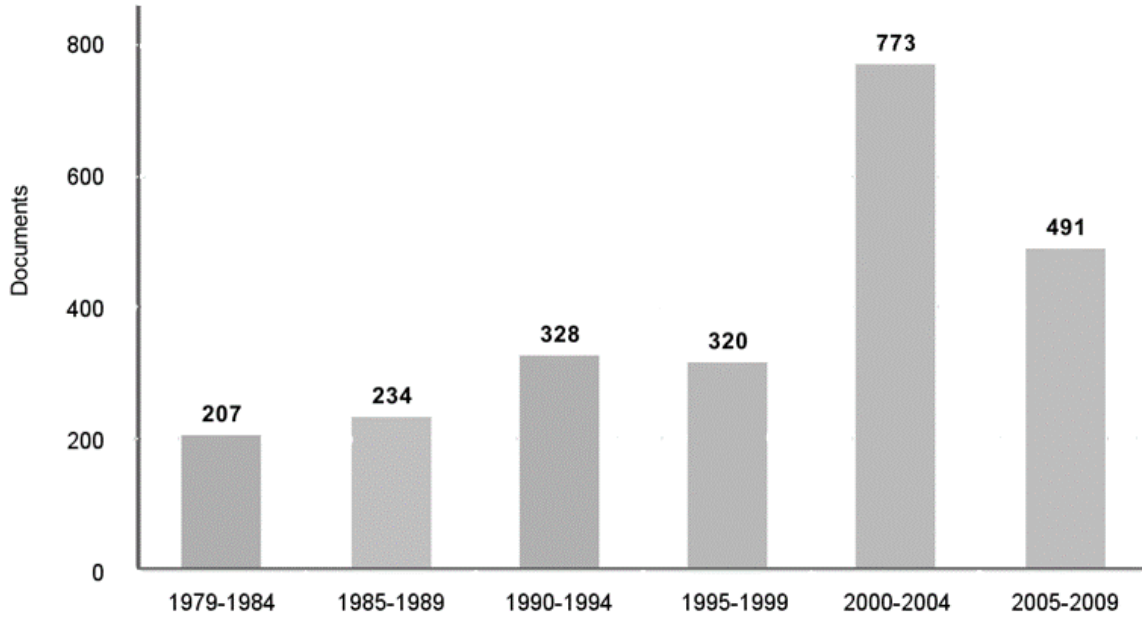


Figure 6. Summary of document counts by Data Subset.

Data Subset 1979-1984

Assuming the Data Subset represented the typical writings and research of Instructional/Educational Technology from 1979 to 1984 as represented in the knowledge domain presented in the published AECT Conference Proceedings, 207 citing documents were examined in the first subset. Table 2 summarizes the keyword descriptors taken from the Cumulative Index 1979-1983 found in 1986 Conference Proceedings of the

AECT. Research appears to be the chief concern as indicated by the descriptors reported in the fist data subset. Visual aspects of instruction and learning are prevalent throughout the main themes of this period.

Table 2

Data Subset 1979-1984 Main Themes (Keyword Descriptors) Determined by Frequency

Variable	All Articles *n = 207*
Research	29 (14%)
Pictorial Research	19 (9%)
Instructional Design	18
Cognitive Styles	17
Attitudes	16
Learning	15
Visualization	15
Behavioral Objectives	13
Computers	13
Instructional Effect	11
Theory	10
Color	9
Evaluation	9
Achievement	8
Comprehension	8
Computer Assisted Instr.	7
Field Dependence/Independence	7
Instructional Media	7
Visualized Instruction	7
Aptitude	6
Encoding	6
Persuasion	6
Retention	6
Teleconference	6
Television	6
Testing	6
Educational Technology	5
Field Dependence	5
Illustrations	5
Imagery	5
Media Techniques	5
Media Utilization	5
Naturalistic Inquiry	5
Task Analysis	5
Time-Compressed Speech	5
Visual Testing	5

Note: Complete list in Appendices.

Authorship production was tabulated, and Table 3 shows the distribution of authors and their authorship. Approximately 75% of authors produced 141 authorships or 46% of authorship in this data subset. Ten authors produced five or more authorships within the subset or 5% of authorship. These ten authors represent 22% of the total document production within this subset responsible for authoring 68 papers within the subset. F.M. Dwyer (12) from Pennsylvania State University produced the most documents within the subset followed M. R. Simonson (9) from Iowa State University.

Table 3

Data Subset 1979-1984 Author Production

Variable	All Authors n=189	All Authorships n=306
5 or more Authorships	10 (5%)	68 (22%)
2 to 4 Authorships	37 (20%)	97 (32%)
1 Authorship	141 (75%)	141 (46%)

Table 4

Data Subset 1979-1984 Individual Authors with ≥5 Authorships.

Variable	All Authorships n=306
Dwyer, F. M.	12 (6%)
Simonson M. R.	9 (4%)
Canelos, J.	8 (4%)
Hannafin, M. J.	8 (4%)
Winn, W. D.	6 (3%)
Berry, L. H.	5 (2%)
Jonassen, D. H.	5
Joseph, J. H.	5
Lamberski, R.	5
Taylor, W.	5

Note: Complete list in Appendices.

Approximately 50% of authors within the subset included an individual position descriptor on the title page of their submitted papers as shown in Table 5. “Assistant Professor” (14%), “Associate Professor” (10%), and “Professor” (10%) were the most reported descriptors.

Table 5

Data Subset 1979-1984 Individual Position Descriptions Determined by Frequency

Variable	All Authorships N=306
Assistant Professor	43 (10%)
Professor	13 (4%)
Director	11 (4%)
Research Associate	11 (4%)
Graduate Student	6 (2%)
Coordinator	5

Note: 147 of 306 authors or 50% of Authorship reported individual position descriptors. Complete list in Appendices.

Table 6 includes the author’s reference disciplines. Authors were more apt to report the reference to which they were affiliated. More than half of the authorship (66%) listed departmental affiliation and these affiliations were measured by frequency to identify associated disciplines. “Education” was identified by 18% of authorship as reference discipline followed by “Educational Technology” (9%) and “Curriculum & Instruction” (4%). Most affiliations of authorship in this subset are related to Education departments within colleges and universities.

Table 6

Data Subset 1979-1984 Reference Disciplines Determined by Frequency

Variable	All Authorships n=306
Education	55 (18%)
Educational Technology	29 (9%)
Curriculum & Instruction	13 (4%)
Medicine	11 (4%)
Instructional Technology	10 (3%)
Secondary Education	7
Educational Comm. & Tech.	6
Engineering	5
Library & Information Science	5

Note: 201 of 306 authors or 66% of authorship reported individual reference discipline. Complete list in Appendices.

In Table 7, 252 authors reported an insitutional affiliation in higher education in the representing 63% of the authorship of the subset with institutions located mainly in the United States. Pennsylvania State University topped the list representing 11% of authorship of the subset. Arizona State University followed representing 8% of authorship of the subset. International authors represented 10% of the subset with authorships from Canada, Australia, Brazil, United Kingdom, and Egypt. Corporate authors in the United States represented 5% of the subset.

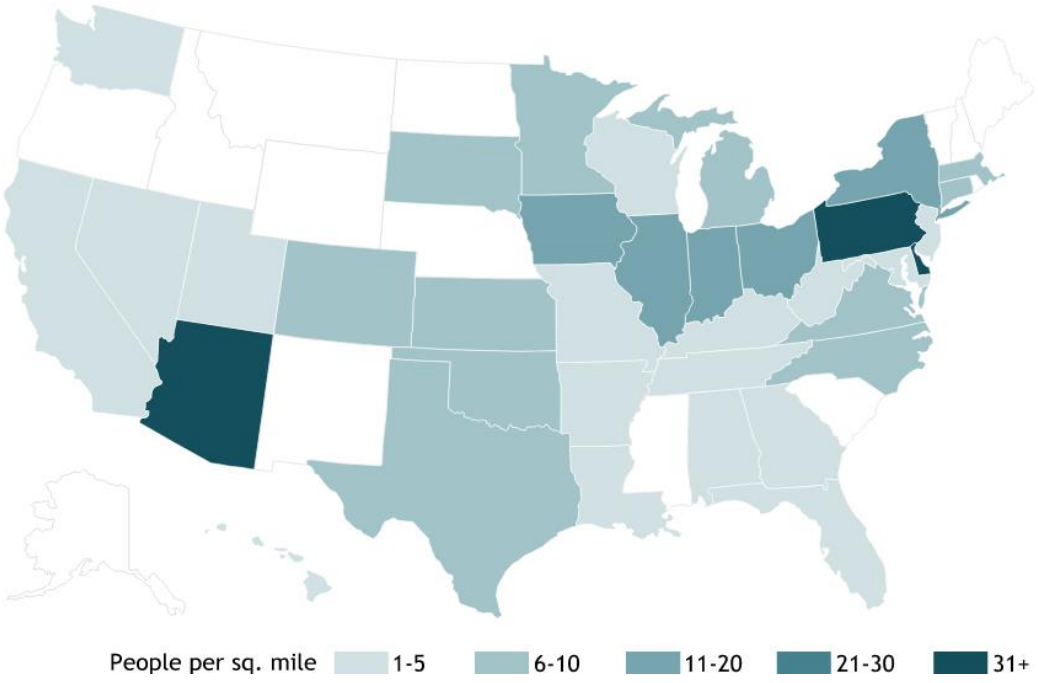
Table 7

Data Subset 1979-1984 Contributing Institutions by Authorship Determined by Frequency

Variable	All Authorships N=306
Pennsylvania State University	34 (11%)
Arizona State University	25 (8%)
Indiana University (Illinois)	11 (4%)
Iowa State University	11 (4%)
University of Calgary	9
Ohio State University	8
University of Colorado	7
Northern Illinois University	6
Texas A&M University	6
University of Pittsburgh	6
University of South Dakota	6
University of Wisconsin	6
Boston University	5
Concordia University	5
Syracuse University	5
University of Kansas	5
University of Maryland	5
University of Minnesota	5
University of North Carolina	5
Virginia Polytechnic Institute	5

Note: 252 of 306 authors or 63% of authorship reported Institutional Affiliation. Complete list in Appendices.

Figure 7 shows a saturation map of the United States according to author productivity for the data subset. A strong concentration of authorships was located in the rustbelt and the southwest of the United States. A majority, 92% of contributors originated in higher education as shown in Table 8.



Data Subset 1979-1984 State Saturation of Author Productivity

Figure 7. Areas of the United States where author productivity is saturated. Saturations determined by reported geographic area of author production.

Table 8

Data Subset 1979-1984 Performance Setting of Authorship Determined by Frequency

Variable	All Authorships n=306
Higher Education	252 (92%)
International	30 (10%)
Corporate	15 (5%)
K-12	7 (2%)
Government/Military	4
Health	1

Note: Determined from Reference Discipline and Institutional Affiliation reports.

Data Subset 1985-1989

Assuming the Data Subset represented the typical writings and research of Instructional/Educational Technology from 1985 to 1989 as represented in the knowledge

domain presented in the AECT Conference Proceedings, 234 citing documents were examined in the second subset. Keyword descriptors were provided in a keyword index for 1985-1988 conference proceedings. Keyword descriptors from the 1989 conference proceedings were missing from the archived copy of the proceedings; therefore, keyword descriptors were extracted from the titles of the documents in the proceedings. Extraction was made based on similarity to other keywords within the subset. No interpretive keyword extraction was made. Table 9 summarizes the keyword descriptors collected and extracted from the subset. “Computer Based Instruction” appears to be the main theme as indicated by the keyword descriptors. The majority of keyword descriptors focus on some aspect of computers within instructional practice.

Table 9

Data Subset 1985-1989 Main Themes (Extracted Keyword Descriptors) Determined by Frequency

Variable	All Articles *n=234*
Computer-Based Instruction	*55 (24%)*
Computers	22 (9%)
Computer-Assisted Instr.	21
Research	20
Feedback	14
Learning Strategies	14
Cognitive Style	13
Television	13
Practice	11
Teachers	11
Educational Technology	10
Persuasion	10
Attitude	9
Computer Display	9
Screen Design	9
Equity	8
Ethics	8
Problem Solving Skills	8
Recall	8
Effect	7
Learning Styles	7
Motivation	7
Videodisc	7
Cognition	6
Schema Theory	6
Theory	6
Video	6
Apple Center of Tomorrow	5
CBI Screen Design	5
Learner Control	5
Pacing	5
Perception	5

Note*:* Complete list in Appendices.

Authorship production was tabulated gor the 1985-1989 Data Subset, and Table 10 shows the distribution of authors and their authorship. Approximately 74% of authors

produced 176 authorships or 45% of authorship in this data subset. Sixteen authors produced five or more authorships within the subset or 7% of authorship. Sixteen authors represented 28% of the total document production within this subset responsible for authoring 111 papers within the subset. M. J. Hannafin (10) from Pennsylvania State University produced the most documents within the subset followed J. C. Belland (8) from Ohio State University as shown in Table 11.

Table 10

Data Subset 1985-1989 Author Production

Variable	All Authors n=237	All Authorships n=394
5 or more Authorships	16 (7%)	111 (28%)
2 to 4 Authorships	45 (19%)	107 (27%)
1 Authorship	176 (74%)	176 (45%)

Table 11

Data Subset 1985-1989 Individual Authors with ≥ 5 Authorships Determined by Frequency

Variable	All Authorships n=394
Hannafin, M. J.	10 (3%)
Belland, J. C.	8 (2%)
Rieber, L. P.	8
Ross, S. M.	8
Taylor, W. D.	8
Canelos, J.	7
Dwyer, F. M.	7
Jonassen, D. H.	7
Morrison, G. R.	7
Smith, P. L.	7
Tennyson, R. D.	7
Dalton, D. W.	6
Grabinger, R. S.	6
Baker, P. R.	5
Simonson, M. R.	5
Winn W. D.	5

Note: Complete list in Appendices.

Approximately, 38% of authors within the subset included an individual position descriptor on the title page of their submitted papers, as shown in Table 12. “Professor” (10%), “Associate Professor” (6%), and “Assistant Professor” (5%) continue to be the most reported descriptors.

Table 12

Data Subset 1985-1989 Individual Position Descriptions Determined by Frequency

Variable	All Authorships n=394
PROFESSOR	40 (10%)
ASSOCIATE PROFESSOR	25 (6%)
ASSISTANT PROFESSOR	18 (5%)
DIRECTOR	8 (2%)
DOCTORAL CANDIDATE	5

Note: 150 of 394 authors or 38% reported individual position descriptors. Complete list in Appendices.

Table 13 includes the authors' reference disciplines. Reference disciplines were reported by 73% of authors and these disciplines were counted to identify associated disciplines. "Education" was reported by 27% of authors as their discipline followed by "Curriculum and Instruction" (11%) and "Communication Arts" (8%). Most affiliations of authors in this subset were related to Education departments within colleges and universities.

Table 13

Data Subset 1985-1989 Reference Disciplines Determined by Frequency

Variable	All Authorships n=394
Education	78 (27%)
Curriculum & Instruction	31 (11%)
Communication Arts	22 (8%)
Instructional Technology	22 (8%)
Educational Technology	22 (8%)
Research & Dev. In Ed. Comp.	19 (7%)
Educational Research	15 (5%)
Res. On Learning & Teaching	14 (5%)
Needs Assessment & Plan.	10 (3%)
Engineering	7 (2%)
Instructional Systems Technology	5

Note: 290 of 394 authors or 73% of authorships reported individual reference discipline. Complete list in Appendices.

In Table 14, 377 authors reported an institutional affiliation in higher education representing 95% of the authors of the subset with institutions located mainly in the United States. Pennsylvania State University continued to top the list with 37 authors representing 9% of authorship of the subset. Ohio State University followed with 27 authors representing 7%, Florida Sate University and Memphis State University with 25 authors representing 6% of authorship of the subset respectively. International affiliations represented less than 1% of the authorship, with authors from Canada, Australia, and

Scotland. Corporate authors in the US represented 3% of the subset.

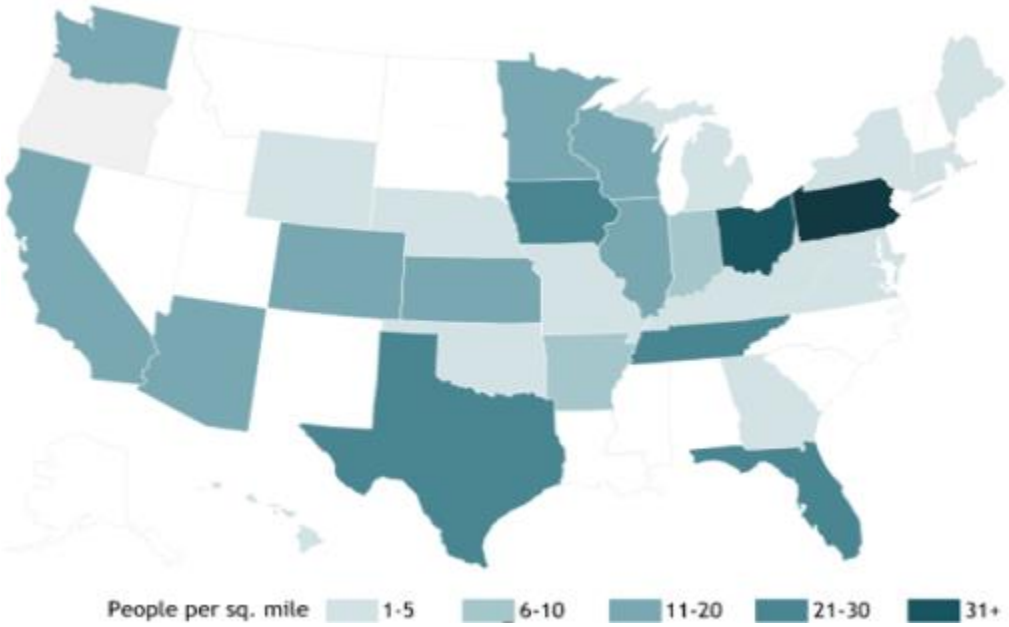
Table 14

Data Subset 1985-1989 Contributing Institutions Determined by Frequency

Variable	All Authorships n=394
Pennsylvania State U	37 (9%)
Ohio State University	27 (7%)
Florida State University	25 (6%)
Memphis State University	25 (6%)
University of Wisconsin	16 (4%)
Iowa State University	12 (3%)
University of Colorado	11 (3%)
University of Texas	11 (3%)
Indiana University	10 (2%)
Indiana University of Pa	10
Northern Illinois University	10
University of Washington	10
Arizona State University	9
Syracuse University	9
University of Minnesota	9
University of Kansas	8
Texas A&M University	7
San Diego State University	6
Kent State University	5
Southern Illinois University	5
University of Arkansas	5

Note: 377 of 394 authors or 95% of authorships reported Institutional Affiliation. Complete list in Appendices.

Figure 8 shows a saturation map of the United States according to author productivity for the data subset. While the Rustbelt continued to have a strong concentration of authorships, other areas of the country began to establish strong authorship bases. A majority, 90% of contributors originated in higher education as shown in Table 15.



Data Subset 1985-1989 State Saturation of Author Productivity

Figure 8. Areas of the United States where author productivity is saturated. Saturations determined by reported geographic area of author production.

Table 15

Data Subset 1985-1989 Performance Setting of Authorship Determined by Frequency

Variable	All Authorships n=394
Higher Education	351 (89%)
Corporate	13 (3%)
International	8 (2%)
K-12	5

Note: Determined from Reference Discipline and Institutional reports.

Data Subset 1990-1994

Assuming the Data Subset represented the typical writings and research of Instructional/Educational Technology from 1990 to 1994 as represented in the knowledge domain presented in the AECT Conference Proceedings, 328 citing documents were examined in the third subset. By the 1990's, the main themes of Instructional/Educational Technology as represented in the conference proceedings of the AECT have become grounded in the terminology of the profession. "Instructional Design" tops this list followed by "Computer Based Instruction" and "Distance Education". The main themes focused on how computers may be used in education and what should be considered in the research for this practice. Table 16 summarized the keyword descriptors extracted of the 328 citing documents from the subset. Extraction was made based on similarity to other keywords within the subset. No interpretive keyword extraction was made.

Table 16

Data Subset 1990-1994 Main Themes (Keyword Descriptors) Determined by Frequency

Variable	All Articles n=328
Instructional Design	42 (13%)
Computer Based Instruction	32 (10%)
Distance Education	23 (7%)
Instructional Strategies	16
Learner Control	16
Feedback	15
Research	15
Metacognition	14
Channel One	13
Computer Assisted Instr.	13
Learning Styles	11
Expert Systems	10
Hypermedia	10
Instructional Development	10
Adult Education	9
Cognitive Style	9
Computer Simulations	9
Educational Technology	9
Motivation	9
Telecommunications	9
Tutoring	9
Constructivist Design	8
Critical Theory	8
Ethics	8
Interactive Videodisc Instr.	8
Case Based Instruction	7
Collaborative Learning	7
Computers	7
Information Processing	7
Instructional Technology	7
Interactive Video	7
Learning Strategies	7
School Restructuring	7

Note: Complete list in appendices.

Authorship production was tabulated, and Table 17 shows the distribution of authors and the authorship for the subset. Approximately 71% of authors produced 278 authorships or 45% of authorship in this data subset. Sixteen authors produced five or more authorships within the subset or 4% of authorship and represented 16% of the total document production responsible for authoring 101 papers within the subset. N. N. Knupfer (10) from Kansas State University produced the most documents within the subset followed J. D. Klein (9) from Arizona State University.

Table 17

Data Subset 1990-1994 Author Production

Variable	All Authors n=393	All Authorships n=618
5 or more Authorships	16 (4%)	101 (16%)
2 to 4 Authorships	99 (25%)	239 (39%)
1 Authorship	278 (71%)	278 (45%)

Table 18

Data Subset 1990-1994 Individual Authors with ≥ 5 Authorships Determined by Frequency

Variable	All Authorships n=618
Knupfer, N. N.	10 (2%)
Klein, J. D.	9
Jonassen, D. H.	8
Wilson, B. G.	8
Cole, P.	7
Grabowski, B. L.	7
Januszewski, A.	6
Ross, S. M.	6
Berry, L. H.	5
Bohlin, R. M.	5
Koetting, J. R.	5
McIsaac, M. S.	5
Muffoletto, R.	5
Orey, M. A.	5
Rieber, L. P.	5
Yeaman, A. R. J.	5

Note: Complete list in Appendices.

Only 8% of authors reported their position on the title pages of their papers in 1990-1994 Data Subset as shown in Table 19. “Associate Professor” (5%) and “Professor” (2%) top the list of position descriptors.

Table 19

Data Subset 1990-1994 Individual Position Descriptors Determined by Frequency

Variable	All Authorships n=618
Associate Professor	31 (5%)
Professor	13 (2%)
Coordinator	3
Media Specialist	1
Project Manager	1
Superintendent	1

Note: 50 of 618 authors or 8% reported individual position descriptors.

Table 20 includes the author's reference disciplines. 30% of authors listed their departmental affiliation and these affiliations were measured by frequency to identify associated disciplines. "Education"(7%) continued as the top identified discipline followed by "Instructional Technology" and "Learning and Instructional Technology". Most affiliations of authors in this subset, as in others, continued to relate to Education departments, schools, or units with more emphasis on units.

Table 20

Data Subset 1990-1994 Reference Disciplines with ≥ 5 Reports Determined by Frequency

Variable	All Authorships n=618
Education	48 (8%)
Instructional Technology	17 (3%)
Learning & Instr. Technology	13 (2%)
Educational Technology	11
Teachers College	10
Curriculum and Instruction	6
Educ. Media & Computers	5
Instr. Design & Technology	5

Note: 186 of 618 authors or 30% reported individual reference disciplines. Complete list in Appendices.

Institutional affiliation was reported by 391 authors related to higher education and represented 63% of the authorship of the subset with instiutions located mainly in the United States. Arizona State University topped the list with 36 authorships representing 6% of the subset. University of Colorado followed with 31 authors representing 5% of authors of the subset.

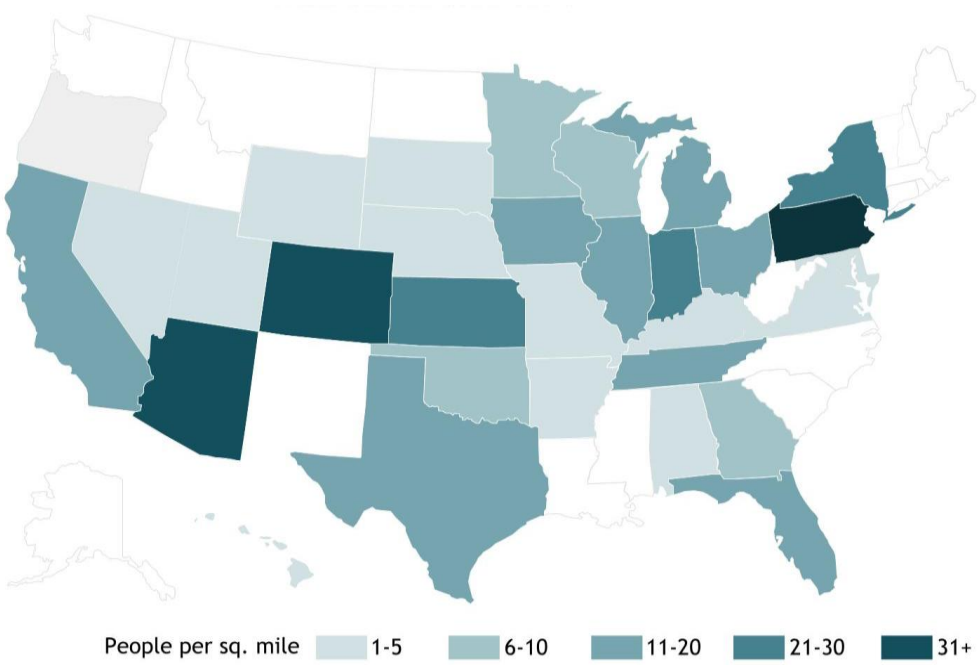
Table 21

Data Subset 1990-1994 Contributing Institutions Determined by Frequency

Variable	All Authorships n=618
Arizona State University	36 (6%)
University of Colorado	31 (5%)
Indiana University	17
Memphis State University	14
Pennsylvania State U.	14
Kansas State University	12
Southern Illinois University	11
Columbia University	10
Syracuse University	9
University of Kansas	9
Florida State University	8
Lehigh University	8
University of Minnesota	8
University of Oklahoma	8
University of Wisconsin	8
Ohio State University	7
University of Georgia	7
University of Pittsburgh	7
California State University	6
Iowa State University	6
Purdue University	6
Texas A&M University	6
University of Northern Iowa	6
University of South Alabama	6
Michigan State University	5
San Diego State University	5
San Jose State University	5
University of Nevada	5
Yeaman and Associates	5

Note: 391 of 618 authors or 63% of authorship reported contributing institutions. Complete list in Appendices.

Figure 9 shows a saturation map of the United States according to author productivity for the 1990-1994 Data Subset. This subset demonstrates a disbursement of concentration of authorship throughout the United States Only 63% of contributing authorships reported institutional affiliation and, of those authorships, 59% originated in higher education as shown in Table 22.



Data Subset 1990-1994 State Saturation of Author Productivity

Figure 9. Areas of the United States where author productivity is saturated. Saturations determined by reported geographic area of author production.

Table 22

Data Subset 1990-1994 Performance Setting of Authorship Determined by Frequency

Variable	All Authorships N=618
HIGHER EDUCATION	363 (59%)
CORPORATE	11 (2%)
INTERNATIONAL	11
K-12	4
GOVERNMENT/MILITARY	1

Note: Determined from Reference Discipline and Institutional Reports.

While international authors represented less than 1% of the authorship, authors from around the world participated within this subset with authors from Australia, Canada, Brazil, The Netherlands, Palestine, the Philippines, and Taiwan. Reported corporate authorships in the United States represented 2% of the subset.

Data Subset 1995-1999

Assuming the Data Subset represented the typical writings and research of Instructional/Educational Technology from 1995 to 1999 as represented in the knowledge domain presented in the AECT Conference Proceedings, 320 citing documents were examined in the fourth subset. Table 23 summarizes the keyword descriptors extracted from the subset. Extraction was made based on similarity to other keywords within the subset. No interpretive keyword extraction was made. “Instructional Design” was the most reported keyword descriptor followed by “Computer Based Instruction”. The “Internet” was the next keyword identified in the subset which may have coincided with technological developments with society.

Table 23

Data Subset 1995-1999 Main Themes (Keyword Descriptors) Determined by Frequency

Variable	All Articles n=320
Instructional Design	36 (5%)
Computer Based Instruction	17 (2%)
Internet	16
Distance Education	15
Educational Technology	15
Critical Perspectives	11
Gender	8
High School Mathematics	7
Web Based Instruction	7
Constructivism	6
Learning Environments	6
Cognitive Task Analysis	5
Constructivist Materials	5
Higher Education	5
Hypermedia	5
Info. Processing Strategies	5
Instructional Television	5
Problem Based Learning	5
Teaching	5
Theory	5
Video	5
Visual Communication	5
World Wide Web	5

Note: Complete list in Appendices.

Authorship production was tabulated, and Table 24 shows the distribution of authors and their authorship. Approximately 74% of authors produced 345 authorships or 46% of authorship in this data subset. Thirteen authors produced five or more authorships within the subset or 3% of authorship. These 13 authors represent 12% of the total document production responsible for authoring 82 papers within the subset. N. N. Knupfer (12) from Kansas State University produced the most documents within the

subset followed by H. L. Schnackenberg (8) from Arizona State University.

Table 24

Data Subset 1995-1999 Author Production

Variable	All Authors n=464	All Authorships n=679
5 or more Authorships	13 (3%)	82 (12%)
2 to 4 Authorships	106 (23%)	252 (37%)
1 Authorship	345 (74%)	345 (51%)

Table 25

Data Subset 1995-1999 Individual Authors with ≥ 5 Authorships Determined by Frequency

Variable	All Authorships N=679
Knupfer, N. N.	12 (2%)
Schnackenberg, H. L.	8
Cennamo, K. S.	7
Januszewski, A.	7
Land, S. M.	7
Marcinkiewicz, H. R.	6
Hannafin, M. J.	5
Harvey, F. A.	5
Jones, M. G.	5
Klein, J. D.	5
Moallem, M.	5
Small, R. V.	5
Wilson, B. G.	5

Note: Complete list in Appendices.

Approximately 14% of authorships within the subset included an individual position descriptor on the title page of the submitted papers as shown in Table 26. “Assistant Professor” (4%), “Associate Professor” (3%), and “Graduate Student” (2%) were the most reported descriptors.

Table 26

Data Subset 1995-1999 Individual Position Descriptions Determined by Frequency

Variable	All Authorships n=679
Assistant Professor	26 (4%)
Associate Professor	18 (3%)
Graduate Student	15 (2%)
Professor	12

Note: 93 of 679 Authors or 14% of Authorships reported individual position descriptions.

Table 27 includes the authors' reference disciplines Authors were less apt to report the reference discipline to which they were affiliated with 52% reporting. "Education" continued to top the list at 15%, followed by "Instructional Systems Technology" and "Instructional Technology". Most authorships continue to be affiliated with higher education settings.

Table 27

Data Subset 1995-1999 Reference Disciplines Determined by Frequency

Variable	All Authorships N=679
Education	100 (15%)
Instructional Systems Technology	36
Psychology in Education	22
Ed. Computing & Instr. Development	21
Educational Psychology	8
Educational Science & Technology	8
Instructional Systems	8
Information Studies	8
Teachers College	8
Curriculum & Instruction	6
Educational Technology	6
Learning & Instruction Technology	6
Lifelong Learning & Instruction	6
Agricultural Education & Studies	5
Education & Human Services	5

Note: 351 of 680 Authorships or 52% of Authorship reported individual reference discipline. Complete list in Appendices.

In the subset, 661 authorships reported an institutional affiliation in higher education representing 98% of the authorships of the subset with institutions located mainly in the United States. University of Hawaii (10) tops the list with the University of Colorado (9), the University of Memphis (9), the University of North Carolina (9), and the University of Oklahoma. International authors represented 10% of the authorship of the subset with 50 authors from countries around the world including Taiwan, The Netherlands, South Korea, Australia, Canada, Guam, Portugal, France, Germany, Israel, Nigeria, and Palestine. Corporate authors represented 4% of the subset.

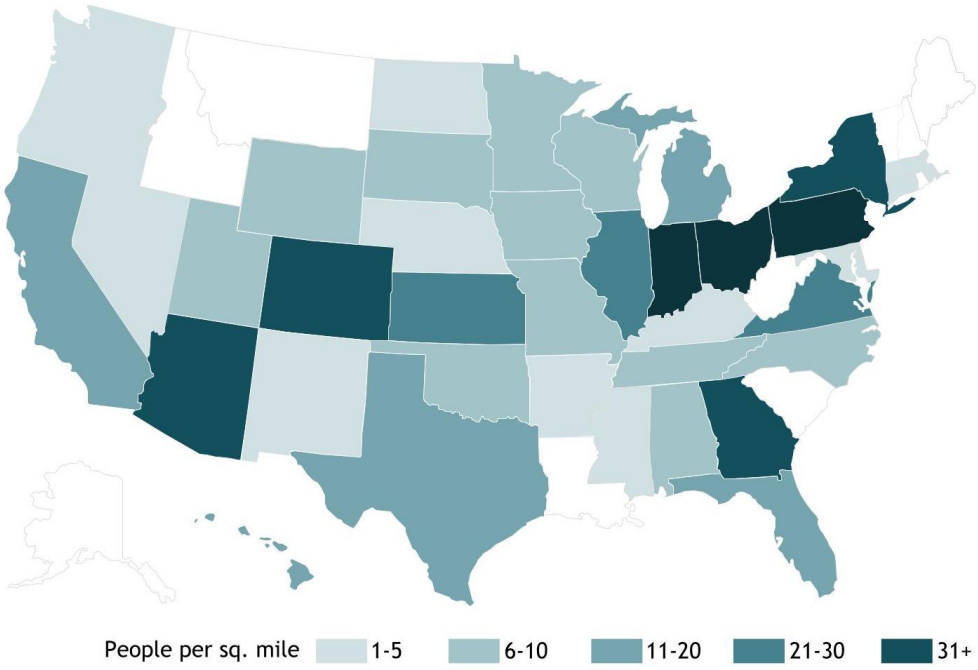
Table 28

Data Subset 1995-1999 Contributing Institutions Determined by Frequency

Variable	All Authorships N=679
University of Hawaii	10
University of Colorado	9
University of Memphis	9
University of North Carolina	9
University of Oklahoma	9
Columbia University	8
Florida State University	7
University of Missouri	7
Wayne State University	7
California State University	7
Iowa State University	6
Storage Technology Corp.	6
University of Connecticut	6
University of Minnesota	6
University of Virginia	6
University of Wyoming	6
Kent State University	5
Kutztown University	5
San Diego State University	5
Tamkang University	5
University of Central Florida	5
University of Wisconsin	5
Utah State University	5

Note: Complete lists in Appendices.

Figure 10 shows a saturation map of the United States according to author productivity for the 1995-1999 Data Subset. Authorship within the subset has been more distributed across the United States with strong concentrations that continued in the Rustbelt, the Southwest, and some Southern states. Only 50% of contributing authorships reported institutional affiliation, and of those authorships, 37% originated in higher education as shown in Table 29.



Data Subset 1995-1999 State Saturation of Author Productivity

Figure 10. Areas of the United States where author productivity is saturated. Saturations determined by reported geographic area of author production.

Table 29

Data Subset 1995-1999 Performance Setting of Authorship Determined by Frequency

Variable	All Authorships N=679
Higher Education	232 (37%)
International	50 (8%)
Corporate	28 (4%)
K-12	7
Government/Military	4
Health	2

Note: Determined from Reference Discipline and Institutional Reports

Data Subset 2000-2004

Assuming the Data Subset represented the typical writings and research of Instructional/Educational Technology from 2000 to 2004 as represented in the knowledge domain presented in the AECT Conference Proceedings, 773 citing documents were examined in the fifth subset. Table 30 summarizes the keyword descriptors extracted from the subset. Keywords were provided in the conference proceedings for the years 2000 through 2003, but no keywords were supplied in the 2004 conference proceedings. Therefore, keywords were extracted from the titles of the articles. Extraction was made based on similarity to other keywords within the subset. No interpretive keyword extraction was made. "Instructional Design" tops the list of keyword descriptors followed by "Technology Integration" and "Distance Education". The main themes of the subset focus on less on the technology tool and more on the process of learning.

Table 30

Data Subset 2000-2004 Main Themes (Extracted Keyword Descriptors) Determined by Frequency

Variable	All Articles n=773
Instructional Design	14 (2%)
Technology Integration	13
Distance Education	10
Problem Based Learning	10
Teacher Education	9
Collaborative Learning	8
Distance Learning	8
Preservice Teachers	8
Instructional Technology	7
Motivation	7
Self Efficacy	7
Web Based Instruction	7
Case Studies	6
Online Discussion	6
Problem Solving	6
Self Regulated Learning	6
Simulations	6
Computer Mediated Comm	5
Human Performance Technology	5
Online Learners	5
Online Learning	5
Research	5

Note: Complete list in Appendices.

Authorship production was tabulated, and Table 31 shows the distribution of authors and their authorship. Approximately 69% of authors produced 635 authorships or 43% of authorship in this data subset. Twenty-seven authors produced 5 or more authorships within the subset or 3% of authorship. These 27 authors represent 13% of the total document production within this subset responsible for authoring 188 papers within the subset. J. D. Klein (11) from Arizona State University produced the most documents within the subset followed by W. C. Savenye (10), also from Arizona State University.

Table 31

Data Subset 2000-2004 Author Production

Variable	All Authors n=918	All Authorships n=1470
5 or more Authorships	27 (3%)	188 (13%)
2 to 4 Authorships	256 (28%)	647 (44%)
1 Authorship	635 (69%)	635 (43%)

Table 32

Data Subset 2000-2004 Individual Authors with ≥ 5 Authorships

Variable	All Authorships N=1470
Klein, J. D.	11
Savenye, W. C.	10
Johnson, T. E.	9
Koszalka, T. A.	9
Ku, H. Y.	9
Park, S. H.	9
Tuzun, H.	9
Cifuentes, L.	8
Dwyer, F. M.	8
Ertmer, P. A.	8
Frick, T. W.	8
Grabowski, B. L.	8
Javeri, M.	7
Maushak, N. J.	7
Cornell, R.	6
Kim, K. J.	6
Yu, B. M.	6
Bollinger, D. U.	5
Bray, M.	5
Mazur, J. M.	5
Schaffer, S. P.	5
Schnackenberg, H. L.	5
Shoffner, M. B.	5
Varank, I.	5
Verhagen, P. W.	5
Wang, C. X.	5
Winograd, D. M.	5

Note: Complete list in Appendices.

Individual position descriptors and reference disciplines were not included on the title page of the submitted papers for the 2000-2004 Data Subset. Most authorships continues to be affiliated with higher education settings. In the subset, 1,434 authorships reported an institutional affiliation in higher education representing 98% of the authorships of the subset with institutions located mainly in the United States. Indiana University (179) topped the list followed by Arizona State University (103) and Pennsylvania State University (103). International authors represented 9% of the authorship of the subset with 131 authors from countries around the world including Taiwan, The Netherlands, South Korea, Australia, Canada, Guam, Portugal, France, Germany, Israel, Nigeria, and Palestine. Corporate authors represented 3% of the subset.

Table 33

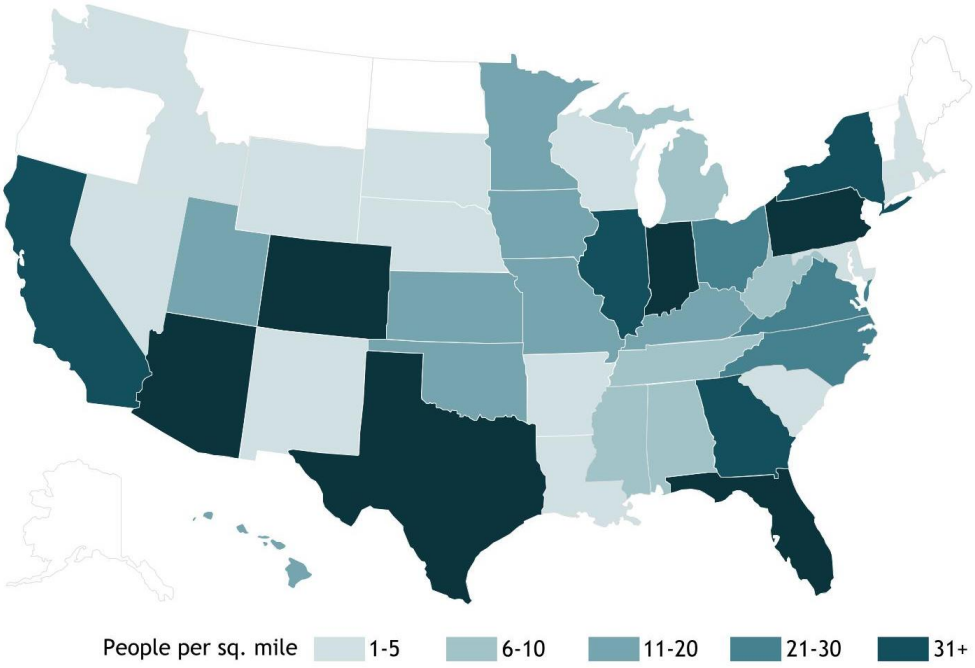
Data Subset 2000-2004 Contributing Institutions Determined by Frequency

Variable	All Authorships N=1470
Indiana University	179 (12%)
Arizona State University	103 (7%)
Pennsylvania State University	103 (7%)
Florida State University	71 (5%)
U of Northern Colorado	69 (5%)
Purdue University	47 (3%)
Texas Tech University	47 (3%)
University of Central Florida	35
University of Georgia	34
Georgia State University	22
California State University	19
Open University of The Netherlands	19
Syracuse University	18
Northern Illinois University	17
University of North Carolina	17
University of South Alabama	15
University of Twente	14
Anadolu University	13
Concordia University	12
Iowa State University	12
University of Missouri	12
Suny	11
University of Hawaii	11
University of Kentucky	11
University of Colorado	10
Brigham Young University	9
East Carolina University	9
Lehigh University	9
University of Toledo	9
Wayne State University	9

Note: Complete lists in Appendices.

Figure 11 showed a saturation map of the United States according to author productivity for the 2000-2004 Data Subset. Authorship within the subset was more

distributed across the United States with strong concentrations continued in the Rustbelt, the Southwest, and some Southern states in keeping with the growing technology sectors across the country. While authorships from the private sector increased to 9% of authorships, the majority of authorships continue to originate in higher education with 94% as shown in Table 34.



Data Subset 2000-2004 State Saturation of Author Productivity

Figure 11. Areas of the United States where author productivity is saturated. Saturations determined by reported geographic area of author production.

Table 34

Data Subset 2000-2004 Performance Setting of Authorship Determined by Frequency

Variable	All Authorships N=1470
Higher Education	1380 (94%)
International	131 (9%)
Corporate	49 (3%)
K-12	4
Government/Military	1

Note: Determined from Reference Discipline and Institutional Reports

Data Subset 2005-2009

Assuming the Data Subset represented the typical writings and research of Instructional/Educational Technology from 2005 to 2009 as represented in the knowledge domain presented in the AECT Conference Proceedings, 491 citing documents were examined in the sixth subset. Table 35 summarizes the keyword descriptors extracted from the subset. Keywords were not provided in the conference proceedings for the years 2005 through 2009. Therefore, keywords were extracted from the titles of the articles. Extraction was made based on similarity to other keywords within the subset. No interpretive keyword extraction was made. “Case Study” and “Instructional Design” top the list of extracted keyword descriptors followed by “Collaboration” and “Preservice Teachers”.

Table 35

Data Subset 2005-2009 Main Themes (Extracted Keyword Descriptors) Determined by Frequency

Variable	All Articles n=491
Case Study	17
Instructional Design	17
Collaboration	16
Preservice Teachrs	14
Assessment	11
Problem Solving	10
Self Regulation	9
Technology Integration	9
Attitudes	8
Blended Learning	8
Evaluation	8
Problem Ased Learning	9
Scaffolding	7
Discussion Forums	7
Educational Technology	6
Animated Instruction	6
Digital Storytelling	6
Hybrid Learning Environment	6
Interaction	6
Motivation	6
Online Learning	6
Performance	6
Research Framework	6
Community	5
Community of Practice	5
Constructuvust Learning	5
Cross Cultural Study	5
Ict Implementation	5
Instructional Designers	5
Integration	5
Online Courses	5
Podcasting	5
Professional Development	5
Teacher Education	5

Note: Complete list in Appendices.

Authorship production was tabulated for the 2005-2009 Data Subset, and Table 36 shows the distribution of authors and their authorship. Approximately 73% of authors produced 518 authorships or 47% of authorship in this data subset. Twenty-two authors produced five or more authorships within the subset or 3% of authorship. These twenty-two authors represent 13% of the total document production within this subset responsible for authoring 141 papers within the subset. P. A. Ertmer (13) from Purdue University produced the most documents within the subset followed by Y. Ma (10) from University of Louisiana.

Table 36

Data Subset 2005-2009 Author Production

Variable	All Authors n=715	All Authorships n=1092
5 or more Authorships	22 (3%)	141 (13%)
2 to 4 Authorships	174 (24%)	433 (40%)
1 Authorship	518 (73%)	518 (47%)

Table 37

Data Subset 2005-2009 Individual Authors with ≥ 5 Authorships Determined by Frequency

Variable	All Authorships N=1092
Ertmer, P. A.	13
Ma, Y.	10
Cifuentes, L.	8
Correia, A. P.	8
Frick, T. W.	8
Richardson, J. C.	8
Cagiltay, K.	7
Kang, M. J.	7
Pan, C. C.	6
Williams, D. C.	6
Baran, E.	5
Bonk, C. J.	5
Grant, M. M.	5
Ke, F.	5
Koszalka, T. A.	5
Lin, H.	5
Magiuka, R. J.	5
Pedersen, S. J.	5
Su, B.	5
Sullivan, M.	5
Wilson, B. G.	5
York, C. S.	5

Note: Complete list in Appendices.

Individual position descriptors and reference disciplines were not included on most of the title pages of the submitted papers for 2005-2009 Data Subset. Most authorships continue to be affiliated with higher education settings. In the subset, 991 authorships reported an institutional affiliation in higher education and represented 91% of the authorships of the subset. Pennsylvania State University (71) tops the list with Indiana University (65) and Purdue University (63). International authors represented 16% of the authorship of the subset with 176 authors from countries around the world including Australia, Canada, China, Egypt, Germany, India, Israel, Japan, Mexico, The

Phillipines, Singapore, South Korea, Spain, Taiwan, Thailand, The Netherlands, and Turkey . Corporate authors represented 2% of the subset.

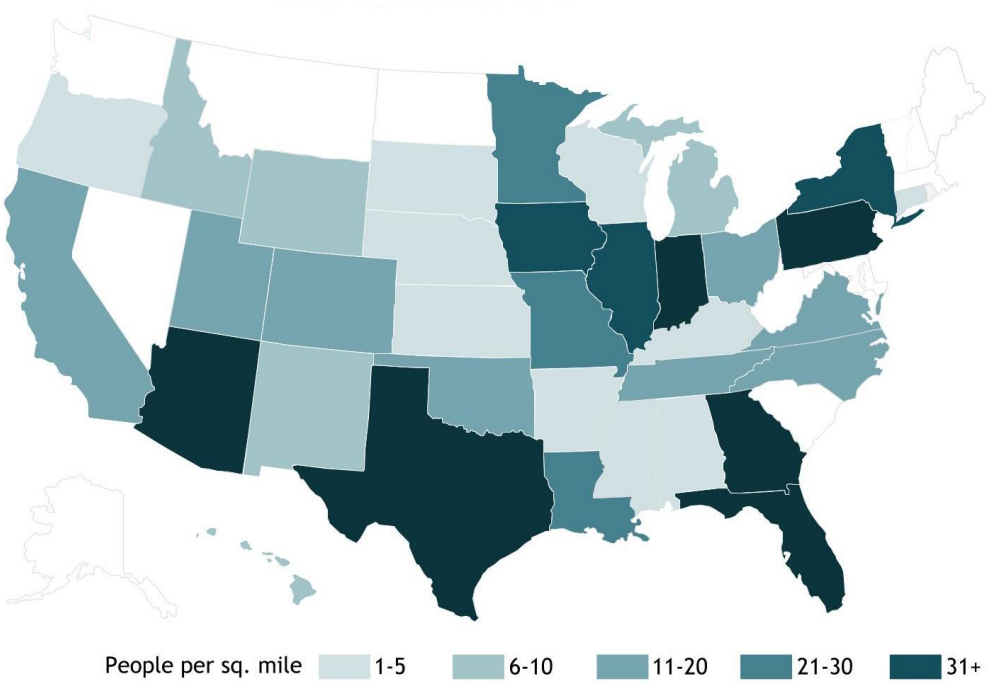
Table 38

Data Subset 2005-2009 Contributing Institutions

Variable	All Authorships N=1092
Pennsylvania State University	71 (7%)
Indiana University	65 (6%)
Purdue University	63 (6%)
Texas A&M University	59 (5%)
Iowa State University	31 (3%)
University of Louisiana	24 (2%)
Georgia State University	22
Middle East Technical U	22
Ewha Womans University	21
University of Missouri	21
Arizona State University	20
University of Minnesota	20
University of Central Florida	19
Florida State University	18
University of Texas	18
Seoul National University	16
Northern Illinois University	15
Anadolu University	14
University of Houston	13
University of Memphis	13
Western Illinois University	13
Oklahoma State University	12
Syracuse University	12
University of Georgia	12
University of N Colorado	10
Cuny	9
East Carolina University	9
Kent State University	9
University of Balearic Islands	9
University of Wyoming	9

Note: Complete lists in Appendices.

Figure 12 shows a saturation map of the United States according to author productivity for the data subset. A strong concentration of authorships was located in the Rustbelt of the United States, but the Southern states also produced strong concentrations of authorships in Texas, Georgia, and Florida as well as Arizona in the West. A majority, 92% of contributors originated in higher education as shown in Table 39.



Data Subset 2005-2009 State Saturation of Author Productivity

Figure 12. Areas of the United States where author productivity is saturated. Saturations determined by reported geographic area of author production.

Table 39

Data Subset 2005-2009 Performance Setting of Authorship

Variable	All Authorships N=1092
Higher Education	991 (92%)
International	176 (16%)
Corporate	24 (2%)
K-12	8
Government/Military	0

Note: Determined from Reference Discipline and Institutional Reports

Summary of AECT Conference Proceedings Papers

The knowledge domain of the AECT Conference Proceedings may be described in terms of the authorship of its papers. During the thirty-year span (1979-2004), most of the authorship were professors and graduate students serving in Education departments at higher learning institutions across the United States. Table 40 summarizes the authorship of the thirty-year span (1979-2009) of the AECT Conference Proceedings. The number of authors with five or more authorships represented an average of 4%, with two to four authorships represented an average of 23%, and with one authorship represented an average of 73%. While there are no established standards of authorship rate to determine knowledge domain strength and while Lotka based his Law of Scientific Productivity on a ratio of 60% to 40%, the percentages here, 73% to 27% with a variance of 7% over the thirty-year span, may represent a committed authorship to the knowledge domain, growth in contributions, and an openness to new authorship.

Table 40

Author Statistics by Data Subset

Subset	5 or More Authorships	2 to 4 Authorships	1 Authorship
1979-1984	10 (5%)	37 (20%)	141 (75%)
1985-1989	16 (7%)	45 (19%)	176 (74%)
1990-1994	16 (4%)	99 (25%)	278 (72%)
1995-1999	13 (3%)	106 (23%)	345 (74%)
2000-2004	27 (3%)	256 (28%)	635 (69%)
2005-2009	22 (3%)	174 (24%)	518 (73%)

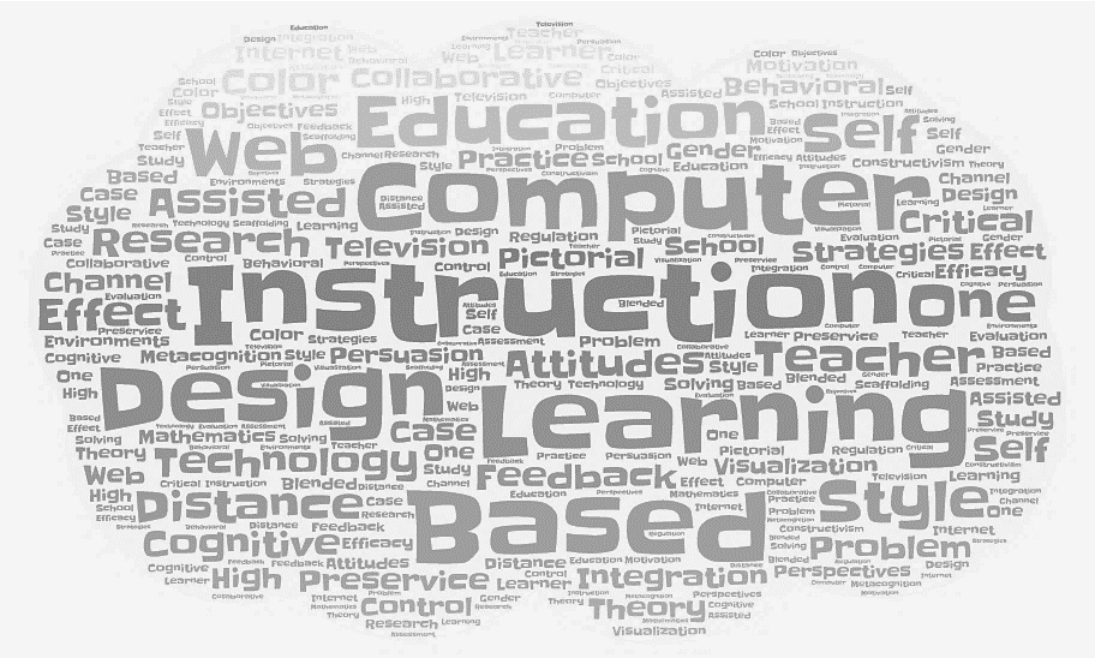
The AECT began publication of its conference proceedings in 1979. The research front of the knowledge domain of the conference proceedings may be represented by the most published authors and the rise of new authors as defined in the data subsets over the course of the thirty-year span as seen in Table 41. The names of new researchers entering the list of the most published researchers for the first time appear in bold text, and four authors, Dwyer, Hannafin, Jonassen, and Klein, had long productive periods as they appeared in more than two data subsets within the list. This would demonstrate a knowledge domain open to new researchers and a consideration for the established researchers of the knowledge domain.

Table 41

Authors Representing the Research Front

1979-1984	1985-1989	1990-1994	1995-1999	2000-2004	2005-2009
Dwyer	Hannafin	Knupfer	Knupfer	Klein	Ertmer
Simonson	Belland	Klein	Schnackenberg	Savenye	Ma
Canelos	Rieber	Jonassen	Cennamo	Johnson	Cifuentes
Hannafin	Ross	Wilson	Januszewski	Koszalka	Correia
Winn	Taylor	Cole	Land	Ku	Frick
Berry	Canelos	Grabowski	Marcinkiewicz	Park	Richardson
Jonassen	Dwyer	Januszewski	Hannafin	Tuzun	Cagiltay
Joseph	Jonassen	Ross	Harvey	Cifuentes	Kang
Lamberski	Morrison	Berry	Jones	Dwyer	Pan
Taylor	Smith	Bohlin	Klein	Ertmer	Williams
	Tennyson	Koetting	Moallem	Frick	Baran
	Dalton	McIsaac	Small	Grabowski	Bonk
	Grabinger	Muffoletto	Wilson	Javeri	Grant
	Baker	Orey		Maushak	Ke
	Simonson	Rieber		Cornell	Koszalka
	Winn	Yeaman		Kim	Lin
				Yu	Magiuka
				Bollinger	Pedersen
				Bray	Su
				Mazur	Sullivan
				Schaffer	Wilson
				Schnackenberg	York
				Shoffner	
				Varank	
				Verhagen	
				Wang	
				Winograd	

The keyword descriptors overtime may provide a view of the main themes of the knowledge domain. *Instructional Design, Computer Based Instruction,* and *Learning* come to the forefront in the keyword descriptors and may identify the purpose or focus of this knowledge domain.



Keyword Descriptors Word Cloud

Figure 13. Keyword descriptor frequencies were used to create a word cloud.

The conference proceedings of the AECT has been as an outlet of publication for academics as evidenced by an average institutional affiliation rate of 92%. The published documents in the first data subset largely originated in the Rustbelt of the United States. Over the course of the thirty-year span, published documents have demonstrated growth in other areas of the United States in keeping with technological development centers. The Rustbelt continued to be the geographical base of the knowledge domain over the thirty-year span as the largest producer of research in the knowledge domain.

Cited Documents within the Conference Proceedings

The second research question asked, “What authors, research, academic publications, and reference works (Cited Documents) may be identified through citedness

in the conference proceedings of the AECT for the period 1979-2009 and what intellectual structure may be derived from these analyses?" The citations from all the citing documents with reference lists were collected from the conference proceedings of the AECT (1979-2009) as Data Set 2. Citations to statistical program manuals, software programs and commercial databases were omitted. Citations with incomplete information were also omitted from the data set. All authors, where a cited document was created by more than one author, were treated as equal counts to honor all contributions of the authors and to avoid omitting possible author/researcher connections. Special cases where non-authors were also included were government reports, Instructional/Educational technology related organization publications and institutional research groups and institute publications. All other references were excluded in the data set. The data set was segmented into six chronological subsets (1979-1984, 1985-1989, 1990-1994, 1995-1999, 2000-2004, and 2005-2009) and citation characteristics were collected from 3,632 authors of 2,354 documents with 48,063 citations. Findings from the bibliometric analysis were reported.

Data Subset 1979-1984

Assuming the Data Subset represented the typical writings and research of Instructional/Educational Technology from 1979 to 1984 as represented in the knowledge domain presented in the AECT Conference Proceedings, 4,644 cited documents were examined in the first subset. Table 42 summarizes authorships of cited documents. Just over half of the authorships (54%) in the cited documents were of journal articles. Books accounted for 31% of the authorships in the cited documents.

Table 42

Data Subset 1979-1984 Most Cited Documents Determined by Frequency

Variable	All Authorships N=7,168
Journals	3,864 (54%)
Books	2,233 (31%)
Other	385 (5%)
Dissertations	346 (5%)
Conference Proceedings	319 (4%)
Theses	17

Table 43 shows the most cited authors with in the subset. F. M. Dwyer from Pennsylvania State University, who published the most papers within the data subset, was also the most cited author of the subset. M. R. Simonson, W. D. Winn, L. H. Berry, R. and J. Lamberski also appeared on the most published authors from Data Set 1 and the most cited authors list here in the 1979-1984 Data Subset.

Table 43

Data Subset 1979-1984 Most Cited Individual Authors Determined by Frequency

Variable	All Authors N=1092
Dwyer, F. M.	106 (10%)
Witkin, H. A.	72 (7%)
Salomon, G.	69
Gagne, R. M.	56
Snow, R. E.	52
Paivio, A.	50
Cronbach, L. J.	42
Goodenough, D. R.	42
Clark, R. E.	37
Winn, W. D.	37
Levin, J. R.	35
Fleming, M. L	34
Simonson, M. R.	34
Levie, W. H.	29
Ausubel, D. P.	28
Travers, R. M. W.	28
Lamberski, R. J.	27
Merrill, M. D.	27
Karp, S. A.	25
Berry, L. H.	22
Mayer, R. E.	22
Oltman, P. K.	22
Allen, W. H.	20
Briggs, L. J.	20
Cox, P. W.	19
Foulke, E.	19
Raskin, E.	19
Tulving, E.	19

Note: Complete list in Appendices.

Despite journal articles accounting for over half of the cited documents in the data subset, the most cited research in the dataset came from books. Table 44 lists the top cited

documents in the data set. *Strategies for Improving Visual Learning* and *A Guide for Improving Visualized Instruction*, both by F. M. Dwyer, were the most cited research in the data set. Only two documents of the most cited research were journal articles.

Table 44
Data Subset 1979-1984 Cited Research Determined by Frequency

Variable	All Cited Documents N=4,644
1. *Strategies for Improving Visual Learning* by F. M. Dwyer	31
2. *A Guide for Improving Visualized Instruction* by F. M. Dwyer	23
3. "Field Dependent and Field Independent Cognitive Styles and Their Educational Implications" by D. R. Goodenough	23
4. *Aptitudes and Instructional Methods* by Cronbach and Snow	22
5. *A Manual for the Embedded Figures Test* by H. A. Witkin	20
6. *Interaction of Media Cognition and Learning* by G. Salomon	19
7. *The Conditions of Learning* by R. M. Gagne	17
8. *Imagery in Verbal Processes* by A. Paivio	15
9. "Reexamining the Methodology of Research on Media and Technology in Education" by R. M. Gagne	14
10. *Instructional Message Design* by Fleming and Levie	13
11. *Principles of Instructional Design* by Gagne and Briggs	13

Table 45 shows the most cited academic publications within the data set. The data set included 389 academic publications with a total of 3,864 citations. Three of the top ten academic publications may be considered educational/instructional technology academic publications. The remainder are academic publications in the discipline of Education. *Audio-Video Communication Review* was the most cited academic publication in this subset.

Table 45
Data Subset 1979-1984 Most Cited Academic Publications Determined by Frequency

Variable	All Academic Publication Citations N=3,864
Av Communications Review	414 (11%)
J of Educational Psychology	316 (8%)
J of Experimental Psychology	232 (6%)
Review of Educational Research	228 (6%)
Ectj	187 (5%)
Educational Technology	113 (3%)
J of Verbal Learning & Verbal Behavior	96
Perceptual & Motor Skills	88
Child Development	66
Bulletin of Psychonomic Society	62

Note: Complete List in Appendices.

The 1979-1984 Data Subset demonstrated 2,233 citations to books or books chapters. Table 46 lists the most cited reference works for the subset. F. M. Dywer and R. M. Gagne had two books each within the most cited reference works list. The reference works focus on instruction and instructional methods.

Table 46
Data Subset 1979-1984 Most Cited Reference Works Dtermined by Frequency

Variable	All Book Citations N=2,233
1. *Aptitudes and Instructional Methods* by Cronbach and Snow	31
2. *Strategies for Improving Visual Learning* by F. M. Dwyer	31
3. *A Guide for Improving Visualized Instruction* by F. M. Dwyer	23
4. *Imagery in Verbal Processes* by A. Paivio	23
5. *A Manual for the Embedded Figures Test* by H. A. Witkin	22
6. *Interaction of Media Cognition and Learning* by G. Salomon	19
7. *Creativity: Its Educational Implications* by Gowan, Demos, and Torrance	18
8. *The Conditions of Learning* by R. M. Gagne	17
9. *Instructional Message Design* by Fleming and Levie	16
10. *Principles of Instructional Design* by Gagne and Briggs	15

Note: Complete List in Appendices.

Data Subset 1985-1989

Assuming the Data Subset represented the typical writings and research of Instructional/Educational Technology from 1985 to 1989 as represented in the knowledge domain presented in the AECT Conference Proceedings, 4,976 cited documents were examined in the second subset. Table 47 summarizes authorships by cited documents. Just over half of the authorships (56%) in the cited documents were to journal articles. Books accounted for 32% of the authorships in the cited documents.

Table 47

Data Subset 1985-1989 Most Cited Documents Determined by Frequency

Variable	All Cited Authorships N=7,725
Journals	4,294 (56%)
Books	2,438 (32%)
Other	461 (6%)
Conference Proceedings	376 (5%)
Dissertations	145 (2%)
Theses	11

Table 48 shows the mosted cited authors within the 1985-1989 Data Subset. R. D. Tennyson from University of Minnesota was also the most cited author of the data subset. Citations to R. D. Tennyson's research rose to 132 citations from 12 citations in the previous subset. R. M. Gagne, R. E. Clark, G. Salomon, and M. D. Merrill also increased in citations from the previous subset.

Table 48
Data Subset 1985-1989 Most Cited Individual Authors Determined by Frequency

Variable	N=3,548 All Authors
Tennyson, R. D.	132 (3%)
Gagne, R. M.	91
Clark, R. E.	83
Hannafin, M. J.	81
Salomon, G.	81
Merrill, M. D.	52
Anderson, R. C.	45
Snow, R. E.	43
Reiguluth, C. M.	42
Witkin, H. A.	37
Dwyer, F. M.	35
Ross, S. M.	33
Kulik, J. A.	31
Mayer, R. E.	31
Winn, W. D.	29
Kulhavy, R. W.	28
Rakow, E. A.	28
Heinich, R.	27
Levin, J. R.	27
Rieber, L. P.	27
Levie, W. H.	26
Briggs, L. J.	25
Canelos, J. J.	24
Phillips, T. L.	24
Hartley, J. R.	23
Norman, D. A.	23
Park, O. C.	23
Cronbach, L. J.	22
Goodenough, D. R.	22
Jonassen, D. H.	22
Paivio, A.	22
Anderson, J. R.	21
Rumelhart, D. E.	21
Simonson, M. R.	21
Taylor, W. D.	21
Wager, W. W.	21

Note: Complete list in Appendices.

Despite journal articles accounting for over half of the authorships in the data subset, the most cited research in the dataset came from books. Table 49 lists the top cited documents in the data set. “Reconsidering Research on Learning from Media” by R. E. Clark and *The Conditions of Learning* by R. M. Gagne were the most cited research in the data subset. Five of the most cited research documents were journal articles.

Table 49
Data Subset 1985-1989 Most Cited Research Determined by Frequency

Variable	All Cited Documents N=4,976
1. “Reconsidering Research on Learning from Media” by R. E. Clark	20
2. *The Conditions of Learning* by R. M. Gagne	16
3. *Aptitudes and Instructional Methods* by Cronbach and Snow	15
4. *Interaction of Media, Cognition and Learning* by G. Salomon	15
5. *Instructional Message Design* by Fleming and Levie	14
6. *Principles of Instructional Design* by Gagne and Briggs	13
7. “Field Dependent and Field Independent Cognitive Styles and Their Educational Implications” by Cox, Goodenough, Moore, and Witkin	12
8. “The Proper Study of Instructional Technology” by R. Heinrich	12
9. “Evidence for Confounding in Computer Based Instruction Studies: Analyzing the Meta Analyses” by R. E. Clark	10
10. “Instructional Control Strategies and Content Structure as Design Variables in Concept Acquisition Using Computer Based Instruction” by R. D. Tennyson	10
11. *Educational Psychology: A Cognitive View* by D. P. Ausubel	10
12. *Imagery and Verbal Processes* by A. Paivio	10
13. *Strategies for Improving Visual Learning* by F. M. Dwyer	10
14. *The Conditions of Learning* by F. M. Dwyer	10

Table 50 shows the most cited academic publications within the 1985-1989 Data Subset. The data subset included 468 academic publications with a total of 4,294 citations. Four of the top ten academic publications may be considered Instructional/Educational Technology academic publications. The remainder were academic publications in the discipline of Education. *Journal of Educational Psychology* was the most cited academic publication in this data subset.

Table 50
Data Subset 1985-1989 Most Cited Academic Publications Determined by Frequency

Variable	All Academic Publication Citations N=4,294
J of Educational Psychology	496 (12%)
ECTJ	400 (9%)
Review of Educational Research	236 (5%)
Educational Technology	182 (4%)
J of Computer-Based Instruction	140 (3%)
J of Instructional Development	117
J of Exp Psych: Human Learning & Memory	104
Av Communications Review	80
J of Educational Research	62
J of Verbal Learning & Verbal Behavior	61

Note: Complete List in Appendices.

Table 51 shows the cited reference works in the subset. The data subset demonstrated 2,438 citations to books or books chapters. *Instructional Design Theories and Models: An Overview of Their Current Status* by C. M. Reigeluth topped the list of most cited reference works.

Table 51
Data Subset 1985-1989 Most Cited Reference Works Determined by Frequency

Variable	All Book Citations N=2,438
1. *Instructional Design Theories and Models: An Overview of Their Current Status* by C. M. Reigeluth,	32
2. *The Conditions of Learning* by Gagne and Dwyer	26
3. *The Technology of Text: Principles for Structuring, Designing, and Displaying Text* by D. H. Jonassen	25
4. *Handbook of Research on Teaching* by N. L. Gage	24
5. *Instructional Technology: Foundations* by R. M. Gagne	16
6. *Aptitudes and Instructional Methods* by Cronbach & Snow	15
7. *Instructional Message Design* by Fleming and Levie	15
8. *Interaction of Media, Cognition and Learning* by G. Salomon	15
9. *Principles of Instructional Design* by Gagne, Briggs, and Wager	15
10. *Instructional Designs for Microcomputer Courseware* by D. H. Jonassen	13
11. *Learning Strategies* by H. F. O'Neil, Jr.	13

Note: Complete List in Appendices.

Data Subset 1990-1994

Assuming the Data Subset represented the typical writings and research of Instructional/Educational Technology from 1990 to 1994 as represented in the knowledge domain presented in the AECT Conference Proceedings, 8,235 cited documents were examined in the third subset. Table 52 summarizes authorships by cited documents. Just over half of the authorships (54%) in the cited documents were to journal articles. Books accounted for 33% of the authorships in the cited documents.

Table 52

Data Subset 1990-1994 Most Cited Documents Determined by Frequency

Variable	All Cited Authorships N=13,458
Journals	7,255 (54%)
Books	4,385 (33%)
Conference Proceedings	913
Other	695
Dissertations	198
Theses	12

Table 53 shows the most cited authors with in the 1990-1994 Data Subset. D. H. Jonassen from University of Colorado was also the most cited author of the subset. Citations to the research of R. M. Gagne, M. J. Hannafin, and C. M. Reigeluth rose to over 100 citations to each authors research in the subset.

Table 53
Data Subset 1990-1994 Most Cited Individual Authors Determined by Frequency

Variable	All Authors N=6,008
Jonassen, D. H.	135 (2%)
Gagne, R. M.	106
Hannafin, M. J.	105
Reigeluth, C. M.	102
Ross, S. M.	83
Tennyson, R. D.	78
Salomon, G.	72
Merrill, M. D.	70
Mayer, R. E.	68
Keller, J. M.	65
Johnson, D. W.	63
Dwyer, F. M.	62
Clark, R. E.	61
Johnson, R. T.	59
Wittrock, M. C.	56
Carrier, C. A.	52
Briggs, L. J.	50
Morrison, G. R.	47
Rieber, L. P.	46
Collins, A. M.	44
Brown, J. S.	42
Dick, W. D.	40
Kulik, J. A.	38
Winn, W. D.	38
Hooper, S.	37
Norman, D. A.	36
Wager, W. W.	36
Sullivan, H. J.	33
Anderson, J. R.	32
Dansereau, D. F.	32
Steinberg, E. r.	32
Anderson, R. C.	31
Spiro, R. J.	31
Brown, A. L.	30

Note: Complete list in Appendices.

While journal articles still account for over half of the authorships in this data subset, only one journal article is included in the top ten most cited research. Table 54 lists the top cited documents in the data subset. *Instructional Design Theories & Models: An Overview of Their Current Status* by C. M. Reigeluth was the most cited research in the data subset.

Table 54
Data Subset 1990-1994 Most Cited Research Determined by Frequency

Variable	All Citations N=8,235
1. *Instructional Design Theories & Models: An Overview of Their Current Status* by C. M. Reigeluth	65
2. *Principles of Instructional Design* by Gagne and Briggs	36
3. *Instructional Designs for Microcomputer Courseware* by D. H. Jonassen	30
4. *Handbook of Research on Teaching* by N. L. Gage	29
5. *Instructional Technology: Foundations* by R. M. Gagne	24
6. *The Technology of Text* by D. H. Jonassen	22
7. *The Systematic Design of Instruction* by W. Dick and L. Carey	21
8. *The Conditions of Learning* by R. M. Gagne	18
9. "Situated Learning and the Culture of Learning" by Brown, Collins, and Duguid	18
10. *Designing Hypermedia for Learning* by Jonassen and Mandl	17
11. *Instructional Technology: Past, Present, and Future* by G. J. Anglin	17

Table 55 shows the most cited academic publications within the the data subset. The data subset included 663 academic publications with a total of 7,255 journal citations. The *Journal of Educational Psychology* was the most cited journal in this data subset. The majority of the journals listed in the table continue to be journals from the Education and Psychology disciplines.

Table 55
Data Subset 1990-1994 Most Cited Academic Publications Determined by Frequency

Variable	All Journal Citations N=7,255
J of Educational Psychology	661(9%)
Educational Technology	426
ETR&D	322
ECTJ	312
J of Computer-Based Instruction	252
Educational Researcher	177
Review of Educational Research	173
American Educational Research Journal	170
J of Educational Research	148
J of Educational Computing Research	142
J of Instructional Development	139
Educational Psychologist	132
Contemporary Educational Psychology	99
Instructional Science	95
J of Experimental Psychology	95
Av Communications Review	76
J of Experimental Education	64
Educational Leadership	63
Cognitive Science	60
Performance & Instruction	58
Cognitive Psychology	55
Org Behavior & Human Decision Processes	54
British J of Educational Technology	52
J of Verbal Learning & Verbal Behavior	48

Note: Complete List in Appendices.

The 1990-1994 Data Subset demonstrated 4,385 citations to books and book chapters. Table 56 lists the top cited documents in the data subset. *Instructional Design Theories & Models: An Overview of Their Current Status* by C. M. Reigeluth was the most cited reference work in the data subset.

Table 56
Data Subset 1990-1994 Most Cited Reference Works Determined by Frequency

Variable	All Book Citations N= 4,385
1. *Instructional Design Theories & Models: An Overview of Their Current Status* by C. M. Reigeluth	65
2. *Principles of Instructional Design* by Gagne and Briggs	36
3. *Instructional Designs for Microcomputer Courseware* by Jonassen	30
4. *Handbook of Research on Teaching* by N. L. Gage	29
5. *Instructional Technology: Foundations* by R. M. Gagne	24
6. *The Technology of Text* by D. H. Jonassen	22
7. *The Systematic Design of Instruction* by Dick and Carey	21
8. *The Conditions of Learning* by R. M. Gagne	18
9. *Designing Hypermedia for Learning* by Jonassen and Mandl	17
10. *Instructional Technology: Past, Present, and Future* by G. J. Anglin	17

Note: Complete List in Appendices.

Data Subset 1995-1999

Assuming the Data Subset represented the typical writings and research of Instructional/Educational Technology from 1995 to 1999 as represented in the knowledge domain presented in the AECT Conference Proceedings, 7,671 cited documents were examined in the fourth data subset. Table 57 summarizes authorships of cited documents. Journal articles fell to 50% from the previous data subset's 54% in the cited documents. Books increased to 36% of the authorships in the cited documents. Of note, the citations to conference proceedings papers, dissertations, theses, and other documents remained relatively the same as in the previous data subset despite an increase in citation.

Table 57

Data Subset 1995-1999 Most Cited Documents Determined by Frequency

Variable	All Authorships N=12,461
Journals	6,207 (50%)
Books	4,444 (36%)
Conference Proceedings	909 (7%)
Other	688 (6%)
Dissertations	198 (2%)
Theses	15

Table 58 shows the mosted cited authors with in the subset. R. M. Gagne from Florida State University and D. H. Jonassen from University of Colorado were the most cited authors of the subset, swapping positions in the list from the previous data subset. Of particular note is the inclusion of a group author, Cognition & Technology Group at Vanderbilt, into the most cited authors list.

Table 58
Data Subset 1995-1999 Most Cited Individual Authors Determined by Frequency

Variable	All Authors N=5,932
Gagne, R. M.	101
Jonassen, D. H.	97
Hannafin, M. J.	93
Keller, J. M.	71
Reigeluth, C. M.	61
Collins, A.	52
Duffy, T. M.	51
Brown, J. S.	50
Dick, W.	50
Dwyer, F. M.	50
Ross, S. M.	49
Salomon, G.	46
Klein, J. d.	41
Johnson, D. W.	40
Johnson, R. T.	39
Merrill, M. D.	39
Hooper, S.	36
Sullivan, H. J.	35
Wilson, B. G.	35
Cognition & Technology Group at Vanderbilt (CTGV)	34
Slavin, R. E.	34
Briggs, L. J.	33
Morrison, G. R.	33
Wager, w. w.	32
Knupfer, N. N.	31
Richey, R. C.	31
Duguid, P.	30
Spiro, R. J.	30
Tessmer, M.	30
Wittrock, M. C.	30

Note: Complete list in Appendices.

Cited journal articles decreased in authorships in this data subset, with 2 journal articles included in the top ten of most cited research. Table 59 lists the top cited documents

in the data subset. *Instructional Design Theories & Models: An Overview of Their Current Status* by C. M. Reigeluth was the most cited research in the data subset. Six documents in the top cited research focus on Instructional Design.

Table 59
Data Subset 1995-1999 Most Cited Research Determined by Frequency

Variable	All Citations N=7,671
1. *Instructional Design Theories & Models: An Overview of Their Current Status* by C. M. Reigeluth	33
2. *The Systematic Design of Instruction* by W. Dick, L. Carey, and J. O. Carey	30
3. "Situated Learning and the Culture of Learning" by Brown, Collins, and Duguid	30
4. *Principles of Instructional Design* by Gagne and Briggs	26
5. *Handbook of Research on Educational Communications and Technology* by D. H. Jonassen	23
5. *Instructional Technology: Past, Present, and Future* by G. J. Anglin	23
7. *The Art of Human Computer Interface Design* by Laurel and Mountford	23
8. *Instructional Designs for Microcomputer Courseware* by Jonassen	21
9. "Rapid Prototyping: An Alternative Instructional Design Strategy" by Tripp and Bichelmeyer	21
10. *Constructivist Learning Environments: Case Studies in Instructional Design* by B. G. Wilson	20

Table 60 shows the most cited academic publications within the the data subset. The data subset included 689 academic publications with a total of 6,207 journal citations. *Educational Technology Research and Development* (*ETR&D*) was the most cited journal in this data subset. In this data subset, instructional technology journals took precedence with a mixture of journals from the Education and Psychology disciplines and other fields as well.

Table 60
Data Subset 1995-1999 Most Cited Academic Publications Determined by Frequency

Variable	All Journal Citations N=6,207
ETR&D	317 (5%)
Educational Technology	295
J of Educational Psychology	140
Educational Researcher	104
Review of Educational Research	91
Educational Psychologist	73
J of Computer Based Instruction	70
J of Research on Computers in Education	59
ECTJ	58
Performance Improvement Quarterly	56
J of Instructional Development	53
Contemporary Educational Psychology	49
American Educational Research Journal	48
Performance & Instruction	45
Tech Trends	44
J of Educational Computing Research	40
Educational Leadership	37
American Pscyhologist	34
J of Personality & Social Psychology	34
Instructional Science	33
J of Educational Technology	33
Av Communications Review	32
The American J of Distance Education	32

Note: Complete List in Appendices.

The 1995-1999 Data Subset demonstrated 4,444 citations to books and book chapters. Table 61 lists the top cited documents in the data subset. *Instructional Design Theories & Models: An Overview of Their Current Status* by C. M. Reigeluth was the most cited reference work in the data subset.

Table 61
Data Subset 1995-1999 Most Cited Reference Works Determined by Frequency

Variable	All Book Citations N=4,444
1. *Instructional Design Theories &Models: An Overview of Their Current Status* by C. M. Reigeluth	33
2. *The Systematic Design of Instruction* by Dick and Carey	30
3. *Principles of Instructional Design* by Gagne and Briggs	26
4. *Handbook of Research on Educational Communications and Technology* by D. H. Jonassen	23
5. *Instructional Technology: Past, Present, and Future* by G. J. Anglin	23
6. *The Art of Human Computer Interface Design* by Laurel and Mountford	23
7. *Instructional Designs for Microcomputer Courseware* by Jonassen	21
8. *Constructivist Learning Environments: Case Studies in Instructional Design* by B. G. Wilson	20
9. *Constructivism and the Technology of Instruction: A Conversation* by Duffy and Jonassen	18
10. *The Conditions of Learning* by R. M. Gagne	17

Note: Complete List in Appendices.

Data Subset 2000-2004

Assuming the Data Subset represented the typical writings and research of Instructional/Educational Technology from 2000 to 2004 as represented in the knowledge domain presented in the AECT Conference Proceedings, 12,437 cited documents were examined in the fifth data subset. Table 62 summarizes authorships of cited documents. Journal articles continued to fall from previous data subsets with a drop to 48%. Books showed a slight drop to 34% of the authorships in the cited documents. Of note, the citations to conference proceedings papers and other cited documents (websites, government documents, and unpublished papers) rose in citations.

Table 62

Data Subset 2000-2004 Most Cited Documents Determined by Frequency

Variable	All Authorships N=21,067
Journals	10,152 (48%)
Books	7,206 (34%)
Other	1,858 (9%)
Conference Proceedings	1,574 (7%)
Dissertations	250 (1%)
Theses	27

Table 63 shows the mosted cited authors with in the subset. D. H. Jonassen from University of Colorado was the most cited author of the subset with 173 citations. Cited authors increased 40% over the previous data subset.

Table 63
Data Subset 2000-2004 Most Cited Individual Authors Determined by Frequency

Variable	All Authors N=9,978
Jonasson, D. H.	173 (2%)
Reiguluth, C. M.	81
Mayer, R. E.	80
Duffy, T. M.	72
Hannafin, M. J.	68
Keller, J. M.	65
Gagne, R. M.	61
Dick, W.	60
Bandura, A.	58
Collins, A.	54
Clark, R. e.	53
Ertmer, P. A.	53
Wenger, E.	50
Bonk, C. J.	49
Moore, M. G.	48
Gunawardena, C. N.	47
Richey, R. C.	47
Sweller, J.	47
Becker, H. J.	45
Carey, L. M.	42
NCES	42
Schunk, D. H.	42
Wilson, B. G.	42
Salomon, G.	41
Van Merrienboer, J. J. G.	40

Note: Complete list in Appendices.

Table 64 lists the top cited documents in the 2000-2004 Data Subset. *Handbook of Research on Educational Communications and Technology* by D. H. Jonassen was the most cited research in the data subset. Five documents in the top cited research focus on Instructional Design with two documents that focus on instruction on the internet and two documents on Educational Technology.

Table 64
Data Subset 2000-2004 Most Cited Research Determined by Frequency

Variable	All Citations N=12,438
1. *Handbook of Research on Educational Communications and Technology* by D. H. Jonassen	133
2. *Web Based Instruction* by B. H. Khan	73
3. *Instructional Design Theories and Models: A New Paradigm of Instructional Theory* by C. M. Reigeluth	66
4. *Electronic Collaborators: Learner Centered Technologies for Literacy, Apprenticeship, and Discourse* by Bonk and King	49
5. *Instructional Design Theories & Models: An Overview of Their Current Status* by C. M. Reigeluth	47
6. *The Systematic Design of Instruction* by Dick and Carey	44
7. *Instructional Design Competencies: The Standards* by Field, Richey, and Foxon	42
8. *Building Learning Communities in Cyberspace: Effective Strategies for the Online Classroom* by Palloff and Pratt	36
9. *Principles of Instructional Design* by Gagne and Briggs	36
10. *Theoretical Foundations of Learning Environments* by Jonassen and Land	27

Table 65 shows the most cited academic publications within the the data subset. The data subset included 1,196 academic publications with a total of 10,152 journal citations. *Educational Technology Research and Development* (*ETR&D*) was the most cited journal in this data subset.

Table 65
Data Subset 2000-2004 Most Cited Academic Publications Determined by Frequency

Variable	All Journal Citations N=10,152
ETR&D	433
Educational Technology	338
J of Educational Psychology	338
The American J of Dist Education	157
J of Edu Computing Research	153
J of Res on Computing on Education	144
Performance Improvement Quarterly	138
Review of Educational Research	124
Educational Researcher	122
Educational Psychology	103
Tech Trends for Leaders in Edu& Trn	100
Instructional Science	98
British J of Educational Technology	84
J of Personality & Social Psychology	80
Contemporary Edu Psychology	77
J of Research in Science Teaching	72
Educational Leadership	71
Distance Education	70
International J of Instr Media	67
J of Technology & Teacher Education	65
American Educational Research Journal	58
Computers in Human Behaviors	52
Online J of Distance Learning Admin	50

Note: Complete List in Appendices.

The 2000-2004 Data Subset demonstrated 7,206 citations to books and book chapters. Table 66 lists the top cited documents in the data subset. *Handbook of Research for Educational Communications Technology* by D. H. Jonassen was the most cited reference work in the data subset.

Table 66
Data Subset 2000-2004 Most Cited Reference Works Determined by Frequency

Variable	All Book Citations N=7,206
1. Handbook of Research on Educational Communications and Technology by D. H. Jonassen	133
2. Web Based Instruction by B. H. Khan	73
3. Instructional Design Theories and Models: A New Paradigm of Instructional Theory by C. M. Reigeluth	66
4. Electronic collaborators: Learner Centered Technologies for Literacy, Apprenticeship, and Discourse by Bonk and King	49
5. Instructional Design Theories & Models: An Overview of Their Current Status by C. M. Reigeluth	47
6. The Systematic Design of Instruction by W. Dick, L. Carey, and J. O. Carey	44
7. Instructional Design Competencies: The Standards by Field, Richey, and Foxon	42
8. Building Learning Communities in Cyberspace: Effective Strategies for the Online Classroom by Palloff and Pratt	36
9. Principles of Instructional Design by Gagne and Briggs	36
10. Theoretical Foundations of Learning Environments by Jonassen and Land	27

Note: Complete List in Appendices.

Data Subset 2005-2009

Assuming the Data Subset represented the typical writings and research of Instructional/Educational Technology from 2005 to 2009 as represented in the knowledge domain presented in the AECT Conference Proceedings, 18,519 cited documents were examined in the sixth data subset. Table 67 summarizes authorships of cited documents. Journal articles rebounded to 53% from the previous data subset's 48%. Books showed a slight drop again to 30% of the authorships in the cited documents.

Table 67
Data Subset 2005-2009 Most Cited Documents Determined by Frequency

Variable	All Authorships N=18,519
Journals	9,813 (53%)
Books	5,613 (30%)
Conference Proceedings	1,489 (8%)
Other	1,389 (8%)
Dissertations	193 (1%)
Theses	23

Table 68 shows the most cited authors within the subset. D. H. Jonassen from University of Colorado was the most cited author of the subset with 133 citations.

Table 68
Data Subset 2005-2009 Most Cited Individual Authors Determined by Frequency

Variable	All Authors N=9,301
Jonassen, D. H.	133 (1%)
Mayer, R. E.	96
Garrison, D. R.	88
Anderson, T.	81
Ertmer, P. A.	62
Sweller, J.	60
Reigeluth, C. M.	56
Archer, W.	54
Hannafin, M. J.	51
Bandura, A.	49
Keller, J. M.	49
Pintrich, P. R.	48
Schunk, D. H.	48
Wenger, E. C.	48
Bonk, C. J.	46
Duffy, T. M.	45
Klein, J. D.	43
Vygotsky, L. S.	42
Moreno, R.	40
Gunawardena, C. N.	38
Brown, J. S.	37
Zimmerman, B. J.	37
Bruner, J. S.	36
Bransford, J. D.	34
Collins, A.	34
Land, S. M.	34
Richey, R. C.	32
Rieber, L. P.	32
Van Merrienboer, J. J. G.	32
Frick, T. W.	31
Johnson, D. W.	30

Note: Complete list in Appendices.

Table 69 lists the top cited documents in the data subset. *Handbook of Research for Educational Communications and Technology* by D. H. Jonassen was the most cited research in the data subset.

Table 69
Data Subset 2005-2009 Most Cited Research Determined by Frequency

Variable	All Citations N=10,100
1. *Handbook of Research on Educational Communications and Technology* by D. H. Jonassen	62
2. *Instructional Design Theories and Models: A New Paradigm of Instructional Theory* by C. M. Reigeluth	60
3. *Self-Regulated Learning: From Teaching to Self-Reflective Practice* by Schunk and Zimmerman	27
4. *Mind in Society: The Development of Higher Psychological Processes* by L. S. Vygotsky	26
5. *Situated Learning: Legitimate Peripheral Participation* by Lave and Wenger	21
6. *Case Study Research: Design and Methods* by R. K. Yin	20
7. *Handbook of Distance Education* by Moore and Anderson	19
8. *Trends and Issues in Instructional Design and Technology* by Reiser and Dempsey	42
9. *Educational Media and Technology Yearbook* by Orey, McClendon, and Branch	17
10. *Psychology of Learning for Instruction* by M. P. Driscoll	17
11. "Situated Cognition and the Culture of Learning" by J. S. Brown	17

Table 70 shows the most cited academic publications within the the data subset. The data subset included 1,603 academic publications with a total of 9,813 journal citations. Educational Technology Research and Development (ETR&D) was the most cited journal in this data subset.

Table 70
Data Subset 2005-2009 Cited Academic Publications

Variable	All Journal Citations N=9,813
Etr&D	321 (3%)
J of Educational Psychology	124
Educational Technology	117
J of Educational Computing Research	91
Educational Researcher	84
Review of Educational Research	78
Performance Improvement Quarterly	76
J of Technology & Teacher Education	72
Educational Psychologist	68
British J of Educational Technology	65
Tech Trends	65
J of Research on Computing in Education	62
J of Asynchronous Learning Networks	59
Instructional Science	57
American Educational Research Journal	56
American J of Distance Education	55
Educational Psychology Review	54
The American J of Distance Education	41
Distance Education	40
J of Computer Assisted Learning	40
Computers & Education	39
J of Research on Technology in Edu	39
Computers in Human Behavior	38
J of The Learning Sciences	38
Contemporary Educational Psychology	37
J of Edu Multimedia & Hypermedia	35
International J of Instructional Media	34
Cognition & Instruction	30

Note: Complete List in Appendices.

The data subset demonstrated 7,206 citations to books and book chapters. Table 71 lists the top cited documents in the data subset. *Handbook of Research on Educational Communications Technology* by D. H. Jonassen was the most cited reference work in the

data subset.

Table 71
Data Subset 2005-2009 Most Cited Reference Works Determined by Frequency

Variable	All Book Citations N=5,613
1. *Handbook of Research on Educational Communications and Technology* by D. H. Jonassen	62
2. *Instructional Design Theories and Models: A New Paradigm of Instructional Theory* by C. M. Reigeluth	60
3. *Self-Regulated Learning: From Teaching to Self-Reflective Practice* by Schunk and Zimmerman	27
4. *Mind in Society: The Development of Higher Psychological Processes* by L. S. Vygotsky	26
5. *Situated Learning: Legitimate Peripheral Participation* by Lave and Wenger	21
6. *Case Study Research: Design and Methods* by R. K. Yin	20
7. *Handbook of Distance Education* by Moore and Anderson	19
8. *Trends and Issues in Instructional Design and Technology* by Reiser and Dempsey	42
9. *Educational Media and Technology Yearbook* by Editors	17
10. *Psychology of Learning for Instruction* by M. P. Driscoll	17

Note: Complete List in Appendices.

Summary of Cited Documents

Table 72 summarizes the number of cited documents, cited authorships, and cited authors with five or more citations from each data subset. The number of authors with five or more citations over the thirty-year period represented an average of 7% and a stable knowledge base within the knowledge domain.

Table 72

Citation Statistics by Data Subset Determined by Frequency

Subset	Total Cited Documents	Total Cited Authorships	No. of Authors with 5 or More Citations
1979-1984	4,644	7,168	238 (5%)
1985-1989	4,976	7,725	272 (7%)
1990-1994	8,235	13,458	468 (8%)
1995-1999	7,671	12,461	434 (7%)
2000-2004	12,437	21,067	699 (7%)
2005-2009	10,100	18,519	605 (7%)

Table 73 summarizes the cited documents types and the percentage of authorship of each document type. The average percentage of cited journals was 53% with a variance of 7.5% and a standard deviation of 2.7%. The average percentage of cited books was 33% with a variance of 4% and a standard deviation of 2%. The average percentage of cited Conference Proceedings was 6% with a variance of 2% and a standard deviation of 1.4%. The average percentage of cited other documents was 6.5% with a variance of 2.2% and a standard deviation of 1.5%. The average percentage of cited dissertations was 2% with a variance of 2% and a standard deviation of 1.4%. While there are no established standards of citation rate to source type to determine knowledge domain strength, these percentages may represent a stability within the citation record of the knowledge domain.

Table 73

Citation Document Type by Data Subset Determined by Frequency

Subset	Journals	Books	Conf. Pro.	Other	Dissert.	Thes
1979-1984	3,864(54%)	2,223(31%)	319(4%)	385(5%)	346(5%)	17
1985-1989	4,294(56%)	2,438(32%)	376(5%)	461(6%)	145(2%)	11
1990-1994	7,255(54%)	4,385(33%)	913(7%)	695(5%)	198(1%)	12
1995-1999	6,207(50%)	4,444(36%)	909(7%)	688(6%)	198(2%)	15
2000-2004	10,152(48%)	7,206(34%)	1,574(7%)	1,858(9%)	250(1%)	27
2005-2009	9,813(53%)	5,613(30%)	1,489(8%)	1,389(8%)	193(1%)	23

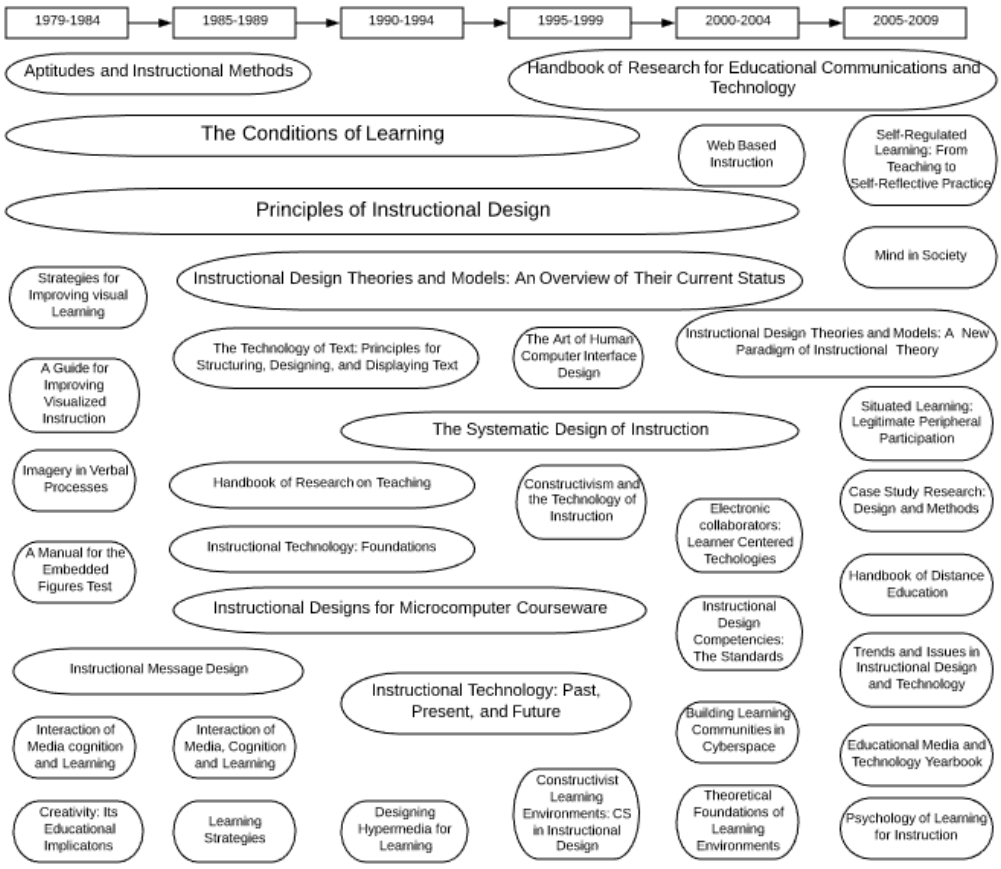
The most cited authors within the knowledge domain may represent the human knowledge base and the change of that knowledge base over time may be represented by changes in citedness between data subsets. Table 74 represents the most cited authors within the thirty-year span and the knowledge base of Instructional/Educational Technology in this knowledge domain. Gagne, Hannafin, Jonassen, Dwyer, and Reigeluth were the most cited authors within the knowledge domain.

Table 74

Authors Representing the Knowledge Base Detemined by Frequency

1979-1984	1985-1989	1990-1994	1995-1999	2000-2004	2005-2009
Dwyer	Tennyson	Jonassen	Gagne	Jonasson	Jonassen
Witkin	Gagne	Gagne	Jonassen	Reiguluth	Mayer
Salomon	Clark	Hannafin	Hannafin	Mayer	Garrison
Gagne	Hannafin	Reigeluth	Keller	Duffy	Anderson
Snow	Salomon	Ross	Reigeluth	Hannafin	Ertmer
Paivio	Merrill	Tennyson	Collins	Keller	Sweller
Cronbach	Anderson	Salomon	Duffy	Gagne	Reigeluth
Goodenough	Snow	Merrill	Brown	Dick	Archer
Clark	Reiguluth	Mayer	Dick	Bandura	Hannafin
Winn	Witkin	Keller	Dwyer	Collins	Bandura
Levin	Dwyer	Johnson	Ross	Clark	Keller
Fleming	Ross	Dwyer	Salomon	Ertmer	Pintrich
Simonson	Kulik	Clark	Klein	Wenger	Schunk
Levie	Mayer	Johnson	Johnson	Bonk	Wenger
Ausubel	Winn	Wittrock	Johnson	Moore	Bonk
Travers	Kulhavy	Carrier	Merrill	Gunawardena	Duffy
Lamberski	Rakow	Briggs	Hooper	Richey	Klein
Merrill	Heinich	Morrison	Sullivan	Sweller	Vygotsky
Karp	Levin	Rieber	Wilson	Becker	Moreno
Berry	Rieber	Collins	CTGV	Carey	Gunawardena
Mayer	Levie	Brown	Slavin	NCES	Brown
Oltman	Briggs	Dick	Briggs	Schunk	Zimmerman
Allen	Canelos	Kulik	Morrison	Wilson	Bruner
Briggs	Phillips	Winn	Wager	Salomon	Bransford

Figure 14 represents the most cited reference works within the thirty-year span of Instructional/Educational Technology represented in this knowledge domain. The most influential reference work of the period studied is *Principles of Instructional Design* by Gagne and Briggs with over a twenty-five-year span of influence. Two other titles influential over a twenty-year span were *The Conditions of Learning* by Gagne, and *Instructional Design Theories and Models: An Overivew of Their Current Status* by Reigeluth.



Timeline of Most Cited Reference Works and Their Span of Influence

Figure 14. Timeline of the most cited Reference Works presented in linear scale over the division of the data subsets with each Reference Work title orb indicating span of influence. Created with Online Diagram Software & Visual Solution | Lucidchart. Copyright 2018 by www.lucidchart.com.

During the thirty-year span of the knowledge domain, the establishment of Instructional/Educational Technology academic publications (journals) became established and rose to the most cited publications within the knowledge domain. Table 75 represents the most cited academic publications within the thirty-year span of Instructional/Educational Technology represented in this knowledge domain.

Table 75
Data Set 2 Most Cited Academic Publications Determined by Frequency

Variable	All Journal Citations N=48,063
J of Educational Psychology	2075
Educational Technology	1471
ETR&D	1393
Review of Educational Research	930
ECTJ	657
AV Communications Review	602
J of Exp Psych: Human Learning & Memory	495
Educational Researcher	487
J of Computer Based Instruction	462
American Educational Research Journal	332
J of Instructional Development	309
The American J of Distance Education	285
Instructional Science	283

Mapping Science

The third research question asked "What intellectual structure may be identified through author co-citedness in the conference proceedings of the AECT for the period 1979-2009?" Dataset 3 was created from the papers of the conference proceedings written by researchers who authored five or more papers within each data subset of Dataset 1. Those papers were examined for cocitations counts of the authors with ten or more citations identified in Dataset 2. All authors were treated as equal authorships and frequencies were tabulated to factor citation counts and form a correlation matrix for each data subset to form an Arc List of cocitation weights and convert it into a Comma Delimited File.

Gephi 0.9.2 software was used to produce multidimensional graphs of the structure of each data subset and Dataset 3 to identify the structure of Instructional/Educational Technology identified in the knowledge domain that the conference proceedings of the AECT may represent. The Yifan Hu layout algorithm, "a force directed algorithm that models the physical system of bodies with forces acting between them," was employed (Hu, Y. 2005). This algorithm "made use of a scheme that combined a force-directed model and a graph coarsening technique" (Khokhar, 2017 p. 85). Graph coarsening grouped the cocitation pairs and built a smaller and tighter graph from the groupings.

The multidimensional graphs were created where each author was represented as a node, the lines connecting the nodes represented the cocitations between authors, and the proximity of these points relected the relationships of authors as recognized through

citation by multiple citers. Node size indicated citation strength or frequency within Dataset 2. Line thickness indicated degree of cocitations between two given authors or nodes as determined in Dataset 3. "The network analyses provide a diagrammatical representation of the relative distances between authors, in terms of influence (citedness)] and illustrated structural patterns and differing positions within the network" (Benchendorff, 2009, p.9). Each multidimensional network analysis was formed and analyzed, and descriptive cluster analyses were reported.

Data Subset 1979-1984

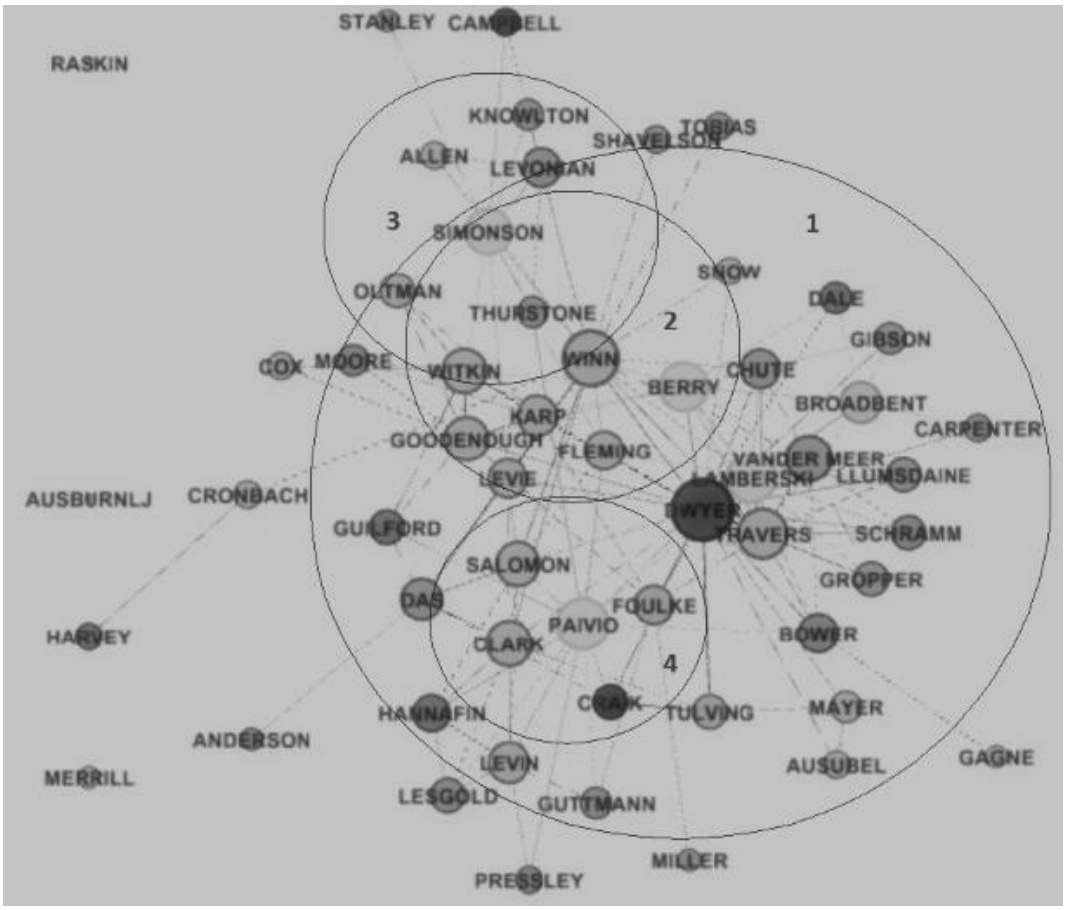
Ten researchers in the first subset of Dataset 1 were identified as authoring five or more documents within the conference proceedings. These researchers contributed 68 papers that were examined for the cocitations of 69 authors identified as most cited in the first data subset of Dataset 2. The 69 authors' cocitation counts were tabulated into a correlation matrix and converted into a Comma Delimited File, which was graphed in Gelphi 0.9.2 software. Sixty-seven nodes were mapped, and 1,211 connections or cocitations for the most influential authors were identified in the graph represented in Figure 15. Average degree length was 18.203 with six communities of influence.

Figure 15 shows only those links with ten or more cocitations in order to keep the diagram relatively uncluttered and easier to interpret. Identifying clusters of nodes with central points is a common analysis technique within cocitation network analysis (Benckendorff, 2009, p.9). Four clusters of related nodes were identified within the graph. The central node of the main cluster, Cluster 1, of the graph is held by F. M. Dwyer. In close proximity to Dwyer in trine were R. M. W. Travers and R. J.

Lamberski. Cluster 1 provided the most density or degree of influence within the graph.

Cluster 2 was formed by another trine of authors in close proximity. Winn was the central node of Cluster 2 with Goodenough, Karp, Witkin, Fleming, and Levie forming a strongly cocited collaborative shell within this cluster. Cluster 3 and 4 comparatively represent relational perspectives. Cluster 3, with M. R. Simonson as the central node, indicates a strong leadership role of influence among a semi-circle or spore-like extention of semi-influentual cocited authors. Cluster 4 indicates a strong collaborative cluster of influence with authors including Pavio as the central node and Salomon, Winn, and Foulke forming a relational cluster.

Some strong nodes of citation appeared outside of the clusters. These nodes may indicate growing nodes of influence. Several authors appeared as radical points outside the main cluster which indicated influencial writers gaining prominence in the domain by intorudcing a new theory, concept or paradigm.



Data Subset 1979-1984 Cocitation Network Analysis of the Most Influential Authors

Figure 15. A bibliometric multi-dimensional map of the author cocitations from the Data Subset 1979-1984 from the Conference Proceedings of the AECT. Visualized with Gephi 0.9.2 software employing the Yifan Hu algorithm.

Data Subset 1985-1989

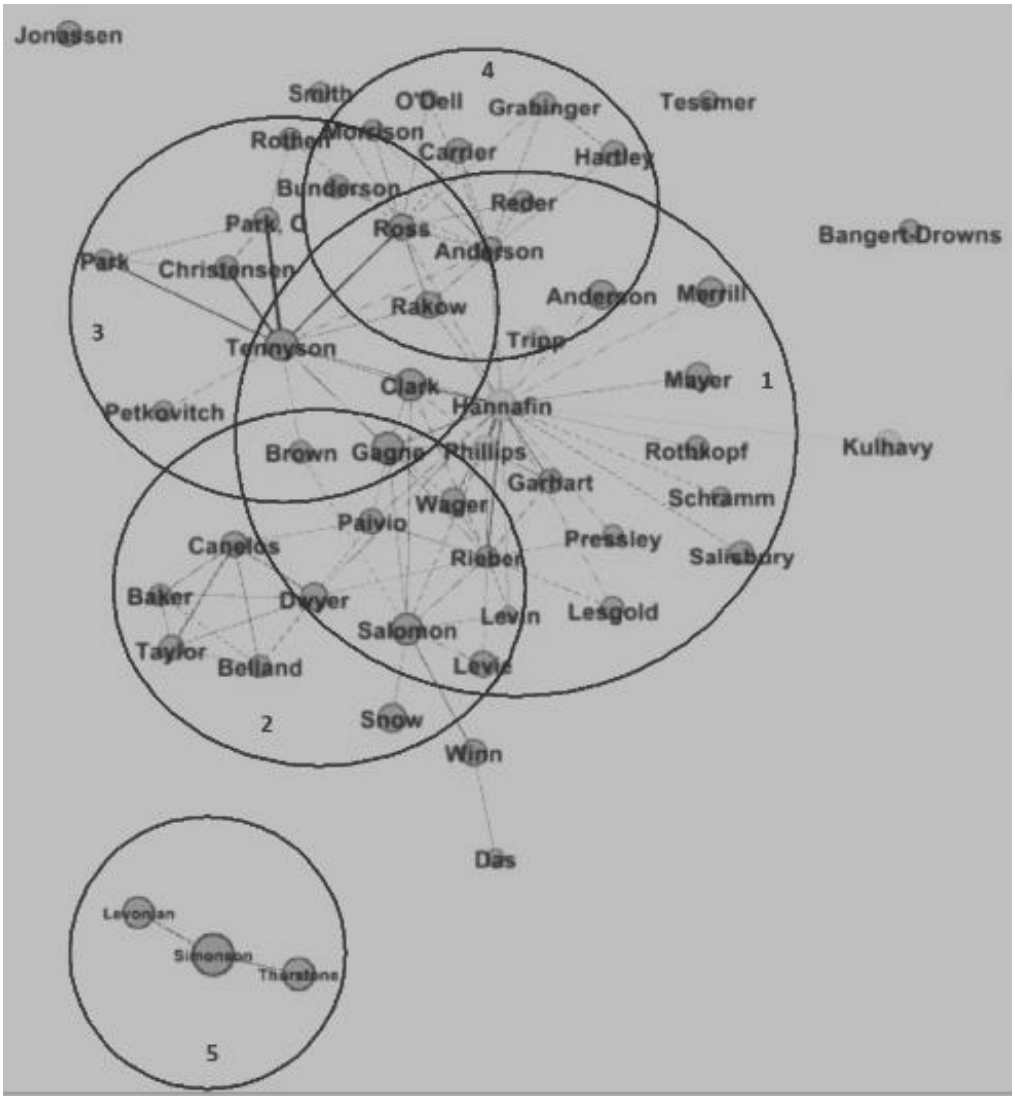
Sixteen researchers in the second subset of Dataset 1 were identified as authoring more than five documents within the conference proceedings. These researchers contributed 111 papers that were examined for the cocitations of 121 authors identified as most cited in the second data subset of Dataset 2. The 121 authors' cocitation counts were tabulated into a correlation matrix and converted into a Comma Delimited File,

which was graphed in Gelphi 0.9.2 software. One hundred-ten nodes were mapped, and 1,607 connections or cocitations for the most influential authors were identified in the graph represented in Figure 16. Average degree length was 26.149 with 16 communities of influence.

Figure 16 shows only those links with ten or more cocitations in order to keep the diagram relatively uncluttered and easier to interpret. Clusters of nodes were identified with central points for network analysis. Five clusters within the graph were identified. The central node of Cluster 1 indicated a strong leadership role of influence among a circle of cocited authors with a strong subcluster of influence within Cluster 1 with Phillips as the secondary central node. Cluster 2 and 3 comparatively represented relational perspectives to Cluster 1. Cluster 2 shows a strong collaborative cluster of influence with authors including Baker, Belland, Canelos, Dwyer, and Taylor forming the cluster with Dwyer as the central node. R. D. Tennyson served as the central node of Cluster 3 and indicated a strong leadership role of influence among a circle of cocited authors. Cluster 4, a more compact cluster with Anderson as the central node formed interconnectivity with Clusters 1 and 3.

This network identified disassociated clusters, wherein there was limited or no connection between the disasociated cluster and the main cluster of the graph. One disassociated cluster was graphed. Cluster 5, with M. R. Simonson as the central node, indicated a leadership role of influence among a semi-circle or spore-like extention of cocited authors. In addition, three free nodes, nodes with no connections, were graphed and indicate three authors with citations levels that would demonstrate influence within

the knowledge domain.



Data Subset 1985-1989 Cocitation Network Analysis of the Most Influential Authors

Figure 16. A bibliometric multi-dimensional map of the author cocitations from the Data Subset 1985-1989 from the Conference Proceedings of the AECT. Visualized with Gephi 0.9.2 software employing the Yifan Hu algorithm.

Data Subset 1990-1994

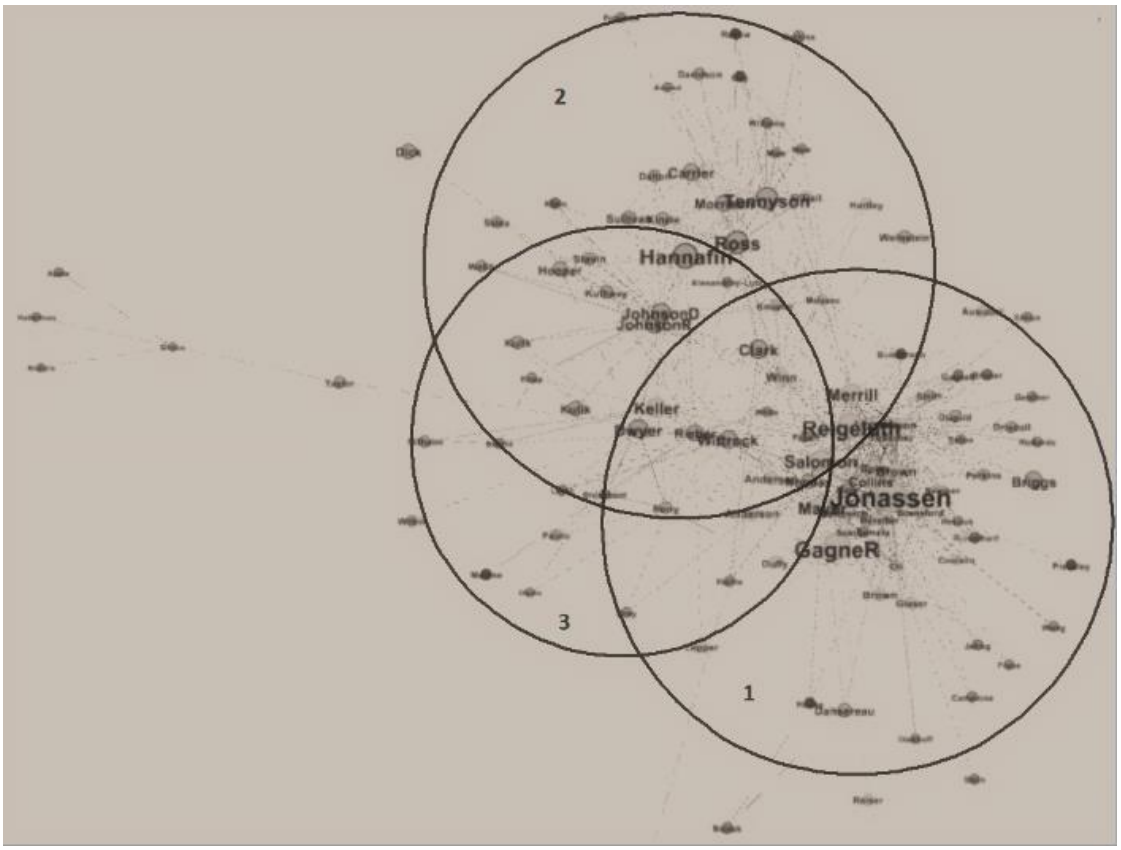
Sixteen researchers in the third subset of Dataset 1 were identified as authoring more than five documents within the conference proceedings. These researchers

contributed 101 papers that were examined for the cocitations of 192 authors identified as most cited in the third data subset of Dataset 2. The 192 authors' cocitation counts were tabulated into a correlation matrix and converted into a Comma Delimited File. One hundred sixty-four nodes were mapped, and 1,607 connections or cocitations were identified in the graph represented in Figure 17. Average degree length was 5.948 with 82 communities of influence.

Figure 17 shows only those links with ten or more cocitations in order to keep the diagram relatively uncluttered and easier to interpret. Clusters of nodes were identified with central points for network analysis. Three interrelated clusters within the graph were identified. The central node of Cluster 1 indicated a strong collaboration cluster of influence with authors including Reigeluth, Jonassen, Gagne, Salomon, Merrill, and Wittrock.

Cluster 2 and 3 also presented strong collaboration formations emerging from the central node. Cluster 2, with Hannafin as the central node was also a collaborative cluster of influence with authors including Ross Tennyson, Morrison, Carrier, Johnson R, and Johnson, D in close proximity. Cluster 3 indicated a strong collaborative cluster of influence with authors including Dwyer, Keller, Rieber and Wittrock with Dwyer as the central node.

This network is the first to show dendronic extensions extending far beyond the proximity barriers of the clusters, which indicate the development of new related paradigms and growth in the knowledge domain.



Data Subset 1990-1994 Cocitation Network Analysis of the Most Influential Authors

Figure 17. A bibliometric multi-dimensional map of the author cocitations from the Data Subset 1990-1994 from the Conference Proceedings of the AECT. Visualized with Gephi 0.9.2 software employing the Yifan Hu algorithm.

Data Subset 1995-1999

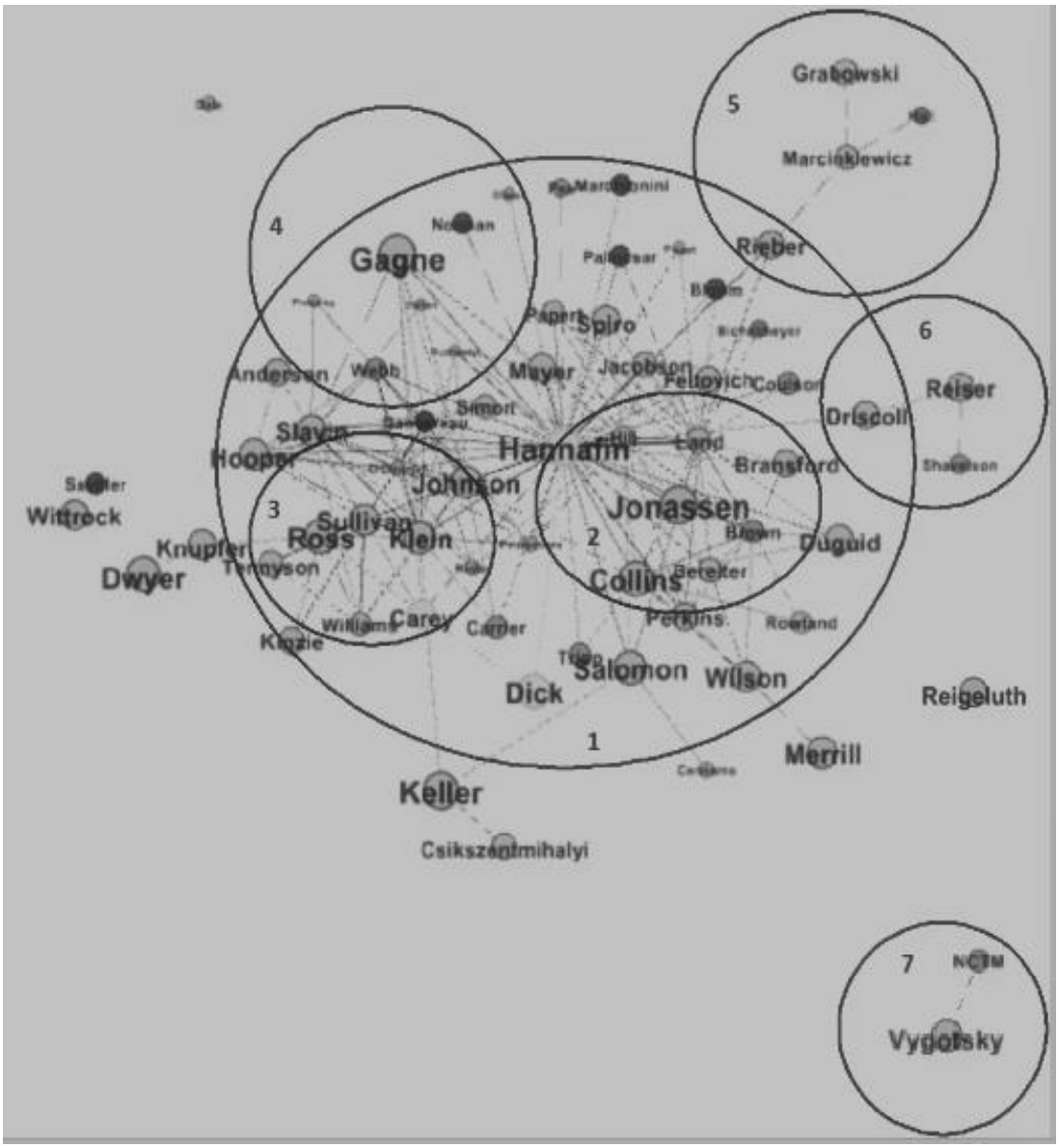
Thirteen researchers in the fourth subset of Dataset 1 were identified as authoring more than five documents within the conference proceedings. These researchers contributed 82 papers that were examined for the cocitations of 147 authors identified as most cited in the fourth data subset of Dataset 2. The 147 authors' cocitation counts were tabulated into a correlation matrix and converted into a Comma Delimited File. One hundred thirty-six nodes were mapped, and 2,012 connections or cocitations were

identified in the graph represented in Figure 18. Average degree length was 2.476 with 89 communities of influence.

Figure 18 shows only those links with ten or more cocitations in order to keep the diagram relatively uncluttered and easier to interpret. Clusters of nodes were identified with central points for network analysis. Seven clusters, one large central cluster with six relational clusters form the body of the graph. One disassociated cluster and five free nodes within the graph were identified.

The body of the graph is portioned within or from Cluster 1 with Hannafin as the strong central node of the graph. All cocitation connections within the graph were connected to Hannafin. Cluster 2, 3, and 4 represented relational perspectives to Cluster 1. Each cluster had a strong central node of influence but remained within the cocitational boundaries of Cluster 1. Jonassen, Sullivan, and Gagne served as central nodes of these clusters. Cluster 5 and 6 were dendronically connected to Cluster 1 but have central nodes that have emerged from the cocitation boundary of Cluster 1 to demonstrate spore-like protrusions from the central node.

This network identified one disassociated cluster, wherein there is limited or no connection between the disasociated cluster and the main cluster of the graph. Vygotsky was identified as the central node of Cluster 7. Some dendronic protrusions were emerging from Cluster 1 and five free nodes have appeared in the upper left quadrant of the graph, which may indicate the formation of new concepts or paradigms and growth within the knowledge domain.



Data Subset 1995-1999 Cocitation Network Analysis of the Most Influential Authors

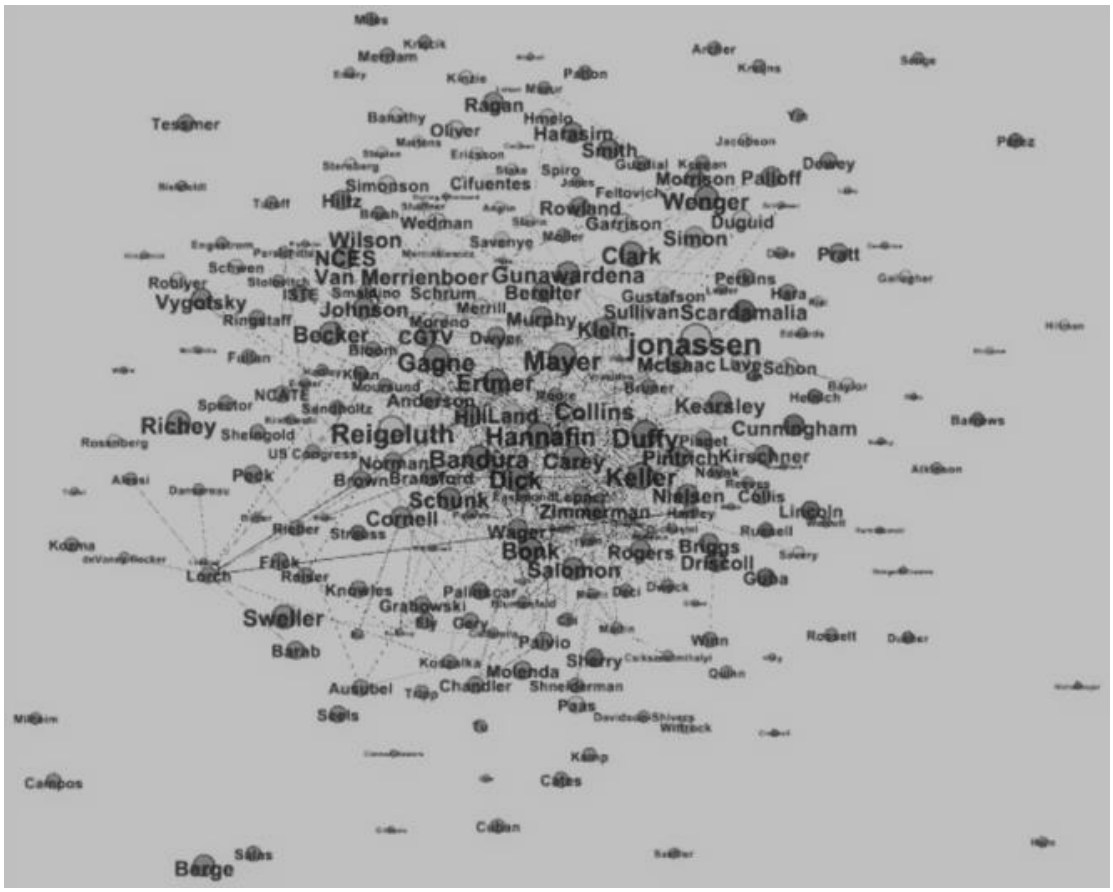
Figure 18. A bibliometric multi-dimensional map of the author cocitations from the Data Subset 1995-1999 from the Conference Proceedings of the AECT. Visualized with Gephi 0.9.2 software employing the Yifan Hu algorithm.

Data Subset 2000-2004

Twenty-five researchers in the fifth subset of Dataset 1 were identified as authoring more than five documents within the conference proceedings. These

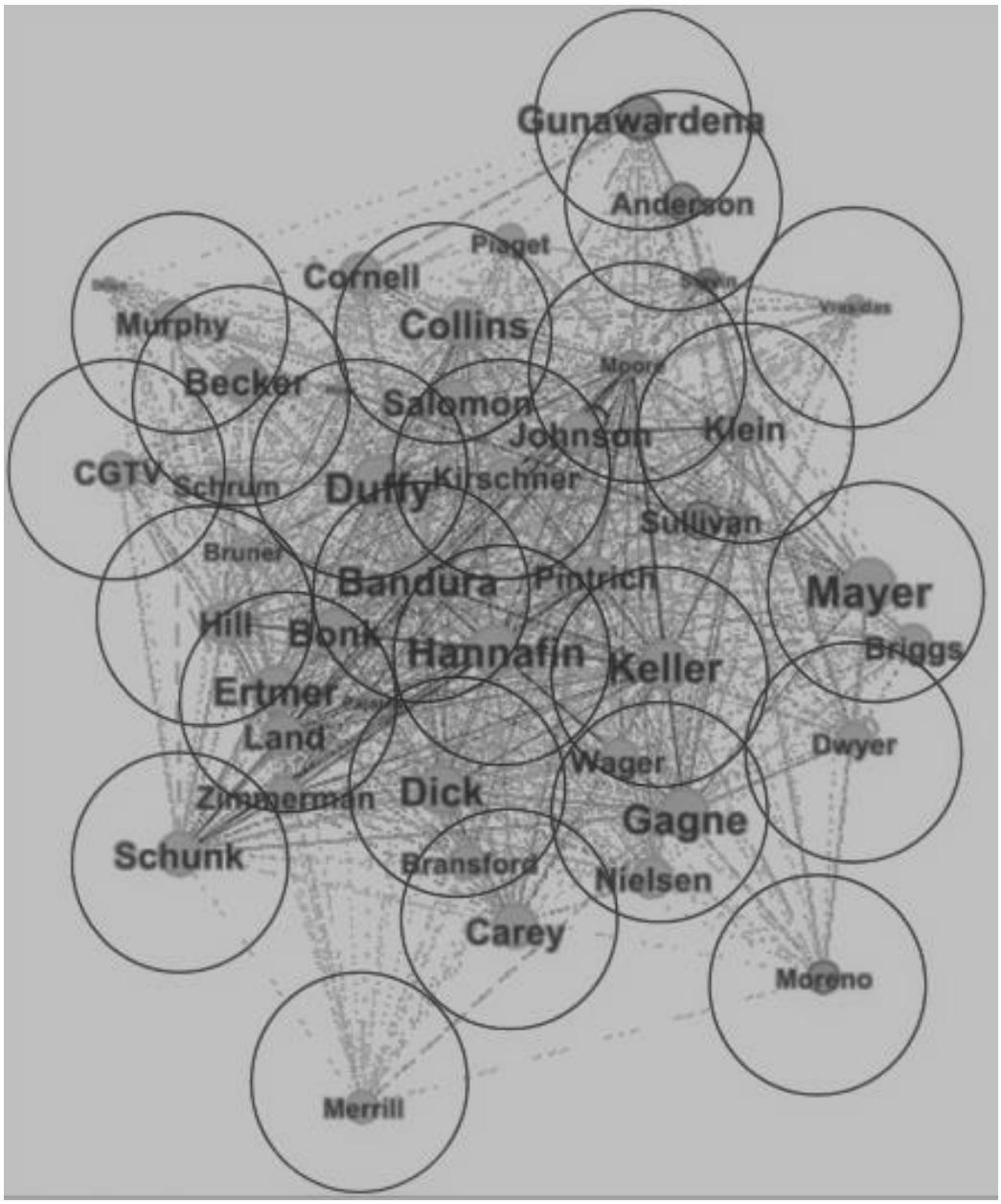
researchers contributed 188 papers that were examined for the cocitations of 268 authors identified as most cited in the fifth data subset of Dataset 2. The 268 authors' cocitation counts were tabulated into a correlation matrix and converted into a Comma Delimited File.Two hundred fifty-three nodes were mapped, and 5,062 connections or cocitations were identified in the graph represented in Figure 19. Average degree length was 7.629 with 83 communities of influence.

Figure 19 shows only those links with ten or more cocitations in order to keep the diagram relatively uncluttered and easier to interpret. Enlargement of the graph was required to focus on the developing clusters for identification for network analysis. Figure 20 shows the embryonic nature of the central cluster of the graph. Multiple clusters of cocotation formed in close proximity to three prominent central clusters with Hannafin, Dick, and Duffy as the central nodes. This embryonic cluster represented the explosion in developmental growth of the knowledge domain within this period.



Data Subset 2000-2004 Cocitation Network Analysis of the Most Influential Authors

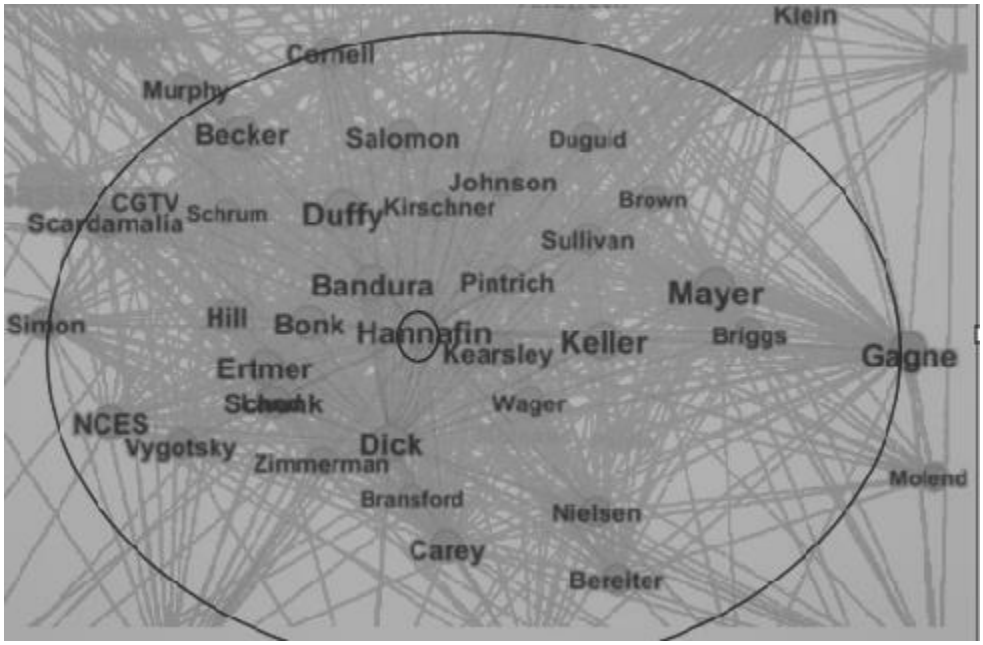
Figure 19. A bibliometric multi-dimensional map of the author cocitations from the Data Subset 2000-2004 from the Conference Proceedings of the AECT. Visualized with Gephi 0.9.2 software employing the Yifan Hu algorithm.



Central Embryonic Cluster of Data Subset 2000-2004 Cocitation Network Analysis of the Most Influential Authors

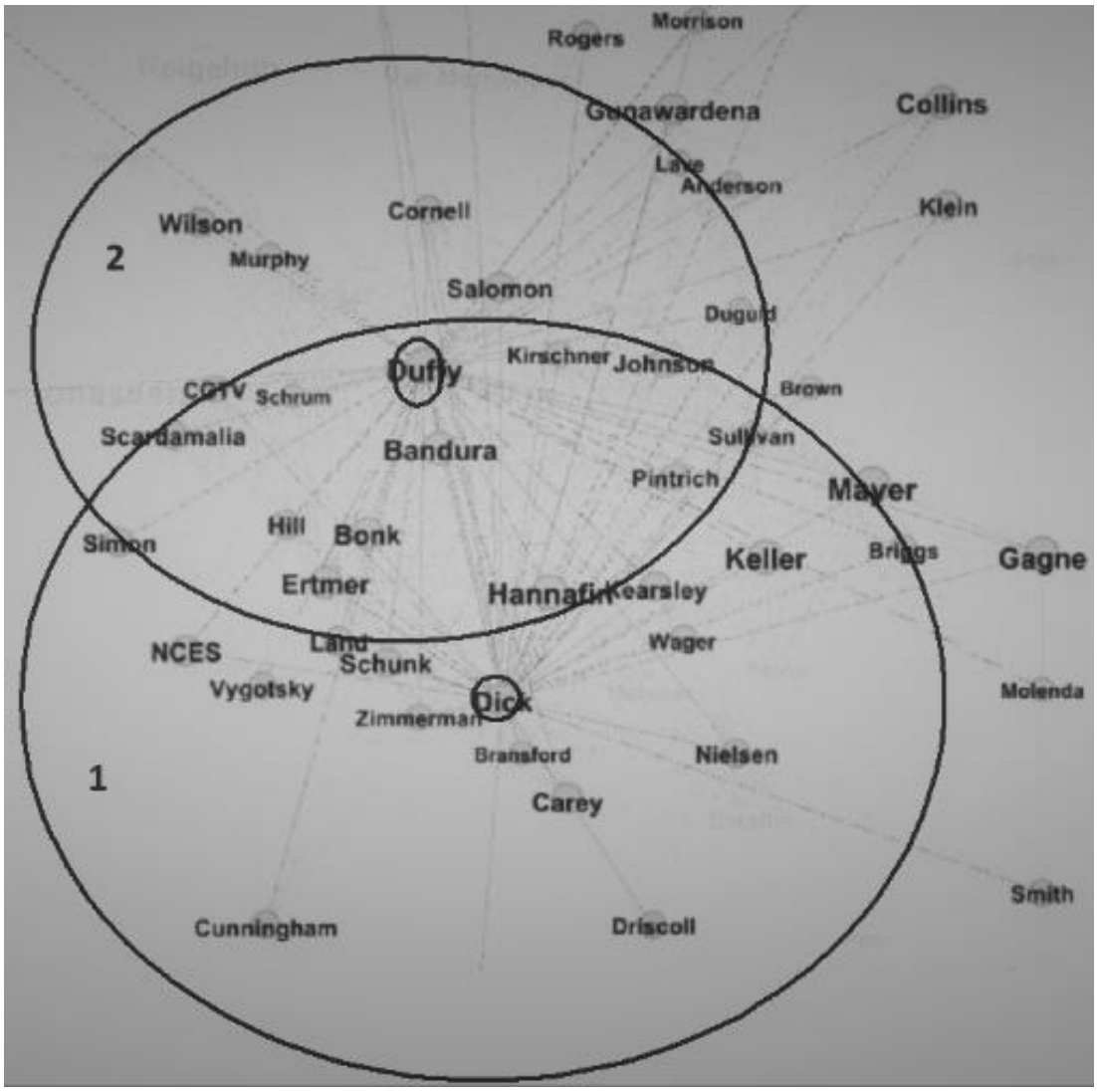
Figure 20. A bibliometric multi-dimensional map of the author cocitations from the Data Subset 2000-2004 from the Conference Proceedings of the AECT. Visualized with Gephi 0.9.2 software employing the Yifan Hu algorithm.

Figure 21 and Figure 22 provide a view of the 3 most prominent clusters within the original graph for this data subset. While Cluster 1, Cluster 2, and Cluster 3 overlap in close proximity due to a low degree measure, these clusters represent strong central leadership roles of influence emanating from three strong central nodes. These clusters represent the knowledge base with this violatile period of development within the knowledge domain.



Enlarged View of Cluster 1 of Data Subset 2000-2004 Cocitation Network Analysis of the Most Influential Authors

Figure 21. A bibliometric multi-dimensional map of the author cocitations from the Data Subset 2000-2004 from the Conference Proceedings of the AECT. Visualized with Gephi 0.9.2 software employing the Yifan Hu algorithm.



Enlarged View of Cluster 2 and Cluster 3 of Data Subset 2000-2004 Cocitation Network Analysis of the Most Influential Authors

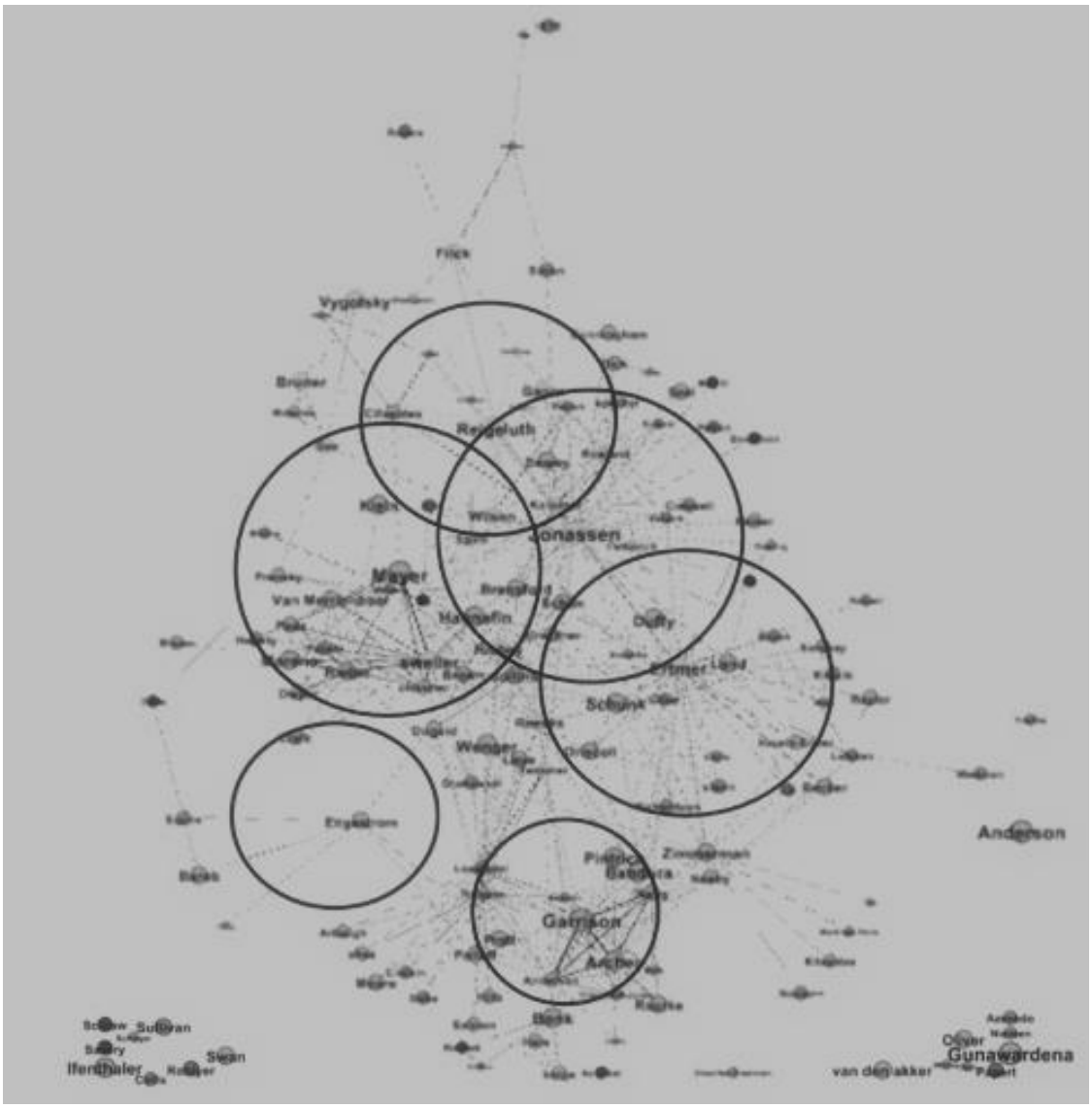
Figure 22. A bibliometric multi-dimensional map of the author cocitations from the Data Subset 2000-2004 from the Conference Proceedings of the AECT. Visualized with Gephi 0.9.2 software employing the Yifan Hu algorithm.

Data Subset 2005-2009

Twenty-seven authors in the sixth subset of Dataset 1 were identified as authoring more than five documents within the conference proceedings. These

researchers contributed 198 papers that were examined for the cocitations of 208 authors identified as most cited in the sixth data subset of Dataset 2. The 208 authors' cocitation counts were tabulated into a correlation matrix and converted into a Comma Delimited File. One hundred seventy-four nodes were mapped, and 4,592 connections or cocitations were identified in the graph represented in Figure 23. Average degree length was 30.798 with 41 communities of influence.

Figure 23 showed only those links with ten or more cocitations in order to keep the diagram relatively uncluttered and easier to interpret. Clusters of nodes were identified with central points for network analysis. Enlargement of the graph was required to focus on the developing clusters for identification for network analysis. Figure 23 shows the development from embryonic graph of the previous subset to the dendronic and cluster nature of the current graph. The distance between clusters has grown 75% from the previous data subset graph.



Data Subset 2005-2009 Cocitation Network Analysis of the Most Influential Authors

Figure 23. A bibliometric multi-dimensional map of the author cocitations from the Data Subset 2005-2009 from the Conference Proceedings of the AECT. Visualized with Gephi 0.9.2 software employing the Yifan Hu algorithm.

Figure 24 shows Cluster 1 with Jonassen as the central node. This cluster is a fully developed cocitation cluster demonstrating subcluster and dendronic growth. Previous disaccociated nodes are now connected to this central cluster, such as Vygotsky in the upper left quadrant.

Enlarged View of Cluster 1 of Data Subset 2005-2009 Cocitation Network Analysis of the Most Influential Authors

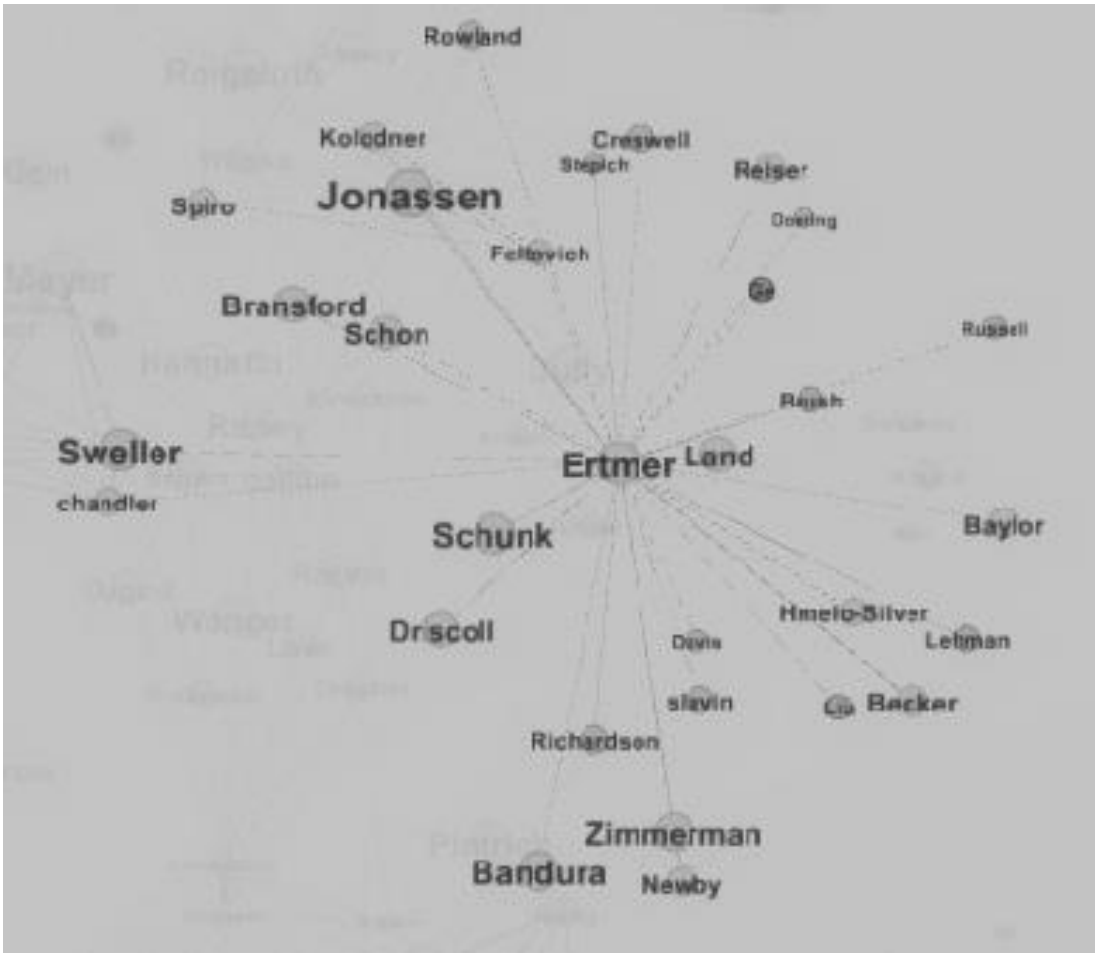
Figure 24. A bibliometric multi-dimensional map of the author cocitations from the Data Subset 2005-2009 from the Conference Proceedings of the AECT. Visualized with Gephi 0.9.2 software employing the Yifan Hu algorithm.

Figure 25 shows Cluster 2 with Reigeluth as the central node. This cluster is a fully developed cocitation cluster demonstrating subcluster and dendronic growth. The subclusters also demonstrate relational connectivity to other nodes.

Enlarged View of Cluster 2 of Data Subset 2005-2009 Cocitation Network Analysis of the Most Influential Authors

Figure 25. A bibliometric multi-dimensional map of the author cocitations from the Data Subset 2005-2009 from the Conference Proceedings of the AECT. Visualized with Gephi 0.9.2 software employing the Yifan Hu algorithm.

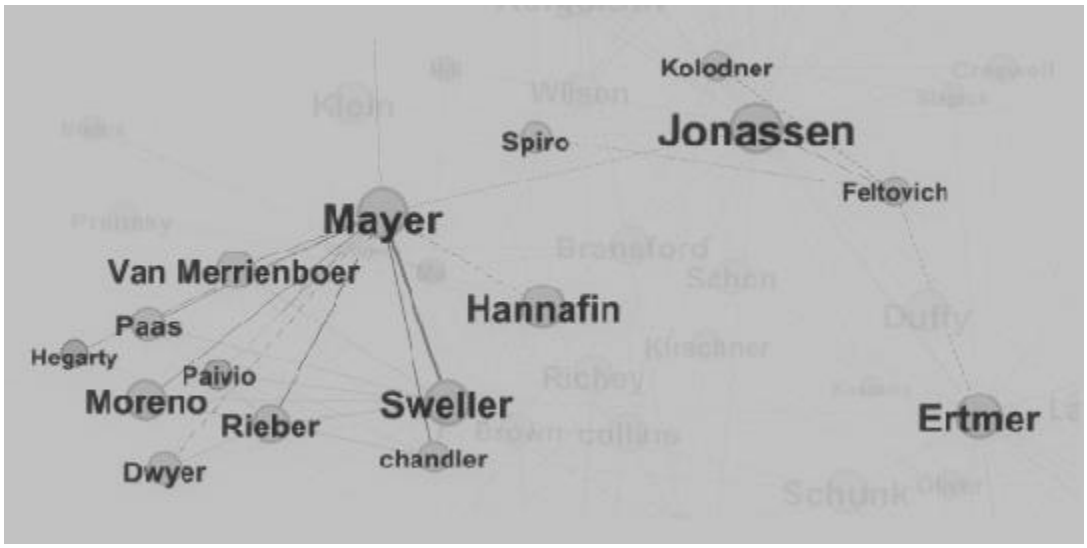
Figure 26 shows Cluster 3 with Ertmer as the central node. This cluster is a fully developed cocitation cluster demonstrating subcluster and dendronic growth. The subclusters also demonstrate relational connectivity to other nodes, such as Sweller on the left side of the graph.



Enlarged View of Cluster 3 of Data Subset 2005-2009 Cocitation Network Analysis of the Most Influential Authors

Figure 26. A bibliometric multi-dimensional map of the author cocitations from the Data Subset 2005-2009 from the Conference Proceedings of the AECT. Visualized with Gephi 0.9.2 software employing the Yifan Hu algorithm.

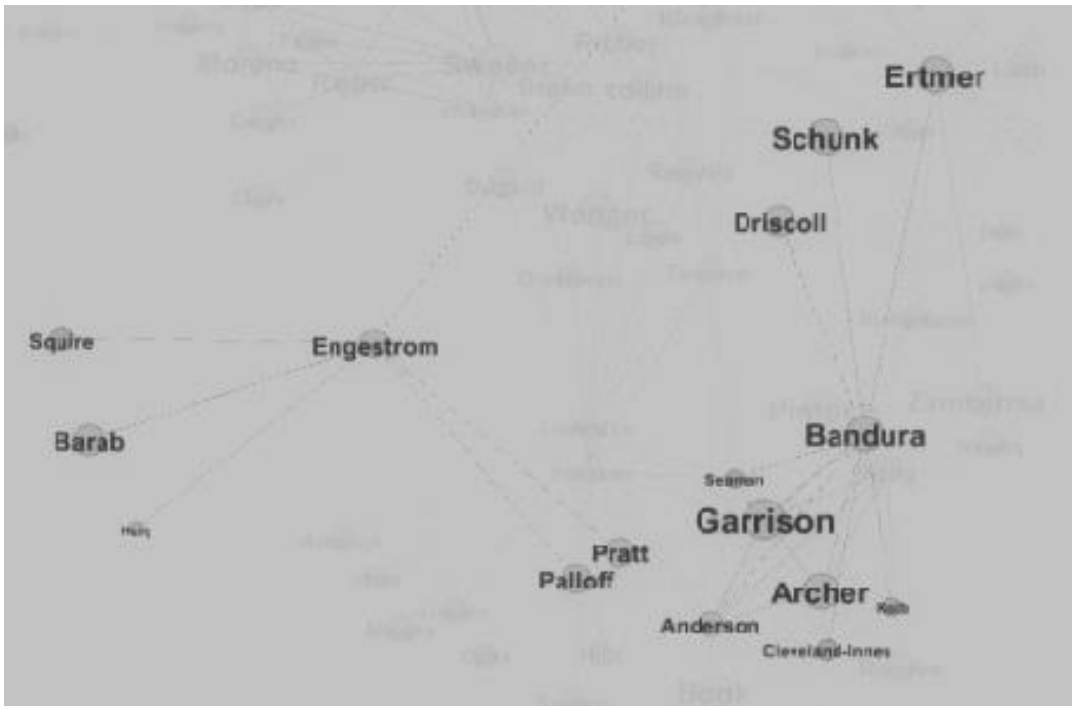
Figure 27 shows Cluster 4 with Mayer as the central node. This cluster is an example of developing cocitation cluster that resembles the spore or seed development of a plant. The nodes emanating from the central point represent nodes rising in influence and connectivity to other clusters within the network.



Enlarged View of Cluster 4 of Data Subset 2005-2009 Cocitation Network Analysis of the Most Influential Authors

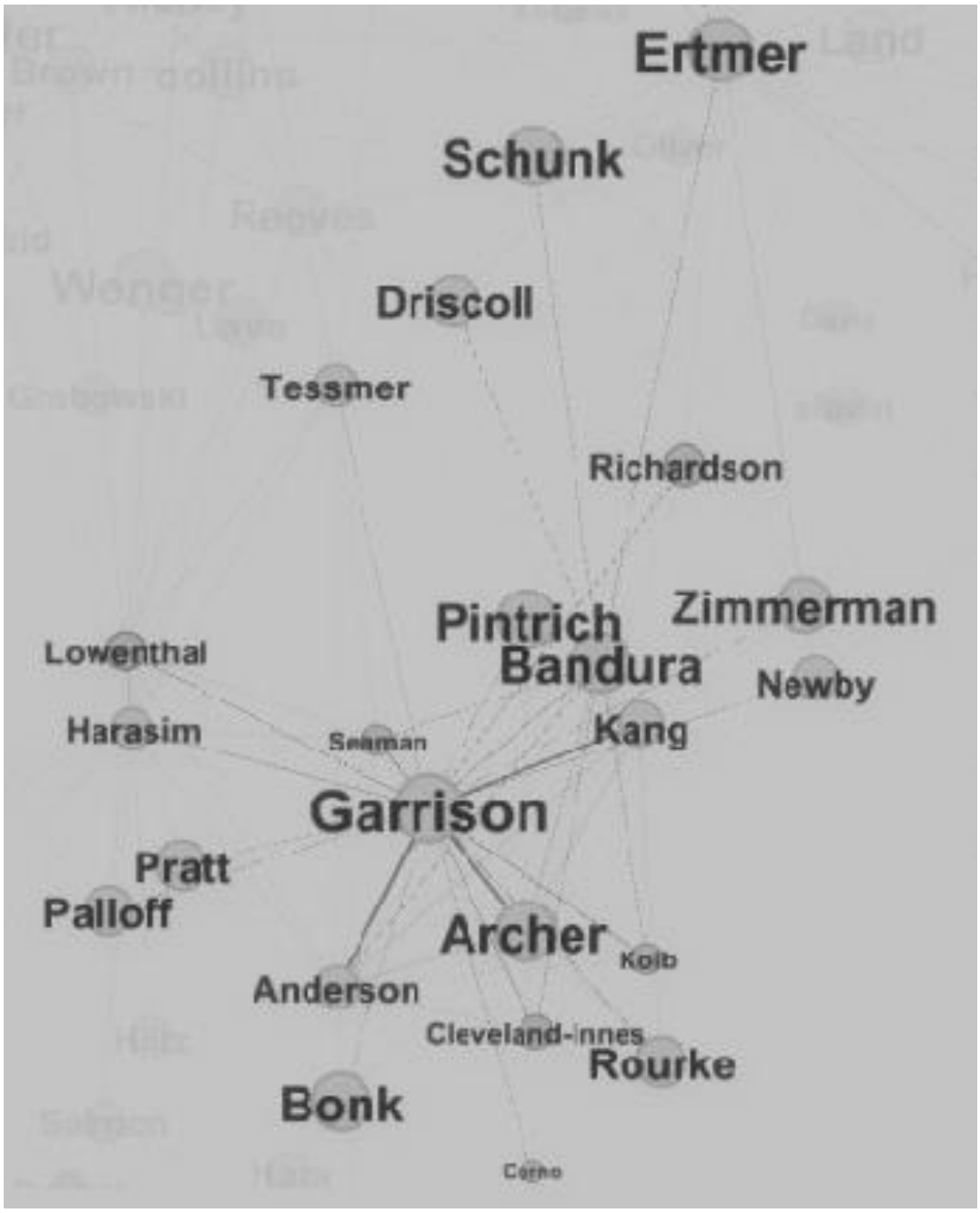
Figure 27. A bibliometric multi-dimensional map of the author cocitations from the Data Subset 2005-2009 from the Conference Proceedings of the AECT. Visualized with Gephi 0.9.2 software employing the Yifan Hu algorithm.

Figure 28 shows Cluster 5 with Engestrom as the central node. This cluster is an example of developing cocitation cluster that resembles the spore or seed development of a plant. The nodes emanating from the central point represent nodes rising in influence and connectivity to other clusters within the network. This cluster appears in the graph to floating in space but with dendronic connections to other clusters. Clusters of this nature demonstrate connections to the established knowledge base and to new theories, concepts, or paradigms.



Enlarged View of Cluster 5 of Data Subset 2005-2009 Cocitation Network Analysis of the Most Influential Authors

Figure 28. A bibliometric multi-dimensional map of the author cocitations from the Data Subset 2005-2009 from the Conference Proceedings of the AECT. Visualized with Gephi 0.9.2 software employing the Yifan Hu algorithm.



Enlarged View of Cluster 6 of Data Subset 2005-2009 Cocitation Network Analysis of the Most Influential Authors

Figure 29. A bibliometric multi-dimensional map of the author cocitations from the Data Subset 2005-2009 from the Conference Proceedings of the AECT. Visualized with Gephi 0.9.2 software employing the Yifan Hu algorithm.

Figure 29 shows Cluster 6 shows a strong collaborative cluster of influence with authors including Bandura, Pintrich, Garrison, Kang, and Seaman forming the cluster with Garrison as the central node. This cluster is a strong relational cluster with connections to other clusters and dendronic development.

The graph and cluster graphs for this data subset demonstrate a well developed and complex knowledge domain with different levels of development of the authorial influence and therefore intellectural connections.

Summary of Findings

The conference proceedings of the AECT, published from 1979 to 2009, provide a consistent set of papers to analyze and graph the cocitations and determine the structure of the knowledge domain. The first data subset, Data Subset 1979-1984, provides a structural view of a small group of authors relationally interacting through cocitation focused on one or two ideas that were visually demonstrated in the network graph. The network, according to Pham, Derntl, and Klammas (2012) *Developmental Model*, may be identified as an interdisciplinary knowledge domain.

The second data subset, Data Subset 1985-1989, provides a structural view of a group realationally interacting through cocitation. The network, according to Pham, Derntl, and Klammas (2012) *Developmental Model*, may be identified as an emerging knowledge domain. Development and growth has occurred since the previous data subset within the knowledge domain.

The third data subset, Data Subset 1990-1994, provides a structural view of a

group of authors relationally interacting through cocitation with new authors establishing eminence over the previous subset that were visually demonstrated in the network graph. The network, according to Pham, Derntl, and Klammas (2012) *Developmental Model*, may be identified as a focused knowledge domain. Not only has growth and development occurred since the previous data subset, but also growth in the participation within the knowledge domain.

The fourth data subset, Data Subset 1995-1999, provides a structural view of a group of authors relationally interacting through cocitation and largely within a focused group that were visually demonstrated in the network graph. The network, according to Pham, Derntl, and Klammas (2012) *Developmental Model*, may be identified as a focused knowledge domain. This knowledge domain is subtedly different from the previous domain in that development is directed internally within the primary cluster. Dendronic protrusions coupled with free nodes indicate a shift within the field to a new paradigm.

The fifth data subset, Data Subset 2000-2004, provides a structural view of a group of authors relationally interacting through cocitation and visually demonstrated in the network graph. The network, according to Pham, Derntl, and Klammas (2012) *Developmental Model*, may be identified as a hierarchical knowledge domain experiencing embryonic intellectual development. The graph is covered in developmental clusters as well as three central clusters connected in trine, that for the first time, represent a knowledge base layered under an explosion of development of new concepts and paradigms within the knowledge domain.

The sixth and last data subset, Data Subset 2000-2004, provides a structural view of a group of authors relationally interacting through cocitation and visually demonstrated in the network graph. The network, according to Pham, Derntl, and Klammas (2012) *Developmental Model*, may be identified as structurally mature incorporating elements of interdisciplinary, hierarchical, and focused knowledge development. Clusters are varied and spread with a multitude of dendronic activity and interrelational development at different levels indicating maturity of growth and development of the knowledge domain.

Chapter 5: Discussion

Science is not recognized as knowledge until it is shared. We share science most aptly through publication. Publications record the actions of science including connections of thought through citation.

> "Citations are cultural artifacts. They are complex textual symbols and one of the most direct means through which we report, imply, and convey our perspective about and uses of previous work. To study citations as expressions of use is to track the ways in which we, collectively, decide to retrieve only some sources in order to readdress and re-animate ideas from the past in new contexts and for ongoing work" (Koshnick, 2014, p. 137).

It is through this process that a physical record of communication within a paradigm may be identified and knowledge domains are created. "Examination of bibliographic data is meant to proxy the examination of products of science" (Koshnick, 2015, p. 27).

New knowledge domains may form as researchers acting within a paradigm find more pathways to publication. Conference proceedings provide a knowledge domain worthy of study. The Association for Educational Communications and Technology (AECT) has provided support to professionals as the oldest association central to instruction through technology. The goal of this research was to provide a more comprehensive picture of the knowledge domain of Educational/Instructional Technology through a combination of bibliometric analyses that described the researchers, their scientific output, and the communication within the knowledge domain through cocitation network analysis.

Summary of Findings

The Conference Proceedings of the AECT provide a consistent view of Instructional/Educational Technology. The proceedings have been a peer-reviewed publication since 1979 compiled by Michael R. Simonson as the sole founding and continuing editor. Michael R. Simonson began his career in Instructional/Educational Technology in Iowa which is located in America's Industrial Heartland, also referred to as the Rustbelt, where Instructional/Educational Technology and the AECT find their origins. This study sought to describe Instructional/Educational Technology through an analysis of the researchers and research presented within the Conference Proceedings of the AECT.

First, the knowledge domain of the AECT Conference Proceedings was described in terms of the authorship of its papers. During the thirty-year span (1979-2009), most of the researchers were professors and graduate students serving in Education departments at higher learning institutions across the United States originating in the Rustbelt. The Scientific Productivity ratio was determined at 73% to 27% with a variance of 7% over the thirty-year span, which represented a committed authorship to the knowledge domain, growth in contributions, and an openness to new authorship.

The research front of the knowledge domain was represented by 118 authors over the course of the thirty-year span. Four authors, Dwyer, Hannafin, Jonassen, and Klein, had long productive periods as they appeared in more than two data subsets of the study. This phenomenon would demonstrate a knowledge domain open to new researchers and a consideration for the established researchers of the knowledge domain.

The main themes of the knowledge domain changed over time with technological and cultural developments. *Instructional Design, Computer Based Instruction,* and *Learning* come to the forefront in the keyword descriptors and identify the purpose or focus of this knowledge domain at the conclusion of the study.

Next, the knowledge domain of the AECT Conference Proceedings was described in terms of the cited authors within its published papers. Over 48,000 citations were analyzed with 7% of the cited authorship representing the knowledge base of the domain. The document type percentage rate also remained the same throughout the thirty-year span and represented stability within the citation record of the knowledge domain.

The most cited authors within the knowledge domain may represent the human knowledge base and the change of that knowledge base over time. Gagne, Hannafin, Jonassen, Dwyer, and Reigeluth were the most cited authors within the knowledge domain over the thirty-year span.

The most influential reference work of the period studied was *Principles of Instructional Design* by Gagne and Briggs with over a twenty-five-year span of influence. Two other titles influential over a twenty-year span were *The Conditions of Learning* by Gagne, and *Instructional Design Theories and Models: An Overivew of Their Current Status* by Reigeluth. In addition, titles changed from focus on the tool to focus on the learning and this was reflected in the book titles within the dataset.

During the thirty-year span of the knowledge domain, Instructional/Educational Technology academic publications (journals) became established and rose to the most cited publications within the knowledge domain. *Educational Technology* and

Educational Technology: Research and Development (ETR&D) were the most influential.

Lastly, six cocitation network analysis graphs were created over the thirty-year span. The graphed cocitation networks of each data subset indicated a strong affinity for citation drawing from within the knowledge domain and structural development occurred and changed over time. The knowledge domain began as a small set of researchers focused on a concept with elements borrowed from other disciplines that developed into a paradigm. In the second subset, the knowledge domain emerged intellectually and became focused on its own communication within the third subset. A subtle shift in focus began in the fourth subset that blossomed into full blown embryonic development of a hierarchically developing knowledge front interacting over a firmly affixed knowledge base within the knowledge domain that demonstrated maturity of intellectual connections within the last data subset.

Interpretation of Findings

The purpose of this study was to examine the conference proceedings of the AECT as the consistent knowledge domain of Instructional/Educational Technology using bibliometric methods, which would reveal the intellectual structure of Educational/Instructional Technology. Librarians, data scientists, and sociologists have long studied knowledge domains to identify intellectual structure and other information in support of the sharing of science (Innes, 2006). The results formulated here offer valuable insights into the structure of Instructional/Educational Technology as presented in the Conference Proceedings of the AECT.

Finn (1953) argued that in order for Instructional/Educational Technology to be recognized as a discipline, it must have an intellectual technique, an application to human affairs, and an intellectual theory undergoing expansion through research. In this study, Finn's (1953) criteria have been met. The studied knowledge domain provided a measured contribution of scientific productivity that was continuous over the thirty-year span. *Instructional Design* was identified as the prominent intellectual technique, and *Computer Based Education* was identified as an application to human affairs. The development of intellectural theories was identified by Flynt (2017) in a previous study. Instructional/Educational Technology is a discipline according to the outcomes of this study.

Context of Findings

"Any analysis is limited by the quality of the data" (Shriffin & Börner, 2004, p. 5183). Only 10% of conference proceedings are recorded in informational databases and made available for research. Additionally, more and more research is finding its home in knowledge domains other than the traditional knowledge domain that peer-reviewed academic publications, i.e. journals, represent. "The researcher must be careful not to assume that some event did not occur simply because he or she is not aware of some record of the event" (Connoway & Powell, 2004, p. 223).

"Few journals are devoted to topical areas that are as narrowly defined as most knowledge domains under study" in the course of their development (Smiraglia, 2014, P. 9). All previous attempts to identify the structure of Instructional/Educational Technology as a discipline have failed due to the lack of sufficient data in academic

publications (journals) as a knowledge domain for bibliometric analysis. Conference proceedings increasingly are providing the knowledge domain worthy of study in a number of fields for domain network analysis.

Any knowledge domain that can provide "patterns of author production, literature growth rates, and related statistical distributions to evalutae authors, assess disciplines, and manage collections" can be used for domain network analysis (O'Connor & Voos, 1981, p. 9). More analyses of conference proceedings in the future should be made "to counteract the neglect of silent evidence" that many conference proceedings represent (Cronin & Sugimoto, 2014, p.7).

Implications of Findings

This study demonstrated a bibliometric analysis in order to identify communication and form models of scientific growth and change which demonstrated evolution within the knowledge domain of Instructional/Educational Technology.

> "It has been stated that the domain analytic approach is a social perspective, where the study of sociology of the knowledge domain is vital for the practice of information services. We have seen that Hjorland and Albrechtsen argue that knowledge domains should be thought of as discourse communities and that knowledge organization, structure, cooperation patterns, language and communication forms, information systems, and relevance criteria are a reflection of the object of the work of these communities and of their role in society" (Bjurström, 2011).
>
> "To begin, theories, paradigms, and disciplines are merely labels we place on

individuals, so we can categorize their interests and beliefs" (Connaway & Powell, 2004, p. 290). Citations serve as markers of relationships of communication and "citation analysis links bibliometrics to other automatic algorithmic methods to construction of knowledge organization systems" and "shares the same epistemoloigcal foundation, *empiricism* to knowledge organization" (Shneider & Börland, 2004, p. 531).

"Historical research is most productive when the researcher attempts to synthesize or integrate the facts into meaningful generalizations" Connaway & Powell, 2004, p. 223). Within Bibliometrics, theory development in describing information production patterns, use, and citation patterns has been guided by established bibliometric laws (Bjurström, 2011). These laws provide a premise in which generalizations about domain analysis that "give the promise of revealing implicit knowledge that is presently known only to domain experts" can be made (Shiffrin & Börner, 2004, p. 5183).

"Research has established the aggregate properties of publications, references, and citations—properties that are essential to know in order to build valid indicators that can be used to measure at various scales, changes in the landscape of science" (Gingras, 2014, p.15). Knowledge domain analysis, according to Koshnick (2013), may be made at three levels of analyses: the particle level, the wave level, and the field level. At the particle level, the characteristics of "the thing itself" relate the units of expression for analysis. At the wave level, the "range of variation" over time of scientific productivity is considered and described. At the field level, "the distribution

of the thing" –how it is percieved within the structure of the knowledge domain and how does it correspond to relevant issues of the field is analyzed and interpreted. Taken collectively, these levels of analysis provide an authoritative view of a knowledge domain. The consistent knowledge domain of the Conference Proccedings of the AECT was analyzed at the particle, wave, and field level and specificity resulted providing the authoritative view of Instructional/Educational Technology as a discipline.

Limitations of the Study

Bibliometric studies by their nature are inherent with apparent limitations and consideration should be made for the purposes of bibliometric study. This dissertation focused on the articles which appeared in the Conference Proceedings of the AECT from 1979 through 2009. The research was concerned with "Who", "What", "Where", and "With whom" of Instructional/Educational Technology with the intention of mapping science to discover the nature of the communication network to make a determination about the type of network represented. Is Instructional/Educational Technology a profession, field, or discipline?

The first research question asked about the researchers, the main themes of their research, and their origins within the field of Instructional/Educational Technology. Unfortunately, one of the major limitatons to the study of conference proceedings as a knowledge domain is the limited amount of information that is recorded about the researchers. Not all data about each individual author was available in the publication, and therefore, was excluded from the study, which may affect the strength of some authors' influences. Further, validity may be limited as paper counts decrease.

In addition, as paradigms develop, researchers use descriptive terminology that may or may not represent the culture of the overall field of study. Authors writing about similar topics may not have employed the same keyword descriptors to describe similar publications; therefore, keyword descriptors may not accurately describe similar publications.

The second research question asked about the resources of the research and its authors, i.e. What reference works, academic publicatons, and their authors were researchers relying on to create science? In this instance, humanity plays a role in the external validity of the study. Not all reference works were cited correctly by citing authors, and therefore, the results may be affected. Another concern is authors' tendencies to cite for reasons other than true influence; therefore, creating influence where none or little may exist.

The third, and last research question asked what intellectual structure may be derived through multidimensional scaling. This information may lead to conclusions about the nature of Instructional/Educational Technology. Again, external validity is affected by human foiables. Not all authors were cited correctly by citing researchers, and therefore, the size of clusters and connections within the network graphs may be affected. These results may also have been affected by a tendency of researchers tend to cite within their own field of reference as a matter of course to influence publication.

Network analysis is also affected by the fractionalizing of scientific contribution by primary and secondary authors and whether these authors were treated as equal contributors to the science or not. In this study, all authors were considered equal with

no distinction between primary author and secondary authors, and therefore, the results may have presented a different network structure that expected in other studies, and an effect on external validity also may have resulted.

Future Research Directions

Research develops through the communication of science by its researchers. No one study can define all the communication connections that exist within science or the specialized communication that is defined and existing within disciplines. “Disciplinary development is an incremental social process that can be analyzed and understood in terms of social theory. Theories, paradigms, and eventually disciplines emanate from a context of these socially constructed areas of knowledge discovery and production” (Connaway & Powell, 2004, p. 290). Conference proceedings by their nature, are a socially constructed knowledge domain worthy of study. The purpose of this study was to visualize Instructional/Educational Technology as presented in a consistent knowledge domain that the AECT Conference Proceedings provided and describe its development.

The data gathered in this study answered the question “How does scholarly communication develop in the knowledge domain presented in conference proceedings and can this microcosm represent the discipline?” This study demonstrated:

- Conference proceedings represent a knowledge domain worthy of study,
- Bibliometric analyses of conference proceedings may identify the research front, knowledge base, and influencers of a knowledge domain,

- Eom's (2009) methodology for data collection and network analysis is applicable to conference proceedings as a knowledge domain, and
- A knowledge domain (Instructional/Educational Technology) may be graphed for developmental and incremental change to provide insight about the communication of science.

Future studies of other conference proceedings with a similar methodology may reinforce the findings may by this study and may answer questions about the strength of conference proceedings as a viable knowledge domain for analysis. Studies of the same knowledge domain in different publications types may also provide information for comparative study and further validate these findings.

Bibliometric analysis provides a wealth of information to be studied. This study considered an epistemological view of the conference proceedings as a knowledge domain to graph its development; and, in this study, developmental and incremental change was identified. Similar cocitation analysis studies, examining different indicators within the dataset, are recommended, such as the analysis of gender and ethnicity in correlation with citation behavior or an examination of collaborative networks between researchers, which may provide insight into developing paradigms for future research. It is also recommended that future researchers compare these findings with the network analysis of other knowledge domains of Instructional/Educational Technology to develop paradigmatic genealogies that will "study the extent to which knowledge and epistemic practices are transmitted" through institutional versus intellectual structures and identify chains of continuity within the discipline (Cronin & Sugimoto, 2014, p. 36).

This information may be used to create an ontological view of the disicpline of Instructional/Educational Technology.

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Appendix A

Data Subset 1979-1984 Main Themes (Keyword Descriptors)

Data Subset 1979-1984 Main Themes (Keyword Descriptors)

Variable	All Articles *n = 207*	*Variable*	All Articles *n = 207*
Research	29	Cueing	4
Pictorial Research	19	Feedback	4
Instructional Design	18	Film	4
Cognitive Styles	17	Information Processing	4
Attitudes	16	Instructional Systems	4
Learning	15	Interactions	4
Visualization	15	Learner Characteristics	4
Behavioral Objectives	13	Mediated Instruction	4
Computers	13	Motivation	4
Instructional Effect	11	Music	4
Theory	10	Special Education	4
Color	9	Teachers	4
Evaluation	9	Teaching	4
Achievement	8	Auditory Learning	3
Comprehension	8	Brain Research	3
Computer Assisted Instr.	7	Children	3
Field Dependence/Independ.	7	Co-Ordination	3
Instructional Media	7	Ethnography	3
Visualized Instruction	7	Eye Movement	3
Aptitude	6	Industry	3
Encoding	6	Information Cueing	3
Persuasion	6	Instructional Methods	3
Retention	6	Instructional Tech	3
Teleconference	6	Media Program	3
Television	6	Media Specialist	3
Testing	6	Memory Strategies	3
Educational Tech	5	Philosophical Foundations	3
Field Dependence	5	Photography	3
Illustrations	5	Preservice Teachers	3
Imagery	5	Programmed Instruction	3
Media Techniques	5	Prose Material	3
Media Utilization	5	Publications	3
Naturalistic Inquiry	5	Self-Evaluation	3
Task Analysis	5	Subsumptive Sequencing	3
Time-Compressed Speech	5	Visual Cueing	3
Visual Testing	5	Visual Literacy	3
ATI	4	Abstract Learning	2
Cognitive Learning	4	Academic Success	2
Cognitive Skills	4	Achievement	2
Computer Anxiety	4	Administrators	2

Algorithmic Instruction	2
Algorithmic Instruction	2
Americanese	2
Assessment	2
Aural Instruction	2
Av Communication Review	2
Bilingual Education	2
Bilingual Learners	2
Black/White Learning	2
Cognitive Aptitude	2
Cognitive Effect	2
Concrete Learning	2
Coordinate Concepts	2
Critical Dialogue	2
Demographic	2
Dental Hygiene	2
Dwyer Research	2
Empirical Research	2
Environment	2
Fear	2
Field Independence	2
Hemisphericity	2
Instruction	2
Instructional Development	2
Instructional Management	2
Instructional Strategies	2
Instructional Variables	2
ITV	2
Learners	2
Learning Strategies	2
Matching Learning Theory	2
Meta-Analytic	2
Networking	2
Nonverbal Communication	2
Perceptions	2
Perceptual Motor	2
Performance	2
Pictorial Elaboration	2
Presentation Mode	2
Prose Learning	2
Psycho-Epistemology	2
Rate Modified Speech	2
Relevance	2
Research	2
Retrieval Strategies	2
Stimulus Explicitness	2
Teacher Practices	2
Teacher Theories	2
Tech	2
University Instruction	2
Videotaped Instruction	2
Visual Learning	2
Visual Perception	2
Aesthetics	1
Affective Responses	1
Analysis	1
Anxiety	1
Attention	1
Audiovisual Presentation	1
Aural Perception	1
Brain Waves	1
Careers	1
Cinematic Elements	1
Communication	1
Computer Simulation	1
Concept Learning	1
Concrete Learner	1
Consumers	1
Content Treatment Inter	1
Continuing Education	1
Control Function	1
Cross Cultural Analysis	1
Cultural Variations	1
Curriculum Theory	1
Design	1
Diagrams	1
Diagraphs	1
Educational Development	1
Elaboration Theory	1
Elementary Media Centers	1
Embedded Figures Test	1
Faculty	1
Field Test	1
Functions	1
Gestalt Approach	1
Higher Education	1
Iconic Stimulus	1
Individualization	1
Instructional Development	1
Instructional Innovation	1

Instructional Texts	1	Prior Knowledge	1
Integr Learning System	1	PSI	1
Learner Interest	1	Psychological Perspective	1
Learning Hierarchies	1	Reinforcement	1
Listening Comprehension	1	Reviewing Methods	1
Mainstreaming	1	Rod and Frame Test	1
Management	1	Self-Concept	1
Mathematics	1	Structure	1
Media	1	Subject Knowledge	1
Media Competency	1	Sup-Plantation Approach	1
Media Materials	1	Symbol Learning	1
Memory	1	Systematic Evaluation	1
Motion Cues	1	Teacher Competence	1
Needs Assessment	1	Tech History	1
Operational Environment	1	Testing Computers	1
Practitioner	1	Time Factor	1
Problem Solving	1	Transfer of Learning	1
Program Evaluation	1		

Appendix B

Data Subset 1979-1984 Individual Authors

Data Subset 1979-1984 Individual Authors

Variable	All Authorships n=306				
Dwyer, F. M.	12	Wise, R. E.	2	Gilbert, R. M.	1
Simonson M. R.	9	Acevedo, C.	1	Gleason, J. J.	1
Canelos, J.	8	Alter, M.	1	Goldstein, M.	1
Hannafin, M. J.	8	Anderson, C.	1	Gray, J.	1
Winn, W. D.	6	Anglin, G. J.	1	Haas, N.	1
Berry, L. H.	5	Anglin, J. B.	1	Hedberg, J.	1
Jonassen, D. H.	5	Arnold, T. C.	1	Hennigan, T. L.	1
Joseph, J. H.	5	Atang, C. I.	1	Hines, S. J.	1
Lamberski, R.	5	Baron, L.	1	Hodges, Y. A.	1
Taylor, W.	5	Bednar, A.	1	Hoelscher, S.	1
Angert, J. F.	4	Berbekar, R.	1	Holliday, W. G.	1
Brody, P. J.	4	Berry, T.	1	Hughs, L. H.	1
Clark, F. E.	4	Bovy, R. C.	1	Israelite, L.	1
de Melo, H. T.	4	Bowie, M. M.	1	Jackson, A.	1
Gerlach, V.	4	Branson, R.	1	Jacobs, R. L.	1
Hortin, J. A.	4	Bratton, B.	1	Johnson, K. A.	1
Koetting, J. R.	4	Braverman, M.	1	Jorgensen, S.	1
Schmid, R. F.	4	Bridges, N.	1	Keller, R. F. G.	1
Altschuld, J.	3	Brooke, M. L.	1	Kennedy, P.	1
French, M.	3	Bruce, K. L.	1	Kerr, S. T.	1
McIsaac, M. S.	3	Burnell, S.	1	Kervin, D.	1
Mosley, M. L.	3	Burroway, R. L.	1	King, F. J.	1
Nesbit, L. L.	3	Burton, J. K.	1	Kloock, T. R.	1
Olson, J. S.	3	Carey, L	1	Korzenny, S. S.	1
Roberts, D. M.	3	Carl, D. L.	1	Krey, C. L.	1
Becker, A. D.	2	Carrier, C.	1	Kurfiss, J.	1
Beckwith, D.	2	Chezik, M. A.	1	LaCroix, P.	1
Carey, J. O.	2	Chiswell, J. N.	1	Lapierre, R. C.	1
Chute, A. G.	2	Cole, D. D.	1	Legenza, A.	1
Fleming, M. L.	2	Cook, S.	1	Lehman, R.	1
Grabowski, B. L.	2	Crossman, J.	1	Leps, A. A.	1
Hancock, B. W.	2	Davidson, G. V.	1	Lewis, R.	1
Harrison, R. T.	2	De Vaney-Becker, A.	1	Lukowsky, J.	1
Jennings, T. J.	2	Dimond, P.	1	Main, R.	1
Levie, W. H.	2	Dionne, J. P.	1	Maldonado-	
Mellon, C. A.	2	Dodge, B. J.	1	Guzman, A. A.	1
Parkhurst, P. E.	2	Dresang, E. T.	1	Mann, R.	1
Reigeluth, C.	2	Duchastel, P.	1	Martin, B. L.	1
Robinson, R. S.	2	Dunn, W.	1	Martin, N.	1
Schwen, T. M.	2	Ehrlich, L.	1	Maurer, M. M.	1
Sheriff, D. E.	2	El-Gazzar, A. I.	1	McBride, S. D.	1
Story, N. O.	2	Ernest, P. S.	1	McCombs, B. L.	1
Torkelson, G. M.	2	Esque, T.	1	McGrady, D. S.	1
Turner, P. M.	2	Filan, G.	1	McLeskey, J.	1
Wildman, T. M.	2	Fleming, N.	1	Melvin, K.	1
Williams, J. A. Jr.	2	Gentry, C.	1	Moore, D. M.	1

Morgan, R.	1	Richards, B.	1	Stein, F.	1
Muffoletto, R.	1	Rickards, D. T.	1	Streibel, M. J.	1
Nelson, J. A.	1	Roblyer, M. D.	1	Sullivan, H.	1
Newell, K. J.	1	Rohner, D. J.	1	Szabo, M.	1
Nielson, T. G.	1	Rosen, T.	1	Tantiblarphol, S.	1
Novak, J.	1	Rosensweig, D.	1	Turner, M.	1
Oxford, J. F.	1	Russell, A. L.	1	Tyson, L.	1
Peck, K. L.	1	Saiet, R.	1	Valach, M.	1
Peck, M. L.	1	Savenye, W.	1	Waniewicz, I.	1
Raburn, J.	1	Schrock, S. A.	1	Watson-Gegeo, K. A.	1
Ragan, T.	1	Sewell, E.	1	Welliver, P. W.	1
Ragsdale, R. G.	1	Sherman, T.	1	Whitaker, J.	1
Rancourt, R.	1	Shrigley, R. L.	1	White, B.	1
Raszakowski, R. R.	1	Smith, P. L.	1	Wieckowski, T. J.	1
Reeves, W. J.	1	Solano, F.	1	Williams, D. M.	1
Regenscheid, J. K.	1	Spitzer, D.	1	Witham, J.	1
Reid, G. A. Jr.	1	Splaine, J.	1	Yacobacci, P. M.	1

Appendix C

Data Subset 1979-1984 Individual Position Descriptions

Data Subset 1979-1984 Individual Position Descriptions

Variable	All Authorships N=306
Assistant Professor	43 (10%)
Professor	13 (4%)
Director	11 (4%)
Research Associate	11 (4%)
Graduate Student	6 (2%)
Coordinator	5
Assistant Provost	3
Media Specialist	3
Post Doctorate Researcher	3
Speech & Language Clinician	3
Assistant Vice President	2
Graduate Assistant	2
Assistant Director	1
Assistant Lecturer	1
Associate Director	1
Chairman	1
Instr. Computing Consultant	1
Lecturer	1
Program Dev. Specialist	1
Program Specialist	1
Project Director	1
Instr. Tech Specialist	1
US Representative	1

Appendix D

Data Subset 1979-1984 Reference Disciplines

Data Subset 1979-1984 Reference Disciplines

Variable	All Authorships n=306
Education	55 (18%)
Educational Tech	29 (9%)
Curriculum & Instruction	13 (4%)
Medicine	11 (4%)
Instructional Tech	10 (3%)
Secondary Education	7
Educational Comm. & Tech	6
Engineering	5
Library & Information Sci	5
Audio-Visual	4
Instr. Design, Dev, & Evaluation	4
Instructional Development	4
Instr. Systems Tech	4
Educational Pscyhology	3
Learning Resources Service	3
Development Research	3
Allied Health Services	2
Curriculum, Instr. And Media	2
Educational Development	2
Instruction & Ed. Psychology	2
Instructional Media	2
Learning Systems	2
Social Systems Res. & Eval.	2
Tech. Train., Corp. Pat. & Mgt	2
Comm. Arts and Sciences	1
Comm., Computing, & Tech.	1
Communications Media	1
Counseling & Ed. Psychology	1
Ed. Evaluation & Res. Services	1
Ed. Media and Tech	1
Educational Studies	1
English as A Second Language	1
Higher Education	1
Info & Comm Studies	1
Instruction	1
Instruction and Learning	1
Instructional Support	1

Instructional Systems	1
Library School	1
Media & Instr. Design Services	1
Perf. Arts & Communications	1
Special Education	1
Technical Training Center	1

Appendix E

Data Subset 1979-1984 Contributing Institutions by Authorship

Data Subset 1979-1984 Contributing Institutions by Authorship

Variable	All Authorships N=306
Pennsylvania State U	34 (11%)
Arizona State University	25 (8%)
Indiana University (Illinois)	11 (4%)
Iowa State University	11 (4%)
University of Calgary	9
Ohio State University	8
University of Colorado	7
Northern Illinois University	6
Texas A&M University	6
University of Pittsburgh	6
University of South Dakota	6
University of Wisconsin	6
Boston University	5
Concordia University	5
Syracuse University	5
University of Kansas	5
University of Maryland	5
University of Minnesota	5
University of North Carolina	5
Va Polytechnic Institute	5
Allepheny Inter Unity	3
California State University	3
Florida State University	3
Kansas State University	3
Mansfield State College	3
Michigan State University	3
Oklahoma State University	3
Southern Illinois University	3
University of Alabama	3
University of Arkansas	3
Denver Research Institute	2
Dundee College of Tech	2
Federal University of Hahia	2
Kent State University	2
Monash University	2
New York University	2
Northwestern State U	2
University of Hawaii	2

University of Oklahoma	2
University of Ottawa	2
University of Tennessee	2
Advanced Science & Tech	1
Ain Shams University	1
Atlantic Institute of Edu	1
City College of Cuny	1
Columbia University	1
Eastern Kentucky University	1
Florida A&M University	1
Kelvin Grove College	1
Maricopa College	1
North Texas State University	1
Northeastern Illinois U	1
Quincy Junior College	1
Sperry University	1
St. Cloud State University	1
The American College	1
Universidad Feral Da Bahia	1
University of Iowa	1
University of Kentucky	1
University of Melbourne	1
University of Montevallo	1
University of Texas	1
University of Washington	1
Virginia Technical University	1
Weber State College	1
West Virginia State College	1

Appendix F

Data Subset 1985-1989 Main Themes (Keyword Descriptors)

Data Subset 1985-1989 Main Themes (Keyword Descriptors)

Variable	All Articles *n=234*		
Computer-Based Instr	55	Learner Achievement	4
Computers	22	Locus of Control	4
Computer-Assisted Instr.	21	Media Selection	4
Research	20	Media Utilization	4
Feedback	14	Noncommercial Fm Radio	4
Learning Strategies	14	Radio	4
Cognitive Style	13	Reading	4
Television	13	Spatial-Visualization	4
Practice	11	Text Design	4
Teachers	11	Artificial Intelligence	3
Educational Tech	10	Atten Reduction Training	3
Persuasion	10	Cognitive Psychology	3
Attitude	9	Curr Changes	3
Computer Display	9	Field Depend/Independence	3
Screen Design	9	High School Education	3
Equity	8	Learning	3
Ethics	8	Library Management	3
Problem Solving Skills	8	Media	3
Recall	8	Notetaking	3
Effect	7	Notetaking Orienting Act	3
Learning Styles	7	Satellite Commun	3
Motivation	7	Simulation	3
Videodisc	7	Special Education	3
Cognition	6	Teacher Socialization	3
Schema Theory	6	Transfer of Learning	3
Theory	6	Word Recognition	3
Video	6	Administrators	2
Apple Cr of Tomorrow	5	Affective/Cog Learning	2
Cbi Screen Design	5	Alter Ctl Strategies	2
Learner Control	5	Analogical Reasoning	2
Pacing	5	Arithmetic Word Prob	2
Perception	5	CBI Program	2
Affiliated Cable Tv	4	Children	2
Concept Learning	4	Cognitive Monitoring	2
Distance Education	4	Cognitive Practice	2
Encoding	4	Cognitive Processing	2
Evaluation	4	Collection Scales	2
Instructional Tech	4	Computer Access	2

Comp Animated Lesson	2	Teacher Attitudes	2
Computer Programming	2	Teaching Strategy	2
Comp-Based Reinforce	2	Text Layout	2
Computerized Images	2	Time Management	2
Comp-Managed Instr	2	Variables	2
Consciousness	2	Verbal and Visual Testing	2
Density of Text Presentations	2	Visual Features of Maps	2
Diagrams	2	Word Processing	2
Educational Media	2	Writing Skills	2
Educational Research	2	Achievement	1
Efficacy of Logo	2	Acquisition Skills	1
Electronic Mail	2	Adult Learning	1
Flowcharting	2	Advance Organizer	1
Gender Differences	2	Algebra	1
Graphic Format	2	Analytic Ability	1
Integration	2	Animation	1
Interactive Videodisc	2	Aptitude-Treatment Inter	1
International Students	2	Associative Learning	1
Learner Performance	2	Cai Strategies	1
Lesson Presentation	2	Case Study Methodology	1
List Vs. Flow Chart	2	Cd/Rom	1
Logo Language	2	Cognitive Ability	1
Mais	2	Cognitive Strategies	1
Management	2	Communication Programs	1
Mapping	2	Comparison Strategies	1
Mathematics	2	Computer	1
Mcbi Program	2	Computer Access Equity	1
Methods and Results	2	Computer Graphics	1
Middle Level Students	2	Comp Graphics Inservice	1
Naturalistic Inquiry	2	Computer Interaction	1
Organizing Instruction	2	Computer Literacy	1
Performance	2	Computer Literacy Assess	1
Perspectives	2	Computer Screen	1
Picture Text Instructions	2	Computer-Generated Text	1
Pictures	2	Computerphobia	1
Progressive State Drill	2	Concept Teaching	1
Prose	2	Connoisseurship	1
Psychotech	2	Content	1
Quantitative Data	2	Courseware	1
Regression Model	2	Credibility	1
Search Task	2	Cueing Curriculum	1
Self-Paced Learning	2	Curriculum Directors	1
Subliminal Messages	2	Data Bases	1
Task Performance	2	Database Structure	1

Design	1	Research Trends	1
Dogmatism	1	Retention	1
Domain Integ Design	1	Scheduling	1
Drill and Practice	1	Schema Activation	1
Education	1	School Practice	1
Educational Philosophy	1	Science	1
Educational Systems	1	Science Education	1
Electronic Books	1	Signaling	1
Empowered Learning	1	Social Interaction	1
Film	1	Social Issues	1
Graphics	1	Spatial Relationships	1
Learner Characteristics	1	Speech	1
Literacy	1	State Anxiety	1
Media Analysis	1	Subliminal Instruction	1
Media Attributes	1	Syntactic Placement	1
Media Libraries	1	Synthesizing Strategies	1
Media Services	1	Task Analysis	1
Mental Effort	1	Teacher Burnout	1
Mental Models	1	Teacher Education	1
Microcomputer Software	1	Teacher Incentives	1
Narrow-Cast Television	1	Teacher/Principal Attitudes	1
Perceptual Mode	1	Teaching Analysis	1
Perceptual Processes	1	Teaching Institutions	1
Perc/Cog Task Person-Env Fit	1	Technical Presentations	1
Photography Skills	1	Teletraining	1
Physics	1	Text Display	1
Picture Effects	1	Text Format	1
Preinstructional Strat	1	Text Learning	1
Processing	1	Text Research	1
Programming	1	Theoretical Overview	1
Public Telev Ision	1	Training	1
Puzzle Solving	1	Visual Imagery Rehearsal	1
Queueing Theory	1	Visualization	1
Reader Theories	1	Visualized Instruction	1
Reinforcement	1	Window Effect	1

Appendix G

Data Subset 1985-1989 Individual Authors

Data Subset 1985-1989 Individual Authors

Variable	All Authorships n=394				
Hannafin, M. J.	10	Greene, E. C.	2	Beauchamp, D. G.	1
Belland, J. C.	8	Hart, R. A.	2	Bender, E.	1
Rieber, L. P.	8	Ho, M. L.	2	Berry, T.	1
Ross, S. M.	8	Hortin, J. A.	2	Bichelmeyer, B.	1
Taylor, W. D.	8	Johnson, J.	2	Bieger, G. R.	1
Canelos, J.	7	Kerr, S. T.	2	Bowie, M. M.	1
Dwyer, F. M.	7	Knupfer, N. N.	2	Boyce, m. J.	1
Jonassen, D. H.	7	Koetting, J. R.	2	Braden, R. A.	1
Morrison, G. R.	7	Leidman, M. B.	2	Bratton, B.	1
Smith, P. L.	7	Li, R.	2	Brovey, A. J.	1
Tennyson, R. D.	7	Milheim, W. D.	2	Cambre, M. A.	1
Dalton, D. W.	6	Phillips, T. L.	2	Carl, D. L.	1
Grabinger, R. S.	6	Reigeluth, C. M.	2	Carl, R. R.	1
Baker, P. R.	5	Rodriguez, S. R.	2	Cates, J. S.	1
Simonson, M. R.	5	Savenye, W. C.	2	Cennamo, K. S.	1
Winn W. D.	5	Schultz, C. W.	2	Chanond, K.	1
Christensen, D. L.	4	Seidman, S. A.	2	Chartrand, S.	1
Lamberski, R. J.	4	Smaldino, S. E.	2	Chu, J. H.	1
Nichols, R. G.	4	Stewart, A.	2	Chute, A. G.	1
O'Dell, J. K.	4	Thompson, M. E.	2	Colamaio, M. E.	1
Yeaman, A. R. J.	4	Tiene, D.	2	Coleman, S. D.	1
Anglin, G. J.	3	Wager, W. W.	2	Cook, S.	1
Aust, R. J.	3	Wilson, B. G.	2	Cushall, M. B.	1
Moore, D. M.	3	Abrams	1	Damarin, S. K.	1
Nishikawa, S. S.	3	Aegerter, R.	1	Davidson, G. V.	1
Robinson, R. S.	3	Ahmad, M.	1	DeGraff, J.	1
Salisbury, D. F.	3	Albers, S.	1	Derry, S. J.	1
Wedman, J. F.	3	Albright, M. J.	1	Di Vesta, F. J.	1
Allen, B. S.	2	Aleamoni, L. M.	1	Dimond, P.	1
Becker, A. D.	2	Alesandrini, K.	1	Dwyer, C. A.	1
Clark, R. E.	2	Allen, G.	1	Ellsworth, E.	1
Dempsey, J. V.	2	Amedeo, D.	1	Erdman, B.	1
Driscoll, M. P.	2	Anand, P.	1	Ericson, A.	1
Dudt, K. P.	2	Anatasoff, J.	1	Evans, L. J.	1
Fosnet, C. T.	2	Arenz, B. W.	1	Felt, S. B.	1
French, M.	2	Assah, C.	1	Foreman, K. H. D.	1
Garhart, C.	2	Ausel, D.	1	Forman, G. E.	1
Grabowski, B. L.	2	Azbell, J. W.	1	Gagne, R. M.	1

Gagnon, R.	1	Litchfield, B. C.	1	Schwen, T. M.	1
Gamas, W.	1	Litchfield, B. S.	1	Seidner, C. J.	1
Gamsky, D.	1	Loertscher, D.	1	Seymour, S. L.	1
Gardner, C. H.	1	Lynch, B. E.	1	Shaw, S.	1
Gjerde, C. L.	1	Lyness, A. L.	1	Shrock, S. A.	1
Goetzfried, L.	1	Martin, B. L.	1	Silverstein, M. A.	1
Gothberg, H. M.	1	Mathison, C.	1	Slee, E. J.	1
Greathouse, S.	1	Matthias, M.	1	Smaldino, J. J.	1
Gribble, M.	1	Mayton, G.	1	Smith, L.	1
Griffin, s. M.	1	McCormick, D.	1	Start, J.	1
Gueulette, D. G.	1	McIsaac, M. S.	1	Stevens, J. T.	1
Hales, R. L.	1	Metallinos, N.	1	Stevenson, R. B.	1
Hanclosky, W. V.	1	Molenda, M.	1	Stone, R.	1
Hanson, C.	1	Molina, R. R.	1	Storm, S. R.	1
Harvey, F. A.	1	Morin, A.	1	Story, N. O.	1
Harvey, R. A.	1	Mosely, M. L.	1	Strand, E.	1
Head, J. T.	1	Muffoletto, R.	1	Streibel, M. J.	1
Hettinger, G. A.	1	Murphy, K. L.	1	Sullivan, H. J.	1
Hines, S. J.	1	Neuberger, J.	1	Sutherland, S.	1
Hlynka, D.	1	Newhouse, B. S.	1	Suzuki, K.	1
Hooper, S.	1	Olia, F.	1	Swartz, J. D.	1
House, J. D.	1	Olson, J. S.	1	Tessmer, M.	1
Howell, R.	1	Ong, L. D.	1	Thompson, Ma. E.	1
Hurt, J. A.	1	Pask-McCartney, C.	1	Tillman, M. H.	1
Hussain, N.	1	Pearson, M.	1	Torardi, M. M.	1
Huyvaert, S. H.	1	Pearson, R.	1	Torgesen, J. K.	1
Igoe, A.	1	Perkins, D. J.	1	Touger, H. E.	1
Jacobs, J. W.	1	Pollock, J.	1	Treimer, M.	1
Januszewski, A.	1	Ragan, T. J.	1	Tripp, S. D.	1
Jones, P. E.	1	Randall, J. P.	1	Tsai, C.	1
Joseph, J. H.	1	Rasch, M.	1	Twitchell, D.	1
King, D. S.	1	Rehn, R. A.	1	Vensel, C.	1
King, J. W.	1	Rezabek, L. L.	1	Wagner, E. D.	1
Kitabchi, G.	1	Richards, D. R.	1	Walster, D. E.	1
Klein, J. D.	1	Richey, R. C.	1	Watson, J. F.	1
Klook, T.	1	Riggs, D. E.	1	Welliver, P. W.	1
Kulik, C. L. C.	1	Rossett, A.	1	West, P. C.	1
Kulik, J. E.	1	Saba, F.	1	Wheat, N. L.	1
Langholz, J.	1	Salcedo, A. M.	1	Williamson, N. G.	1
Lasnik, V. E.	1	Scandura, J. M.	1	Yacci, M.	1
Lee, M. J.	1	Schwartz, E.	1	Yao, K.	1

Appendix H

Data Subset 1985-1989 Individual Position Descriptions

Data Subset 1985-1989 Individual Position Descriptions

Variable	All Authorships n=394
Professor	40 (10%)
Associate Professor	25 (6%)
Assistant Professor	18 (5%)
Director	8 (2%)
Doctoral Candidate	5
Research Associate	4
Graduate Student	3
Instructional Designer	3
Coordinator	2
Media Specialist	2
Phd Candidate	2
Assistant Director	1
Assistant Library Director	1
Graduate Assistant	1
Head	1
M.A. Candidate	1
Manager	1
Research Assistant	1
Speech & Language Clinician	1
Teacher	1
Teaching Assistant	1
University Librarian	1

Appendix I

Data Subset 1985-1989 Reference Disciplines

Data Subset 1985-1989 Reference Disciplines

Variable	All Authorships n=394
Education	78 (27%)
Curriculum & Instruction	31 (11%)
Communication Arts	22 (8%)
Instructional Tech	22 (8%)
Educational Tech	22 (8%)
Research & Dev. In Ed. Comp.	19 (7%)
Educational Research	15 (5%)
Res. On Learning & Teach.	14 (5%)
Needs Assessment & Plan.	10 (3%)
Engineering	7 (2%)
Instructional Systems Tech.	5
Instr Systems Tech	4
Psychology	4
Communication Studies	3
Communicative Disorders	3
Ed Communications & Tech	3
Instructonal Systems Tech	3
Medicine	3
Instructional Systems	2
Ld & Ed Pol Stu in Instr Tech	2
Media Services	2
Sys-Based Courseware Ed Ser	2
Audio Visual Center	1
Communications	1
Communications Media	1
Computer Based Instruction	1
Dept of Agronomy & Soil Sci	1
Education and Training	1
Educational Computing	1
Ed Media and Computers	1
Ed Media and Library Science	1
Ed Media and Technology	1
Graduate Library School	1
Instruction Support Center	1
Instructional Development	1
Instr Dev and Services	1
Instru Media Development	1

Instr Res & Development	1
Instr Telecommunication Ctr	1
Instructional Television	1
Learning Center	1
Learning Resources	1
Media Studies	1
Microcomputer Services	1
National Teletraining Center	1
Nursing	1
Physics Department	1
Research Services	1
Teacher Education	1
Tech Transfer Centre	1

Appendix J

Data Subset 1985-1989 Contributing Institutions

Data Subset 1985-1989 Contributing Institutions

Variable	All Authorships n=394
Pennsylvania State University	37 (9%)
Ohio State University	27 (7%)
Florida State University	25 (6%)
Memphis State University	25 (6%)
University of Wisconsin	16 (4%)
Iowa State University	12 (3%)
University of Colorado	11 (3%)
University of Texas	11 (3%)
Indiana University	10 (2%)
Indiana University of PA	10
Northern Illinois University	10
University of Washington	10
Arizona State University	9
Syracuse University	9
University of Minnesota	9
University of Kansas	8
Texas A&M University	7
San Diego State University	6
Kent State University	5
Southern Illinois University	5
University of Arkansas	5
Lehigh University	4
University of Kentucky	4
University of Northern Iowa	4
California State University	3
Ithaca College	3
Kansas State University	3
University of Cincinnati	3
University of Iowa	3
University of Nebraska	3
U of N C @ Greensboro	3
Va Polytechnic Institute & State U	3
Concordia University	2
Dundee Institute of Tech	2
Maricopa College	2
Oklahoma State University	2
Southern Conn State University	2
University of Arizona	2

University of Georgia	2
University of Maine	2
University of Michigan	2
University of Missouri	2
University of Oklahoma	2
U of Southern California	2
Ain-Shams University	1
Austin Community College	1
Cleveland State University	1
Duquesne University	1
East Texas State University	1
Eastern Michigan University	1
Gallaudet University	1
Loyola University of Chicago	1
Michigan State University	1
Rochester Institute of Tech	1
Seattle Pacific University	1
Southern Oregon State Col	1
SW Oklahoma State U	1
Towson State University	1
Universite Du Quebec	1
U of Central Arkansas	1
University of Hawaii	1
University of Manitoba	1
University of Massachusetts	1
University of Montreal	1
U of Northern Colorado	1
University of Pennsylvania	1
University of Pittsburgh	1
University of Queensland	1
University of Wyoming	1
Urbandale Public Library	1
Virginia Military Institute	1
Virginia Technical College	1
Wayne State University	1
Western Oregon State College	1
Widener University	1

Appendix K

Data Subset 1990-1994 Main Themes (Keyword Descriptors)

Data Subset 1990-1994 Main Themes (Keyword Descriptors)

Variable	All Articles n=328		
Instructional Design	42	Qualitative Research	5
Computer Based Instruction	32	Simulation	5
Distance Education	23	Business Simulation	4
Instructional Strategies	16	Cognitive Apprenticeships	4
Learner Control	16	Cognitive Flexibility Theory	4
Feedback	15	Computer Mapping	4
Research	15	Computer Use	4
Metacognition	14	Education	4
Channel One	13	Educational Computing	4
Computer Assisted Instr.	13	Evaluating Impact of Tech	4
Learning Styles	11	Higher Order Thinking Skills	4
Expert Systems	10	Instructional Systems	4
Hypermedia	10	Multimediated Training	4
Instructional Development	10	Outcome Based Education	4
Adult Education	9	Perception	4
Cognitive Style	9	Student Attitudes	4
Computer Simulations	9	Student Interaction	4
Educational Tech	9	Teacher Planning	4
Motivation	9	Tech	4
Telecommunications	9	Visuals	4
Tutoring	9	Achievement	3
Constructivist Design	8	Adoption/Diffusion Theory	3
Critical Theory	8	Adult Learning Theory	3
Ethics	8	Analysis of Instr & Adults	3
Interactive Videodisc Instr.	8	Authentic Assessment	3
Case Based Instruction	7	Authoring	3
Collaborative Learning	7	Cognitive Learning	3
Computers	7	Coll Problem Solving	3
Information Processing	7	Compressed Video	3
Instructional Tech	7	Computer Based Learning	3
Interactive Video	7	Computer Based Training	3
Learning Strategies	7	Computer Mediated Comm	3
School Restructuring	7	Constructivist Approaches	3
Attitudes	6	Coop Learning & Incentive	3
Cognitive Theory	6	Coop Learning & Motivation	3
Design	6	Coop Learning & Reward	3
Interactive Multimedia	6	Diffusion of Innovation	3
Theory	6	Educational Reform	3
Computer Assisted Learning	5	Evaluation and Instr Prep	3
Constructivism	5	Generative Learning	3
Curriculum Development	5	Generative Strategies	3
Evaluation	5	Graphic Techniques & Know	3
Hypermedia	5	Hypercard	3
Hypertext	5	Hypermedia Design	3
Learning	5	Industrial Training	3
Needs Assessment	5	Information Systems	3
Networks	5	Innovation Implementation	3
Professional Education	5	Instructional Environments	3

Instr Materials Evaluation	3	Cost Analysis	2
Integrated Tutoring System	3	Course Structure & Attitudes	2
Interaction and Achievement	3	Curiosity & Learning	2
Interactive Dissection & Perf	3	Curriculum Materials Center	2
Interactive Software	3	Designing Gender Based Gr	2
Interactive Television	3	Desktop Publishing	2
Military Training	3	Digital Video Interactive	2
Modeling & Problem Solving	3	Digitized Speech	2
Nursing Education	3	Educational Media	2
Perf Improvement Strategies	3	Effects of Humor on Learning	2
Picture Text Instruction	3	Effects of Two Practice Strat	2
Realism	3	Elaboration Theory	2
Reward and Performance	3	Electronic Publishing	2
Selecting Graphic Techniques	3	Embedded Training	2
Self Assessment	3	Empiricism	2
Small Groups	3	Empowering Teachers	2
Social Considerations	3	English as A Second Language	2
Socio-Technical Perspective	3	Equity and Social Justice	2
Structural Knowledge	3	Error and Feedback	2
Student Perceptions	3	Ethnicity and Reading	2
Systems Approach	3	Evaluaton	2
Teacher Education	3	Extending the Learning Envir	2
Visual Literacy	3	Faculty Inservice	2
Writing	3	Feedback and Computers	2
Adopter Characteristics	2	Feedback in Comp Based Instr	2
Analogies & Problem Solving	2	Formative Evaluation	2
Animation	2	Form Eval of Multimedia	2
Assessing Tchrs' Comp Use	2	Foundations and Tech	2
At-Risk Students	2	Gaming	2
Attitude Change	2	Gender	2
Attitudes About Computers	2	Graphics Design	2
Attributes of Innovations	2	Group Composition	2
Audit	2	Group Computer Instr & Ach	2
Authentic Learning	2	Group Decision Making	2
Children's Art	2	Group Instr & Learning Style	2
Closed Captioned Video	2	Groupware	2
Cognitive Processing	2	Hemispheric Laterality	2
Color Coding	2	High Vs Low Achievers	2
Computer Attitudes	2	Higher Education	2
Computer Based Multimedia	2	Hypermedia Environments	2
Computer Based Simulations	2	Hypermedia Training Envir	2
Comp Graphics for Diff Sexes	2	Hypermedia User Interactions	2
Computer Literacy	2	Hypertext Interface Design	2
Comp Vs. Audio Comparison St	2	Independent Research Tasks	2
Concept Development	2	Information Processing	2
Conceptual Learning	2	Information Tech	2
Conceptual Model	2	Innovation Adoption	2
Conditions Based Approach	2	Instructional Analogies	2
Configurational Inquiry	2	Instructional Design Theory	2
Connect Home & School	2	Instr Transformation	2
Cont Analysis & Confidence	2	Instructional Tech	2
Contextual Environments	2	Integrated Learning Systems	2
Cooperative Learning	2	Interactive Fiber Optic Net	2

Interactive Learning Envir	2	Tracking Ad Analyzing Inter	2
Interactive Media	2	Training	2
Interactive Tech	2	Two Restructuring Schools	2
Interface Design	2	Two Way Visual Contact	2
Interface Types and Learning	2	Utilization	2
Internet	2	Value of Immediacy	2
Interpersonal Computing	2	Video Interaction Analysis	2
Intervention Strategies	2	Videodisc	2
Learner Ctl and Computers	2	Visual Org Strategies	2
Learner Vs Instructor Anal	2	Visual Recall	2
Learner/Comp Interaction	2	Adoption	1
Learning and Achievement	2	Anxiety	1
Learning in an Inter Environment	2	Applied Research	1
Library Media	2	Assessment of Instr Systems	1
Logo	2	Attitude	1
Media Attributes	2	Case Study	1
Model Development	2	Cerebral Laterality	1
Models	2	Classifying Interaction	1
Multimedia	2	Cognitive Closure Model	1
Navigation Tools	2	Cognitive Model	1
Page Design	2	Cognitive Science	1
Parental Involvement	2	Cognitive Skills	1
Pedagogy	2	Cognitive Strategies	1
Personalization	2	Cognitive Structures	1
Pre-Service Teachers	2	Communication	1
Problem Identification	2	Compressed Audio	1
Problem Solving	2	Computer Anxiety	1
Process Model	2	Comp Based Coop Learning	1
Process Tools	2	Comp Based Interactive Video	1
Reading Comprehension	2	Comp Difficulty for Children	1
Recall	2	Computerized Instr Design	1
Res Methods & Techniques	2	Conceptual Analysis	1
Research Methods Workshop	2	Constructionism	1
Restructuring	2	Constructivist Instr Design	1
Restructuring in Kentucky	2	Constructivist Theory	1
Schools' Culture	2	Content Analysis	1
Screen Design	2	Cooperative Groups	1
Self Regulated Learning	2	Culturefax	1
Semantic Relationships	2	Curriculum Theory	1
Situated Learning	2	Delphi Technique	1
Spont Gen of Analogies	2	Descriptive Study	1
Survey of Media in California	2	Design &Multimedia Instr	1
Survey of Media in Industry	2	Design of Eff Strategies	1
Teacher Competence	2	Developmental Research	1
Teacher Needs Hierarchy	2	Diagnostic Evaluation	1
Teaching Self Reg Strat	2	Disciplinary Tech	1
Teaching Skills	2	Display Format	1
Teaching Strategies	2	Drug Awareness	1
Tech and Classrooms	2	Educational Biotech	1
Tech & Restructuring Sch	2	Educational Partnerships	1
Television	2	Educational Roles	1
Tenure Decision	2	Electronic Perform Support	1
Text Design	2	Embedded Cognitive Strategy	1

Empowering Learners	1	Library Media Skills	1
Empowerment	1	Library Networking	1
Equity	1	Linguistic Analysis	1
Evaluating Interactive Instr	1	Literacy	1
Evolution of Instructional	1	Loci of Control	1
Expectancy Theory	1	Media Competencies	1
Faculty Concerns & Comp	1	Media Research	1
Faculty Development	1	Mediated Instruction	1
Filmmaking	1	Memory	1
Foucault	1	Mental Model Analysis	1
French Infl On Modern Tching	1	Metacognitive Development	1
Generative Cognitive Strategy	1	Microworlds	1
Global Classroom	1	Moral Opposition	1
Graphics	1	Motivational Design Theory	1
Hemisphere	1	Motivational Instr Design	1
Hints and Learner Control	1	Motivational Strategies	1
History of Educ Tech	1	Nonlinear Design Models	1
Hypermedia Structure	1	Nonverbal Cognitive Strat	1
Implications for Learner Ctl	1	Postconstructivist Approach	1
Improving Instruction	1	Process View of Educational	1
Innovations	1	Research Design	1
Innovativeness	1	Research in Instr Technology	1
Inservice Design	1	Research Methodology	1
Instructional Activities	1	Response Theory	1
Instructional Management	1	Satellite Delivered Instr	1
Instructional Materials	1	School Redesign	1
Instructional Media	1	Schools & Democratic Soc	1
Instructional Model	1	Seating Arrangement	1
Instructional Multimedia	1	Story Structure	1
Instructional Organizers	1	Stu, Tchr & Parent Reactions	1
Integrating Domains of Instr	1	Succ of Partnerships & Tech	1
Interactive Instr Tech	1	Systematically Designed Text	1
Interactive Learning Systems	1	Systems	1
Interactive Video Instr	1	Teacher Att & Computers	1
Interactivity	1	Teacher Differences	1
Interactivity and Multimedia	1	Teacher Training	1
International Perspective	1	Teachers & Computer Tech	1
International Training	1	Teachers and Email	1
Intrinsic Motivation	1	Teachers and Tech	1
Jacques Derrida	1	Teaching	1
Journal Writing	1	Teaching Theory	1
Knowledge Structures	1	Text Display	1
Layout	1	Theory, Tech and Ethics	1
Learner Center Instr Design	1	Thought, Instr & Design	1
Learner Characteristics	1	Time	1
Learner Control Research	1	Unquiet Pedagogy	1
Learner Performance	1	Values Clarification	1
Learner Quest & Comments	1	Varying Format in Instr Film	1
Learning Environment	1	Video & Oral Communication	1
Learning from Video	1	Visual Complexity & Children	1
Learning Strategies Interv	1	Visual/Verbal Testing	1
Learning Strategy Training	1	Visualization Strategies	1
Library Instruction	1	Wide Area Networks	1

Appendix L

Data Subset 1990-1994 Individual Authors

Data Subset 1990-1994 Individual Authors

Variable	All Authorships n=618				
Knupfer, N. N.	10	Braden, R. A.	2	Sales, G. C.	2
Klein, J. D.	9	Caffarella, E. P.	2	Schlenk, G. W.	2
Jonassen, D. H.	8	Cardinale, L. A.	2	Schmitt, D. R.	2
Wilson, B. G.	8	Cates, W. M.	2	Schroeder, E. E.	2
Cole, P.	7	Christensen, D. L.	2	Schwier, R.	2
Grabowski, B. L.	7	Clariana, R. B.	2	Smaldino, S. E.	2
Januszewski, A.	6	Cyr, T.	2	Small, R. V.	2
Ross, S. M.	6	Damarin, S. K.	2	Smith, M. A.	2
Berry, L. H.	5	Darwazeh, A. N.	2	Stepich, D. A.	2
Bohlin, R. M.	5	de Soto, D.	2	Streibel, M. J.	2
Koetting, J. R.	5	De Vaney, A.	2	Sullivan, H. J.	2
McIsaac, M. S.	5	Dempsey, J. V.	2	Tennyson, R. D.	2
Muffoletto, R.	5	Dodge, B. J.	2	Thalheimer, W.	2
Orey, M. A.	5	Driscoll, M. P.	2	Thurman, R. A.	2
Rieber, L. P.	5	Duffy, T. M.	2	Tucker, S. A.	2
Yeaman, A. R. J.	5	Dwyer, F. M.	2	Viechnicki, K. J.	2
Black, J. B.	4	Dwyer, H. J.	2	Wager, W. W.	2
Goodrum, D. A.	4	Earle, R. S.	2	Wang, S.	2
Higginbotham-Wheat, N.	4	Erchul, J. A.	2	Wilder, H.	2
Kenny, R. F.	4	Fulford, C. P.	2	Williams, M. D.	2
Marcinkiewicz, H. R.	4	George, R. G.	2	Wolf, B.	2
Morrison, G. R.	4	Gibbs, W. J.	2	Yacci, M.	2
Nelson, W. A.	4	Hirumi, A.	2	Zvacek, S. M.	2
Nichols, R. G.	4	Igoe, A. R.	2	Adriano, C. T.	1
Pridemore, D. R.	4	Johnsey, A. L.	2	Anglin, G. J.	1
Richey, R. C.	4	Jost, K. L.	2	Antes, R. L.	1
Savenye, W. C.	4	Lee, I. S.	2	Applefield, J. M.	1
Shrock, S. A.	4	Lee, M. J.	2	Arenz, B. W.	1
Simonson, M. R.	4	Lee, Y. B. B.	2	Arnone, M. P.	1
Smith, P. L.	4	Lin, X.	2	Baker, L. M.	1
Anderson, J. A.	3	Lindner, R. W.	2	Bamford, C.	1
Aust, R.	3	Lu, M. Y.	2	Bannan-Hang, B.	1
Beissner, K. L.	3	Mattoon, J. S.	2	Bauer, J. W.	1
Cennamo, K. S.	3	McLellan, H.	2	Berge, Z. L.	1
Davidson, G. V.	3	Morian, J. E.	2	Besser, H.	1
Harris, B. R.	3	Naugle, L.	2	Blackstone, B.	1
Harvey, F. A.	3	Nuttall, A. E.	2	Bloom, E.	1
Hooper, S.	3	O'Dell, J. K.	2	Bork, A.	1
Milheim, W. D.	3	Pearson, R.	2	Column1	1
Newby, T. J.	3	Pina, A. A.	2	Bowers, D. R.	1
Robinson, R. S.	3	Ragan, T. J.	2	Bozonie, M.	1
Smith, L. J.	3	Reeves, T. C.	2	Branch, R. C.	1
Tripp, S. D.	3	Reigeluth, C. M.	2	Broholm, J. R.	1
Allen, G. W.	2	Rezabek, L. L.	2	Brown, C.	1
Belland, J. C.	2	Rodriguez, S.	2	Buckley, J.	1
Borsook, T. K.	2	Rysavy, S. D. M.	2	Bunting, L.	1

Butler, L.	1	Glasgow, Z.	1	Larson, J.	1
Cariaga-Lo, L. D.	1	Gleim, C. W.	1	Leader, L. F.	1
Carl, D.	1	Green, E. E.	1	LeBlanc, G.	1
Carlin, T.	1	Gueulette, D. G.	1	Lebow, D. G.	1
Carr, A.	1	Guman, E. C.	1	Lee, D.	1
Carter, M.	1	Gustafson, K. L.	1	Legree, P. J.	1
Casey, J.	1	Hakes, B.	1	Lemke, R. A.	1
Cashman, C. S.	1	Hall, S. H.	1	Li, M. F.	1
ChanLin, L. J.	1	Hamilton, J.	1	Liang, C. C.	1
Chen, L. C.	1	Hamilton, R.	1	Lin, C. H.	1
Chung, J.	1	Hammer, R.	1	Loftin, B.	1
Chung, M. L.	1	Handler, M. G.	1	Lopez, C. L.	1
Cichocki, R. R.	1	Harmon, S.	1	Loser, R. C.	1
Clark, B. I.	1	Harper, B.	1	Lovell, K. L.	1
Clark, F. E.	1	Harris, D.	1	Lowry, M.	1
Clark-Baca, J.	1	Hedberg, J. G.	1	Lowry, W. H.	1
Clausing, C. S.	1	Henry, M. P.	1	Lowther, D. L.	1
Cleveland, E.	1	Hill, C.	1	Lucas, L. A.	1
Cochenour, J.	1	Hill, F.	1	Malikowski, S.	1
Collins, M.	1	Hlynka, D.	1	Manning, J. L.	1
Cook, P. F.	1	Hodgins, M. W.	1	Mayton, G. B.	1
Coorough, R. P.	1	Hoffman, R. P.	1	McClintock, R.	1
Cronin, M.	1	Hollins, N.	1	McCraw, P.	1
Daniel, D.	1	Holman f. A.	1	McGonigle, D.	1
Davis, M.	1	Honebein, P. C.	1	McMahon, T. A.	1
Dean, M. R.	1	Hong, E.	1	Meyer, M. J.	1
Dean, P J.	1	Hsu, T. E.	1	Mills, S. C.	1
Dede, C.	1	Hunt, N. P.	1	Misanchuk, E. R.	1
Denning, J. D.	1	Hussain, N.	1	Moore, D. M.	1
Donoho, G. E.	1	Jakobsdottir, S.	1	Morrissey, K. A.	1
Doran, M. S.	1	Jensen, E. A.	1	Mory, E.	1
Dorsey, L. T.	1	Jesky, R. R.	1	Murphy, K. L.	1
Dwyer, C. A.	1	Jo, M. L.	1	Neal, P.	1
Eggers, R.	1	Johnston, M. D.	1	Nelson, A.	1
Elenes, A.	1	Jones, J. I.	1	Newhouse, B.	1
El-Hindi, A. E.	1	Jones, M. G.	1	Norris, C. A.	1
Ely, D. P.	1	Jordon, C.	1	Okey, J. R.	1
Erdman, B.	1	Kao, H. F.	1	Orr, K. L.	1
Farquhar, J. D.	1	Keller, J. M.	1	Osman-Jouchouz, R.	1
Farr, C. W.	1	Kent, A.	1	Padmanabhan, S.	1
Ferreira, S. M.	1	Kester, D. D.	1	Palumbo, D.	1
Fields-Ottaviani, B.	1	King, J. W.	1	Parkhurst, P. E.	1
Fly, K.	1	Kinzie, M. B.	1	Parmley, M. W.	1
Fontana, L. A.	1	Klayder, J.	1	Patterson, A.	1
Foss, J.	1	Knuth, R. A.	1	Persichitte, K. A.	1
Foster, W. T.	1	Kochery, t.	1	Picard, P.	1
Fowler, K. L.	1	Kollof, M. A.	1	Placier, P.	1
Frederick, F. J.	1	Kompella, J.	1	Plavocos-Arnone, M.	1
Freitag, E.	1	Koneman, P. A.	1	Pollock, J. C.	1
Frey, D.	1	Koontz, F. R.	1	Price, C. B.	1
Frick, T. W.	1	Krey, C. L.	1	Price, R. V.	1
Frye, A. W.	1	Kushigian, R.	1	Quade, A. M.	1
Gillis, P. D.	1	La Follette, J. J.	1	Quinones, Z.	1

Rathbun, G. A.	1	Shiu, K. F.	1	Thompson, M. E.	1
Reehm, S. P.	1	Shlechter, T. M.	1	Thomson, D. R.	1
Regian, J. W.	1	Shore, A.	1	Thorkildsen, R.	1
Reid, D.	1	Signer, B. R.	1	Thurman, G. B.	1
Relan, A.	1	Simsek, A.	1	Thurston, L. P.	1
Repman, J.	1	Simsek, Ali	1	Todd, N. J.	1
Rezabek, R. H.	1	Slee, E. J.	1	Towers, R. L.	1
Richards, B. F.	1	Smith, E. E.	1	Turner, S. V.	1
Richmond, A. D.	1	smith, R. E.	1	Tuscher, L. J.	1
Riddle, J.	1	Smith, S. D.	1	Ullmer, E. J.	1
Rieck, D.	1	Smith, V. S.	1	Venkatesh, M.	1
Ritchie, S. D.	1	Snetsinger, W.	1	Verhagen	1
Robershotte, L. A.	1	Spears, R. E.	1	Verschelden, C.	1
Roby, W.	1	Spejewski, E.	1	Volker, R.	1
Rotto, L. I.	1	Sprafka, S. A.	1	Waltz, E.	1
Rude-Parkins, C.	1	Stafford, C. W.	1	Wedge, A. K.	1
Russell, F. K.	1	Stanley, L. S.	1	Wedman, J.	1
Russell, J. R.	1	Stephens, R. E.	1	Weinstein, C. S.	1
Sachs, S. G.	1	Stepp, S. L.	1	Welliver, P. W.	1
Saito, R.	1	Sticht, T. G.	1	White, C. S.	1
Scales, G. R.	1	Story, W. B. Jr.	1	White, D.	1
Schmidt, K. J.	1	Strauss, R.	1	Wiegmann, B.	1
Schneberger, S. L.	1	Strommen, E.	1	Wilkins, D. A.	1
Schultz, C. W.	1	Surry, D. W.	1	Wilshire, D. T.	1
Schwartz, D. L.	1	Taguchi, M.	1	Wolcott, L. L.	1
Schwen, T. M.	1	Talab, R. S.	1	Wong, D. T.	1
Scott, D. M.	1	Taylor, C. D.	1	Woodson, E.	1
Seals, B.	1	Taylor, R.	1	Yonker, R.	1
Shank, G.	1	Teclehaimanot, B.	1	Zahner, J. E.	1
Shapiro, A. F.	1	Temiyakarn, C.	1	Zhang, S.	1
Shen, C. W.	1	Teslow, J. L.	1	Zollman, D.	1
Sherman, G.	1	Tessmer, M.	1		
Shih, M. Y.	1	Thompson, A.	1		

Appendix M

Data Subset 1990-1994 Reference Disciplines

Data Subset 1990-1994 Reference Disciplines

Variable	All Authorships n=618
Education	48 (8%)
Instructional Tech	17 (3%)
Learning & Instr. Tech	13 (2%)
Educational Tech	11
Teachers College	10
Curriculum and Instruction	6
Educ. Media & Computers	5
Instr. Design & Tech	5
Educational Leadership	4
Instr Support Services	4
Kansas Rural Child Welf Project	4
Osteopathic Medicine	4
Psychology in Education	4
Educational Communications	3
Ed Comp Curriculum & Instr	3
Instr Psychology & Tech Prog	3
Interactive Ed Tech	3
Learning Tech	3
School of Info Studies	3
Corporate Learning Institute	2
Ed Policy and Leadership	2
Educational Research	2
Ed Tech & Computer Edu	2
Instr Design, Dev & Evaluation	2
Nursing	2
Actuarial Science & Insurance	1
Business Tech	1
Computer and Info Sciences	1
Ed Comp & Instr Res & Dev	1
Educational Foundations	1
Ed Instrumentation	1
Elementary & Secondary Ed	1
Instruction and Curriculum	1
Instr Tech & Extended Learn	1
Law	1

Lrn Res Serv & The Ctr for Info Media	1
Library and Info Sciences	1
Mathematics	1
Media	1
Mediated Learning	1
Medicine	1
Psych & Graduate Studies	1
Science & Mathematics Ed	1
Technical Training Res Div	1
Tech Education, Sch of Tech	1
Training	1

Appendix N

Data Subset 1990-1994 Contributing Institutions

Data Subset 1990-1994 Contributing Institutions

Variable	All Authorships n=618		
Arizona State University	36	University of Northern Colorado	3
University of Colorado	31	University of Wollongong	3
Indiana University	17	University of Wyoming	3
Memphis State University	14	Control Data Corp	2
Pennsylvania State University	14	Georgia State University	2
Kansas State University	12	National Louis University	2
Southern Illinois University	11	St. Cloud State University	2
Columbia University	10	University of Arkansas	2
Syracuse University	9	University of Hawaii	2
University of Kansas	9	University of Missouri @ Columbia	2
Florida State University	8	University of Northeastern Illinois	2
Lehigh University	8	University of South Dakota	2
University of Minnesota	8	University of Virginia	2
University of Oklahoma	8	Wayne State University	2
University of Wisconsin	8	Air Force Armstrong Lab	1
Ohio State University	7	An-Najah National University	1
University of Georgia	7	App Beh & Cog Sci, Inc.	1
University of Pittsburgh	7	Brigham Young University	1
California State University	6	Butler University	1
Iowa State University	6	Central Conn. State University	1
Purdue University	6	Charter Performance	1
Texas A&M University	6	College of The Desert	1
University of Northern Iowa	6	Cc of Allepheny Cty	1
University of South Alabama	6	Cornell University	1
Michigan State University	5	Creighton University	1
San Diego State University	5	Dow, Usa	1
San Jose State University	5	Drake University	1
University of Nevada	5	Eastern Illinois University	1
Yeaman and Associates	5	Fu-Jen Catholic University	1
Northern Illinois University	4	Geneva College	1
University of Cincinnati	4	Georgetown University	1
University of Houston	4	Hunter College	1
Vanderbilt University	4	John Carroll University	1
Arapahoe Community College	3	Kent State University	1
George Mason University	3	Loma Linda University	1
Suny	3	Mankato State University	1
Texas Tech University	3	Northern Arizona University	1

Northern Virginia Comm College	1	University of Florida	1
NW Ark Ed Service Cooperative	1	University of Manitoba	1
Rochester Inst of Tech	1	University of Nebraska @ Lincoln	1
Scottsdale CC	1	University of Ottawa	1
Simms Industries, Inc.	1	University of Sao Paulo	1
Slippery Rock U of Penn	1	University of Tennessee @ Martin	1
SW Missouri State University	1	University of Texas	1
Tamkang University	1	University of The Philippines	1
The Amer Inst for Learn	1	University of Twente	1
University of Central Florida	1	VA Polytechinst & State U	1

Appendix O

Data Subset 1995-1999 Main Themes (Keyword Descriptors)

Data Subset 1995-1999 Main Themes (Keyword Descriptors)

Variable	All Articles n=320		
Instructional Design	36	Global Perspectives	3
Computer Based Instr	17	Human Performance Tech	3
Internet	16	Instr Development	3
Distance Education	15	Instructional Tech	3
Educational Tech	15	Interactive Strategies	3
Critical Perspectives	11	Interactive Video	3
Gender	8	Interactivity	3
High School Mathematics	7	Internet Research	3
Web Based Instruction	7	Interview Methods	3
Constructivism	6	Intrinsic Motivation	3
Learning Environments	6	Learner Ability	3
Cognitive Task Analysis	5	Learner Characteristics	3
Constructivist Materials	5	Learner Control	3
Higher Education	5	Learning Strategies	3
Hypermedia	5	Media Directors	3
Info. Processing Strat	5	Mental Models	3
Instructional Television	5	Navigation	3
Problem Based Learning	5	Rapid Prototyping	3
Teaching	5	Reflective Self Regulation	3
Theory	5	Systemic Change	3
Video	5	Teacher Expertise	3
Visual Communication	5	Tech	3
World Wide Web	5	Tech Adoption	3
Agriculture Education	4	Web Based Multimedia	3
Assessment	4	Academic Achievement	2
Decision Making	4	Activity Based Learning	2
Interactive Multimedia	4	Adoption Analysis	2
Listserv	4	Adoption/Infusion Theory	2
Multimedia	4	Animation and Visuals	2
Navigation Models	4	Color Coding	2
Portable Computer Lab	4	Computer Conferencing	2
Professional Development	4	Computer Games	2
Socio Cultural	4	Computer Mediated Comm	2
Software Assessment	4	Computer Use	2
Case Based Instruction	3	Cooperative Learning	2
Collab Multimedia	3	Curiosity	2
Communication	3	Curriculum	2
Contract Ethnography	3	Design	2
Foreign Language Edu	3	Designing Instruction	2

Dialectic Discourse	2	Asynchronous & Synch	1
Education	2	Asynch Learning Net	1
Educational Media	2	Automaticity	1
Evaluation Model	2	Backward Naviagation	1
Fiber Optics	2	Cd-Rom	1
Generative Learning	2	Cognitive Development	1
Global Communications	2	Cognitive Style	1
Graphic Organizers	2	Collaboration	1
Group Culture	2	Collaborative Model	1
Innovation Evaluation	2	Composition	1
Instruction	2	Computer	1
Instructional Format	2	Comp Based Learning Env	1
Instructional Strategies	2	Computer Procedures	1
Interaction	2	Conceptual Change	1
Interactive Television	2	Contextual Variables	1
Keller's Arcs Model	2	Copyright	1
Language	2	Critical Literacy	1
Ldship	2	Critical Mass	1
Leaner Centered Instr	2	Cultural	1
Learning Outcome	2	Cybercourse	1
Learning Process	2	Database	1
Media Education	2	Dehumanization	1
Metacognition	2	Design and Development	1
National Info Infrastructure	2	Developing Effective Instr	1
Open Ended Learning	2	Digitized Speech	1
Philosophy	2	Dissertation	1
Professional Org	2	Distributed Cognition	1
Simulation Game	2	Dual Structured Instr Sys	1
Teacher Education	2	Educational Philosophy	1
Teacher Planning	2	Elementary Education	1
Teacher Preparation	2	Emerging Tech	1
Teacher Thinking	2	Engineering	1
Teacher Training	2	Epss	1
Tech Based Learning	2	Equivalency Theory	1
Tech Resource People	2	Esl	1
Television	2	Evaluation	1
Test	2	Faculty Motivation	1
Text Design	2	Fd Dependence/Ind	1
Vygotskian Perspective	2	Flow Theory	1
Web Based Course	2	Foreign Language	1
Achievement and Attitude	1	Gender Stereotypes	1
Anecdotes	1	Group Dynamics	1
Aptitude Treatment	1	Historical Perspective	1
ARCS Model	1	Hypertext Processing	1

Hypertext	1	Perf Based Learning	1
Implementation	1	Place	1
Individual Instruction	1	Planning Template	1
Inductive Instr Strategies	1	Postmodernism	1
Information Seeking	1	Presence	1
Instr Designer Comp	1	Presentation Graphics	1
Instructional Designers	1	Problem Solving Learning	1
Instructional Planning	1	Processing Styles	1
Instructional Principles	1	Publishing	1
Instructional Theory	1	Reading & Writing Skills	1
Instructional Theory	1	Reconceptualizing Res	1
Inter Learning Tools	1	Reflection & Instr Design Proc	1
Interface	1	Refle Instr Designers	1
International Team Teaching	1	Research	1
Internet Survey	1	Resource Integration	1
Itde Model	1	School Reform	1
Knowledge Structures	1	Screen Design	1
Learner Instr Inter	1	Secondary Teachers	1
Learner Teacher Interaction	1	Self Directed Learning	1
Learning Structure & Sum	1	Self Learning	1
Learning Style	1	Simulation	1
Locus of Control	1	Situated Learning	1
Math Anxiety	1	Social Issues	1
Mathematics	1	Social Studies	1
Media	1	Social Support	1
Media Sensor	1	Software	1
Methodology	1	Software Documentation	1
Microworlds	1	Spatial Ability	1
Minority Students	1	States of Concern	1
Model for Promoting Ref Th	1	Standards & Instr Tech	1
Motivation	1	Student Centered Learn	1
Motivation in Dis Edu	1	Student Trainers	1
Motivationally Adaptive Cai	1	Subjective Norms	1
Multidisciplinary Approaches	1	Symposium	1
Multiple Intelligences	1	Tech, Teaching and Learn	1
Narrative Simulation	1	Tech Courses	1
Navigational Structure	1	Tech Integration	1
Navigation Influences	1	Tech Planning	1
Nctm Curristandards	1	Topographies	1
Networked Instruction	1	Training Tech	1
New Tech in Education	1	University Faculty	1
Notebook Computers	1	User Interface	1
Novice and Expert Res	1	Using Groupware	1
Open Ended Learning Envir	1	Utilization	1

Virtual Classroom	1	Web Assisted Learning	1
Visual Ability	1	Web Based Menus	1
Visual Design	1	Web Based Publishing	1
Visual Literacy	1	Writing Activities	1
Visual Representation	1		

Appendix P

Data Subset 1995-1999 Individual Authors

Data Subset 1995-1999 Individual Authors

Variable	All Authorships N=679				
Knupfer, N. N.	12	Szabo, M.	3	Lockee, B. B.	2
Schnackenberg, H. L.	8	Wang, Y. M.	3	Mahoney, J. E.	2
Cennamo, K. S.	7	Andrews, S.	2	Mangione, M.	2
Januszewski, A.	7	Angeli, C.	2	Mazur, J. M.	2
Land, S. M.	7	Bennett, L.	2	Newby, T. J.	2
Marcinkiewicz, H. R.	6	Betrus, A. K.	2	Nichols, r. G.	2
Hannafin, M. J.	5	Black, J. B.	2	Northrup, P. T.	2
Harvey, F. A.	5	Breman, J.	2	Plomp, T.	2
Jones, M. G.	5	Brown, J. P.	2	Quade, A. M.	2
Klein, J. D.	5	Burton, J. K.	2	Quinn, J.	2
Moallem, M.	5	Caffarella, E. P.	2	Rathbun, G. A.	2
Small, R. V.	5	Choi, W.	2	Reigeluth, C. M.	2
Wilson, B. G.	5	Chung, M. L.	2	Richey, R. C.	2
Boling, E.	4	Clark, B. I.	2	Rieber, L. P.	2
Cates, W. M.	4	Cochenour, J. J.	2	Ritchie, D.	2
Farguhar, J. D.	4	Dalton, D. W.	2	Robinson, R. S.	2
Hill, J. R.	4	Darwazeh, A. N.	2	Rogers, P. L.	2
Jost, K. L.	4	Di Gangi, S. A.	2	Schaeffer, R. S.	2
Reeves, T. C.	4	Doerfert, D. L.	2	Schwen, T.	2
Ryder, M.	4	Duffy, T. M.	2	Shellnut, B.	2
Sherry, A. C.	4	Dyer, D.	2	Sherman, G.	2
Tharp, D. D.	4	Gram, T. E.	2	Sherry, L.	2
Bateman, W. E.	3	Guan, Y.	2	Shoffner, M. B.	2
Berry, L. H.	3	Hawley, C. L.	2	Shyu, H. Y.	2
Cifuentes, L.	3	Hewitt, G.	2	Smith, P. L.	2
Dwyer, F. M.	3	Hsu, Y. c.	2	Smith, S.	2
Ertmer, P. A.	3	Huang, J. C. Y.	2	Streibel, M. J.	2
Frick, T.	3	Jamison, P. K.	2	Sugar, W. A.	2
Harmon, S. W.	3	Jannasch-Pennell, A.	2	Summerville, J. B.	2
Koetting, J. R.	3	Jonassen, D. H.	2	Surry, D. W.	2
Lee, J. Y.	3	Jones, E. E. K.	2	Tessmer, M.	2
Leh, A. S. C.	3	Kim, Y. H.	2	van Esselstyn, D.	2
Miller, G.	3	Kinzie, M. B.	2	Verhagen, P. W.	2
Moore, D. M.	3	Kovalik, C. L.	2	Voithofer, R. J.	2
Morrison, G. R.	3	Kramer, K. M.	2	Young, M. F.	2
Murphy, K. L.	3	Larsen, V. A.	2	Abell, S. K.	1
Persichitte, K. A.	3	Leader, L. F.	2	Abhaya, P. S.	1
Ragan, T. J.	3	Lee, O.	2	Al-Ghafry, S.	1
Ravitz, J.	3	Lee, S. H.	2	Andrew, R.	1
Savenye, W. C.	3	Li, T. C.	2	Appelman, B.	1
Seels, B.	3	Liang, C. C.	2	Applefield, J.	1
Sullivan, H. J.	3	Lockard, J.	2	Arnone, M. P.	1

Askun, C.	1	clariana, R. B.	1	fullerton, K.	1
Babb, J. S.	1	Clark, F. E.	1	Furst-Bowe, J.	1
Bailey, D.	1	Cohen, A.	1	Gibbs, W. D.	1
Baker, M. H.	1	Cole, J.	1	Gieber, c.	1
Balli, S. J.	1	Collis, B.	1	Gilbert, L. S.	1
Bannan, B.	1	Conley, A. T.	1	Giles, F.	1
Barab, S. A.	1	Corderoy, B.	1	Gimenez, R.	1
Barrett, D.	1	Cornell, R.	1	Goodnight, R.	1
Bassoppo-Moyo, T. C.	1	Corwin, T.	1	Goodrum, D. A.	1
Bastecki, V. L.	1	Cribelli, S.	1	Goodwin, Y. A.	1
Baumberger, J.	1	Cross, L. H.	1	Grabinger, r. S.	1
Baylor, A. L.	1	Dabbagh, N.	1	Grabowski, B.	1
Beck, d.	1	Danielson, J. A.	1	Green, T.	1
Bender, C.	1	Das Ray, S.	1	Greene, B.	1
Beriswill, J. E.	1	Davidson-Shivers, G. V.	1	Hale, M. E.	1
Berkley, J.	1	Davies, I. K.	1	Hamodey-Douglas, S.	1
Bichelmeyer, B. A.	1	Davis, M.	1	Haney, D. S.	1
Bishop, M. J.	1	Davis, T.	1	Hara, N.	1
Bland, R.	1	de Freitas, C. V.	1	Hardy, R. D.	1
Bliss, T.	1	de Vin, J.	1	Harper, B.	1
Bohlin, R. M.	1	Dehoney, J.	1	Havard, B. C.	1
Bonk, C. J.	1	Dent, D. R.	1	Hedberg, J.	1
Bradshaw, A. C.	1	DeVaney, A.	1	Hettinger, G.	1
Bramble, W. J.	1	Dimaraki, D.	1	Hilliard, A. W.	1
Branch, R. C.	1	Dirksen, D. J.	1	Hinn, D. M.	1
Braunlich, E.	1	Dodge, B. J.	1	Holmes, G.	1
Brown, S. W.	1	Doran, M. S.	1	Holthaus, P.	1
Brush, T. A.	1	Drabier, R.	1	Hoover, S. J.	1
Burke, W. F.	1	Duffield, J. A.	1	Horn, L.	1
Burmeister, M.	1	Dunlap, J. C.	1	Hrabe, M. E.	1
Byun, H.	1	Dwyer, H.	1	Hruskocy, C.	1
Byun, Y. K.	1	Earle, R. S.	1	Hu, Y. C.	1
Cai, W.	1	Eastmond, N.	1	Hugg, W.	1
Campbell, L. M.	1	Edens, J.	1	Hughey, J.	1
Carter, B. J.	1	Edwards, C.	1	Hunt, J. I.	1
Carter-Tod, D.	1	Edwards, L. D.	1	Jackson, W. A.	1
Cassity, C. L.	1	Eggers, R. M.	1	Jiang, B.	1
Cavalier, J. C.	1	Eisenberg, M.	1	Jiang, X.	1
Charnitski, C. W.	1	Ellsworth, J. B.	1	Johari, A.	1
Chase, M. E.	1	Ely, D. P.	1	Johnson, C.	1
chen, L. C.	1	Epps, M. L.	1	Johnson, R.	1
Chen, L. L.	1	Erickson, M.	1	Johnson, T.	1
Chen, M. P.	1	Erwin, A.	1	Jones, H.	1
chen, R. S.	1	Fields, D.	1	Jordan, J.	1
Chiero, R. T.	1	Fitzgerald, G. E.	1	Jordan, K.	1
Chu, G.	1	Flanagan, R.	1	Julian, M. F.	1
Chuang, W. H.	1	Foshee, N. H.	1	Kao, M. T.	1
Chung, J.	1	Fulford, C. P.	1	Karolick, D.	1

Keller, J. M.	1	McCahan, J.	1	Proviano, C. J.	1
Kilic, G.	1	McClintock, R. O.	1	Pryor, D.	1
Kim, J.	1	McCrary, N.	1	Pye, J.	1
Kincaid, T. M.	1	McCune, C.	1	Ramos, A.	1
Kincannon, J.	1	McGinty, B.	1	Reck, L.	1
Kirley, S.	1	McGonigle, D.	1	Rehaag, D. M.	1
Kisling, E.	1	McIsaac, M. S.	1	Reinhart, J.	1
Kitty, H. F. K.	1	McKay, R. I.	1	Rezabek, L. L.	1
Klemm, E. B.	1	McNabb, M. L.	1	Rezabek, R.	1
Klimczak, A. K.	1	McWright, B. M.	1	Richelmeyer, B.	1
Knowlton, A.	1	Meyer, M. J.	1	Rizzo, S.	1
Kochery, T.	1	Micallef, s.	1	Ross, S. M.	1
Kochery, t. S.	1	Middleton, J. A.	1	Rothenberger, M. C.	1
Koos, M.	1	Miller, P.	1	Roussell, J. M.	1
Koroghlanian, C. M.	1	Mills, R.	1	Rumbaugh, S.	1
Kotcho, C.	1	Mills, S. C.	1	Rusman, E.	1
Krawchuk, c.	1	Mitchell, M. R.	1	Russell, A. L.	1
Kuiper, W.	1	Miwa, M.	1	Rust, w. J.	1
Lai, F. Q.	1	Molenda, M.	1	Saito, R. S.	1
Lambdin, D. V.	1	monson, J. A.	1	Samijo,	1
Lambert, C.	1	Moore, D. R.	1	Savage, T.	1
Larsen, E. Z.	1	Moore, J.	1	Schaumburg, H.	1
Law, M. P.	1	Moore, J. A.	1	Schiff, J.	1
Lawless, K. A.	1	Moore, J. C.	1	Schlenk, G. W.	1
Lawyer-Brook, D.	1	Mory, E. H.	1	Schlosser, C. A.	1
Layng, J.	1	Moskal, P. J.	1	Schneider, E. F.	1
Lebow, D. G.	1	Mount, V.	1	Schneider, P.	1
Lee, M. J.	1	Mowery, B.	1	Schnieder, E.	1
Lee, Y. B. B.	1	Murry, B.	1	Schuh, K. L.	1
Lehman, J. D.	1	Neher, I. M.	1	Schwalm, K. T.	1
Leuck, V.	1	Nelson, A.	1	Semrau, L. P.	1
Ley, K.	1	Nichols, P. J.	1	Shambaugh, R. N.	1
Li, M. F.	1	Okey, J. R.	1	Sheehan, J.	1
Li, S.	1	Olive, J. F. III	1	sherry, R. T.	1
Lohr, L.	1	Orde, B. J.	1	Shih, P. H. C.	1
Ma, G.	1	Orey, M. A.	1	Shih, Y. F.	1
MacDougall, M.	1	O'Rourke, S.	1	Sholdt, G. P.	1
Mack, M.	1	Owen, S.	1	Shorter, L.	1
MacLeod, L. G.	1	Pacheco, J.	1	Shrock, S. A.	1
MaDougall, M.	1	Park, S. H.	1	Simonson, M. R.	1
Magliario, S. G.	1	Parsons, C.	1	Sindt, K. M.	1
Mahesh, V.	1	Pearson, R.	1	Smith, A. J.	1
Mann, E.	1	Pena, C.	1	Smith, K. J.	1
Manternach-Wigans, L.	1	Pilcher, J. K.	1	Song, S. H.	1
Marszalek, C. S.	1	Poleski, T.	1	Spaulding, K. L.	1
Martin, B. L.	1	Poohkay, B.	1	Squire, K.	1
Maushak, N.	1	Powell, G. C.	1	Summers, J.	1
Maxwell, R. C.	1	Powers, S. M.	1	Supinski, S. B.	1

Sutton, S.	1	Ullrich, R.	1	Wittman, M. S.	1
Szul, L.	1	Urfels, C.	1	Wittman, T. K.	1
Tannehill, N. Jr.	1	Vaenkatesh, M.	1	Worthington, t. G.	1
Tao, C. W.	1	Visser, L.	1	Wotell-Charnitski, C.	1
Taylor, m. D.	1	Volk, C.	1	Wright, R.	1
Taylor-Day, J.	1	Wamey, B.	1	Xaver, R. F.	1
Teran, R.	1	Wang, J.	1	Yang, F. M.	1
Thompson, M.	1	Wedman, J. F.	1	Yasin, K.	1
Thompson, W.	1	Weisberg, M.	1	Yi, Q.	1
Tipton, M. H.	1	Weiss, R. E.	1	Young, D. B.	1
Torrence, E.	1	Werner, J. L.	1	Young, S.	1
Tribble, K.	1	Whyte, M.	1	Yu, A.	1
Tsai, B. R.	1	Wieggers, M.	1	Yu, B. M.	1
Turner-Vorbeck, T.	1	Wilkins, R. D.	1	Yu, C. H.	1
Tyan, N. C. N.	1	Wilkinson, G.	1	Zhang, S.	1
Tzeng, S. C.	1	Willemse, A.	1	Zhu, E.	1
Ullmer, E. J.	1	Winograd, D.	1		

Appendix Q

Data Subset 1995-1999 Reference Disciplines

Data Subset 1995-1999 Reference Disciplines

Variable	All Authorships N=679
Education	100 (15%)
Instructional Systems Technology	36
Psychology in Education	22
Ed. Computing & Instr. Development	21
Educational Psychology	8
Educational Science & Technology	8
Instructional Systems	8
Information Studies	8
Teachers College	8
Curriculum & Instruction	6
Educational Tech	6
Learning & Instr. Technology	6
Lifelong Learning & Instruction	6
Agricultural Ed. & Studies	5
Education & Human Services	5
Mathematics & Computer Science	4
Ed Communications & Technology	3
Information Systems Technology	3
Inter Multimedia Learn Lab	3
Program of Training & Development	3
Area of Instructional Sys	2
Computer & Information Science	2
Educational Foundations	2
Ed Media & Computers	2
Info & Communication Technology	2
Inst for Sim & Training	2
Instr Enhancement Services	2
Instr Psychology and Technology	2
Instr Tech & Distance Education	2
Interfacial Engineering	2
Audio Visual Center	1
Center for Information Media	1
Computing, Comm & Media Services	1
Curr, Teaching, and Education	1
Dental Medicine	1
Dentistry	1
Dept of Ed & Human Services	1
Dept of Elem Education	1

Dept of Sec & Higher Ed	1
Distance Education Center	1
Ed Media & Library Science	1
Educational Services	1
Educational Media Services	1
Elementary Education	1
Eric/IT	1
Faculty of Law	1
Information Studies	1
Instr Tech & Telecommunication	1
Library	1
Mathematics & Computer Science	1
Media Services	1
Research Institute of Ed	1
Sch of Info Sci & Learn Technology	1
School of Nursing	1
Sec Ed/Foundations of Education	1
Special Education	1
Tech in Education	1
Telecommunications	1
Training & Development Professional	1
Us Air Force Academy/Education	1

Appendix R

Data Subset 1995-1999 Contributing Institutions

Data Subset 1995-1999 Contributing Institutions

Variable	All Authorships N=679		
University of Hawaii	10	Drexel University	2
University of Colorado	9	Gonzaga University	2
University of Memphis	9	Hawaii Dept of Ed	2
University of North Carolina	9	Korea Ed Dev Inst	2
University of Oklahoma	9	Mankato State University	2
Columbia University	8	National Library of Medicine	2
Florida State University	7	Northeastern Illinois University	2
University of Missouri	7	Pusan National University	2
Wayne State University	7	Rmc Research Corp	2
California State University	7	Slippery Rock University	2
Iowa State University	6	South Dakota State University	2
Storage Technology Corp.	6	Southern Illinois University	2
University of Connecticut	6	The University of Iowa	2
University of Minnesota	6	University of Illinois	2
University of Virginia	6	University of Minho	2
University of Wyoming	6	University of South Florida	2
Kent State University	5	Yuan-Ze Institute of Tech	2
Kutztown University	5	Air University	1
San Diego State University	5	Alice Lloyd College	1
Tamkang University	5	Anderson Consulting	1
University of Central Florida	5	Andong University	1
University of Wisconsin	5	Arkansas State University	1
Utah State University	5	AT&T	1
Indiana State University	4	Auburn University	1
University of Guam	4	Bell Atlantic	1
University of Kentucky	4	Bemidji State University	1
University of South Dakota	4	Bossier Parish CC	1
University of Wollongong	4	Brigham Young University	1
VA Poly Inst & State University	4	Brown Mackie College	1
Ferris State University	3	Burlington-Edison Public Sch	1
National Chung Cheng University	3	Butler University	1
Nova Southeastern University	3	Central Washington University	1
University of Alberta	3	Chadron State College	1
University of Nevada	3	Chiayi Teachers College	1
University of West Florida	3	Child Reading Dev Corp	1
US Air Force Academy	3	Concordia University	1
Indiana University of PA	3	Creative Media Solutions	1
An-Najah National University	2	Csu Northridge	1
College Misericordia	2	Drake University	1

East Texas State University	1	Performix, Inc.	1
Edmonton Public Sch	1	Portland State University	1
Emporia State University	1	Pricewaterhouse Coopers	1
Frank Magid Associates	1	Queensland University of Tech	1
Free University of Berlin	1	Regis University	1
Grambling State University	1	Samsung Data Systems	1
Gte Internetworking	1	Son-U of Tx Med Br	1
Haney Consulting	1	St. Cloud State U	1
Horizon Interactive, Inc.	1	Strategic Perf. Des.	1
Howard University	1	The King's University College	1
Jostens Learning Corporation	1	The Phoenix Zoo	1
Know Solutions, Inc.	1	Unites States Army	1
Korea University	1	University of Alberta	1
Leeward CC	1	University Communications	1
Lg Academy	1	University of Alabama	1
Locus Technologies	1	University of Arkansas	1
Mesa Community College	1	University of Cincinnati	1
National Ed Training Grp	1	University of Houston	1
National Louis University	1	University of Iowa	1
National Open University	1	University of Michigan @ Flint	1
Nat Taipei Teachers' College	1	University of New Mexico	1
North Ctl Regional Ed Lab	1	University of Southern Ms	1
Nd State Bd for Voc & Tech Ed	1	U of Tx Health Science Center	1
Northern State University	1	Valley City State University	1
Northern States Power Co.	1	Visser Associates	1
Novanet Learning	1	Western Illinois University	1

Appendix S

Data Subset 2000-2004 Main Themes (Extracted Keyword Descriptors)

Data Subset 2000-2004 Main Themes (Extracted Keyword Descriptors)

Variable	All Articles n=773		
Instructional Design	14	Higher Education	3
Technology Intgration	13	Integration	3
Distance Education	10	K-12 Education	3
Problem Based Learning	10	Novice Learners	3
Teacher Education	9	Online Learning Environments	3
Collaborative Learning	8	Online Prof Development	3
Distance Learning	8	Professional Development	3
Preservice Teachers	8	Reflective Thinking	3
Instructional Technology	7	Storytelling	3
Motivation	7	Technology	3
Self Efficacy	7	Techology Integration	3
Web Based Instruction	7	Web Based Course Dev	3
Case Studies	6	Websites	3
Online Discussion	6	World Wide Web	3
Problem Solving	6	Adjunct Questions	2
Self Regulated Learning	6	Adult Learners	2
Simulations	6	AECT	2
Computer Mediated Comm	5	Affective Video	2
Human Performance Tech	5	Animated Instruction	2
Online Learners	5	Asynch Interaction	2
Online Learning	5	CBI	2
Research	5	Collab Prob Solving	2
Achievement	4	Complex Learning	2
Assessment	4	Conceptual Framework	2
Evaluation	4	Constructivism in Edu	2
Faculty Development	4	Constructivist Learning	2
Laptop Education	4	Content Analysis	2
Motivation in WBI	4	Course Evaluation	2
Online Course Development	4	Course Transformation	2
Online Education	4	Critical Thinking	2
Student Learning	4	Design	2
Web Based Learning	4	Development Models	2
Animation Strategies	3	Educational Objectives	2
Attitudes	3	E-learning	2
Computer Conference	3	Feedback Timing	2
Computer Simulation	3	Field Dependence	2
Computers	3	Gender	2
Educational Technology	3	Goal Setting	2
Electronic Portfolios	3	Handheld Computers	2

Hypermedia	2	Asynchonous Discussion
Instr Design Theory	2	At Risk Learners
Instructional Development	2	Audience Awareness
Integrating Technology	2	Authentic Learning Strategies
Internet	2	Authoring Tools
Intrinisic Motivation	2	Automaticity
Learning Environments	2	Barriers
Metacognition	2	Bayesian Decisions
Multimedia Learning	2	Benchmarks
Older Adults	2	Big Six Information Skills
Online Instr Design	2	Blended Learning
Perception	2	Booktalk
Recall	2	Brain Based Learning
Reflection	2	Career Interests
Response Rates	2	Causal Influence Diagrams
School University Partnership	2	CBI
Science Education	2	CBR System
Staff Development	2	CBT
Student Performance	2	Citation Patterns
Survey	2	Classroom Studies
Teachers' Beliefs	2	Cognitive and Psychomotor Tasks
Teaching	2	Cognitive Based Instructional
Usability	2	Intervention
Wap Technology	2	Cognitive Facilitation
Web Based Courses	2	Cognitive Load
Web Based Dis Learning	2	Cognitive Skills
Web Based Instruction	2	Collaboration
Web Based Learning Env	2	Collaborative and Individual Learning
4c/Id Model	1	Collaborative Design
Accessibility	1	Collaborative Online Communities
Action Research	1	Collaborative Online Leanring
Adaptive Learning	1	Collaborative Researh
Addie Model	1	Collaborative Tools for Assessment
Adult and Higher Edu	1	Collaborative Web Pages
Adult Learning Pref	1	Color Coding
AECT Archives	1	Communication Style
Affordances	1	Community
Archival Equipment	1	Community Building
Arcs Model of Motivation	1	Community College Environment
Arts and Learning	1	Community of Practice
Assessment and Research Tools		Computer Based Electrical Engineering
Assessment Plan		Complex Problems
Assets		Computer Affect and Behavior Effects
Astronomy		Computer Animations

Computer Based Multiple Representations
Computer Based Test
Computer Based Training
Computer Games
Computer Instruction
Computer Literacy and Persistence
Computer Medicated Intercultural Communication
Computer Security
Computer Skills
Computer Supported Collaborative Argumentation
Computer Supported Communities
Concept Maps
Configuration Map
Connectionist Models
Continuous Assessment
Coputer Attitudes
Course Development Strategies
Course Revision
Course Syllabi
Creative Instruction
Creative Thinking
Critical Realist
Crmt
Case Study
Cultue of Inquiry
Cultural Conceptions
Cultural Hisotircal Activity Theory Chat Analysis
Cultural Studies
Culture
Culture and Motivation
Curriculum Design
Curriculum Development
Curriculum Management Systems
Cyberethics
Cyberspace
Dales Cone of Exerience
Data
Debate
Deconstruction
Delta Rule
Design and Production
Design Ideas
Design Languages
Design of Graphic Organizers
Design Strategies
Desktop Videocoference
Determinants for Failure and Success
Development and Validity
Devleopment Research
Diffusion
Diffusion of Educationalt Echnology
Digital Immigrants
Digital Natives
Digital Television
Digitial Divide
Discourse
Dislogue
Dissertations
Distance Field Experiences
Distance Learning Environment
Diverse Learner
Diversity
Domain
Drama's Role in Multimedia Instructional Software
Dynamic Selection
Educational Change
Educational Multimedia
Educational Purposes
Educational Setting
Educational Software
Educational Tool
Educators Experiences
Efficiency
Ejournal Forum
E-learning Professional Certificate Program
Electronic Conferencing
Electronic Journals
Electronic Support
E-listening
English as A Foreign Language
Epistemological Beliefs
E-portolfios

EPSS
EPSS for Performance Analysis
EPSS for Self Efficacy
Essential Skills
Ethics
Experience Learning
Expertise
Faculty Beliefs
Faculty Impediments
Faculty Mentoring
Faculty Participation
Faculty Professional Development
Feedback
Field Independence
Foreign Language Pedagog
Formative Evaluation
Formative Research
Frameworks
Gender Differences
Governing Policies
Graphical Representation
Groove Software
Group Composition
Grouping
Headings
Health Teachers
Heuristic
Heuristic Evaluation
Heuristic Task Analysis
Higher Order Learning
Hispanic Women
Human Computer Interactio
Hybrid Course
ICN
ICT
Ill Syructured Problem Solving
Image Based
Image Processing
Immediate Feedback
Impact of The Technology Course
Implementation
Indonesia
Information Management
Information Problem Solvi
Information Resources
Information Technology Literacy
Inquiry Based Learning
Inquiry Based Multimedia Program
Inquiry Driven Design
Instruction
Instructional Design Expertise
Instructional Design Language
Instructional Design Rating System
Instructional Design Tools
Instructional Effectivenes
Instructional Interface
Instructional Media Production
Instructional Methodologi
Instructional Mode
Instructional Planning
Instructional Principles
Instructional Research
Instr Strategies and Classroom Practice
Instr Strategies and Learning Styles
Instructional Strategy
Instructional Styles
Instructional Television
Instructional Tool
Instructional Website
Instructor Moderation
Insyructional Events
Integrating Video Producti
Integrative Learning Design Framework
Interaction Pattern
Interactions
Interactive Activities
Interactive Videoconferencing
Intereactive TV
International Telecommunications
Internet Based Learning
Internet Searching
Interpersonal Relations
Intervention
Intranet Blackboard
Invariance
Iste Standards
Iterative Dsign
Job Corps

K-12 Classrooms
K-12 Educational Technolo
K-12 Learning
K-12 Professional Development
Language and Access
Latino Community
Leadership
Learers Experience
Learner Centered Learning Environent
Learner Centered Teaching
Learner Dropout
Learner Perceptions
Learner's Cultural Awareness
Learning Activities
Learning Interest
Learning Objects
Learning Organizations
Learning Process
Learning Teasks
Legal Education
Lesson Template
Library Media Collections
Library Media Specialists
Literacy
Low Income and Minority Students
Lurker
Magnetic Audio Tapes
Mathematics
Media and Technology Practice
Media Effects
Media Literacy
Mental Model
Mentoring Student Teachers
Message Function
Meta Analysis
Metadata
Mindset Change
Mindtools
Mixed Mode Courses
Modalities
Modularity
Motivation in Education
Motivation Influences
Motivation Support
Multicultural
Multilevel Assessment Framework
Multimedia
Multimedia Rich
Multimedia Tutorial Instruction
Multiple Perspectives
Music Technology
Needs Analysis
Netconferencing
Network
Neural Networks
New Media
Nonlinear Dynamics
Notetaking
Object Oriented Dynamic Learning Environment
Online
Online Asynchrononous Environment
Online Collaboration
Online Community
Online Content Developmen
Online Debates
Online Delivered
Online Education Instruction
Online Environments
Online Facilitation
Online High School Course Development
Online Instruction
Online Interaction
Online Learning Community
Online Learning Environments
Online Learning Support System
Online Mba Courses
Online Moderators
Online Projects
Online Reference Maps
Online Simulation
Online Teaching
Online Writing
Open Content
Oral Description
Organic Knowledge Buildin
Organizational Culture
Organizational Knowledge Networks

Pathfinder
Pedagogical Styles
Peer Challenging Learning
Peer Feedback
Peer Interactions
Peer Rating System
Peer to Peer Computing
Performance Outcomes
Person Centered Model of Instruction
Personality
Phenomenological Researc
Photographic Images
Policy Development
Portal Site
Postmodern View of Learning
Postmodernism
Power Relations
Power Relationships
Powerful Powerless Language Use
Pratice and Applications
Preparation
Prior Knowledge
Process Vs. Product
Program Design
Program Evaluation
Program Solving Skills
Project Based Learning
Project Management
Project Manager
Public Health Education
Qualitative Evaluation
Qualitative Inquiry
Qualitative Research
Qualitative Return
Quality
Question Prompts
Rapid Application Development
Rapid Representation
Reading Assessment
Redundancy
Relationships
Relevance
Repeated Measures
Research Based Process Model
Resource Based Learning Environment
Response Bias
Resrouce Based
Revlection
Rhetorical Theory
Role of Scaffolds
Role Play
Rural Schools
Scaffolds
Scenarios
Schema Theory
School Leaders
School Reform
Scorm Compliant Content Production
Search Engines
Self Directed Online Learning Environments
Self Direction
Self Learning
Self Paced Instruction
Self Study
Senior Adults
Sensitivity
Service Learning
Shared Decision Making
Signals
Situated Motivation
Small Group Learning
Socially Constructed Beliefs
Sociocultural Context
Software Development
Sound Effects
Special Education
Split Attention
Spoken Instructions
Streaming Video Education
Structured Instruction
Student Achievement
Student and Teacher Performance
Student Attitudes
Student Centered Learning
Student Engagment
Student Exposure
Student Faculty Mentoring

Student Perspectives
Student Profiles
Student Satisfaction
Student Self Generated Questions
Students' Attitudes
Success in Online Distance Education
Summative Evaluation
Synchronous and Asynch Distance Edu
Synchronous Computer Conference
Synchronous Online Courses
Systematic Improvement
Systemic Change
Systemic Transformation of Education
Systems Science
Teachers
Task Analysis
Teach Research
Teacher Decision Making
Teacher Preparation
Teacher Training
Teaching Computer Skills
Teaching Online
Teaching Practices
Teaching Strategies
Teaching with Technology
Technolo-Categorical Analysis
Technology Integration
Technological Support
Technology Acceptance Model
Technology Adoption
Technology Applications
Technology Attitudes
Technology Competency Levels
Technology Coordinators
Technology Grants
Technology Infusion
Technology Mediated Learning
Technology Mediated Prof Development
Technology Needs
Technology Standards
Technology Use
Technology Use by Faculty
Technology Use in K-12
Theoretical
Theory to Practice
Thinking
Three Dimensional Virtual Worlds
Traditional Classroom Instruction
Training
Transformationallearnin
Ubiquitous Computng
Undergraduate Courses
Undergraduate Instructio
Undergraduate Student Achievement
Universal Instructional Experiences
Usability Evaluation
Usability Test
Use of Epss
Use of Web Resources
User Centered Design
Uses and Gratifications
Utilization
Validity
Vicarious Learning
Video Centric Instruction
Video Games
Video On Demand
Video Streaming
Video Technology
Videoconferencing
Virtual Field Experience
Virtual High School
Virtual Learning Communit
Virtual Manipulation
Virtual Quests
Virtual Reality
Virtual Universities
Virtual Community of Practice
Visual Literacy
Visual Montage Messages
Visual Perception
Visual Scaffolding
Visualization
Web Based Evironmental Learning
Web Based Lessons
Web Based Modules
Web Based Pedagogy
Web Design Approach

Web Enhanced Instruction
Web Enhanced Learning
Webct Training
Weblogs
What Price Metaphor
Women
Word Problem Solving Skills
Www Administered Survey

Appendix T

Data Subset 2000-2004 Individual Authors with $\geq$ 5 Authorships

Data Subset 2000-2004 Individual Authors

Variable	All Authorships N=1470				
Klein, J. D.	11	Lohr, L. L.	4	Lamboy, C. L.	3
Savenye, W. C.	10	Luppicini, R. J.	4	Lee, Y.	3
Johnson, T. E.	9	Martin, F.	4	Leh, A. S. C.	3
Koszalka, T. A.	9	Misanchuk, M.	4	Lin, H.	3
Ku, H. Y.	9	Niemczyk, M. C.	4	Lio, C. H.	3
Park, S. H.	9	Pedersen, S.	4	Liu, S.	3
Tuzun, H.	9	Prestera, G. E.	4	Liu, X.	3
Cifuentes, L.	8	Sullivan, H. J.	4	Martindale, T.	3
Dwyer, F. M.	8	Tao, Y.	4	Middleton, J. A.	3
Ertmer, P. A.	8	Tozoglu, D.	4	Mills, S. C.	3
Frick, T. W.	8	Wu, Y. S.	4	Munyofu, M.	3
Grabowski, B. L.	8	Yang, Y. C.	4	Murphy, K. L.	3
Javeri, M.	7	Zhang, K.	4	Oncu, S.	3
Maushak, N. J.	7	Alford, P.	3	Pan, C. C.	3
Cornell, R.	6	An, J. S.	3	Peng, H.	3
Kim, K. J.	6	Baylor, A.	3	Persichitte, K. A.	3
Yu, B. M.	6	Beers, P. J.	3	Reigeluth, C. M.	3
Bollinger, D. U.	5	Berg, B. C.	3	Roberts, S.	3
Bray, M.	5	Blocher, J. M.	3	Ross, E. M.	3
Mazur, J. M.	5	Bozkaya, M.	3	Sanzone, C.	3
Schaffer, S. P.	5	Branon, R.	3	Shalyefu-Shimhopileni,	
Schnackenberg, H. L.	5	Cakir, H.	3	R. K.	3
Shoffner, M. B.	5	Campos, M. N.	3	Shambaugh, N.	3
Varank, I.	5	Carr-Chellman, A. A.	3	Shen, E.	3
Verhagen, P. W.	5	Charsky, D.	3	Sherry, A. C.	3
Wang, C. X.	5	Chen, H. H.	3	Sheu, F. R.	3
Winograd, D. M.	5	Chen, S. J.	3	Song, H. D.	3
Ausman, B. D.	4	Clariana, R. B.	3	Stansberry, S. L.	3
Aydin, C. H.	4	Cramer, J.	3	Su, B.	3
Brinkerhoff, J. D.	4	Demirbilek, M.	3	Swain, W. J.	3
Butler, R. P.	4	Di Gangi, S. A.	3	Teclehaimanot, B.	3
Caffarella, E. P.	4	Dias, L. B.	3	Wang, C. Y. J.	3
Cates, W. M.	4	Duffy, T. M.	3	Yang, C. C.	3
Conn, C.	4	Dwyer, H.	3	Yilmaz, O.	3
Davidson-Shivers, G. V.	4	Flowers, C. P.	3	Yu, C. H.	3
Eseryel, D.	4	Galbraith, J. D.	3	Zahner, J.	3
Ferguson-Pabst, D.	4	Gao, H.	3	Abromitis, J. G	2
Gall, J. E.	4	Giguere, P. J.	3	Akdemir, O.	2
Han, S.	4	Harvey, F. A.	3	Algozzine, R. F.	2
Julian, M. F.	4	Huang, D. W. H.	3	Anderson, C. A.	2
Kirschner, P. A.	4	Igoe, A. R.	3	Anderson, T.	2
Koroghlanian, C. M.	4	Jannasch-Pennell, A.	3	Apedoe, X.	2
Land, S. M.	4	Jones, M. G.	3	Arnone, M. P.	2
Lee, J. Y.	4	Jun, J. S.	3	Ataizi, M.	2
Lee, M.	4	Kenny, R.	3	Baek, E. O.	2
Lehman, J. D.	4	Kidwai, K.	3	Bai, H.	2
Liu, P. L.	4	Kim, M. J.	3	Beatty, B.	2

Bishop, M. J.	2	Hu, H.	2	Rosenfeld, B.	2
Bonk, C. J.	2	Hunt, E. K.	2	Salden, R. J. C. M.	2
Boyer, N. R.	2	Ingram, K. W.	2	Sharma, P.	2
Breman, J.	2	Jeong, A. C.	2	Shih, Y. C. D.	2
Brewer, S. A.	2	Kaminski, K.	2	Shin, N.	2
Brown, A.	2	Khalil, M.	2	Small, R. V.	2
Brown, C. A.	2	Kim, Y.	2	Smith, B. K.	2
Brush, T.	2	Kopcha, T. J.	2	Smith, C. L.	2
Buckenmeyer, J. A.	2	Kreijns, K.	2	Solomon, D. L.	2
Cagiltay, K.	2	Kumahata, H.	2	Solomon, H.	2
Caropreso, E. J.	2	Larsen, V. A.	2	Sorensen, C. K.	2
Chang, S. L.	2	Lee, C. Y.	2	Spitzer, B. A.	2
Cheng, Y. C.	2	Lee, D.	2	Stoel, D.	2
Chou, C. C.	2	Lee, H. K.	2	Strijbos, J. W.	2
Choy, D.	2	Lee, I. S.	2	Stuart, D. H.	2
Clarebout, G.	2	Lee, J.	2	Subramony, D. P.	2
Clem, F. A.	2	Lim, B.	2	Sugar, W. A.	2
Colaric, S. M.	2	Lin, G. Y.	2	Summerville, J. B.	2
Collis, B.	2	Liu, M.	2	Taricani, E.	2
Cornelius, L. F.	2	Llama, G.	2	Torok, A. G.	2
Correia, A.	2	Lowell, N.	2	Tsai, M. H.	2
Cox, S.	2	Lowther, D.	2	Tutkun, T.	2
Crooks, S. M.	2	Ludwig, B. M.	2	Valentine, T.	2
Cullen, T. A.	2	Mahoney, C.	2	van Merrienboer, J. J. G.	2
Darabi, A.	2	Malopinsky, L.	2	Verleur, R.	2
Davis, T.	2	Maughan, M. D.	2	Visser, L.	2
de Freitas, C. M. V.	2	McCrary, N. E.	2	Voithofer, R.	2
del Valle, R.	2	McGee, S.	2	Wang, H. C.	2
Dickey, M. D.	2	McGriff, S. J.	2	Wang, L.	2
dong, C.	2	Miller, C. T.	2	Wang, S. K.	2
Dougherty, J. U.	2	Moller, L. A.	2	Wang, W.	2
Eastmond, D.	2	Moore, J.	2	Watson, C.	2
Eddy, P.	2	Morales, D. R.	2	Werner, J. L.	2
Eichelberger, A.	2	Morrison, G. R.	2	white, P. A.	2
Elen, J.	2	Murry, F. R.	2	Williams, D.	2
Essex, C.	2	Murry, G. B.	2	Wilson, J.	2
Evans, M. A.	2	Muth, R.	2	Zhu, L.	2
Feldon, D. F.	2	Nelson, D. W.	2	Aagard, H.	1
Fischer, K. M.	2	Nichols, R. G.	2	Abdulla, A.	1
Formica, S. W.	2	O'Connor, D.	2	Abraham, R.	1
Fulford, C. P.	2	Okubo, M.	2	Abrami, P. C.	1
Fuller, D. P.	2	Olina, Z.	2	Adair, R.	1
Gaddis, B.	2	Orrill, C. H.	2	Adams, S.	1
Ganesh, T. G.	2	Paas, F.	2	Adiguzel, T.	1
Gannon-Cook, R.	2	Parker, P. P.	2	Akpinar, Y.	1
Gibbons, A. S.	2	Pedersen, D. C.	2	Albayrak, M.	1
Glazer, E.	2	Polly, D.	2	Alegre, M. K.	1
Graham, C.	2	Rabak-Wagener, J.	2	Alexander, K.	1
Hampton, S.	2	Remley, C. M.	2	Allen, B.	1
Harding, W. M.	2	Riboldi, P. J.	2	Allen, S.	1
Harmon, S. W.	2	Richey, R. C.	2	Amiel, T.	1
Harrelson, C. L.	2	Robinson, L. K.	2	Anderson, D.	1
Hsieh, Y. C. J.	2	Robinson, R.	2	Andrews, S.	1

Anglin, G.	1	Brown, L.	1	Curnow, C. K.	1
Archambault, C. C. A.	1	Brown, S.	1	Curts, J. B.	1
Arias, S.	1	Browne-Ferrigno, T.	1	da Silva, A. P.	1
Armstrong, B.	1	Brush, J.	1	Dabbagh, N.	1
Atkinson, R. K.	1	Bucci, T. T.	1	Dabrowski, R. S.	1
Atkinson, T.	1	Bucker, A. J.	1	Dakwa, K. D.	1
Aviv, R.	1	Burdette, K.	1	Danielson, J.	1
Aydin, I. E.	1	Burger, K.	1	De Broux, M. L.	1
Baek, J.	1	Burkett, R.	1	de Croock, M.	1
Baker, J. D.	1	Burr-McNeal, B.	1	de Medio, D.	1
Baker, R. M.	1	Burton, J.	1	de Rabago, J. D.	1
Balaban-Sali, J.	1	Calandra, B. D.	1	Deets, J.	1
Bannan-Ritland, B.	1	Cameron, B. H.	1	Delialioglu, O.	1
Baptiste, I.	1	Campbell, K.	1	Demmon, T. L.	1
Barati, K.	1	Campbell, P.	1	Dempsey, J. V.	1
Baro, J. A.	1	Campbell, R.	1	Dessouky, M. M.	1
Barrett, L. c.	1	Carr, C. S.	1	DeWitt-Heffner, J.	1
Barrington, M. E.	1	Carter-wells, J.	1	Diaz, S.	1
Barron, A. E.	1	Carvalho, A. A. A.	1	Diefus-Dux, H.	1
Baruniske, R. W.	1	Cascia, A.	1	Dodge, T.	1
Bauck, T.	1	Cassiday, D.	1	Doering, A.	1
Bauer, J.	1	Cennamo, K.	1	Doering, A. H.	1
Baumbach, D.	1	Chadwick, J.	1	Dornisch, M. M.	1
Baylen, D. M.	1	Chamers, T.	1	Doucette, M. A.	1
Bayrak, C.	1	Chang, M. M.	1	Doughty, P.	1
Beach, R.	1	Chase, M. E.	1	Douglas, I.	1
Beck-Jones, J.	1	Chavez, M.	1	Dowie, S.	1
Beesley, A. D.	1	Chen, K. T.	1	Downs-Keller, M.	1
Bellisimo, Y.	1	Chen, L. C.	1	Driscoll, M. P.	1
Bender, H.	1	Chen, L. L.	1	Du, J.	1
Berkley, J. S.	1	Chen, X.	1	Dueber, B.	1
Bernard, R. M.	1	Chin, K.	1	Duncan, S. M.	1
Bernas, R. S.	1	Cho, M. H.	1	Dunsworth, Q.	1
Bernhardt, P.	1	Choi, C.	1	Duvenci, A.	1
Betrus, A.	1	Choi, I.	1	Dwight, J.	1
Bevill, L.	1	Chu, C.	1	Dylak, S.	1
Bianco, M. B.	1	Chuang, W. H.	1	Ebersole, S. E.	1
Bichelmeyer, B. A.	1	Chung, J. S.	1	Efaw, J.	1
Bigatel, P.	1	Chuvessiriporn, S.	1	Ekstrom, I.	1
Blaeser, B.	1	Chyung, S. Y.	1	Elmahdi, I.	1
Blair, H. C.	1	Cilesiz, S.	1	Erbas, A. K.	1
Blodgett, T.	1	Clark, K. A.	1	Erlich, Z.	1
Bludnicki, M.	1	Clarke, C.	1	Ezell, S. D.	1
Bober, M. J.	1	Clarke, C. B.	1	Fang, F.	1
Bocchiaro, J. III	1	Clayson, R. L.	1	Ferrell, K. A.	1
Bohlin, R. M.	1	Cohen, A.	1	Fine, B.	1
Boling, E.	1	Cohen, D. E.	1	FitzPatrick, S. B.	1
Borokhovski, E.	1	Collins, C.	1	Fleck, R. A. Jr.	1
Bradshaw, F.	1	Corbalan, G.	1	Foley, A. L.	1
Branch, R. M.	1	Crichton, S.	1	Foley, S.	1
Brophy, J.	1	Cronin, G. M.	1	Ford-Lawton, D.	1
Broskoske, S. L.	1	Crozier, J.	1	Fowler, R.	1
Brovey, A. J.	1	Cullen, K.	1	Fox, E. J.	1

Frier, R.	1	Hirumi, A.	1	Kim, H.	1
Gabrielle, D. M.	1	Hixon, E.	1	Kim, K. N.	1
Galloway, C.	1	Hoffman, B.	1	Kim, N.	1
Gastfriend, H. H.	1	Hofmann, W.	1	Kinuthia, W.	1
Gazeda, R. B.	1	Hoiting, W.	1	Kirby, J. A.	1
Ge, X.	1	Hokanson, B.	1	Kirkley, J.	1
Gerber, B. L.	1	Hooper, S.	1	Kitsantas, A.	1
Gerraughty, J. F.	1	Horn, P. J.	1	Kletnicks, C.	1
Giarratano, J.	1	Howell, D.	1	Knowles, M.	1
Gibbs, W. J.	1	Hrabe, D. P.	1	Kochery, T.	1
Gillespie, W.	1	Hsieh, M. F.	1	Koksal, N. F.	1
Giordano, M.	1	Hsieh, W. L.	1	Kolar, B.	1
Glass, G. V.	1	Huang, R.	1	Koontz, F. R.	1
Glazewski, K.	1	Huang, X.	1	Kopp, H.	1
Goetze, S. K.	1	Huber, D.	1	Korkmaz, A.	1
Goodnight, R.	1	Hung, W.	1	Kowch, E. G.	1
Goodson, L. A.	1	Hutton, D.	1	Kramers-Pals, H.	1
Gordon, D. E.	1	Ikuta, J.	1	Ku, C. H.	1
Gowen, S. A.	1	Ivers, K.	1	Kucuk, M.	1
Grant, M. M.	1	Jackson, M. K.	1	Kuforiji, P.	1
Green, M.	1	Jacobsen, M.	1	Kunnath, M. L. A.	1
Green, T.	1	Jamison, J.	1	Kurz, T.	1
Greene, B. A.	1	Jenks, K.	1	Laboone, E.	1
Grega, L. M.	1	Jennings, T. A.	1	Laferriere, T.	1
Guenther, P. F.	1	Jiang, M.	1	Laffey, J.	1
Gunter, G.	1	Job, K. A.	1	Lai, H. S.	1
Gurney, K.	1	Johari, A.	1	Lane, M. M.	1
Gursoy, H.	1	Johnson, a.	1	Lantz, N.	1
Gustafson, K.	1	Johnson, C.	1	Lasnik, V. E.	1
Guzman, N.	1	Johnson, W. L.	1	Layne, B. H.	1
Hahs-Vaughn, D.	1	Jones, J. L.	1	Leavy, A. M.	1
Hamilton, K. M.	1	Jones, T. S.	1	Lee, C. B.	1
Hampton, E.	1	Joseph, R.	1	Lee, H. J.	1
Han, N. C.	1	Joung, S.	1	Lee, J. L.	1
Hancock, D. R.	1	Kale, U.	1	Lee, S. H.	1
Hancock-Niemic, M.	1	Kalk, D.	1	Lee, S. M.	1
Hanson, K.	1	Kang, S. P.	1	Lei, K.	1
Harriman, S.	1	Kapke, G.	1	Lewandowski, J.	1
Harris, B. R.	1	Kaya, I.	1	Lewis, B.	1
Harris, E. L.	1	Kazlauskas, E. J.	1	Lewis, D.	1
Harris, P.	1	Ke, F.	1	Ley, K.	1
Hartsell, T.	1	Kealy, W. A.	1	Li, H.	1
Harvey, D.	1	Keller, J.	1	Li, J.	1
Haughton, N. A.	1	Kelley, P.	1	Li, L.	1
Havard, B.	1	Kellogg, A.	1	Li, M. F.	1
Hay, K. E.	1	Kelly, C.	1	Li, Q.	1
Haynes, L. L.	1	Kelly, M. L.	1	Liang, L. A.	1
Hemphill, H. H.	1	Kelsey, R.	1	Lim, J.	1
Hemphill, L. S.	1	Kermani, H.	1	Lin, Y. M.	1
Herndon, L.	1	Kester, L.	1	Lindquist, B.	1
Hew, K. F.	1	Kim, A.	1	Little, C.	1
hill, J. R.	1	Kim, B.	1	Liu, J. M.	1
Hirner, L.	1	Kim, E. A.	1	Liu, Y. H.	1

Lockard, J.	1	Mishra, U.	1	Powell, G. C.	1
Lockee, B.	1	Mitchem, T.	1	Pratt, D.	1
Lopez-Ortiz, B. I.	1	Moallem, M.	1	Preast, V.	1
Lou, Y.	1	Monaghan, J. M.	1	Price, C.	1
Louis, E.	1	Mooij, T.	1	Price, R.	1
Lu, W. H.	1	Moore, D. M.	1	Prichavudhi, A.	1
Lubinescu, E. S.	1	Morgan, J.	1	Qian, Y.	1
Ma, Y.	1	Morris, S.	1	Raven, A.	1
MacDonald, C.	1	Morse, T. E.	1	Ravid, G.	1
Macedo, P.	1	Mott, M.	1	Raymond, M. H.	1
Mackal, M. C.	1	Muller, B.	1	Reese, D. D.	1
MacPherson-Coy, A.	1	Musgrove, C.	1	Reinartz, T. J.	1
Maddox, S.	1	Napier, W.	1	Reinhart, J.	1
Magjuka, R. J.	1	Napierkowski, H.	1	Reisslein, J.	1
Magliario, S. G.	1	Napper, V. S.	1	Reisslein, M.	1
Mancuso, C.	1	Nelms, K. R.	1	Rendon, B.	1
Mansfield, J.	1	Newby, V. A.	1	Resta, P. E.	1
Marchessou, F.	1	Ni, X.	1	Rezabek, L. L.	1
Marcinkiewicz, H. R.	1	Nicholson, G.	1	Richards, R. A.	1
Margaryan, A.	1	Nicolaou, A.	1	Richardson, J.	1
Martens, R.	1	Nieveen, N.	1	Richter, K.	1
Martin, L.	1	Nkonge, B.	1	Rickel, J.	1
Martinez, R.	1	Nkonge, J. H.	1	Riggsby, D. S.	1
Martinez, S.	1	Norris, J.	1	Rivera, L.	1
Martinez-Pons, M.	1	Norwood, M. M.	1	Roberston, H. P.	1
Marvin, E.	1	Novick, S. L.	1	Roblyer, M. D.	1
Matthys, D.	1	Nworie, J.	1	Roemmelt, B.	1
Maxwell, N. L.	1	Odabasi, H. F.	1	Roh, S. Z.	1
May, M. K.	1	Oh, J. E.	1	Ross, J. D.	1
McCann, S. A.	1	Ohlund, B.	1	Ross, S. M.	1
McCarthy, M.	1	Oksuz, C.	1	Roushanzamir, S.	1
McCausland, J. A.	1	Orey, M.	1	Russo-Converso, J. A.	1
McClendon, V. J.	1	Osguthorpe, R. T.	1	Salazar, J.	1
McConnell, S.	1	Oswald, D.	1	Sales, G. C.	1
McCoy, D.	1	Owen, D. O.	1	Sallisky, R.	1
McCrae, M.	1	Oxenford, C.	1	Sansing, W.	1
McCurry, D. S.	1	Ozkan, B.	1	Santiago, R. S.	1
McDowell, S. D.	1	Pannen-Jamaludin, P.	1	Sawyer, B.	1
McGraw, T. M.	1	Park, T.	1	Sawyer, S.	1
McKimmy, P. B.	1	Parrish, P.	1	Schaalje, J.	1
McLin, T.	1	Pascoe, D.	1	Schank, P.	1
McNamara, J.	1	Pascoe, S. M.	1	Schaumburg, H.	1
McQueen, T. F.	1	Paulus, T.	1	Schiller, M. E.	1
Meese, J.	1	Payne, R.	1	Schmidt, D.	1
Mergendoller, J. R.	1	Pearson, T.	1	Schmidt, T.	1
Merrill, P. F.	1	Penny, S.	1	Schoenfeld-Tache, R.	1
Michels, B. J.	1	Perko, K.	1	Schwen, T.	1
Mikolaj, P.	1	Peterson, B.	1	Schwier, R. A.	1
Miller, A.	1	Phillion, J. A.	1	Seak-Zoon, R.	1
Miller, P.	1	Phillips, W.	1	Seale, V. B.	1
Mills, E.	1	Pociask, f. D.	1	Seel, P.	1
Miltiadou, M.	1	Potter, A.	1	Seo, K. K.	1
Minor, L.	1	Poudel, D.	1	Shaddle, S.	1

Sherry, F. T.	1	Sutton, J.	1	Waters, S. H.	1
Sherry, L.	1	Sutton-andrews, S.	1	Weber, W.	1
Sheumaker, F.	1	Swan, K.	1	Wells, J.	1
Shi, M.	1	Tackett, S.	1	West, J. A.	1
Shi, S.	1	Talab, R. S.	1	White, K.	1
Shih, M. Y.	1	Tan, A.	1	Wietecha, L. M.	1
Shrader, V.	1	Tate, K. J.	1	Wigesuriya, R.	1
Simonson, D.	1	Terheggen, S. L.	1	Wiggins, J. R.	1
Simonson, M.	1	Thomas, C. D.	1	Wilhauk, P.	1
Simsek, A.	1	Thompson, A.	1	Wilke, r. A.	1
Sivo, S.	1	Thurman, R. a.	1	Williams, B. O.	1
Slowinski, J.	1	Toci, M.	1	Williams, V. S.	1
Sluder, K. J.	1	Tolbert, D. E.	1	Willis, E. M.	1
Smith, G. G.	1	Tonkin, S.	1	Willis, J. M.	1
Smith, G. W. H. III	1	Tsai, M. C.	1	Wilson, F.	1
Smith, S.	1	Tsai, P. Y.	1	Wilson, Y.	1
Snider, R.	1	Tseng, H. W.	1	Wimberg, J. E.	1
So, H. J.	1	Tu, C. H.	1	Winter, c.	1
Sockman, B. R.	1	Tucker, G.	1	Wise, A.	1
Son, C. H.	1	Turgeon, A. J.	1	Witta, E. L.	1
Song, S. H.	1	Tutty, J.	1	Wolf, S. E.	1
Song, Y.	1	Twal, R.	1	Wotell-Charnitski, C.	1
Spector, B.	1	Tzeng, J. Y.	1	Wright, D. E.	1
Spector, J. M.	1	Uchida, H.	1	Wu, C. P.	1
Spudic, L.	1	Um, E. J.	1	Wu, X.	1
Srinivasan, S.	1	Umberger, S.	1	Xie, Y.	1
Staffo, M. J.	1	Unfred, D.	1	Yamagata-Lynch, L. C.	1
Stapleton, J.	1	Uribe, D.	1	Yanes, M. J.	1
Steckelberg, A.	1	van Eck, R.	1	Yang, J. C. I.	1
Steele, G.	1	van Gendt, K.	1	Yao, Y.	1
Stefanou, S. E.	1	van Hoogstraat, A.	1	Yates, K. A	1
Stein, R.	1	van 't Hooft, M.	1	Yeh, H. T.	1
Stepich, D. A.	1	Vance, J. R.	1	Yildiz, M. N.	1
Stewart, B. L.	1	Varnhagen, C.	1	Yonkers, V.	1
Stinson, B.	1	Vega, E. S.	1	Yoo, S. A.	1
Stone, L. A.	1	Vermaat, H.	1	Yoo, S. M.	1
Street, C.	1	Vermeer, P.	1	Youn, S.	1
Strongin, D.	1	Villachica, S. W.	1	Young, A. L.	1
Stuckey-Mickell, T.	1	Visser, Y. L.	1	Young-Roby, T.	1
Su, P.	1	Wade, A.	1	Yzenbaard, R.	1
Su, Y.	1	Waight, C. L.	1	Zadoo, E.	1
Subude, M. D.	1	Wang, C. M.	1	Zazelenchuk, T.	1
Suh, s.	1	Wang, F.	1	Zellner, R. D.	1
Sujo de Montes, L.	1	Wang, Z.	1	Zhai, M.	1
Sullivan, F. R.	1	Wang-Chavez, J.	1	Zibrowski, C.	1
Sullivan, H. S.	1	Waring, B.	1	Zygouris-Coe, V.	1
Summers, L.	1	Warren-Trufant, L.	1		
Sungwook, H.	1	Waters, L.	1		

Appendix U

Data Subset 2000-2004 Contributing Institutions

Data Subset 2000-2004 Contributing Institutions

Variable	All Authorships N=1470		
Indiana University	179	University of Florida	6
Arizona State University	103	US Military Academy	6
Pennsylvania State University	103	Western Illinois University	6
Florida State University	71	Plattsburgh State University	5
University of Northern Colorado		Seoul National University	5
Purdue University	47	University of Memphis	5
Texas Tech University	47	Utah State University	5
University of Ctl Florida	35	Wheeling Jesuit University	5
University of Georgia	34	IAETE	4
Georgia State University	22	Social Sci & Evaluation, Inc	4
California State University	19	Columbus State University	4
Open U of The Netherlands	19	Indiana State University	4
Syracuse University	18	Ohio State Uniiversity	4
Northern Illinois University	17	St. Cloud State University	4
University of North Carolina	17	University of Leuven	4
University of South Alabama	15	University of Northern Iowa	4
University of Twente	14	University of Oklahoma	4
Anadolu University	13	University of Phoenix	4
Concordia University	12	University of West Florida	4
Iowa State University	12	University of Wisconsin	4
University of Missouri	12	Western Governors University	4
Cuny	11	Educ Development Ctr, Inc.	3
University of Hawaii	11	Andong National University	3
University of Kentucky	11	Columbia University	3
University of Colorado	10	Drexel University	3
Brigham Young University	9	Eastern Illinois University	3
East Carolina University	9	Emporia State University	3
Lehigh University	9	National Chiao Tung University	3
University of Toledo	9	Ny Institute of Technology	3
Wayne State University	9	Open University of Israel	3
Mississippi State University	8	PA State Great Valley Sch	3
Northern Arizona University	8	Richard Stockton Col of NJ	3
University of Houston	8	Saint Francis University	3
University of Texas	8	Tempe High Sch District	3
Valdosta State University	8	Tokyo Inst of Polytechnics	3
Virginia Tech	8	University of Alberta	3
George Mason University	7	University of Calgary	3
Oklahoma State University	7	University of Kansas	3
University of Minnesota	7	University of Montreal	3
University of South Florida	7	University of Wyoming	3
University of Southern California	7	Winthrop University	3
VA Polytech Inst & State University	7	Arizona K-12 Center	2
West Virginia University	7	Comet/Ucar	2
Colorado State University	6	Creative Media Sol, Inc.	2
Nova Southeastern University	6	Effect Performance, Inc.	2
San Diego State University	6	Profitwise	2

Shell Inter Explor & Prod	2	Standford Research Inst	1
Sichuan Provincial Bur of Ed	2	Tech & Innovations in Ed	1
Six Sigma Performance	2	TERC	1
Strategic Mgt Group, Inc.	2	Unext.Com	1
Ashland University	2	Jefferson Cty N Unif Sch Dis	1
Brooklyn College	2	Littleton Sch District	1
Caliber Associates	2	Sch of Creative & Perf Arts	1
College Misericordia	2	St Charles East Hs	1
Embry Riddle Aero University	2	USAFA	1
Ferris State University	2	Adam Mickiewicz University	1
Fu Jen Catholic University	2	AECT	1
Kansas City Public Television	2	Ana G Mendez University	1
Kansas State University	2	Arkansas Tech University	1
Kent State University	2	Auburn University	1
Marymount University	2	Baylor University	1
Miami University	2	Beijing Normal University	1
Michigan State University	2	Black Hills State University	1
Ntl Taiwan Normal Univrsity	2	Bogazici University	1
NC A&T State University	2	Boise State University	1
Northern State University	2	Cameron University	1
Regent University	2	Central Missouri State University	1
Sejong University	2	Centre Learning Community Charter Sch	1
South Georgia College	2	Chadron State College	1
SW Missouri State University	2	Clayson and Associates	1
Tamkang University	2	College of Marin	1
The U of Memphis	2	Depaul University	1
U of Minnesota	2	Dominican University	1
Universidade Do Minho	2	Eastern Michigan University	1
U of Akron	2	Elem Sch of Ponte De Lima	1
U of Louisiana	2	Fayette County Public Sch	1
U of Massachusetts	2	Florida Gulf Coast University	1
U of Nebraska	2	Freie Universitaet Berlin	1
U of New Hampshire	2	George Washington University	1
U of Southern Ms	2	Georgetown U Medical Ctr	1
U of The Incarnate Word	2	Georgia College and State University	1
Western Washington U	2	Georgia Institute of Tech	1
Wwf Coll for Conserv Ldrsp	2	Hong Kong Polytechnic University	1
Al Supercomputer Authority	1	Independent Consultant	1
Buck Institute for Education	1	Instructional Systems	1
Cortex Learning	1	Konkuk University	1
Doe and Cultural Affairs	1	Lamar Institute of Tech	1
Galaxy Scientific Corp	1	Laval University	1
Gundersen Lutheran Hosl	1	Lee County High Sch	1
Lng & Perf Support Lab	1	Leeward CC	1
Learning Systems Institute	1	Leiden University	1
Media Kube, Llc	1	Louisiana State University	1
Museum Web Services	1	Middle East Technical University	1
Nasa Dryden Flight Res Ctr	1	Minnesota State University	1
Oracle Corporation	1	Monmouth University	1
OSB	1	Morehead State University	1
Qualcomm	1	National Chiayi University	1
Rmc Research Corporation	1	Ntl Pingtung U of Sci & Tech	1
Seward Learning Sys, Inc.	1	New York University	1

NC Wesleyan College	1	U of Groningen	1
Northeastern Illinois University	1	U of Illinois	1
Ohio University	1	U of Maryland	1
Okanagan U College	1	U of Michigan	1
Old Dominion University	1	U of Minho	1
PA College of Technology	1	U of Nevada	1
Piedmont College	1	U of New Mexico	1
Prairie State College	1	U of Nijmegen	1
Roosevelt University	1	U of North Texas	1
Slippery Rock University	1	U of Redlands	1
Stillman College	1	U of Rhode Island	1
Sunset Elementary Sch	1	U of Saskatchewan	1
Taylor University	1	U of South Carolina	1
Teacher Tech Connection	1	U of Southern Co	1
The Edumetrics Institute	1	U of Technology	1
The Mitre Corporation	1	U of Tennessee	1
The U of New Mexico	1	U of Utah	1
Universidad De Santiago	1	Waubonsee Community Coll	1
Universit De Poitiers	1	Weber State University	1
Universitas Terbuka	1	Webster University	1
U of Alabama	1	Western New Mexico University	1
U of Bergen	1	William Paterson University	1
U of British Columbia	1		

Appendix V

Data Subset 2005-2009 Main Themes (Extracted Keyword Descriptors)

Data Subset 2005-2009 Main Themes (Extracted Keyword Descriptors)

Variable	All Articles n=491		
Case Study	17	Perception	4
Instructional Design	17	Self Efficacy	4
Collaboration	16	Simulation Game	4
Preservice Teachers	14	Achievement	3
Assessment	11	Activity Theory	3
Problem Solving	10	Adult Learners	3
Self Regulation	9	Asynch Online Dis	3
Technology Integration	9	Blogging	3
Attitudes	8	Case Based Learning	3
Blended Learning	8	Cognitive Load Theory	3
Evaluation	8	Communication	3
Problem Ased Learning	8	Comp Based Dist Edu	3
Scaffolding	8	Computer Games	3
Discussion Forums	8	Computer Littraining	3
Educational Tech	8	Concept Map	3
Animated Instruction	8	Distance Education	3
Digital Storytelling	8	Effectiveness	3
Hybrid Learning Envir	8	Game Based Learning Env.	3
Interaction	7	Learning Environment	3
Motivation	7	Learning Styles	3
Online Learning	7	Literacy	3
Performance	7	Online Learning Envir	3
Research Framework	6	Peer Assessment	3
Community	6	Qualitative Study	3
Community of Practice	6	Social Media	3
Constructivist Learning	6	Technology Use	3
Cross Cultural Study	6	Video Conferencing	3
Ict Implementation	5	Virtual Environment	3
Instructional Designers	5	Wiki	3
Integration	5	Accreditation	2
Online Courses	5	Advance Organizer	2
Podcasting	4	Adventure Learning	2
Prof Development	4	Best Practices	2
Teacher Education	4	Cog Apprenticeship	2
Electronic Portfolio	4	Cog Presence Scale	2
Instructional Strategies	4	Corporate Elearning	2
Online Teaching	4	Creative Thinking Skills	2
Pedagogy	4	Critical Thinking	2

Cultural Divide	2	Academic Interaction
Curriculum Delivery	2	Academic Success
Design Strategies	2	Action Research
Digital Equity	2	Adaptive Learning
Educational Designers	2	Adoption
Educational Games	2	AECT
Exploratory Study	2	Arcs Based Confidence Strategies
Eye Movement	2	Art Gallery
Feedback	2	Artifacts
Gender Gap	2	ASP
Human Performance	2	Attrition
Instr Design Model	2	Bioinformatics
Instructional Message Design	2	Blackboard Faculty Training
Instr Technology	2	Bloom's Taxonomy
International Students	2	Circadian Rhythms
Knowledge Constr	2	Classroom Community Scale
Knowledge Mgt	2	Classroom Instruction
Learner's Metacognition	2	Classroom Technology
Mentoring Model	2	CMC
Multimedia Prod Comp	2	Cognition
Online Design	2	Cognition Based Design
Online Disc Strategies	2	Cognitive Strategies
Online Instruction	2	Cognitive Structuring
Perf Technology	2	Commercial Products
Phenomeno Approach	2	Comprehension
Presence	2	Computer Anxiety
Reflection	2	Computer Based Concept Mapping
Reflective Learning	2	Computer Conferencing
Reflective Practice	2	Computer Mediated Communication
Second Life	2	Computer Mediated Instruction
Social Presence	2	Computer Science
Stakeholder Org	2	Computer Use
Student Perception	2	Conceptual Change
Study Habits	2	Conceptual Framework
Teacher Training	2	Conference Management System
Teaching Practice	2	Content Analysis
Technology Acceptance	2	Content Management Systems
Video Games Generation	2	Contextual Training
Virtual Teamwork	2	Contribution Model
Web Based Environment	2	Cooper Online Learning
Web Based Instruction	2	Course Completion Policies
Websites	2	Course Management Syste
21st Century Skills		Creativity
Academic Advisement		Critical Reflection

CSCL
CTL
Cultural Artifacts
Cultural Connection
Cultural Influence
Cultural Perspectives
Curricula Redesign
Curriculum Analysis
Curriculum Pathways
Cyber Bullies
Definitions
Design
Design Case
Design Online Instruction
Design Research
Design Theory
Diagnostic Learning Environment
Digital Camera
Digital Divide
Digital Images
Digital Learning Environment
Digital Media
Digital Music
Digital Portfolios
Discovery Learning
Dissertation
Distance Learners
Distributed Learning
Digital Immigrants
Diverse Families
Doctoral Programs
Double Face Model
Dynamic Learning Environment
Dynamic Organisms
Education Coursework
Education System
Educational Computer Games
Educational Resources
Educational Tasks
Effects of Mobile Computi
Elearning
Elearning Initiatives
Elearning Process
Elearning System
Electronic Text Presentation
Emoderating
Emotions
Empirical Assessment
End of Course Surveys
Enterprise Learning
Enterprise Learning Technology
Ethical Issues
Evidence Based
Examining Barriers
Experiential Simulation
Face to Face Support
Factor Structure
Faculty Development
Faculty Mentoring
Faculty Modeling
Faculty Perceptions
Faculty Perspective
Faculty Training
Famework
Field Trips
Formative Evaluation
Geospatial Information Technologies
Goal Based
Goal Orientation
Graphic Organizers
Graphical Notes
Graphical Representation
Grounded Theory Analysi
Group Composition
Group Discussion
Group Processing
Guided Problem Solving
Heuristics
Higher Level Learning
Higher Order Thinking Ski
Hispanic Digital Natives
HPL
Human Brain
Hypermedia
Hypermedia Authoring Systems
Identity Salience
Impirical Study
Indivdualized Instruction

Individualized Online Instruction
Information Management Programs
Infrastructure
Innovation
Inquiry
Institutional Approaches
Instructional Computer Game
Instructional Consulting
Instructional Framework
Instructional Software
Instructional Support
Instructor Behavior
Integrated Instructional Model
Interactive Multimedia
Interactive Recruitment Tool
Interactivity
International Design
Intercultural Collaboration
Intercultural Competenc
Interdependence
Interdisciplinary Approaches
Interdisciplinary Degree
Interfaces
Internet Communication
Intervention Strategy
Isd Field
Job Corps
Journaling
K-12 Education
Keywords
Knowledge Acquisition
Knowledge Community
Knowledge Development
Leadership Role
Leadership Style
Learner Centered
Learner Centered Perspectives
Learner Confidence
Learner Motivation
Learner Performance
Learner Related Determinants
Learners' Performance
Learners' Socialization
Learning Achievement
Learning Community
Learning Effectiveness
Learning Experience
Learning Management Systems
Learning Object Design
Learning Outcomes
Learning Pragmatics
Learning Preferences
Learning Process
Learning Quality
Learning Resources
Learning Texts
Librarians
Linking Theory
Mapstat
Mathematical Software
Mathematics Learning
Mathematics Tutor
Media Education
Mental Model
Mentoring Faculty
Mentoring Graduate Students
Meta Analysis
Metaanalytic
Methodologies
Methodology
Middle School Classroom
Mobility Skills
Model Based Knowledge Man.
Models Suvey
Montessori Classroom
Motivational Beliefs Learning Strat
Movie Maker
Multi Level Learning
Multicultural Online Learning Environment
Multimedia Learning
Multimedia Presentations
Multimedia Research
Multiple Intelligences
Multiple Representations
Narrative Simulation
Non Profit Organization
Online Certificate Prog

Online Conferencing
Online Discussion Groups
Online Education
Online Environments
Online Essay Scoring
Online Game Environment
Online Healthcare Education
Online Instruction Archetypes
Online Instructor Roles
Online Instructors
Online Interaction
Online Reading
Online Reading Couse
Online Writing Course
Ontology
Open Learning Envir
Open Source
Organizational Knowledge
Organizational Support
Outcome Design
Outsourcing
Partnership
Pedagogical Agent
Pedgogical Technology Integration
Peer Mentoring
Performance Improvement
Performance Support Systems
Personal Support System
Personality Types
Personalized Instruction
Pilot Study
Plagiarism
Powerpoint Pedagogy
Preference
Preliminary Study
Presentation Format
Primary Sources
Prior Knowledge
Prof Technologists
Project Management Simulation
Proximal Development
Quality of Learning
Quantitiative Analysis
Quaterly Review of Distnace Edu.
Question Prompts
Readiness
Reading Comprehension
Reevaluation
Research Agenda
Reverse Modality Effect
Revlections
Role Based Design
Scaffold Interface Des. Framework
Scalability
School Library Media Specialists
School Teachers
Science Learning
Scientific Thinking
Second Lang Classroom
Second Language Comprehension
Self Directed Learning
Self Explanation
Semantic Analysis
Semantic Embedding
Service Learning
Signaling Effect
Signlang Learning Tool
Skype
Social Capital
Social Cognitive Theory
Social Interaction
Social Networking
Spatial Ability
Spatial Presence
Statistics
Story Telling
Struct Equation Model
Student Achievement
Student Project Quality
Student Satisfaction
Student Strategies
Student Teachers
Students Perception
Study Framework
Study Strategy
Survey
Systemic Change
Systemic Improvement

Systems Analysis
Systems Approach
Tablet PC
Task Analysis
Teacher Librarian
Teacher Mentors
Teacher Perspectives
Teachers Electronic Support System
Teachers' Perceptions
Teaching Presence
Techer Professional Development
Technological Change
Technology Competencies
Technology Content Standards
Technology Instruction
Technology Intervention
Technology Skills
Text Messaging
Theoretical Framework
Theories
Theory Based Learning
Time
Tool Use
Traditional Learners
Training
Training Solutions
Transformative Learning Experience
Transparency
Troubleshooting
Trust
Typology
Ubiquitous Computing Classroom
Undergraduate Computer Course
Universal Design
User Interface
User Participation
User Support Design
Video Based Courses
Video Products
Virtual Field Trips
Virtual Learning
Virtual Schooling
Visual Organizers
Visualization
Vocabulty Learning
Web Based Concept Maps
Web Based Content
Web Based Courses
Web Based Distance Education
Web Based Experiment
Web Based Inquiry
Web Based Proj Learning
Web Based Resources
Web Based Self Instr
Web Based System
Web Based Training
Web Conf Platform
Web Survey
Work Ethic Instruction
Workplace Experiences

Appendix W

Data Subset 2005-2009 Individual Authors

Data Subset 2005-2009 Individual Authors with ≥ 5 Authorships.

Variable	All Authorships N=1092					
Ertmer, P. A.	13	Wang, C. X.	4	Salinas, J.	3
Ma, Y.	10	Yildirim, Z.	4	Smith, A. J. M.	3
Cifuentes, L.	8	Yusop, F. D.	4	Techehaimanot, B.	3
Correia, A. P.	8	Arslan-Ari, I.	3	Tolbert, D. E.	3
Frick, T. W.	8	Aworuwa, B. O.	3	Vega, E. S.	3
Richardson, J. C.	8	Cates, W. M.	3	Veletsianos, G.	3
Cagiltay, K.	7	Cernusca, D.	3	Visscher-Voerman, I.	3
Kang, M. J.	7	Cho, M. H.	3	Xie, Y.	3
Pan, C. C.	6	Eastmond, D.	3	Yoo, S. A.	3
Williams, D. C.	6	Goktas, Y.	3	Zellner, R. D.	3
Baran, E.	5	Grabowski, B.	3	Akdemir, O.	2
Bonk, C. J.	5	Hemphill, H. H.	3	Antonenko, P.	2
Grant, M. M.	5	Hemphill, L. S.	3	Armstrong, K. A.	2
Ke, F.	5	Hosler, K. A.	3	Artino, A. R. Jr.	2
Koszalka, T. A.	5	Hsieh, Y. C. J.	3	Atkinson, R. K.	2
Lin, H.	5	Hung, W. C.	3	Avgerinou, M. D.	2
Magjuka, R. J.	5	Karakus, T.	3	Ballard, g.	2
Pedersen, S. J.	5	Kidwai, K.	3	Banas, J. R.	2
Su, B.	5	Kim, H. J.	3	Baran, B.	2
Sullivan, M.	5	Klein, J. D.	3	Barbour, M. K.	2
Wilson, B. G.	5	Koh, J.	3	Beabout, B. R.	2
York, C. S.	5	Lai, G.	3	Beatty, B. J.	2
Aydin, C. H.	4	Land, S. M.	3	Bentley, J. P. H.	2
Belland, B. R.	4	Lee, H. W.	3	Brantley-Dias, L.	2
Brown, C. A.	4	Lee, Y.	3	Bray, L. M.	2
Cheon, J. P.	4	Lehman, J. D.	3	Brown, A.	2
ching, Y. H.	4	Ley, K.	3	Bulu, S. T.	2
Doering, A.	4	Lim, C.	3	Calandra, B. D.	2
Dwyer, F. M.	4	Liu, X.	3	Caliskan, H.	2
Gedik, N. T.	4	Lowenthal, P. R.	3	Campbell, D. J.	2
Hokanson, B.	4	Miller, C.	3	Chang, S. L.	2
Hu, H.	4	Myers, R. D.	3	Chen, H. Y.	2
Ifenthaler, D.	4	Newby, T. J.	3	Choi, H.	2
Ionas, I. G.	4	Ottenbreit-Leftwich,		Chou, C. C.	2
Kwon, S. Y.	4	A. T.	3	Chow, A. s.	2
Lee, S. H.	4	Park, S.	3	clarebout, G.	2
Lin, Y. M.	4	Parrish, P.	3	Clark, K. F.	2
Smith, B. K.	4	Pirnay-Dummer, P.	3	cook, R. G.	2
Tutty, J. I.	4	Prejean, L.	3	Corbeil, R. J.	2

Cornell, R.	2	Negre, F.	2	Alarcon, C. M.
da Costa, B.	2	Nguyen, H.	2	Albayrak, M.
Davis, N.	2	O'Connor-Petruso, S. A.	2	Allen, S.
de Benito, B.	2	Ozden, M. Y.	2	Allred, J. A.
Demiraslan, Y.	2	Park, J. H.	2	Alvarez, M. F.
Elen, J.	2	Park, J. U.	2	Alvarez, O.
Eustace, K.	2	Park, S. H.	2	Amber, V.
Fellows, G.	2	Rosenfeld, B.	2	An, J.
Gardner, J.	2	Schaffer, S.	2	An, Y. J.
Graves, I.	2	Schnackenberg, H. L.	2	Anderson, A.
Green, M. R.	2	Schwier, R. A.	2	Anderson, C.
Hannafin, M. J	2	Sharma, P.	2	Andrews, S.
Hay, L.	2	Shen, Y.	2	Ari, F.
Hinojosa, J.	2	Shin, S.	2	Arslanyilmaz, A.
Hodges, C. B.	2	Simons, K.	2	Aslan, S.
Hong, H.	2	Simons, K. D.	2	Ataizi, M.
Hsu, Y. C.	2	Stickman, A.	2	Atkinson, T.
Huang, L. C.	2	Stone, D. E.	2	Ausman, B. D.
Jones, M. G.	2	Sullivan, H.	2	Aviv, R.
Karpova, E.	2	Swan, K.	2	Baek, E. O.
Keller, J. M.	2	Tao, Y.	2	Bai, H.
Kim, A.	2	Thompson, K. R.	2	Bainbridge, K.
Kim, D.	2	top, E.	2	Bajagaku, R.
Kim, H. Y.	2	van 't Hooft, M.	2	Bakar, A.
Kim, K.	2	Williams, D.	2	Barrett, A.
Kim, K. J.	2	Williams, D. D.	2	Batmaz, B.
Kim, N.	2	Winograd, D.	2	Baumbach, D.
Kiraz, E.	2	Worrell, P.	2	Baylen, D. M.
Klinger, K.	2	Yang, D.	2	Baytak, A.
Kratcoski, A.	2	Yang, H. H.	2	Beck, D.
Ku, H. Y.	2	Yeon, E.	2	Bennett, C.
Kulo, V. A.	2	Yildirim, S.	2	Benson, A. D.
Lee, C. W.	2	Yukselturk, E.	2	Benton, D.
Lee, M.	2	Yung, H. I.	2	Berg, R. A.
Lee, M. J. W.	2	Zhu, L.	2	Beriswill, J.
Lim, K. Y.	2	Ziaeehezarjeribi, Y.	2	Berliner, D. C.
Liu, C. N. J.	2	Aagard, H.		Bettati, R.
Liu, Y.	2	Aagard, S.		Betts, J. D.
Lomax, E. C.	2	Adams, C.		Bhatt, S.
Lu, W. H.	2	Adiguzel, T.		Blackman, J.
Martin, F.	2	Agostini, K.		Blair, H.
McGriff, S. J.	2	Akarasriworn, C.		Bodzin, A. M.
Montalto-Rook, M.	2	Akilli, G. K.		Boulay, R.
Moore, D. R.	2	Akpinar, Y.		Bracewell, R. J.

Branch, R. M.
Bray, M.
Brock, A.
Brown, I.
Brown, L.
Brown, N. J.
Brubaker, D.
Bulut, S.
Bunch, J. M.
Burnett, S.
Burton, J. K.
Buss, A. R.
Cakir, H.
Camin, D.
Campbell, K.
Campos, M. N.
Cao, Y.
Carper, G. T.
Carroll, M. K.
Carter, c. W.
Carter-Ward, R.
Cekerol, K.
Chambers, S. M.
Chang, C. W.
Chang, Y.
Chao, C. A.
charania, A.
Chen, B.
Chen, S. J.
Chen, X.
Chen, Y. C.
Chen, Z.
Cheng, X.
Cheung, W. S.
Chilakamarri, S.
Choi, H. J.
Choy, D.
Chronister, M.
Chung, J. S.
Cleaves-Huett, K.
Clifford, A. C.
Cochenour, J.
Combs, L. M.
Compton, L.
Conforth, M.
Connolly, P.
Cook-Wallace, M.
Cornille, T.
Coulthard, G.
Crawford, C.
Crooks, S.
Cropper, M.
Crow, K. L.
Crowe, C.
Cui, L.
Curry, J.
Dail, J. S.
Daloglu, a.
Daniel, B. K.
Daniels, L.
Darabi, a.
Darder, A.
Davidon, M. J.
Davis, R. E. Jr.
de Haan, J. W.
Debose-columbus, Y.
Dedrick, R.
Deimann, M.
DeVaugh-Miller, C.
Di Gangi, S. A.
di Legge, T.
Diteeyont, W.
Dotson, K.
Draper, D.
Driscoll, M.
Duan, W. S.
Duncan, J. R.
Dwyer, K.
Easter, M.
Eichelberger, A.
Elder, M.
Emerick, L. J.
Enfield, J.
Ennis, E.
Erlich, Z.
Eslami-Rasekh, Z.
Essex, C.
Estes, M.
Evans, A. D.
Evans, M. A.
Fabry, D. L.
Fang, J.
Fang, L. M. L.
Farha, N.
Feist, S.
Feng, H.
Fiedler, r. L.
Fitt, M. H.
Flores, R.
Forbess, J.
Ford-Lawton, D.
Fraher, R.
Francois, S.
Freehling, S.
Fried, A.
Friesen, S.
Fujimoto, T.
Fulford, C.
Galloway, J. P.
Ganesan, R.
Ganesh, T. G.
Gannon-Cook, R.
Garcia, B.
Gervedink-Nijhuis, G. J.
Giffin, M. K.
Giguere, P.
Glazewski, K. D
Green, M.
Green, T. D.
Greene, E.
Guan, Y. Q.
Guoying, Z.
Hanlon, K.
Hansen, R. R.
Harmon, S. W.
Harris, M. J.
Hawkins, A.
He, J.
Hebb, C.
Hedberg, J. G.
Hew, K. F.
Higginbotham, D.

Hill, R. B.
Hirumi, A.
Hoffman, E. S.
Hogg, J.
Hong, M.
Hooper, S.
Houdeshell, J.
Houk, K. R.
Howard, C.
Hseih, H. W.
Hsiao, E. L.
Hsieh, P. H.
Hsieh, W. M.
Hsu, C.
Huang, W. H.
Huang, X.
Huett, J. B.
Hughes, H.
Hughes, H.
Humphrey, P.
Hung, D.
Hutchison, L.
Iliff, J.
Inan, R. A.
Jaber, w. E.
James, R.
Jannasch-Pennell, A.
Jiang, B. C.
Jin, L.
Jin, S. H.
Jinbao, Z.
Jiyue, H.
Jo, I. H.
Johnson, t.
Jonassen, D.
Jones, P.
Jones-Owens, D.
Joo, J. E.
Joo, Y.J.
Jordan, R.
Jung, J. Y.
Kamal, A.
Kaner, C.
Kang, H.
Kapli, N.
Kealy, W. A.
Keith, J. L.
Kellison, K.
Kelsey, K. D.
Kennedy, K.
Kenny, R. F.
Khalil, M.
Kidkarn, R.
Kilic, E.
Kim, B.
Kim, C. M.
Kim, E.
Kim, J. S.
Kim, J. Y.
Kim, K. N.
Kim, N. Y.
Kim, T.
Kim, Y.
Kinsell, C.
Kinuthia, W.
Kisicki, T.
Koeniz, D. K.
Koh, J. H. L.
Kolloff, F.
Kolloff, M. A.
Kopcha, T. J.
Kou, X.
Kovalik, C. L.
Krumm, A. E.
Kuiper, W.
Kwon, Y. J.
Lachner, A.
Lai, F. Q.
Lara, M.
Lawrence, E.
Leavitt, M.
LeBlanc, S. M.
Lee, E. H.
Lee, H. J.
Lee, J.
Lee, S. J.
Lei, K.
Leong, P.
Lewallen, R. A.
Lewis, R. D.
Li, C. W.
Li, L.
Li, Z.
Lim, J. H.
Lim, W. Y.
Lin, C. C.
Lin, C. Y.
Lin, T. Y.
Lindner, E.
Lindsey, L.
Liu Y. C.
Liu, G.
Liu, J.
Liu, S.
Liu, W.
Liu, Z.
Lockard, J.
Lockee, B. B.
Loewer, A.
Lopez-Ortiz, B. I.
Lowenthal, A.
Lucas, M. r.
Luetkehans, L.
Luo, H. Q.
Luterbach, K. J.
Lysaght, P.
Ma, Z.
Manyofu, M.
Maria, S.
Martindale, T.
Mayall, H.
Mazur, J. M.
McCaw, D. S.
Mccombs, S.
McCowin, T. E.
McCrary, N. E.
McGee, P.
McGowan, W.
McKenney, S.
McLaren, Z.
Mendez, J. P.
Mentzer, G.

Mercer, R.
Merrill-Lusk, M.
Michaelidou, T.
Millard, M. O.
Miyamoto, M.
Mohammed, M.
Moller, L.
Mong, C.
Mong, C.
Motes, G.
Mott, J.
Mukerji, K.
Mulcahy, D.
Mutlu, M. E.
Mwavita, M.
Myers, J. J.
Nabb, L.
Nakatani, M.
Nam, C. W.
Nelson, B.
Ni, X.
Nie, R. H.
Niederhauser, D.
Nkonge, B.
Notess, M.
O'Connor, D.
Oh, E. J.
Oh, S.
Okon, E. T.
Oliver, K.
O'Neill, E. J.
Oner, D.
Orey, M.
Ozaydemir, N.
Ozcelik, E.
Ozgur, A. Z.
Park, I.
Park, K.
Park, M.
Park, T.
Park, Y. J.
Pedersen, D.
Peng, H.
Perez, A.
Plantz-Masters, S.
Prichavudhi, A.
Prickett, C.
Procee, H.
Putrini Mahadewi, L. P.
Rasekh, Z. E.
Ravid, G.
Reid, D. H.
Reid, J. R.
Reigeluth, C. M.
Reinhart, J.
Rentfro, A.
Rezabek, L.
Richard, C.
Rico, J. G.
Ritzhaupt, A. D.
Robinson, R.
Rodney, D.
Rodriguez, C. D.
Rominger, R.
Rowlett, B.
Ruifang-Adams, H.
Sadaf, A.
Sahinhayasi, H.
Salem, C.
Salisbury, M.
Saritas, T.
Satterly, L. B.
Savenye, W.
Schenker, J.
Schlosser, C.
Schmidt, M.
Schoorman, D.
Schriver, M.
Schwartz, J.
Seawright, L.
Seyferth, T.
Shah, K.
shambaugh, N.
Shen, X.
Shim, W. J.
Shoffner, M. B.
Shunxing, Z.
Sianjina, R.
Silber, K.
Simonson, M. R.
Simpson, E. S.
singh, O. B.
Skinner, J. K.
Slate, J. R.
Slowinski, J.
Smith, T.
Solomon, H.
Son, S. J.
Song, H.
Song, H. G.
Sosulski, K.
South, J. B.
Spears, C.
Spelman, M. V.
Spencer, H. E.
Steckelberg, A. L.
Stephens, J. M.
Stepich, D. A.
Storrings, D. A.
Strobel, J.
Su, Y.
Sugar, W.
Sun, Y.
Sundholm, T.
Sung, E.
Sutton-Andrews, S.
Swain, W. J.
Switzer, S. H.
Szabo, Z.
Tantrarungroj, P.
Tasci, D.
Taylor, R.
Teng, Y. T.
Thompson, P.
Tinney, M. V.
Toy, S.
Trueman, R.
Tu, C. H.
Ulukan, C.
Um, E.
Unger, D.
Uzun, E.

Vaithinathan, V.
Valdes-Corbeil, M. E.
van der Spek, E. D.
van Meter, P.
van Oostendorp, H.
Varol, F.
Verdines, P.
Verhagen, P.
Voogt, J.
Walker, S.
Wang, F.
Wang, L.
Wang, P.
Wang, X.
Wang, Y.
wang, Y. W.
Warner, Z. B.
Waters, J.
Watson, W. R.
Weaver, C.
Weigant, A.
Weinland, K.
Wells, A. T.
Wescott, D.
West, J. A.
Westbrook, R.
Westhoff, G.
White, J. W.
White, W.
Wickersham, L. E.
Wieland, K.
Wilcox, D.
Williams, D. L.
Williams, K.
Wise, J. M.
Wollenstein, T.
Woo, J. W.
Wood, N.
Wouters, P.
Wright, V. H.
Wu, X.
Wu, Y. F.
Xiao, J.
Xiong, Q. A.
Xu, M.
Yan, Q.
Yanchar, S. C.
Yang, C. C.
Yao, Y.
Yazici, C.
Yeo, J. A. C.
Yerasimou, T.
Yilmaz, U.
Yonemura, S.
Yoon, H. J.
Yoon, S.
Yoshie, M.
Young, D. B.
Young, J.
Yu, H. C.
Zadoo, E.
Zannini, K.
Zeng, T. T.
Zhang, B.
Zhang, Z. W.
Zhao, C.
Zhu, C. B.
Zurek, S.
Zygouris-Coe, V.

Appendix X

Data Subset 2005-2009 Contributing Institutions

Data Subset 2005-2009 Contributing Institutions

Variable	All Authorships N=1092		
Pennslyvania State U	71 (7%)	Nova Southeastern U	5
Indiana U	65 (6%)	Plattsburgh State U	5
Purdue U	63 (6%)	U of North Carolina	5
Texas A&M U	59 (5%)	U of West Georgia	5
Iowa State U	31 (3%)	Boise State U	4
U of Louisiana	24 (2%)	Concordia U	4
Georgia State U	22	Geogia State U	4
Middle East Technical U	22	Georgia Southern U	4
Ewha Womans U	21	U of Toledo	4
U of Missouri	21	Western Governors U	4
Arizona State U	20	Ataturk U	3
U of Minnesota	20	California State U	3
U of Central Fl	19	College of Staten Island	3
Florida State U	18	Korea U	3
U of Texas	18	Michigan State U	3
Seoul National U	16	Ntt Cyber Solution Lab	3
Northern Illinois U	15	Ohio U	3
Anadolu U	14	Open Uof Israel	3
U of Houston	13	San Diego State U	3
U of Memphis	13	Second Military Medical U	3
Western Illinois U	13	Southern Illinois U	3
Oklahoma State U	12	Texas Tech U	3
Syracuse U	12	The Ideal Research Lab	3
U of Georgia	12	U of New Mexico	3
U of N Colorado	10	U of North Florida	3
Cuny	9	U of Saskatchewan	3
East Carolina U	9	U of Twente	3
Kent State U	9	U of Wollongong	3
U of Balearic Islands	9	Utrecht U	3
U of Wyoming	9	Carroll Independent Sch Dis	2
Charles Sturt U	8	Centre forInstr Psyand Tech	2
U of South Florida	8	Ching Yun U	2
National U	7	Chuncheon National U of Ed	2
U of Colorado	7	Cicero Public Schools	2
Albert Ludwigs U	6	Florida Atlantic U	2
Brigham Young U	6	Katholieke Univer Leuven	2
Depaul U	6	Mcgill U	2
Lehigh U	6	Missouri State U	2
South China Normal U	6	Missouri U of Sci & Tech	2
U of Freiburg	6	Monterey Inst forTech & Ed	2
U of Hawaii	6	National Chiao Tung U	2
U of Illinois	6	New Mexico State U	2
Utah State U	6	North Carolina A&T State U	2
Virginia Tech	6	Northwestern State U	2
Yuan Ze U	6	Portland State U	2
Nanyang Tech U	5	Saint Xavier U	2

Salisbury U	2	Kansas State U
San Francisco State U	2	Kennesaw State U
San Jose State U	2	Korea National U of Education
Southern Polytechnic State U	2	Korean Inst of Curr& Eval
Southwest U	2	Lds
Steinhardt School of Edu	2	Lee U
Systems-Predictive Tech	2	Lincoln Memorial U
Tarleton State U	2	Louisiana State U
The Ctr forTeaching & Learning	2	Martin County Schools
U of Alberta	2	Memorial U of Newfoundland
U of Connecticut	2	Milligan College
U of Kentucky	2	Mississippi State U
U of Mexico	2	Montclair State U
U of Michigan	2	Narmer American College
U of Nebraska	2	National Cheng Chi U
U of Virginia	2	National Taichung U
U of Wisconsin	2	North Carolina State U
Vangent Inc.	2	Passaic Valley High School
Va Polytechnic Inst & State U	2	Quest Alliance
Wayne State U	2	Regis U
Yantai U	2	Sinclair Community College
York College	2	Standford U
Abant Izzet Baysal U		Technologico De Monterrey
Arkansas State U		Texas Southmost College
Armstrong Atlantic U		The Boeing Company
Assumption College		The Comet Program
Athabasca U		The New Dimensions School
Autonomous U of Baja		Tokyo U of forStudies
Beijing Normal U		Troy U
Bilkent U		Tufts U
Bogazici U		Uniformed Services U of the Health Sciences
Bossier Parish Comm College		U Corporation forAtmospheric Research
Central Missouri State U		U of Alabama
Centro Escolar U		U of Arizonia
Centrum Voor Taal En Onderwijs		U of Montreal
Chippewa Valley Tech College		U of North Texas
Clemson U		U of Northern Arizona
Dominican U		U of Northern Iowa
Erfurt U		U of South Dakota
Florida Institute of Technology		U of Southern Mississippi
Hallym U		U of St. Thomas
Hangyang U		U of Tsukuba
Harpers College		Upstate Medical U
Idaho State U		Us Naval Academy
Indiana State U		Vanderbilt U
Ipa Research Foundation		Virginia Commonwealth U
Johnson & Wales U		Wide World
Kaiser Permanente		Winthrop U

Appendix Y

Data Subset 1979-1984 Most Cited Authors with ≥ 5 Authorships

Data Subset 1979-1984 Most Cited Individual Authors with ≥ 5 Authorships

Variable	All Authorships N=1092					
Dwyer, F. M.	106	Ausburn, F. B.	13	Torkelson, G. M.	9
Witkin, H. A.	72	Campbell, D. T.	13	White, R. T.	9
Salomon, G.	69	Canelos, J. J.	13	Yuille, J. C.	9
Gagne, R. M.	56	Craik, F. I. M.	13	AASL	8
Snow, R. E.	52	Reigeluth, C. M.	13	Bransford, J. D.	8
Paivio, A.	50	Ausburn, L. J.	12	Clark, F. E.	8
Cronbach, L. J.	42	Carpenter, C. R.	12	Deregowski, J. B.	8
Goodenough, D. R.	42	Guttmann, J.	12	Duchastel, P. C.	8
Clark, R. E.	37	Lesgold, A. M.	12	Glanzer, M.	8
Winn, W. D.	37	Royce, J. R.	12	Glaser, R.	8
Levin, J. R.	35	Tennyson, R. D.	12	Gould, J.	8
Fleming, M. L	34	Levonian, E.	11	Hartley, J. R.	8
Simonson, M. R.	34	Miller, G. A.	11	Hoban, C. F. Jr.	8
Levie, W. H.	29	Parkhurst, P. E.	11	Loftus, G. R.	8
Ausubel, D. P.	28	Shavelson, R. J.	11	Mackworth, N. H.	8
Travers, R. M. W.	28	Thurstone, L. L.	11	Morris, C. W.	8
Lamberski, R. J.	27	Tobias, S.	11	Orr, D. B.	8
Merrill, M. D.	27	Becker, A. D.	10	Piaget, J.	8
Karp, S. A.	25	Chute, A. G.	10	Severin, W. J.	8
Berry, L. H.	22	Das, J. P.	10	Anderson, J. R.	7
Mayer, R. E.	22	Gibson, J. J	10	Apple, M. W.	7
Oltman, P. K.	22	Gropper, G. L.	10	Beasley, D. S.	7
Allen, W. H.	20	Knowlton, J. Q.	10	Brody, P. J.	7
Briggs, L. J.	20	Llumsdaine, A. A.	10	Burch, G.	7
Cox, P. W.	19	Rohwer, W. D. Jr.	10	Carey, J. O.	7
Foulke, E.	19	Stanley, J. C.	10	Carey, L. M.	7
Raskin, E.	19	Vander Meer, A. W.	10	Carrier, C. A.	7
Tulving, E.	19	Wolf, W.	10	Deci, E. L.	7
Anderson, R. C.	17	Bloom, B. S.	9	Eisner, E. W.	7
Bower, G. H.	17	Clark, W. H.	9	Fitz-Gibbon, C. T.	7
Guba, E. G.	17	Davies, I. K	9	Gerlach, V. S.	7
Rothkopf, E. Z.	17	Di Vesta, F. J.	9	Hortin, J. A.	7
Broadbent, D. E.	16	Dick, W.	9	Kagan, J.	7
Bruner, J. S.	16	Frase, L. T.	9	McKeachie, W. J.	7
Moore, C. A.	16	Habermas, J.	9	McLoed, D. B.	7
Pressley, M.	16	Heidt, E. U.	9	Morris, L. L.	7
Schramm, W. L.	16	Holliday, W. G.	9	Norman, D. A.	7
Dale, E.	14	Kosslyn, S. M.	9	Nunnally, J. C.	7
Guilford, J. P.	14	Olson, D. R.	9	Rickards, J. P.	7
Hannafin, M. J.	14	Popham, W. J.	9	Rigney, J. W.	7
Harvey, O. J.	14	Sticht, T. G.	9	Scriven, M.	7

Shrigley, R. L.	7	Sheehan, P. W.	6	Jacobson, H.	5		
Sullivan, H. J.	7	Shepard, R. N.	6	Jacoby, L. L.	5		
ALA	6	Silverstone, D. M.	6	Janis, I. L.	5		
Banathy, B. H.	6	Steinbrenner, K.	6	Jenkins, J. G.	5		
Bent, D. H.	6	Swets, J. A.	6	Just, M. A.	5		
Berlinger, D. C.	6	Thies, P.	6	Kanner, J. H.	5		
Bracht, G. H.	6	Thomas, W. I.	6	Kaplan, R.	5		
Broudy, H. S.	6	Underwood, B. J.	6	Kerlinger, F. N.	5		
Dansereau, D. F.	6	Wildman, T. M.	6	Kintsch, W.	5		
Dickie, K. E.	6	Znznidcki, F.	6	Knemeyer, M.	5		
Duker, S.	6	Adams, V. M.	5	Legenza, A.	5		
Dunn, K.	6	Angert, J. F.	5	Levy, J. C.	5		
Dunn, R.	6	Baker, E. L.	5	Liesener, J. W.	5		
Ellson, D. G.	6	Bovy, R. C.	5	Lincoln, Y. S.	5		
Friedman, H. L.	6	Cable, G. W.	5	Lockhart, R. S.	5		
Greenhill, L. P.	6	Cohen, P. A.	5	Long, G. M.	5		
Greenwald, A. G.	6	de Groot, S.	5	Mager, R. F.	5		
Haber, R. N.	6	Dewey, J.	5	Messick, S.	5		
Hall, G. E.	6	Dyk. R. B.	5	O'Neil, H. F. Jr.	5		
Hull, C. H.	6	Ebbesen, E.	5	Peeck, J.	5		
Hunt, D. E.	6	Ekstrom, R. B.	5	Roberts, D. M.	5		
Jackson, P. W.	6	Erickson, F.	5	Rogers, C. R.	5		
Jarmon, R. F.	6	Ernest, C. H.	5	Rosenstein, A. J.	5		
Katzman, N.	6	Faterson, H. F.	5	Sheikhian, M.	5		
Kaufman, R. A.	6	Faust, G. W.	5	Smith, S. L.	5		
Kirby, J. R.	6	Faw, H. W.	5	Spradley, J. P.	5		
Koran, J. J. Jr.	6	Faw, T.	5	Stasz, C. W.	5		
Koran, M. L.	6	Freire, P.	5	Strauss, A. L.	5		
Krathwohl, D. R.	6	French, J. W.	5	Suppes, P.	5		
Kulhavy, R. W.	6	Glaser, B. G.	5	Taylor, W. D.	5		
Kulik, J. A.	6	Glass, G. V.	5	Thompson, R.	5		
Light, L.	6	Goldstein, M. T.	5	Thomson, D. M.	5		
Luria, A. R.	6	Hartman, F. R.	5	Van Atta, R.	5		
Nie, N. H.	6	Henerson, M. E.	5	Waller, T. G.	5		
Nyenhuis, J.	6	Higgins, L. C.	5	Wittrock, M. C.	5		
Otto, W.	6	Hochberg, J.	5	Wood, N. D.	5		
Ragan, T. J.	6	Hunt, E. B.	5	Zimbardo, P.	5		
Royer, J. M.	6	Hymes, D.	5				
Samuels, S. J.	6	Inhelder, B.	5				

Appendix Z

Data Subset 1979-1984 Cited Academic Publications with $\geq$ 5 Citations

Data Subset 1979-1984 Cited Academic Publications

Variable	All Academic Publication Citations N=3,864
AV Communications Review	414 (11%)
J of Educational Psychology	316 (8%)
J of Experimental Psychology	232 (6%)
Review of Educational Research	228 (6%)
Ed Communication & Tech J	187 (5%)
Educational Technology	113 (3%)
J of Verb Learning & Verb Beh	96
Perceptual & Motor Skills	88
Child Development	66
Bulletin of The Psychonomic Society	62
Perception & Psychophysics	57
J of Research in Science Teaching	51
Psychological Bulletin	50
Psychological Review	46
American Ed Research J	43
Cognitive Psychology	42
J of Educational Research	42
American J of Psychology	39
Psychonomic Science	38
J of Experimental Child Psych	36
J of Applied Psychology	35
J of Instructional Development	35
Memory & Cognition	34
Audiovisual Instruction	32
Canadian J of Psychology	31
J of Psychology	30
J of Personality & Social Psy	29
Educational Researcher	28
American Psychologist	27
Instructional Science	26
Viewpoints (Sch of Ed, Indiana U)	26
Contemporary Educational Psychology	24
J of Abnormal & Social Psy	23
Science	22
J of Experimental Education	21
J of Special Education	21
Psychological Monographs	21

Psychophysiology	20
Harvard Educational Review	19
British J of Ed Psychology	18
British J of Psychology	18
J of Communication	17
Human Factors	16
Nspi J	16
J of Genetic Psychology	15
J of Reading Behavior	15
Psychological Reports	15
Reading Research Quarterly	15
J of Speech & Hearing Disorders	14
Perception	14
Annual Review of Psychology	13
J of Speech & Hearing Research	13
Jism Quarterly	13
School Media Quarterly	13
Acta Psychologica	12
British J of Educational Tech	12
Psychology in The Schools	12
International J of Psychology	11
J of Auditory Research	11
J of Social Psychology	11
Phi Delta Kappan	11
Review of Research in Education	11
J for Res in Mathematics Edu	10
J of Child Language	10
Educational Psychologist	9
Instructional Innovator	9
J of The University Film Assoc	9
Psychometrika	9
Quar J of Experimental Psych	9
Scientific American	9
Speech Monographs	9
Assoc for Edu Data Systems J	8
Brain & Language	8
California J of Edu Research	8
Developmental Psychology	8
J of Res in Mathematics Edu	8
Scandinavian J of Psychology	8

Human Development	7
J of Abnormal Psychology	7
J of Educational Measurement	7
J of Educational Technology Systems	7
J of Personality	7
J of The Acous Society of America	7
Perception & Motor Skills	7
American J of Mental Deficiencies	6
Ed & Psychological Measurement	6
Educational Research Quarterly	6
Electro-Encephalography & Clinical Neurophysiology	6
Human Communication Research	6
J of Community Psychology	6
J of Consulting & Clinical Psych	6
J of Cross-Cultural Psychology	6
J of Learning Disabilities	6
J of School Psychology	6
Teachers College Record	6
The Elementary School Journal	6
The Journal	6
Academic Therapy	5
Atlantic Inst of Ed R & D Bulletin	5
Bull of Los Angeles Neurological Soc	5
J of Advertising Research	5
J of Classroom Interaction	5
J of Educational Statistics	5
J of General Psychology	5
J of Instructional Psychology	5
J of Typographic Research	5
J of Visual Impairment & Blindness	5
Neuropsychologia	5
Reading Improvement	5
School Review	5
Science Education	5

Appendix AA

Data Subset 1979-1984 Most Cited Reference Works with $\geq$ 5 Citations

Data Subset 1979-1984 Cited Reference Works

Variable	All Book Citations N=2,233
Aptitudes and Instructional Methods	31
Strategies for Improving Visual Learning	31
A Guide for Improving Visualized Instruction	23
Imagery and Verbal Processes	23
A Manual for The Embedded Figures Test	22
Interaction of Media Cognition and Learning	19
Creativity: Its Educational Implications	18
The Conditions of Learning	17
Instructional Message Design	16
Principles of Instructional Design	15
Audiovisual Methods in Teaching	12
Handbook of Research on Teaching	11
Levels of Processing in Human Memory	10
Learning Strategies	9
Perception and Communication	9
Second Handbook of Research and Teaching	8
Signs, Language and Behavior	8
Student Learning Styles: Diagnosing and Prescribing Programs	8
The Orienting Reflex in Human Beings	8
Educational Psychology: A Cognitive View	7
Big Media, Little Media	6
Cognitive Styles: Essence and Origins	6
Instructional Systems	6
Media & Symbols: The Forms of Expression, Comm., & Edu.	6
Schooling and The Acquisition of Knowledge	6
Taxonomy of Edu Objectives: HDBK 1, Cognitive Domain	6
The Polish Peasant in Europe and America	6
Experimental and Quasi- Experimental Designs for Research	5
How to Measure Attitudes	5
Individuality in Learning	5
Influencing Attitudes and Changing Behavior	5
Instructional Design	5
Nonverbal Behavior: Applications and Cultural Implications	5
Psychological Differentiation: Studies of Development	5
Research in Instructional Television and Film	5
Sig Detection & Recogn by Human Observers: Cont. Readings	5
The Nature of Human Intelligence	5

Theory in Practice: Increasing Professional Effectiveness	5
Yearbook of The National Society for The Study of Education	5

Appendix BB

Data Subset 1985-1989 Most Cited Individual Authors with ≥ 5 Authorships

Data Subset 1985-1989 Most Cited Individual Authors

Variable	All Authorships N=3,548					
Tennyson, R. D.	132	Rothkopf, E. Z.	15	Norberg, K. D.	9
Gagne, R. M.	91	Sassenrath, J. M.	15	Park, S. I.	9
Clark, R. E.	83	Bangert-Drowns, R. L.	14	Resnick, L. B.	9
Hannafin, M. J.	81	Lesgold, A. M.	14	Rigney, J. W.	9
Salomon, G.	81	Oltman, P. K.	14	Sternberg, R. J.	9
Merrill, M. D.	52	Ausubel, D. P.	13	Tobias, S.	9
Anderson, R. C.	45	Bloom, B. S.	13	Tulving, E.	9
Snow, R. E.	43	Bransford, J. D.	13	Anderson, R. E.	8
Reiguluth, C. M.	42	Brown, J. S.	13	Becker, H. J.	8
Witkin, H. A.	37	Guba, E. G.	13	Craik, F. I. M.	8
Dwyer, F. M.	35	Meyer, B. J. F.	13	Dansereau, D. F.	8
Ross, S. M.	33	Raskow, E. A.	13	Dewey, J.	8
Kulik, J. A.	31	Reiser, R. A.	13	Di Vesta, F. J.	8
Mayer, R. E.	31	Belland, J. C.	12	Dobson, R. L.	8
Winn, W. D.	29	Bork, A.	12	Driscoll, M. P.	8
Kulhavy, R. W.	28	Bower, G. H.	12	Hortin, J. A.	8
Heinich, R.	27	Brown, A. L.	12	Klein, J. D.	8
Levin, J. R.	27	Dick, W.	12	Metallinos, N.	8
Rieber, L. P.	27	Glynn, S. M.	12	Moore, M. V.	8
Levie, W. H.	26	Piaget, J.	12	Morrison, G. R.	8
Briggs, L. J.	25	Rothen, W.	12	Neisser, U. G.	8
Canelos, J. J.	24	Simon, H. A.	12	Petkovitch, M. D.	8
Phillips, T. L.	24	Skinner, B. F.	12	Schon, D. A.	8
Hartley, J. R.	23	Stanley, J. C.	12	Travers, R. M. W.	8
Norman, D. A.	23	Wilson, B. G.	12	Trollip, S. R.	8
Park, O. C.	23	Baker, P.	11	Weil, M. L.	8
Cronbach, L. J.	22	Cox, P. W.	11	Williams, G. W.	8
Goodenough, D. R.	22	Dalton, D. W.	11	Anglin, G. J.	7
Jonassen, D. H.	22	Koetting, J. R.	11	Atkinson, R. C.	7
Paivio, A.	22	Reder, L. M.	11	Ausburn, F. B.	7
Anderson, J. R.	21	Scandura, J. M.	11	Ausburn, L. J.	7
Rumelhart, D. E.	21	Sturges, P. T.	11	Bandura, A.	7
Simonson, M. R.	21	Weinstein, C. E.	11	Buttrey, T.	7
Taylor, W. D.	21	Alesandrini, K. L.	10	Collins, A.	7
Wager, W. W.	21	Alessi, S. M.	10	Duchastel, P. C.	7
Carrier, C. A.	20	Bruner, J. S.	10	Fishbein, M.	7
Britton, B. K.	19	Campbell, D. T.	10	Flavell, J. H.	7
Christensen, D. L.	17	Cohen, P. A.	10	Friedman, M. I.	7
Fleming, M. L.	17	Gardner, H.	10	Habermas, J.	7
Garhart, C.	17	Kerr, S. T.	10	Hall, G. E.	7
Glaser, R. m	17	Tinker, M. A.	10	Jackson, P. W.	7
Salisbury, D. F.	17	Tripp, S. D.	10	Joyce, B. R.	7
Wittrock, M. C.	17	Apple, M. W.	9	Judd, W. A.	7
Bunderson, C. V.	16	Breuer, K.	9	Lincoln, Y. S.	7
Kulik, C. L. C.	16	Cocciharella, M. J.	9	McCombs, B. L.	7
Moore, C. A.	16	Lentz, R.	9	Merrill, P. F.	7
Grabinger, R. S.	15	Messick, s. J.	9	Papert, S.	7
Rakow, E. A.	15	Morin, A.	9	Pressley, M.	7

Roberts, T. W.	7	Tessmer, M.	6	Karp, S. A.	5
Rojas, A.	7	Webb, N. M.	6	Kerlinger, F. N.	5
Seidel, R. J.	7	Williams, M.	6	King, W. A.	5
Shepard, R. N.	7	Yeaman, A. R. J.	6	Knowlton, J. Q.	5
Smith, S. L.	7	AECT	5	Kolb, D. A.	5
Stewart, A.	7	Ajzen, I.	5	Kozma, R. B.	5
Sullivan, H. J.	7	Amedeo, D.	5	Krendl, K. A.	5
Tullis, T. S.	7	Armbruster, B. B.	5	Laurillard, D. M.	5
White, R. T.	7	Barratt, E. S.	5	Lockhart, R. S.	5
Yonge, G. D.	7	Becker, A. D.	5	Lockheed, M. E.	5
Allen, B. S.	6	Berlinger, D. C.	5	Lohman, D. F.	5
Allen, W. H.	6	Berman, P.	5	Malone, T. W.	5
Andre, T.	6	Bessent, E. W.	5	Mandinach, E. B.	5
Baron, R. M.	6	Bovy, R. C.	5	Manning, D. T.	5
Boutwell, R. C.	6	Boyer, E. L.	5	Martin, B. L.	5
Carey, L.	6	Brody, P. J.	5	Maurer, M. M.	5
Carter, J. F.	6	Brooks, F. R.	5	McLaughlin, M. W.	5
Cohen, V. B.	6	Brophy, J. E.	5	McLuhan, M.	5
Davidson, G.	6	Bugelski, B. R.	5	Nawrocki, L.	5
Derry, S. J.	6	Cambre, M. A.	5	Nunan, T.	5
Di Sessa, A. A.	6	Campione, J. C.	5	O'Dell, J. K.	5
Dyer, J. W.	6	Chu, G. C.	5	Peterson, P. L.	5
Eisner, E. W.	6	Clement, F. J.	5	Reynolds, R. E.	5
Gay, G.	6	Cohen, J.	5	Romiszowski, A. J.	5
Greeno, J. G.	6	Cunningham, D. J.	5	Saettler, P.	5
Hawkins, J.	6	Damaris, S. K.	5	Samuels, S. J.	5
Holliday, W. G.	6	Dobson, J. E.	5	Savenye, W. C.	5
Johansen, K. J.	6	Ebner, D. G.	5	Schaffer, L. C.	5
Kagan, J.	6	Foulke, E.	5	Schneider, E. W.	5
Kearsley, G. P.	6	Frase, L. T.	5	Schneider, W.	5
Landa, L. N.	6	Freire, P.	5	Schramm, W. W.	5
Molenda, M.	6	Gall, M. D.	5	Schubert, J. G.	5
O'Neil, H. F. Jr.	6	Ganz, R. L.	5	Schwartz, B. J.	5
Richard, B. F.	6	Garcia, A. B.	5	Siegel, M. A.	5
Robinson, r. S.	6	Goetzfried, L.	5	Stanovich, K. E.	5
Rohwer, W. D. Jr.	6	Good, T. L.	5	Stein, F. S.	5
Royer, J. M.	6	Gropper, G. L.	5	Stimutis, Z.	5
Russell, J. D.	6	Heines, J. M.	5	Surber, J. R.	5
Schank, R. C.	6	Higgins, N.	5	Thorndike, E. L.	5
Schramm, W. L.	6	Holley, C. D.	5	Thurstone, L. L.	5
Slavin, R. E.	6	Hughes, C. W.	5	Wager, S.	5
Streibel, M. J.	6	Johnson, D. W.	5	Yekovich, F. R.	5
Taylor, S.	6	Johnson, R. T.	5		

Appendix CC

Data Subset 1985-1989 Most Cited Academic Publications with ≥ 5 Citations

Data Subset 1985-1989 Cited Academic Publications

Variable	All Academic Publication Citations N=4,294
J of Educational Psychology	496
ECTJ	400
Review of Educational Research	236
Educational Technology	182
J of Computer-Based Instruction	140
J of Instructional Development	117
J of Exp Psych: Human Learning & Memory	104
AV Communications Review	80
J of Educational Research	62
J of Verbal Learning & Verbal Behavior	61
American Educational Research Journal	59
Educational Researcher	59
Educational Leadership	58
Educational Psychologist	56
Instructional Science	50
J of Educational Technology Systems	50
Psychological Review	46
Human Factors Review	44
Contemporary Educational Psychology	43
Phi Delta Kappan	43
J of Educational Computing Research	39
J of Personality & Social Psychology	39
The Computing Teacher	38
Instructional Innovator	37
Performance & Instruction	35
Child Development	33
J of Experimental Education	33
Perceptual & Motor Skills	30
Programmed Instruction & Edu Technology	30
British J of Educational Technology	28
Memory & Cognition	28
Reading Research Quarterly	28
Cognitive Psychology	26
American Psychologist	24
J of Research in Science & Teaching	24
Improving Human Performance Quarterly	23

Psychological Reports	22
Communications of Acm	21
Annual Review of Psychology	19
Psychological Bulletin	19
Science	19
J of Reading Behavior	18
AEDS Journal	16
Cognitive Science	16
International J of Instructional Media	16
J of Psychology	16
J of Applied Psychology	14
J of Reading	14
J of Research & Development in Education	14
J of Visual & Verbal Language	13
Teaching of Psychology	13
Computers in The Schools	12
Developmental Psychology	12
International J of Man Machine Studies	12
J of Speech & Hearing Research	12
American J of Psychology	11
Educational & Psych Measurement	11
J of Instructional Design	11
American J of Public Health	10
Behavior Res Methods & Instrumentation	10
Creative Computing	10
Harvard Educational Review	10
Heart & Lung	10
J of Personality	10
Learning Disabilities Quarterly	10
Adult Education Quarterly	9
Audiovisual Instruction	9
Educational Psychology	9
Educational Research Bulletin	9
J of Economic Education	9
J of Educational Measurement	9
Teachers College Record	9
Videodisc, Videotext	9
American Annals of the Deaf	8
Educational & Industrial Television	8
Exceptional Children	8

J of Communications	8
J of Nursing Education	8
Jism Quarterly	8
Actes Du Colloque: Methodologie Et Pratique De La Rechereche Action	7
Arithmetic Teacher	7
Educational Forum	7
Electronic Learning	7
J of Research in Mathematics Education	7
J of Structural Learning	7
Machine Mediated Learning	7
Psychonomic Science	7
Cognition	6
Experimental Aging Research	6
Illinois School Board Journal	6
J of Experimental Social Psychology	6
Psychology in The Schools	6
Quarterly J of Experimental Psychology	6
Reading World	6
Sex Roles	6
Tech Trends	6
The Elementary School Journal	6
Visible Language	6
Behavior & Information Technology	5
Byte	5
College English	5
Curriculum Inquiry	5
Discourse Processes	5
Harvard Business Review	5
JID	5
J of Abnormal & Social Psychology	5
J of Comparative Physiology & Psychology	5
J of Instructional Psychology	5
J of Learning Disabilities	5
J of Research in Personality	5
J of Social Psychology	5
J of Teacher Education	5
J of The Student Personnel Ass for Teach Ed	5
New York University Education Quarterly	5
NSPI Journal	5

Nursing Management	5
Nursing Outlook	5
Remedial & Special Education	5
Speech Monographs	5
Theory into Practice	5
Viewpoints in Teaching & Learning	5

Appendix DD

Data Subset 1985-1989 Cited Reference Works $\geq$ 5 Citations

Data Subset 1985-1989 Cited Reference Works

Variable	All Book Citations N=2,438
Instructional Design Theories & Models: An Overview of Their Current Status	32
The Conditions of Learning	26
The Technology of Text: Principles for Structuring, Designing, & Displaying Text	25
H&Book of Research on Teaching	24
Instructional Technology: Foundations	16
Aptitudes & Instructional Methods	15
Instructional Message Design	15
Interaction of Media, Cog & Learning	15
Principles of Instructional Design	15
Instructional Designs for Microcomputer Courseware	13
Learning Strategies	13
Encyclopedia oEducational Research	12
Edu Psychology: A Cognitive View	10
Imagery & Verbal Processes	10
Strategies for Improving Visual Learning	10
Educational Media Yearbook	9
Computer Based Instruction: Methods & Development	8
Contemporary Theory & Research in Visual Perception	8
Experimental & Quasi- Experimental Designs for Research on Teaching	8
Processing of Visible Language	8
Teaching Concepts: An Instructional Design Guide	8
A Manual for The Embedded Figures Test	7
Aptitude, Learning, & Instruction	7
Cognitive Psychology & Its Implications	7
Intelligent Tutoring Systems	7
Learning to Read in American Schools	7
Levels of Processing in Human Memory	7
Schooling & The Acquisition of Knowledge	7
Semantic Factors in Cognition	7
Theoretical Issues in Reading Comprehension	7
Big Media, Little Media	6
Cognition & Reality	6
Cognitive Skills & Their Acquisition	6

Effective Evaluation: Improving the Usefulness of Evaluation Results Through Responsive & Naturalistic Approaches	6
Essentials of Learning: The New Cognitive Learning for Students of Education	6
Human Characteristics & School Learning	6
Mindstroms: Children, Computers, & Powerful Ideas	6
Review of Research in Education	6
The Reflective Practitioner	6
The Systematic Design of Instruction	6
Cognitive & Affective Learning Strategies	5
Communication & Education: Social & Psychological Interaction	5
Computer Literacy: A H&S-On Approach	5
Countering Educational Design	5
Designing Instructional Systems	5
High School: A Report on Secondary Education in America	5
Individuality in Learning	5
Methods of Heuristics	5
Neuropsychological & Cognitive Processes in Reading	5
Personality Theory & Information Processing	5
Screen Design Strategies for Computer Assisted Instruction	5
The Cognitive Psychology of School Learning	5
User Centered System Design: New Perspectives on Human Computer Interaction	5
Using What We Know About Teaching	5

Appendix EE

Data Subset 1990-1994 Cited Authors with ≥ 5 Authorships

Data Subset 1990-1994 Most Cited Individual Authors

Variable	All Authorships N=6,008					
Jonassen, D. H.	135	Dalton, D. w.	22	Rumelhart, D. E.	15
Gagne, R. M.	106	Driscoll, M. P.	22	US Congress office of	
Hannafin, M. J.	105	Savenye, W. C.	22	technology assessment	15
Reigeluth, C. M.	102	Bangert-Drowns, R. L.	21	Alessi, S. M.	14
Ross, S. M.	83	Berry, L. H.	21	Bandura, A.	14
Tennyson, R. D.	78	Davidson, G. V.	21	Becker, H. J.	14
Salomon, G.	72	Duffy, T. M.	21	Bunderson, C. V.	14
Merrill, M. D.	70	Guba, E. G.	21	Cunningham, D. J.	14
Mayer, R. E.	68	Heinich, R.	21	Gay, G.	14
Keller, J. M.	65	Lepper, M. R.	21	Gustafson, K. L.	14
Johnson, D. W.	63	Glaser, R.	20	Hall, G. E.	14
Dwyer, F. M.	62	Hartley, J. R.	20	Holley, C. D.	14
Clark, R. E.	61	McCombs, B. L.	20	Kozma, R. B.	14
Johnson, R. T.	59	Duguid, P.	19	Levie, W. H.	14
Wittrock, M. C.	56	Holyoak, K. J.	19	Malone, T. W.	14
Carrier, C. A.	52	Perkins, D. N.	19	McKeachie, W. J.	14
Briggs, L. J.	50	Sales, G. C.	19	Pressley, M.	14
Morrison, G. R.	47	Snow, R. E.	19	Rakow, E. A.	14
Rieber, L. P.	46	Banathy, B. H.	18	Scardamalia, M.	14
Collins, A. M.	44	Bransford, J. D.	18	Tobias, S.	14
Brown, J. S.	42	Duchastel, P. C.	18	Zimmerman, B. J.	14
Dick, W. D.	40	Milheim, W. D.	18	Alesandrini-Lutz, K. L.	13
Kulik, J. A.	38	Reiser, R. A.	18	Apple, M. W.	13
Winn, W. D.	38	Taylor, W. D.	18	Britton, B. K.	13
Hooper, S.	37	Webb, N. M.	18	Darwazeh, A. N.	13
Norman, D. A.	36	Belland, J. C.	17	Flavell, J. H.	13
Wager, W. W.	36	Finn, J. D.	17	Gentner, D. R.	13
Sullivan, H. J.	33	Knupfer, N. N.	17	Habermas, J.	13
Anderson, J. R.	32	Newby, T. J.	17	Harris, M.	13
Dansereau, D. F.	32	Novak, J. D.	17	Levin, J. R.	13
Steinberg, E. r.	32	Romiszowski, A. J.	17	O'Neill, H. F. Jr.	13
Anderson, R. C.	31	Tripp, S. D.	17	Williams, M. D.	13
Spiro, R. J.	31	Coulson, R. L.	16	Anand, P. G.	12
Brown, A. L.	30	Grabowski, B. L.	16	Berdel, R. L.	12
Kinzie, M. B.	29	Paivio, A.	16	Berlyne, D. E.	12
Slavin, R. E.	29	Pintrich, P. R.	16	Bloom, B. S.	12
Wilson, B. G.	28	Smith, P. L.	16	Campione, J. C.	12
Kulhavy, R. W.	27	Witkin, H. A.	16	Chi, M. T. H.	12
Kulik, C. L. C.	27	Bruner, J. S.	15	Csikszentmihalyi, M.	12
O'Dell, J. K.	26	Cole, P.	15	Dempsey, J. V.	12
Ausubel, D. P.	25	Gagne, E. D.	15	Ely, D. P.	12
Weinstein, C. E.	25	Goodenough, D. R.	15	Goodlad, J. I.	12
Carey, L. M.	24	Klein, J. D.	15	Harvey, F. A.	12
Feltovich, P. J.	24	Lincoln, Y. S.	15	Jehng, J. C.	12
Tessmer, M. A.	24	Martin, B. L.	15	Kearsley, G. P.	12
Rogers, E. M.	23	Park, O. C.	15	Kiewra, K. A.	12
Bereiter, C.	22	Reeves, T. C.	15	Sharan, S.	12

Stepich, D. A.	12	Anderson, T. H.	9	Moore, C. A.	8
Suppes, P.	12	Atkinson, R. C.	9	Norris, C. A.	8
Trollip, S. R.	12	Baker, E. L.	9	Perry, J. D.	8
Williams, M.	12	Bichelmeyer, B. A.	9	Rothkopf, E. Z.	8
Andre, T.	11	Clancey, W. J.	9	Rotter, J. B.	8
Bohlin, R. M.	11	Cox, P. W.	9	Russell, J. D.	8
Broadbent, D. E.	11	Craik, F. I. M.	9	Schank, R. C.	8
Carroll, J. M.	11	di Vesta, F. J.	9	Schwartz, E.	8
Cognition & Technology Group		Earle, R. S.	9	Shavelson, R. J.	8
at Vanderbuilt (CGTV)	11	Eisner, E. W.	9	Small, R. V.	8
Davies, I. K.	11	Gardner, H.	9	Stake, R. E.	8
Gentner, D. L.	11	Glynn, S. M.	9	Stanne, M. B.	8
Gick, M. L.	11	Gressard, C. P.	9	Stevens, A. L.	8
Kopp, T. W.	11	Hammond, N.	9	Stock, W. A.	8
Maw, w. h.	11	Holmberg, B.	9	Streibel, M. J.	8
McIsaac, M. S.	11	Keefe, J. W.	9	Travers, R. M.	8
Molenda, M.	11	Lahey, G. F.	9	Walberg, H. J.	8
Nichols, R. G.	11	Lave, J.	9	Wedman, J. F.	8
Orey, M. A.	11	Loyd, B. H.	9	Williams, G. W.	8
Papert, S.	11	Mehrabian, A.	9	Allen, B. S.	7
Rickards, J. P.	11	Miller, G. A.	9	Baker, P. R.	7
Schon, D. A.	11	Rothen, W.	9	Barron, R. F.	7
Schunk, D. H.	11	Schoenfeld, A. H.	9	Bednar, A. K.	7
Simon, H. A.	11	Schvaneveldt, R. W.	9	Berman, P.	7
Stein, F. S.	11	Sheingold, K.	9	Braden, R. A.	7
Aust, R.	10	Suzuki, K.	9	Buttrey, T.	7
Brophy, J. E.	10	Viechnicki, K.	9	Cherryholmes, C. H.	7
Canelos, J. J.	10	AECT	8	Clemente, R.	7
Christensen, D. L.	10	Ambron, S.	8	Cohen, J. A.	7
Clariana, R. B.	10	Anderson, D. K.	8	Conklin, J. C.	7
Clark, C. M.	10	Andrews, D. H.	8	Dale, E.	7
Cronbach, L. J.	10	Bean, T. W.	8	Freire, P.	7
Davis, J. K.	10	Bork, A.	8	Fullan, M. G.	7
Day, J. D.	10	Borkowski, J. G.	8	Garhart, C.	7
Dede, C. J.	10	Burton, J. K.	8	Garland, J. C.	7
Diekhoff, G. M.	10	Cambre, M. A.	8	Goodson, L. A.	7
Frase, L. T.	10	Collins, K. W.	8	Hannum, W. H.	7
Giroux, H. A.	10	De Bloois, M. L.	8	Harel, I.	7
Mager, R. F.	10	Derrida, J.	8	Herman, J. L.	7
Maw, E. W.	10	Derry, S. J.	8	Higginbotham-Wheat, N.	7
Newman, S. E.	10	Fleming, M. L.	8	Judd, W. A.	7
Ortony, A.	10	Glover, J. A.	8	Kenny, R. F.	7
Peterson, P. L.	10	Gowan, D. B.	8	Kintsch, W.	7
Phillips, T. L.	10	Grabinger, R. S.	8	Kruglanski, A. W.	7
Resnick, L. B.	10	Kerr, S. T.	8	Kuhn, T. S.	7
Rigney, J. W.`	10	Krendl, K. A.	8	Lakoff, G.	7
Salisbury, D. F.	10	Laurel, B.	8	Lin, Y. G.	7
Simonson, M. R.	10	Linn, M. C.	8	Mandinach, E. B.	7
Singer, H.	10	Marchionini, G.	8	McCann, P. H.	7
Tulving, E.	10	Marcinkiewicz, H. R.	8	Nelson, W. A.	7
Wang, S.	10	McDonald, B. A.	8	Paris, S. G.	7
Welliver, P. W.	10	Merriam, S. B.	8	Pool, R.	7
White, B. Y.	10	Miles, M. B.	8	Seidel, R. J.	7

Sherwood, R. S.	7	Roblyer, M. D.	6	Goetz, J. P.	5
Skinner, B. F.	7	Roby, W.	6	Goodman, N.	5
Smith, L. J.	7	Rutherford, W. L.	6	Gordon, W. J. J.	5
Stein, B. s.	7	Rysavy, D. M.	6	Hamm, M.	5
Sternberg, R. J.	7	Sachs, S. G.	6	Hasselbring, T. S.	5
Weiner, B.	7	Schaffer, L. C.	6	Howard, G. S.	5
Yacci, M.	7	Schloss, P. J.	6	Huberman, A. M.	5
Abelson, R. P.	6	Schwier, R. A.	6	Jackson, P. W.	5
Adams, D.	6	Seels, B. A.	6	Jacobson, M. J.	5
Adams, H.	6	Shank, G.	6	Johansen, K. J.	5
Anglin, G. J.	6	Shulman, L. S.	6	Jones, B. F.	5
Armbruster, B. B.	6	Strike, K. A.	6	Jones, M. K.	5
Barrett, W.	6	Stufflebeam, D. L.	6	Karp, S. A.	5
Baskin, A. B.	6	Taylor, R. P.	6	Klopfer, L. E.	5
Bassock, M.	6	Tversky, A.	6	Knirk, F. G.	5
Berliner, D. C.	6	Wildman, T. M.	6	Knowles, M. S.	5
Bower, G. H.	6	Winograd, T.	6	Knowlton, J. Q.	5
Branson, R. K.	6	Yinger, R. J.	6	Kuhlthau, C. C.	5
Bush, V.	6	Zemke, R.	6	Lamberski, R. J.	5
Campbell, D. T.	6	Arnone, M. P.	5	Landow, G. P.	5
Carlson, H. L.	6	Barnes, B. R.	5	Lentz, R.	5
Corno, L.	6	beissner, K. L.	5	Levin, J. A.	5
Cuban, L.	6	Biddle, W. B.	5	Lindsay, P. H.	5
Dewey, J.	6	Bogdan, R. C.	5	Markle, S. M.	5
Di Sessa, A.	6	Bonner, J.	5	marks, C. B.	5
Ellsworth, E.	6	Bright, G. W.	5	Martinez-Pons, M.	5
Evans, S. H.	6	Burton, R. R.	5	Mauer, M.	5
Foucault, M.	6	Caffarella, E. P.	5	McCroskey, J.	5
Gerlach, V. S.	6	Campbell, V. N.	5	McGhee, P. E.	5
Gilbert, T. F.	6	Carpenter, C. R.	5	Medway, F. J.	5
Glass, G. V.	6	Carver, R. P.	5	Messick, S.	5
Goetzfried, L.	6	Cennamo, K. S.	5	Mevarech, Z. R.	5
Higgins, N.	6	Cicchelli, T.	5	Moran, T. P.	5
Hlynka, D.	6	cole, M. A.	5	Naveh-Benjamin, M.	5
Kahneman, D.	6	Cook, D. L.	5	Nelson, T. H.	5
Keegan, D.	6	Cook, L. K.	5	Noddings, N.	5
King, F. J.	6	Day, H. I.	5	Oakes, J.	5
Koetting, J. R.	6	Deci, E.	5	Olsen, J. B.	5
Komaski, P. K.	6	Doctorow, M. J.	5	Olson, D. R.	5
Laurillard, D. M.	6	Dreyfus, H. L.	5	Peshkin, A.	5
Li, Z.	6	Dubois, N. F.	5	Polanyi, M.	5
Lieberman, A.	6	Dweck, C. S.	5	Pridemore, D. R.	5
Lockhart, R. S.	6	Fischhoff, B.	5	Ragan, T. J.	5
Lopez, C. L.	6	Fisher, K. M.	5	Reeves, B.	5
Muncer, S. J.	6	Fletcher, J. D.	5	Richards, B. F.	5
Newman, D.	6	Flores, F.	5	Rossett, A.	5
Palincsar, A. S.	6	Frederiksen, J. R.	5	Russell, J.	5
Peck, K. L.	6	Frick, T.	5	Saettler, P.	5
Reder, L. M.	6	Gabel, D. L.	5	Sarason, S. B.	5
Reed, S. K.	6	Gall, M. D.	5	Schultz, C. W.	5
Reiser, B. J.	6	Gearhart, M.	5	Senge, P. M.	5
Reynolds, R. E.	6	Geertz, C.	5	Severin, W. J.	5
Richey, R. C.	6	Gibbons, A. S.	5	Soloway, E.	5

Spielberger, C. D.	5	Thiagarajan, S.	5	Watkins, B. A.	5
Story, N. O.	5	Thorson, E.	5	Wilcox, W. C.	5
Story, W. B. Jr.	5	Tyler, R. W.	5	Yekovich, F. R.	5
Strommen, E. f.	5	Vygotsky, L. S.	5		

Appendix FF

Data Subset 1990-1994 Cited Academic Publications with $\geq$ 5 Citations

Data Subset 1990-1994 Cited Academic Publications

Variable	All Journal Citations N=7,255
J of Educational Psychology	661
Educational Technology	426
ETR&D	322
ECTJ	312
J of Computer-Based Instruction	252
Educational Researcher	177
Review of Educational Research	173
American Educational Research J	170
J of Educational Research	148
J of Educational Computing Research	142
J of Instructional Development	139
Educational Psychologist	132
Contemporary Educational Psychology	99
Instructional Science	95
J of Experimental Psychology	95
Av Communications Review	76
J of Experimental Education	64
Educational Leadership	63
Cognitive Science	60
Performance & Instruction	58
Cognitive Psychology	55
Org Behavior & Human Decision Processes	54
British J of Educational Technology	52
J of Verbal Learning & Verbal Behavior	48
Computers in Human Behavior	47
Psychological Reviews	47
Reading Research Quarterly	47
American Psychologist	44
J of Educational Technology Systems	44
Human Factors	42
J of Research in Science Teaching	41
J of Personality & Social Psychology	40
Phi Delta Kappan	39
Memory & Congnition	36
International J of Instructional Media	35

Psychological Bulletin	35
J of Reading	34
Psychological Reports	33
Science	32
Computers in The Schools	31
Cognition & Instruction	30
International J of Man Machine Studies	30
Perception & Motor Skills	30
Child Development	29
Programmmed Learning & Edu Tech	28
J of Research & Development in Education	27
J of Research On Computing in Education	27
Design Studies	26
Aeds J	25
The Computing Teacher	25
Performance Improvement Quarterly	24
Science Education	24
Communications of The Acm	23
Human Communication Research	22
J for Research in Mathematics Education	21
The Journal	21
Annual Review of Psychology	20
Educational Psychology Review	20
Tech Trends	20
Computers in Education	19
Simulations & Games	19
The American J of Distance Education	19
Instructional Innovator	18
J of Reading Behavior	18
Kappan	18
Org Behavior & Human Performance	18
Audiovisual Instruction	17
J of Computer Assisted Learning	17
Human Computer Interaction	16
J of Communication	16
Sex Roles	16
English Journal	15
Harvard Educational Review	15

J of Edu Multimedia & Hypermedia	15
J of Psychology	15
Machine Mediated Learning	15
Ergonomics	14
International J of Neuroscience	14
J of Experimental Child Psychology	14
NSPI Journal	14
The J of the Learning Sciences	14
American J of Psychology	13
Communication Research	13
Exceptional Children	13
J of Applied Psychology	13
J of Teacher Education	13
ACM Transactions On Info Systems	12
Byte	12
J of Artificial Intelligence in Education	12
J of Social Psychology	12
Management Science	12
Theory into Practice	12
Training & Development J	12
Computers & Education	11
J of Research & Computing in Education	11
Psychological Monographs	11
Reading World	11
Research Strategies	11
Scientific American	11
Canadian J of Edu Communications	10
Communication Education	10
Early Childhood Development & Care	10
Electronic Learning	10
J of Consulting & Clinical Psychology	10
J of Instructional Psychology	10
J of Management Information Systems	10
Physical Therapy	10
Psychology in The Schools	10
The American Biology Teacher	10
American Annals of the Deaf	9
Behavior & Information Technology	9

Bulletin of The Psychonomic Society	9
Educational & Psychological Meas	9
Educational Psychology	9
J of Early Adolescence	9
J of Education Psychology	9
Reading Research & Instruction	9
Technological Horizons in Education Journal	9
Academic Computing	8
Acta Psychologica	8
Administrative Science Quarterly	8
Calico Journal	8
Elementary School Journal	8
Human Relations	8
Hypertexts: J of Hypermedia Multimedia Studies	8
J of Computing in Childhood Education	8
J of Medical Education	8
Peabody J of Education	8
The J of Teacher Education	8
The Reading Teacher	8
Academy of Management Journal	7
American J of Distance Education	7
Arithmetic Teacher	7
British J of Educational Psychology	7
College & Research Libraries	7
Curriculum Inquiry	7
Discourse Processes	7
Educational Horizons	7
Educational Research Bulletin	7
Educational Review	7
Foreign Language Annals	7
Interactive Learning Environments	7
J of Abnormal & Social Psychology	7
J of Learning Disabilities	7
J of Vocational Behavior	7
Learning Disabilities Quarterly	7
Library & Information Science Research	7
Neuropsychologia	7
New Scientist	7

School Science & Mathematics	7
Teachers College Record	7
Teaching of Psychology	7
The J of Psychology	7
The J of Social Psychology	7
Academy of Management Review	6
Collegiate Micocomputer	6
Distance Education	6
Exceptional Education Quarterly	6
Higher Education	6
J of College Science Teaching	6
J of Computers in Mathematics & Science Teaching	6
J of Computing in Higher Education	6
J of Computing Research	6
J of Continuing Higher Education	6
J of Economic Education	6
J of Research in Reading	6
Jism Quarterly	6
Quarterly J of Experimental Psychology	6
Research Quarterly	6
Serial Review, Special Issue On Economics Models for Electronic Publishing	6
The Elementary School Journal	6
The Public Access Computer Sys Review	6
The Technology of Text: Principles for Structuring, Designing, & Displaying Text	6
Theory & Research in Social Education	6
Training	6
Training/Hrd	6
Academic Therapy	5
Acm Computer Graphics	5
Adult Education Quarterly	5
American Biology Teacher	5
American Mathematical Monthly	5
Arch Pathol. Lab Med	5
Artificial Intelligence	5
Atlantic Monthly	5
Behavior Res Methods, Instruments, & Computers	5
Edu & Training Tech International	5

Educational Research	5
Evaluation Review	5
IDDE	5
Ieee Transactions On Systems, Man, & Cybernetics	5
International Council for Dist Edu Bulletin	5
International J of Educational Research	5
J of America Indian Education	5
J of Broadcasting	5
J of Curriculum Studies	5
J of Experimental Child Psychology	5
J of Special Education	5
J of Visual Literacy	5
Ohio Media Spectrum	5
Personality & Social Psych Bulletin	5
Review of Research in Education	5
The New York Times	5

Appendix GG

Data Subset 1990-1994 Cited Reference Works with $\geq$ 5 Citations

Data Subset 1990-1994 Cited Reference Works

Variable	All Book Citations N= 4,385
Instructional Design Theories &Models: An Overview of Their Current Status	65
Principles of Instructional Design	36
Instructional Designs for Microcomputer Courseware	30
Handbook of Research on Teaching	29
Instructional Technology: Foundations	24
The Technology of Text	22
The Systematic Design of Instruction	21
The Conditions of Learning	18
Designing Hypermedia for Learning	17
Instructional Technology: Past, Present, And Future	17
Learning and Study Strateies: Issues in Assessment, Instruction, And Evaluation	15
Computer Based Instruction: Methods &Development	14
Strategies for Improving Visual Learning	14
Diffusion of Innovations	13
Knowing, Learning, And Instruction: Essays in Honor of Robert Glaser	13
Paradigms Regained: The Uses of Illuminative, Semiotic and Post-Modern Criticism as Modes of Inquiry in Educational Technology: A Book of Readings	13
Dimensions of Thinking and Cognitive Instruction	12
Instructional Theories in Action: Lessons Illustrating Theories and Models	12
The Art of Human Computer Interface Design	12
The Cognitive Psychology School of Learning	12
Cognition, Education, And Multimedia: Exploring Ideas in High Technology	11
Mental Models	11
System Design	11
Cognition and Instruction: Issues and Agendas	10
Educational Media and Technology Yearbook	10
Teachers &Machines: The Classroom Use of Technology Since 1920	10
The Conditions of Learning &Theory of Instruction	10
Cognition and Figurative Language	9
Hypertext/Hypermedia	9
Learning Strategies	9

Learning with Interactive Multimedia: Developing and Using Multimedia Tools in Education	9
Media and Symnbols: The Forms of Expression, Communication, And Education	9
Metaphor and Thought	9
Research on Motivation in Education: The Classroom Milieu	9
Schooling and The Acquisition of Knwoledge	9
Spatial Learning Strategies: Techniques, Applications and Related Issues	9
Designing Instructional Systems: Decision Making in Course Planning &Curriculum Design	8
Educational Psychology: A Cognitive View	8
Instructional Design: Principles &Applications	8
Instructional Media &The New Technologies of Instruction	8
A Guide for Improving Visualized Instruction	7
Case Study Research in Education: A Qualitative Approach	7
Children's Understanding of Television	7
Cooperation & Competition: Theory &Research	7
Distance Education: International Perspectives	7
Instructional Technology: A Systematic Approach to Education	7
Naturalistic Inquiry	7
Scripts, Plans, Goals &Understanding: An Inquiry into Human Knowledge Structures	7
The Computer in The School: Tutor, Tool, Tutee	7
The Psychology of Illustration Vol 2 Instructional Issues	7
Cognitive Psychology &Its Implications	6
Cognitive Skills and Their Acquisition	6
Cognitive Structure and Conceptual Change	6
Communication of Innovations: A Cross Cultural Approach	6
Conflict, Arousal, &Curiosity	6
Constructivism in The Computer Age	6
Cooperative Learning & Educational Media	6
Enhancing Visualized Instruction - Recommendations for Practitioners	6
Ethnography &Qualitative Design in Educational Research	6
Instructional Message Design: Principles from The Behavioral Sciences	6
Learning How to Learn	6
Mental Representations: A Dual Coding Approach	6
Metacognition, Motivation and Understanding	6

Metaphors We Live By	6
Pathfinder Associative Networks: Studies in Knowledge Organization	6
Aptitudes &Instructional Methods: A Handbook for Research on Interactions	5
Cognition in Practice: Mind, Mathematics, &Culture in Everyday Life	5
Cognitive Classroom Learning: Understanding, Thinking, And Problem Solving	5
Cooperative Learning: Theory, Research, & Practice	5
Designing Instructional Text	5
Educational Psychology	5
Federal Programs Supporting Educational Change	5
Imagery &Verbal Processes	5
Instructional Design for Micromcomputer Courseware	5
Instructional Development: The State of the Art	5
Interactive Multimedia: Visions of Multimedia for Developers, Educators, & Information Providers	5
Mathematical Problem Solving	5
Perception &Communication	5
Power &Criticism: Post Structural Investigations in Education	5
Qualitative Data Analysis: A Source Book of New Methods	5
Signial Detection and Recognition by Human Observers: Contemporary Readings	5
The Design, Development, & Evaluation of Instructional Software	5
The Psychology of Illustration Vol 1	5
The Structure of Scientific Revolutions	5
The Technology of Text Vol 2	5
Theoretical Issues in Reading Comprehension	5
Understanding Computers &Cognition: A New Foundation for Design	5

Appendix HH

Data Subset 1995-1999 Most Cited Authors with $\geq$ 5 Authorships

Data Subset 1995-1999 Most Cited Individual Authors

Variable	All Authorships N=12,461				
Gagne, R. M.	101	Csikszentmihalyi, M.	22	Rogers, E. M.	15
Jonassen, D. H.	97	Feltovich, P. J.	22	Saettler, P.	15
Hannafin, M. J.	93	Grabowski, B. L.	22	Savery, J. R.	15
Keller, J. M.	71	Land, S. M.	22	Strauss, A. L.	15
Reigeluth, C. M.	61	Tennyson, R. D.	22	Alexander, P. A.	14
Collins, A.	52	Glaser, R.	21	Becker, H. J.	14
Duffy, T. M.	51	Jacobson, M. J.	21	Guba, E. G.	14
Brown, J. S.	50	Seels, B. B.	21	Hartley, J.	14
Dick, W.	50	Bereiter, C.	20	Li, Z.	14
Dwyer, F. M.	50	Branch, R. C.	20	Martin, B. L.	14
Ross, S. M.	49	Cunningham, D. J.	19	Milheim, W. D.	14
Salomon, G.	46	Grabinger, R. S.	19	Moore, D. M.	14
Klein, J. d.	41	Marcinkiewicz, H. R.	19	Russell, J. D.	14
Johnson, D. W.	40	Schon, D. A.	19	Scardamalia, M.	14
Johnson, R. T.	39	Simon, H. A.	19	Schwen, T. M.	14
Merrill, M. D.	39	Davidson, G. V.	18	Shneiderman, B.	14
Hooper, S.	36	Gustafson, K. L.	18	Smith, P. L.	14
Sullivan, H. J.	35	Heinich, R. M.	18	wedman, J. F.	14
Wilson, B. G.	35	Kozma, R. B.	18	Winn, W. D. `	14
Cognition & Technology		Papert, S.	18	Jones, M. G.	13
Group at Vanderbilt	34	Savenye, W. C.	18	Kearsley, G.	13
Slavin, R. E.	34	Williams, M. D.	18	NCTM	13
Briggs, L. J.	33	Witkin, H. A.	18	Newman, S. E.	13
Morrison, G. R.	33	Barrows, H. S.	17	Nielsen, J.	13
Wager, w. w.	32	Brown, A. L.	17	Pea, R. D.	13
Knupfer, N. N.	31	Bruner, J. S.	17	Shavelson, R. J.	13
Richey, R. C.	31	Carrier, C. A.	17	Streibel, M. J.	13
Duguid, P.	30	Coulson, R. L.	17	Bender, I.	12
Spiro, R. J.	30	Dewey, J.	17	Bichelmeyer, B.	12
Tessmer, M.	30	Moore, M. G.	17	Crane, G.	12
Wittrock, M. C.	30	Reeves, T. C.	17	Eisner, E. W.	12
Carey, L. M.	29	Tripp, S. D.	17	Goodenough, D. R.	12
Mayer, R. E.	28	Webb, N. M.	17	Goodrum, D. A.	12
Reiser, R. A.	27	Davies, I. K.	16	Gunawardena, C. N.	12
Rieber, L. P.	27	Hill, J. R.	16	Hall, G. E.	12
Driscoll, M. P.	26	Rowland, G.	16	Jones, M. K.	12
Anderson, J. R.	25	Bloom, B. S.	15	Ausubel, D. P.	11
Bransford, J. D.	25	Dansereau, D. F.	15	Carroll, J. M.	11
Perkins, D. N.	25	Ely, D. P.	15	Cates, W. M.	11
Vygotsky, L. S.	25	Marchionini, G.	15	Cennamo, K. S.	11
Kinzie, M. B.	24	Norman, D. A.	15	Dale, E.	11
Clark, R. E.	23	Palincsar, A. S.	15	Frick, T. w.	11
Paivio, A.	23	Riel, M.	15	Lave, J.	11

Lincoln, Y. S.	11	Borg, W. R.	8	Faiola, T.	7
Malone, T. W.	11	Clark, C. M.	8	Fazio, R. H.	7
O'Donnell, A. M.	11	Cole, P.	8	Gallagher, S. A.	7
Pridemore, D. R.	11	Davidson, M. E.	8	Gallimore, R.	7
Reder, L. M.	11	Di Vesta, F. J.	8	Garner, R.	7
Burkman, E.	10	Fishman, B. J.	8	Good, T. L.	7
Clariana, R. B.	10	Fullan, M. G.	8	Goodson, L. A.	7
Dalton, D. W.	10	Gardner, H.	8	Hannafin, R. D.	7
Duchastel, P. C.	10	Globerson, T.	8	Hidi, S.	7
Earle, R. S.	10	Hadley, M.	8	Hofstetter, F. T.	7
Glaser, B. G.	10	Hall, C.	8	Hutchinson, J. A.	7
Harasim, L. M.	10	Hiltz, S. R.	8	Jonassen, D. L.	7
McCombs, B. L.	10	Hlynka, D.	8	Karp, S. A.	7
Molenda, M.	10	Huberman, A. M.	8	Krathwohl, D. R.	7
Piaget, J.	10	Johnson, M.	8	Kulik, C. L. C.	7
Pressley, M.	10	Kosslyn, S. M.	8	Landow, G. P.	7
Ragan, T. J.	10	Kulik, J. A.	8	Leader, L. F.	7
Simonson, M. R.	10	Lambiotte, J. G.	8	Lebow, J. L.	7
Zimmerman, B. J.	10	Laurel, B. K.	8	Lehrer, R.	7
Boling, E.	9	Lepper, M. R	8	Levin, J. R.	7
Borko, H.	9	Levie, W. H.	8	Linn, M. C.	7
Campbell, J. P.	9	Mazur, J.	8	McLellan, H.	7
Collis, B. A.	9	McIsaac, M. S.	8	Miles, M. B.	7
Dorsey, L. T.	9	Miller, G. g.	8	Misanchuk, E. R.	7
Fleming, M. L.	9	Resnick, L. B.	8	Mukherjee, P.	7
Gery, G.	9	Rocklin, T. R.	8	Okey, J. R	7
Kemp, J. E.	9	Smaldino, S. E.	8	Osman-Jouchoux, R.	7
Koetting, J. R.	9	Steinberg, E. R.	8	Park, O. C.	7
Lajoie, S. P.	9	Surry, D. W.	8	Postman, N.	7
Lakoff, G.	9	Suzuki, K.	8	Rakow, E. A.	7
Lesgold, A. M.	9	Tharp, R. G.	8	Rankin, P. M.	7
Neuman, D.	9	Tufte, E. R.	8	Salisbury, D. F.	7
Newby, T. J.	9	Verhagen, P. W.	8	Schwier, R. A.	7
O'Dell, J. K.	9	Willis, B.	8	Sherman, G. P.	7
Office of Technology	9	Willis, J. W.	8	Shuell, T. J.	7
Romiszowski, A. J.	9	Woodruff, E.	8	Shulman, L. S.	7
Sales, G. C.	9	AECT	7	Tolhurst, D.	7
Sheingold, K.	9	Alessi, S. M.	7	Travers, R. M. W.	7
Sherwood, R. D.	9	Anderson, M. A.	7	Turkle, S.	7
Shrock, S. A.	9	Apple, M. W.	7	Wertsch, J. V.	7
Small, R. V.	9	Biklen, S. K.	7	Alesandrini, K. L.	6
Stanne, M. B.	9	Bohlin, R. M.	7	Arnone, M. P.	6
Weinstein, C. E.	9	Brophy, J. E.	7	Banathy, B. H.	6
Welliver, P. W.	9	Burton, J. K.	7	Bandura, A.	6
Wenger, E.	9	Cuban, L.	7	Bangert-Drowns, R. L.	6
Andrews, D. H.	8	Deci, E. L.	7	Banvard, R.	6
Barab, S. A.	8	Dillon, C. L.	7	Berdel, R. L.	6
Berliner, D. C.	8	Edmonds, G. S.	7	Berlyne, D. E.	6

Binns, J. C.	6	Schlosser, C. A.	6	harvey, F. A.	5
Black, J. B.	6	Schrum, L.	6	Hinn, D. M.	5
Bogdan, R. C.	6	Soloway, E.	6	Hoban, C. F. Jr.	5
Bonk, C. J.	6	Stepien, W. J.	6	Holmberg, B.	5
Boud, D. J.	6	Tobin, K.	6	Jones, B. F.	5
Carver, R. P.	6	Vye, N. J.	6	Jones, E. E. K.	5
Chi, M. T. H.	6	Wlodkowski, R. J.	6	Kaplan, R.	5
Couch, R. A.	6	Young, M. D.	6	Kaput, J. J.	5
Craik, F. I. M.	6	Young, M. F.	6	Keegan, D.	5
Cronbach, L. J.	6	Allen, B. S.	5	Kiesler, S.	5
Darwazeh, A. N.	6	Anderson, R. C.	5	Kinzer, C. K.	5
Day, H. I.	6	APA	5	Kliebard, H. M.	5
Doran, M. S.	6	Barron, A. E.	5	Kopp, T. W.	5
Engestrom, Y.	6	Bateson, G.	5	Larsen, V. A.	5
Ericsson, K. A.	6	Bednar, A. K.	5	Liu, M.	5
Ertmer, P. A.	6	Belland, J. C.	5	Locatis, C.	5
Fidell, L. S.	6	Berry, G. L.	5	Marx, R. W.	5
Fitzgerald, G.	6	Black, M.	5	Masia, B. B.	5
Freire, P.	6	Bowdish, B. E.	5	McCaslin, M.	5
Gall, M. D.	6	Bowers, C. A.	5	McClelland, D. C.	5
Giroux, H. A.	6	Braden, R. A.	5	McCormick, T. M.	5
Gornick, V.	6	brooks, J. G.	5	McKnight, C. K.	5
Green, K. C.	6	Brooks, M. G.	5	Merriam, S. B.	5
Hasselbring, T. S.	6	Caffarella, E. P.	5	Meyer, B. J. f.	5
Hawkins, J.	6	Chung, J.	5	Miller, J.	5
Heller, R. S.	6	Clement, J.	5	Moore, C. A.	5
Higgins, N.	6	Cole, M. A.	5	Muffoletto, R.	5
Hmelo, C. E.	6	Connelly, F. M.	5	Nichols, R. G.	5
Hord, S. M.	6	Corbin, J.	5	Northrup, P. T.	5
Hunter, B.	6	Crooks, S. M.	5	Oltman, P. K.	5
Kim, Y.	6	Day, J. D.	5	Orey, M. A.	5
Kulhavy, R. W.	6	Dede, C.	5	Ortony, A.	5
Lawless, K. A.	6	Dugdale, S.	5	Pettersson, R.	5
Lin, X.	6	Ellsworth, J. H.	5	Phillips, D. C.	5
Lumsdaine, A. A.	6	Eraut, M.	5	Powell, G. C.	5
McLaughlin, M. W.	6	Farquhar, J. D.	5	Rasmussen, K. L.	5
McLean, R. S.	6	Finn, J. D.	5	Reiber, L. P.	5
Moallem, M.	6	Ford, M.	5	Rezabek, R. H.	5
Mory, E. H.	6	Freitag, E. T.	5	Richards, J. C.	5
Murphy, K. L.	6	Fulford, C. P.	5	Rohwer, W. D. Jr.	5
Negroponte, N. P.	6	Gagne, E. D.	5	Roth, W. M.	5
Patton, M. Q.	6	Garrison, D. R.	5	Rothkopf, E. Z.	5
Peck, K. L.	6	Gentner, D. R.	5	Roychoudhury, A.	5
Perry, J. D.	6	Glynn, S. M.	5	Ryder, M.	5
Pollock, J. C.	6	Goetz, E. T.	5	Schank, R. C.	5
Ravitz, J.	6	Greeno, J. G.	5	Schnackenberg, H. L.	5
Ronning, R. R.	6	Guzdial, M.	5	Schunk, D. H.	5
Rossett, A.	6	Harmon, S. W.	5	Sherry, L.	5

Skinner, B. F.	5	Temiyakarn, C.	5	Visser, J.	5
Snow, R. E.	5	Teslow, J. L.	5	Wood, T.	5
Stanton, N. A.	5	Tobias, S.	5	Yeaman, A. R. J.	5
Stevens, A. L.	5	Torrence, E. p	5	Yin, R. K.	5
Swallow, J.	5	Trollip, S. R.	5	Yinger, R. J.	5
Taylor, R. G.	5	Turoff, M.	5		

Appendix II

Data Subset 1995-1999 Cited Academic Publications with ≥ 5 Citations

Data Subset 1995-1999 Cited Academic Publications

Variable	All Journal Citations N=6,207
ETR&D	317 (5%)
Educational Technology	295
J of Educational Psychology	140
Educational Researcher	104
Review of Educational Research	91
Educational Psychologist	73
J of Computer Based Instruction	71
J of Research On Computers in Education	59
ECTJ	58
Performance Improvement Quarterly	56
J of Instructional Development	53
Contemporary Educational Psychology	49
American Educational Research Journal	48
Performance & Instruction	45
Tech Trends	44
J of Educational Computing Research	40
Educational Leadership	37
American Pscyhologist	34
J of Personality & Social Psychology	34
Instructional Science	33
J of Educational Technology	33
AV Communications Review	32
The American J of Distance Education	32
J of Research in Science Teaching	27
J of Experimental Psychology	23
Psychological Review	22
American J of Distance Education	21
Sex Roles	21
Communications of The ACM	20
J of Edu Multimedia & Hypermedia	20
Canadian J of Edu Communication	19
Computers in Human Behavior	19
Human Factors	19
J of Teacher Education	19
International J of Instructional Media	18
Psychological Bulletin	18
British J of Educational Technology	17

J of Experimental Education	16
Phi Delta Kappan	16
J of Verbal Learning & Verbal Behavior	15
Cognitive Psychology	14
J of Educational Technology Systems	14
The Chronicle of Higher Education	14
Perceptual & Motor Skills	13
Programmed Learning & Edu Technology	13
The Elementary School Journal	13
Computers & Education	12
Computers in The Schools	12
The Computing Teacher	12
Psychological Monographs: General & Applied	11
Psychological Reports	11
Reading Research Quarterly	11
Scienitific American	11
Cognitive Science	10
Focus On Learning Problems in Mathematics	10
Harvard Educational Review	10
J of Communication	10
J of Research in Music Education	10
Training & Development J	10
Canadian J of Psychology	9
Child Development	9
Communication Education	9
J of The American Society of Info Science	9
Memory & Cognition	9
NSPI Journal	9
THE Journal	9
Theory into Practice	9
Audiovisual Instruction	8
Communication Research	8
International J of Educational Research	8
J of Computer Assisted Learning	8
J of Higher Education	8
J of Technology & Teacher Education	8
Orgl Behavior & Human Decision Proc	8
Science	8
Cognition & Instruction	7
Edu & Training Tech Inter Journal	7

Elementary School Journal	7
For The Learning of Mathematics	7
J for Research in Mathematics Education	7
J of Applied Psychology	7
J of Reading Behavior	7
J of Research & Development in Education	7
Medical Education	7
Studies in Art Education	7
Technical Communications: J of The Society for Techl Comm	7
TLC Guide	7
Training	7
Curriculum Inquiry	6
Edu & Psychological Measurement	6
Educational Psychology Review	6
J for The Education of the Gifted	6
J of Agricultural Education	6
J of Computing in Childhood Education	6
J of Computing in Teacher Education	6
J of Curriculum Studies	6
J of Education for Library & Info Science	6
J of Research in Mathematics Education	6
School Science & Mathematics	6
Science Education	6
Teachers College Record	6
The J of the Learning Sciences	6
Written Communication	6
AECT	5
AEDS Journal	5
Behavior & Information Technology	5
British J of Psychology	5
Business Week	5
Computers in Education	5
Ieee Computer	5
Instructional Innovator	5
Interchange	5
International J of Man Machine Studies	5
Internet Research	5
Interpersonal Computing & Technology: An Electronic J for The 21st Century	5

J of Computers in Mathematics & Science Teaching	5
J of General Psychology	5
J of Psychology	5
J of The Learning Sciences	5
Learning & Instruction	5
Review of Research in Education	5
Social Education	5
Teaching & Teacher Education	5
Technology & Learning	5
The American School Board Journal	5
The Reading Teacher	5

Appendix JJ

Data Subset 1990-1994 Cited Reference Works with ≥ 5 Citations

Data Subset 1995-1999 Cited Reference Works

Variable	All Book Citations N=4,444
Instructional Design Theories &Models: An Overview of Their Current Status	33
The Systematic Design of Instruction	30
Principles of Instructional Design	26
Handbook of Research for Educational Communications &Technology	23
Instructional Technology: Past, Present, & Future	23
The Art of Human Computer Interface Design	23
Instructional Designs for Microcomputer Courseware	21
Constructivist Learning Environments: Case Studies in Instructional Design	20
Constructivism &The Technology of Instruction: A Conversation	18
The Conditions of Learning	17
Knowing, Learning, &Instruction: Essays in Honor of Robert Glaser	16
Web Based Instruction	16
Visual Literacy: A Spectrum of Visual Learning	14
Instructional Message Design: Principles from The Behavioral & Cognitive Sciences	13
Instructional Technology: Foundations	13
Mental Models	13
Handbook of Research on Teaching	12
Imagery & Visual Literacy	12
Mind in Society: The Development of Higher Psychological Processes	12
Computers as Cognitive Tools	11
Imagery, Memory &Cognition: Essays in Honor of Allan Paivio	11
Metaphor & Thought	11
Psychology of Learning for Instruction	11
Computers in Education: Social, Political, &Historical Perspectives	10
Handbook of Research on Educational Communications &Technology	10
Self Regulated Learning: From Teaching to Self Reflective Practice	10
Naturalistic Inquiry	9
Review of Research in Education	9

The Discovery of Grounded Theory: Strategies for Qualitative Research	9
The Evolution of American Educational Technology	9
Cognition, Education, & Multimedia: Exploring Ideas in High Technology	8
Context & Consciousness: Activity Theory & Human Computer Interaction	8
Educating the Reflective Practitioner: Toward A New Design for Teaching & Learning in The Professions	8
Instructional Design	8
The Reflective Practitioner: How Professionals Think in Action	8
Vygotsky & Education: Instructional Implications & Applications of Sociohistorical Psychology	8
Designing Hypermedia for Learning	7
Designing the User Interface: Strategies for Effective Human Computer Interaction	7
Instructional Technology: The Definition & Domains of The Field	7
International Encyclopedia of Educational Technology	7
Metaphors We Live By	7
Paradigms Regained: The Uses of Illuminative, Semiotic & Post-Modern Criticism as Modes of Inquiry in Educational Technology	7
Survey of Instructional Development Models with an Annotated Eric Bibliography	7
Designing Environments for Constructive Learning	6
Educational Media & Technology Yearbook	6
Educational Research: An Introduction	6
Global Networks: Computers & International Communication	6
Handbook of Research in Educational Technology	6
Handbook of Research on Mathematics Teaching & Learning	6
Learning Together &Alone: Cooperative, Competitive, & Individualistic Learning	6
New Directions in American Intellectual History	6
Online Education: Perspectives on A New Environment	6
Qualitative Research for Education: An Introduction to Theory &Methods	6
Rousing Minds to Life: Teaching, Learning, & Schooling in A Social Context	6
Strategies for Improving Visual Learning	6
Student Response in Programmed Instruction: A Symposium	6
Teaching for Competence	6
Vygotsky &The Social Formation of Mind	6
A Taxonomy of Educational Objectives	5

Case Methods in Teacher Education	5
Computer Based Instruction: Methods & Development	5
Cooperation &Competition: Theory &Research	5
Cooperative Learning: Theory, Research, & Practice	5
Creating the Nonsexist Classroom: A Multicultural Approach	5
Designing Effective Instruction	5
Distributed Cognition: Psychological & Educational Considerations	5
Electronic Performance Support Systems	5
Flow: The Psychology of Optimal Experience	5
Handbook of Human Performance Technology: A Comprehensive Guide for Analyzing &Solving Performance Problems in Organization	5
Handbook of Individual Differences, Learning, & Instruction	5
Imagery &Verbal Processes	5
Instructional Design Fundamentals: A Reconsideration	5
Intrinsic Motivation: A New Direction in Learning	5
Optimal Experience: Psychological Studies Fo Flow in Consciousness	5
Pedagogy of The Oppressed	5
Protocol Analysis: Verbal Reports as Data	5
Research Issues in The Learning &Teaching of Algebra	5
Self-Regulation of Learning &Performance: Issues &Educational Applications	5
Technopoly: The Surrender of Culture to Technology	5
The Challenge of Problem Based Learning	5
The Children's Machine: Rethinking School in The Age of the Computer	5
The Cognitive Psychology of School Learning	5
The Conditions of Learning &Theory of Instruction	5
The Enlightened Eye: Qualitative Inquiry &The Enhancement of Educational Practice	5
Thought &Language	5
User Centered System Design: New Perspectives on Human Computer Interaction	5

Appendix KK

Data Subset 2000-2004 Cited Authors with $\geq$ 5 Authorships

Data Subset 2000-2004 Most Cited Individual Authors

Variable	All Authors N=9,978				
Jonasson, D. H.	173	Driscoll, M. P.	31	Paas, F. G. W. C.	20
Reiguluth, C. M.	81	CTGV	30	Palinscar, A. S.	20
Mayer, R. E.	80	Palloff, R. M.	30	Tessmer, M.	20
Duffy, T. M.	72	Sullivan, H. J.	30	Ausubel, D. P.	19
Hannafin, M. J.	68	Briggs, L. J.	29	Hara, N.	19
Keller, J. M.	65	Kirschner, P. A.	29	Hmelo, C. E.	19
Gagne, R. M.	61	Murphy, K. L.	29	Lorch, E. P.	19
Dick, W.	60	Ragan, T. J.	29	NCATE	19
Bandura, A.	58	Rogers, E. M.	29	Piaget, J.	19
Collins, A.	54	Rowland, G.	29	Seels, B. B.	19
Clark, R. E.	53	Zimmerman, B. J.	29	Bloom, B. S.	18
Ertmer, P. A.	53	Wager, w. W.	28	Gery, G. J.	18
Wenger, E.	50	Anderson, J. R.	27	Lepper, M. R.	18
Bonk, C. J.	49	Hiltz, S. R.	27	Lorch, R. F. Jr.	18
Moore, M. G.	48	Lave, J.	26	Reiser, R. A.	18
Gunawardena, C. N.	47	Morrison, G. R.	26	Ringstaff, C.	18
Richey, R. C.	47	Norman, D. A.	26	Roblyer, M. D.	18
Sweller, J.	47	Pratt, K. P.	26	Savenye, W. C.	18
Becker, H. J.	45	Duguid, P.	25	Bruner, J. S.	17
Carey, L. M.	42	Garrison, D. R.	25	Cates, W. M.	17
NCES	42	Glaser, R. E.	25	Ely, D. P.	17
Schunk, D. H.	42	Lincoln, Y. S.	24	Feltovich, P. J.	17
Wilson, B. G.	42	Molenda, M. H.	24	Merriam, S. B.	17
Salomon, G.	41	Bransford, J. D.	23	Rieber, L. P.	17
Van Merrienboer, J. J. G.	40	Brown, A. L.	23	Sheingold, K.	17
Brown, J. S.	39	Cifuentes, L.	23	Smaldino, S. E.	17
Dwyer, F. M.	39	Guba, E. G.	23	Spiro, R. J.	17
Kearsley, G.	39	Oliver, R.	23	Strauss, A. L.	17
Hill, J. R.	38	Paivio, A.	23	Winn, W. D.	17
Scardamalia, M.	38	Peck, K. L.	23	Banathy, B. H.	16
Johnson, D. W.	37	Schon, D. A.	23	Campos, M. N.	16
Land, S. M.	37	Schrum, L.	23	Carnevale, D.	16
Berge, Z. L.	36	Sherry, L.	23	Fullan, M. G.	16
Klein, J. D.	36	Barab, S. A.	22	Guzdial, M.	16
Simon, H. A.	36	Collis, B.	22	Khan, B. H.	16
Cornell, R. A.	35	Dwyer, D. C.	22	Novak, J. D.	16
Johnson, R. T.	34	Simonson, M. R.	22	Russell, J. D.	16
Cunningham, D. J.	33	Wedman, j. F.	22	Salas, E.	16
Nielsen, J.	33	Frick, T. W.	21	Sandholtz, J. H.	16
Pintrich, P. R.	33	Grabowski, B. L.	21	Schwen, T. M.	16
Vygotsky, L. S.	33	Gustafson, K. L.	21	Shneiderman, B.	16
Bereiter, C.	32	Perkins, D. N.	21	Spector, J. M.	16
Harasim, L. M.	32	Chandler, P.	20	Collins, M. P.	15
McIsaac, M. S.	32	Dewey, J.	20	Cuban, L.	15
Reeves, T. C.	32	ISTE	20	Hartley, J.	15
Ross, S. M.	32	Knowles, M. S.	20	Heinich, R.	15
Smith, P. L.	32	Merrill, M. D.	20	Koszalka, T. A.	15
Anderson, T.	31	Moreno, R.	20	Kozma, R. B.	15

Moller, L.	15	Martin, B. L.	12	Greene, B. A.	10
Moursund, d.	15	Milheim, W. D.	12	Hall, G. E.	10
Patton, M. Q.	15	Persichitte, K. A.	12	Kirkpatrick, D. L.	10
Perez, R. S.	15	Ritchie, D. C.	12	Kling, R.	10
Soloway, E.	15	Rourke, L.	12	Kulhavy, R. W.	10
US Con, Office of		Savery, J. r.	12	Kulik, C. L. C.	10
Technology Assess	15	Senge, P. M.	12	Larsen, V. A.	10
Archer, W.	14	Slavin, R. E.	12	Lawless, K. A.	10
Barrows, H. S.	14	Stake, R. E.	12	Lewis, L.	10
Brush, T. A.	14	Sternberg, R. J.	12	Lowe, C. A.	10
Chi, M. T. H.	14	White, B. Y.	12	Mager, R. F.	10
Deci, E. L.	14	Anglin, G. J.	11	Marx, R. W.	10
Dweck, C. S.	14	Bannan-Ritland, B.	11	McCombs, B. L.	10
Keegan, D.	14	Bielefeldt, T.	11	Mitchell, S.	10
Kemp, J. E.	14	Butler, R. P.	11	Romiszowski, A. J.	10
Kinzie, M. B.	14	Caffarella, E. P.	11	Ross, E. M.	10
Miles, M. B.	14	Csikszentmihalyi, M.	11	Saba, F. E.	10
Moore, D. M.	14	deVaney-Becker, A.	11	Schank, R. C.	10
Rossett, A.	14	Duchastel, P.	11	Webb, N. M.	10
Ryan, R. M.	14	Edwards, J. E.	11	Barron, A. E.	9
Tripp, S. D.	14	Eisner, E. W.	11	Boling, E.	9
Yin, R. K.	14	Emery, C. D.	11	Branch, R. M.	9
Alessi, S. M.	13	Frederiksen, J. R.	11	Bruckman, A. S.	9
Baylor, A. L.	13	Gardner, H.	11	Carr, C. A.	9
Eastmond, D. V.	13	Herrington, J.	11	Carr-Chellman, A. A.	9
Ericsson, K. A.	13	Hillman, D. C. A.	11	Cobb, P.	9
Jacobson, M. J.	13	Horn, R. E.	11	Cronbach, L. J.	9
Jochems, W. M. G.	13	King, A.	11	Dabbagh, N. H.	9
Krajcik, J. S.	13	Krathwohl, D. R.	11	Darling-Hammond, L.	9
Kreijns, K.	13	Ku, H. Y.	11	Davies, I. K.	9
Kulik, J. A.	13	Lester, J. C.	11	Farris, E.	9
Lang, A.	13	Maehr, M. L.	11	Gilbert, T. F.	9
Mazur, J.	13	Marcinkiewicz, H. R.	11	Green, K. C.	9
NCTM	13	Pajares, F.	11	Hawley, C. L.	9
Quinn, J. B.	13	Riel, M. M.	11	Huberman, A. M.	9
Reeves, B.	13	Saettler, L. P.	11	Julian, M. F.	9
Rosenberg, M. J.	13	Shoffner, M. B.	11	Kalyuga, S.	9
Stolovitch, H. D.	13	Stepien, W. J.	11	Keeps, E. J.	9
Tu, C. H.	13	Vrasidas, C.	11	King, K. S.	9
Turoff, M.	13	Wolcott, L. L.	11	Kinzer, C. K.	9
Wittrock, M. C.	13	Alberg, M.	10	Lane, M. M.	9
Atkinson, R. K.	12	Bichelmeyer, B. A.	10	Lehman, J. D.	9
Blumenfeld, P. C.	12	Brookfield, S. D.	10	Levin, J. R.	9
Dansereau, D. F.	12	Cannon-Bowers, J. A.	10	Magliaro, S. G.	9
Davidson-Shivers, G. V.	12	Cennamo, K. S.	10	Malone, T. W.	9
Dede, C. J.	12	Chickering, A. W.	10	Marzano, R. J.	9
Dueber, B.	12	Coulson, R. L.	10	Mason, R.	9
Engestrom, Y.	12	Creswell, J. W.	10	Muilenburg, L. Y.	9
Gallagher, S. A.	12	Dillon, A.	10	Nelson, L. M.	9
Hadley, M.	12	Ehrmann, S. C.	10	Newman, S. E.	9
Jones, M. G.	12	Freire, P.	10	Oliver, K.	9
Lin, X.	12	Gibbons, A. S.	10	Preece, J.	9
Martens, R. L.	12	Glaser, b. G.	10	Rasmussen, K. L.	9

Raybould, B.	9	Toulmin, S. E.	8	Northrup, P. T.	7
Renkl, A.	9	Trotter, A.	8	Owston, R. D.	7
Sage, S. M.	9	Trueman, M.	8	Papert, S.	7
Schoenfeld, A. H.	9	Visser, Y.	8	Patel, V. L.	7
Schwier, R. A.	9	Wasserman, S.	8	Pridemore, D. R.	7
Shambaugh, R. N.	9	Weinstein, C. E.	8	Reder, L. M.	7
Snow, R. E.	9	Willis, D. J.	8	Rickel, J. W.	7
Teles, L.	9	Alexander, P. A.	7	Robinson, R. S.	7
Trollip, S. R.	9	Ames, C.	7	Rogers, C. R.	7
Twigg, C. A.	9	Anderson-Inman, L.	7	Roschelle, J.	7
USDOE	9	Ayersman, D. J.	7	Rothwell, W. J.	7
Wellman, B.	9	Bishop, M. J.	7	Rumble, G.	7
Willis, J.	9	Campbell, J. P.	7	Saye, J. W.	7
Windschilt, M. A.	9	Carr, S.	7	Sherry, A. C.	7
Witkin, H. A.	9	Carroll, J. M.	7	Shih, Y. D.	7
Adler, P. A.	8	CEO Forum on Edu and		Song, S. H.	7
AECT	8	Technology	7	Stock, W. A.	7
Ajzen, I.	8	Charness, N. H.	7	Strijbos, J. W.	7
Burton, J. K.	8	Clariana, R. B.	7	Swan, K.	7
Carey, J. O.	8	cocking, R. R.	7	Thompson, M. M.	7
Davidson, M. E.	8	Douglas, M.	7	Tsai, M. H.	7
Dempsey, J. V.	8	Dziuban, C. D.	7	USDOE, NTIA	7
Dillon, C. L.	8	Feenberg, A.	7	Waugh, M. L.	7
Estes, F.	8	Fishman, B. J.	7	Wertsch, J. V.	7
Formica, S. W.	8	Fleming, M. L.	7	Willis, B.	7
Garcia, T.	8	Foxon, M.	7	Abrami, P. C.	6
Gay, G.	8	Gick, M. L.	7	Addison, P.	6
Grabinger, R. S.	8	Goldberg, L. R.	7	Albion, P. R.	6
Hall, C.	8	Graham, S. W.	7	Albright, M.	6
Harding, W. M.	8	Hedberg, J.	7	Anderson, R. E.	6
Hirumi, A.	8	Holmberg, B.	7	Baddeley, a. D.	6
Hoffman, B.	8	Holyoak, K. J.	7	Beissner, K. L.	6
Johnson, W. L.	8	Hord, S. M.	7	Berliner, D. C.	6
Kolodner, J. L.	8	Jeong, A.	7	Bernard, R. M.	6
Koschmann, T. D.	8	Johnson, S. D.	7	Borg, W. R.	6
Laurel, B.	8	Kaufman, R. A.	7	Breuleux, A.	6
Levie, W. H.	8	Laferriere, T.	7	Brooks, J. G.	6
Levin, D. S.	8	Laffey, J. T.	7	Bruffee, K. A.	6
Margaryan, A.	8	Lehrer, R.	7	Campbell, D. T.	6
Martinez, M. E.	8	Lohr, L. L.	7	Chiero, R. T.	6
Martinez-Pons, M.	8	Mann, b. L.	7	Chou, C. C.	6
Means, B.	8	McKenzie, J.	7	Clark, D.	6
Moore, J.	8	McLean, R. S.	7	Corbin, J.	6
Muth, R.	8	Middleton, J. A.	7	Corno, L.	6
Nelson, W. A.	8	Midgley, C.	7	Cory, M. D.	6
Oblinger, D. G.	8	Moore, J. A.	7	Dale, E.	6
Pea, R. D.	8	Musser, D.	7	Davidson, G. V.	6
Resnick, L. B.	8	National Commission on		Davis, M.	6
Russell, T. L.	8	Teaching & America's Future		Dennen, V. P.	6
Secules, T. J.	8		7	Denzin, N. K.	6
Smith, K. A.	8	Newby, T. J.	7	Derry, S. J.	6
Stepich, D. A.	8	Newmann, F. M.	7	Dusick, D. M.	6
Thompson, a. D.	8	Noble, D. F.	7	Elliot, e. S.	6

Finn, J. D.	6	Muffoletto, R.	6	Boshuizen, H. P. A.	5
Fishbein, M.	6	Nass, C. I.	6	Boyd, G.	5
Foucault, M.	6	Nelson, C. E.	6	Branch, R. C.	5
Fulford, C. P.	6	Newman, D. R.	6	Brooks, L. W.	5
Gall, J. P.	6	Norman, K. L.	6	Buchanan, T.	5
Garrison, R.	6	Omari, A.	6	Cassidy, S.	5
Glass, G. V.	6	Pan, S.	6	Chase, W. G.	5
Goodrum, D. A.	6	Posner, G. J.	6	Chisholm, W. A.	5
Grabe, C.	6	Pratt, K.	6	Clark, R. C.	5
Groen, G. J.	6	Ravitz, J. L.	6	Cohen, J.	5
Guglielmino, L. M.	6	Reeves, P. M.	6	Cole, M.	5
Guskey, T. R.	6	Rockman, S.	6	Collis, B. A.	5
Hall, B.	6	Rogoff, B.	6	Cooke, A.	5
Hannafin, R. D.	6	Ross, J. A.	6	Cooper, M.	5
Hansen, L.	6	Rossen, S.	6	de Croock, M. B. M.	5
Harmon, S. W.	6	Schaffer, S. P.	6	de Groot, A. D.	5
Harris, J.	6	Schvaneveldt, R. W.	6	de Groot, E. V.	5
Hernandez-Serrano, J.	6	Scriven, M.	6	Dehoney, J.	5
Hlynka, D.	6	Small, R. V.	6	Dias, L. B.	5
Hooper, S.	6	Snyder, D.	6	Dillon, J. T.	5
Howland, J. L.	6	Strike, K. A.	6	Dodge, B. J.	5
Hruskocy, C.	6	Surry, D. W.	6	Don, A.	5
Hung, D.	6	Swallow, J.	6	Dorsey, L. T.	5
Isen, a. M.	6	Tam, M.	6	Drake, L.	5
Kalman, H. K.	6	Tao, Y.	6	Dwyer, H.	5
Kanuka, H.	6	Tinker, R.	6	Fahy, P. J.	5
Kember, D.	6	Torp, L. T.	6	Fairclough, N.	5
Kirby, E. J.	6	Tulving, E.	6	Fennema, E.	5
Kirkley, J.	6	Turkle, S.	6	Fields, D. C.	5
Knuth, R. A.	6	Turner, J. C.	6	Gall, M. D.	5
Ko, S. S.	6	Voss, J. F.	6	Gamson, Z. F.	5
Kodali, S.	6	Wagner, E. D.	6	Gibson, C. C.	5
Koetting, J. R.	6	Weil, M. M.	6	Gibson, J. J.	5
Kulikowich, J. M.	6	Wetzel, K.	6	Gilbert, S. W.	5
Lajoie, S. P.	6	Woodruff, E.	6	Globerson, T.	5
Larkin, J. H.	6	Woods, D.	6	Goodenough, D. R.	5
Leggett, W.	6	Wright, D. L.	6	Goodlad, J. I.	5
Lewis, C.	6	Yeaman, A. R. J.	6	Gowin, D. B.	5
Liu, M.	6	Young, M. F.	6	Grabe, M.	5
Locke, e. a.	6	Zvacek, S. M.	6	Gredler, M. E.	5
Loyd, B. H.	6	Ahern, T. C.	5	Gressard, C. P.	5
Malopinsky, L.	6	Anderson, R. B.	5	Haag, B. B.	5
Maslow, A. H.	6	Angelis, P.	5	Habermas, J.	5
McKeachie, W. J.	6	Apple Classroom of		Hall, R. H.	5
McLuhan, M.	6	Tomorrow	5	Harter, S. P.	5
McMillan, D. W.	6	Barthes, R.	5	Havriluk, M. A.	5
McNergney, R. F.	6	Bates, A. W.	5	Hawkes, M. L.	5
Meece, J. L.	6	Belanger, F.	5	Hedges, L. V.	5
Mehlinger, H. D.	6	Bermudez, A.	5	Henri, F.	5
Meyer, B. J. F.	6	Billig, S. H.	5	Hill, W. H.	5
Miller, G. a.	6	Biner, P. M.	5	Hofstede, G. H.	5
Miller, R. B.	6	Bliss, T.	5	Honey, M.	5
Moore, J. L.	6	Bohlin, R. M.	5	Horton, s.	5

Hung, W. C.	5	Miltiadou, M.	5	Shulman, L. S.	5
IBSTIPI	5	Morris, M. G.	5	Smith, M. U.	5
IHEP	5	Naidu, S.	5	Smith, R.	5
Jacobsen, D. M.	5	Newell, A.	5	Snow, K.	5
Johnson, J. F.	5	Nicholls, J.	5	Song, H. D.	5
Jones, B. F.	5	Norman, G. R.	5	Strudler, N.	5
Jung, I.	5	O'Neil, H. F. Jr.	5	Tavalin, F.	5
Kerr, S. T.	5	Park, O.	5	Tharp, D. D.	5
Kim, H.	5	Peters, O.	5	Thompson, J. C. Jr.	5
Kitsantas, A.	5	Phillips, J. J.	5	Tsai, P. Y.	5
Kruse, K.	5	Phipps, R. A.	5	Tupper, T.	5
Kuutti, K.	5	Pierson, M. E.	5	Turns, J.	5
Lacy, M. J.	5	Plotnick, E.	5	Van der heiden, G.	5
Lebow, D.	5	Pratt, J. A.	5	van Lehn, K.	5
Lee, C.	5	Resnick, M.	5	von Bertalanffy, L. V.	5
Lee, I. S.	5	Rha, I.	5	von Glaserfeld, E.	5
Levin, J. A.	5	Rohrer-Murphy, L.	5	Walsh, S. M.	5
Levin, s. R.	5	Rovai, A. P.	5	Wetzel, C. D.	5
Lin, S. S. J.	5	Rubin, J.	5	Wisher, R. a.	5
Lowther, D. L.	5	Ryder, M.	5	Wlodkowski, R. J.	5
Lowyck, J.	5	Schallert, D. L.	5	Wood, D.	5
Lynch, P. J.	5	Schlosser, c. A.	5	Yacci, M. A.	5
Martin, W. M.	5	Schmidt, H. G.	5	Yildirim, S.	5
McCarthy, M. E.	5	Schommer, M.	5	Yuan, S. M.	5
McLoughlin, C.	5	Schraw, G. J.	5	Zemke, R.	5
McManus, T. F.	5	Segur, R.	5	Ziegahn, L.	5
Mergendoller, J. R.	5	Shaw, E.	5	Zittle, F. J.	5
Mills, S. C.	5	Shrock, S. A.	5		

Appendix LL

Data Subset 2000-2004 Cited Academic Publications with $\geq$ 5 Citations

Data Subset 2000-2004 Cited Academic Publications

Variable	All Journal Citations N=10,152
ETR&D	433
Educational Technology	338
J of Educational Psychology	338
The American J of Dist Edu	157
J of Edu Computing Research	153
J of Research On Computing On Education	144
Performance Improvement Quarterly	138
Review of Educational Res	124
Educational Researcher	122
Educational Psychology	103
Tech Trends for Leaders in Education & Training	100
Instructional Science	98
British J of Educational Tech	84
J of Personality & Social Psy	80
Contemporary Edu Psy	77
J of Research in Sci Teaching	72
Educational Leadership	71
Distance Education	70
International J of Instr Media	67
J of Tech & Teacher Education	65
American Edu Research Journal	58
Computers in Human Beh	52
Online J of Distance Learning Administration	50
The Journal	48
J of Asynchronous Learning Networks	47
J of Educational Multimedia & Hypermedia	46
Communications of The Acm	45
Academic Medicine	43
Performance & Instruction Journal	42
J of Experimental Psychology: Learning, Memory, & Cognition	40
American Psychologist	38
Educational Technology & Society	37
J of Computer Based Instr	37
J of Educational Research	37
Phi Delta Kappan	36
American J of Dist Education	35

Educational Media International	35
ECTJ	34
Cognition & Instruction	33
Cognitive Science	33
Educational Psych Review	32
J of Computer Assisted Learning	32
J of Distance Education	32
Teaching & Teacher Edu	32
Training	32
Change: The Magazine of Higher Learning	31
J of Research On Tech in Edu	31
Learning & Instruction	31
Psychological Review	31
Computers & Education	30
J of Educational Tech Systems	30
Human Factors	28
Computers in The Schools	27
J of Applied Psychology	27
Annual Review of Psychology	26
Human Communications Res	26
J of Experimental Education	26
Learning & Leading with Tech	26
Chronicles of Higher Edu	25
J of Broadcasting & Electronic Media	24
J of Computing in Teacher Edu	24
J of Interactive Learning Res	24
J of The Learning Sciences	24
J of Instructional Dev	23
Training & Development J	23
Behavior & Information Tech	22
Education	22
J of Computer Mediated Communications	22
J of Teacher Education	22
International Review of Research in Open & Dist Learning	21
Quarterly Review of Dist Edu	21
Simulation & Gaming	21
Teachers' College Record	21
Inter J of Educational Telecommunications	20
Reading Research Quarterly	20

J of Instructional Psych	19
Innovations in Education & Training Intrenational	18
Syllabus	18
Australian J of Educational Technology	17
College Teaching	17
Educational & Psychological Neasurement	17
Medical Teacher	17
Science Education	17
Behavior Research Methods, Instruments, & Computers	16
Human Computer Interaction	16
International J of Artifical Intelligence in Education	16
Open Learning	16
Psychological Bulletin	16
Teacher Edu & Special Edu	16
Action in Teacher Education	15
Assessment & Evaluation On Higher Education	15
Communication Education	15
Developmental Psychology	15
Memory & Cognition	15
The Chronicle of Higher Edu	15
The Quarterly Review of Dist Edu	15
Av Communications Review	14
Communication Research	14
Inter J of Human Computer Studies	14
J for The Edu of the Gifted	14
Theory into Practice	14
Applied Cognitive Psychology	13
Cognitive Psychology	13
Converge	13
Interactive Learning Envir	13
J of Community Psychology	13
NASSP Bulletin	13
Social Education	13
American J of Education	12
American J of Physics	12
Contemporary Education	12
Educom Review	12
Internet & Higher Education	12
J of Chemical Education	12

J of Computing in Higher Edu	12
J of Management Info Systems	12
J of Reading Behavior	12
New Dir for Teaching & Learning	12
Canadian J of Edu Communication	11
International J of Edu Research	11
J of Counseling Psychology	11
Community College J of Research & Practice	10
Computers & Composition	10
Computers in Education	10
Educause Quarterly	10
Eric Digest	10
J of Staff Development	10
J of Verbal Learning & Verbal Behavior	10
Personality & Social Psych Bulletin	10
Teacher Education Quarterly	10
The Elementary School Journal	10
The J of the Learning Sciences	10
Adult Education Quarterly	9
Assessment in Education: Principles, Policy, & Practice	9
Child Development	9
College Student Journal	9
Computer in Human Behavior	9
Educational Research	9
Harvard Business Review	9
International J of Sci Edu	9
J of Communication	9
J of Computers in Mathematics & Science Teaching	9
J of Education for Business	9
J of Geography	9
J of Inst Delivery Systems	9
J of Special Education Tech	9
Library Trends	9
Multimedia Schools	9
Teaching in Psychology	9
The Computing Teacher	9
The Information Society	9
The J of Educational Research	9
Academy of Management Journal	8

Audiovisual Instruction	8
Connections	8
Education Week	8
Edu Evaluation & Policy Analysis	8
Educause Review	8
Ieee Transactions On Edu	8
International J of Edu Tech	8
Interpersonal Computing & Technology: An Electronic J for The 21st Century	8
J of Adolescent & Adult Lit	8
J of Applied Behavior Analysis	8
J of Higher Education	8
J of Industrial Teacher Edu	8
J of Info Tech for Teacher Edu	8
J of Vocational Behavior	8
Psychological Science	8
School Science & Mathematics	8
Technical Communications	8
Technology & Learning	8
Technology Source	8
The Physics Teacher	8
Training Research Journal	8
User Modeling & User Adapted Interaction	8
Adult Learning	7
American J of Sociology	7
Community College Review	7
Current Issues in Education	7
Edu Policy Analysis Archives	7
Elementary School Journal	7
First Monday	7
Harvard Educational Review	7
Interactive Multimedia Electronic J of Computer Enhanced Learning	7
J of Advanced Nursing	7
J of College Student Dev	7
J of Computing in Childhood Edu	7
J of Computing Research	7
J of Counseling & Development	7
J of Curriculum Studies	7
J of Learning Disabilities	7

J of Management Development	7
J of Organizational Behavior	7
J of Science Education & Tehcnology	7
J of The American Statistical Association	7
New Dir for Adult & Continuing Edu	7
Reading Research & Instruction	7
Remedial & Special Education	7
Science	7
Small Group Research	7
Social Sci Computer Review	7
Asynchronous Learning Networks Magazine	6
British J of Psychology	6
Cade: J of Distance Education	6
College Composition & Communication	6
Computer & Education	6
Higher Education	6
Ieee Computer	6
International J of Human Computer Interaction	6
Int J of Man Machine Studies	6
J of Continuing Higher Edu	6
J of Learning Sciences	6
J of Management Education	6
J of The American Society for Info Science	6
Library Journal	6
Medical Education	6
Motivation & Emotion	6
Psychological Reports	6
Review of Research in Edu	6
Roeper Review	6
School Library Journal	6
Social Cognition	6
Teaching at A Distance	6
Teaching in Higher Education	6
Vision Research	6
Academy of Mgmt Review	5
Acm Transactions On Information Systems	5
Administrative Sci Quarterly	5
American Educator	5
American Society of Information Science Journal	5
American Sociological Review	5

Association for Educational Data Systems Journal	5
Design Studies	5
Educational & Training Technology International	5
Edu Media & Tech Yearbook	5
Edu Studies in Mathematics	5
Elearning Magazine	5
Electronic Learning	5
Evaluation Quarterly	5
Health Psychology	5
JALN	5
J of Educational Technology	5
J of General Psychology	5
J of Marketing Education	5
J of Personalized Instruction	5
J of Speech & Hearing Res	5
J of The American Society for Info Society	5
Library & Info Science Research	5
Military Psychology	5
Mis Quarterly	5
Organization	5
Peabody J of Education	5
Perceptual & Motor Skills	5
Public Opinion Quarterly	5
Quarterly J of Experimental Psychology	5
Reading & Writing Quarterly: Overcoming Learning Disabilities	5
Research Quarterly for Exercise & Sport	5
School Lib Media Quarterly	5
Strategic Change	5
Teaching & Learning Medicine	5
Technology Review	5
Tesol Journal	5
Text	5
The Internet & Higher Edu	5
The J of Continuing Higher Edu	5
The Social Studies	5
Theory & Research in Social Education	5
USA Today	5

Appendix MM

Data Subset 2000-2004 Cited Reference Works with $\geq$ 5 Citations

Data Subset 2000-2004 Cited Reference Works

Variable	All Book Citations N=7,206
Handbook of Research in educational Communications & Technology	133
Web Based Instruction	73
Instructional Design Theories & Models: A New Paradigm of Instructional Theory	66
Electronic Collaborators: Learner Centered Technologies for Literacy, Apprenticeship, & Discourse	49
Instructional Design Theories & Models: A Overview of Their Current Status	47
The Systematic Design of Instruction	44
Instructional Design Competencies: The Standards	42
Building Learning Communitites in Cyberspace: Effective Strategies for The Online Classroom	36
Principles of Instructional Design	36
Theoretical Foundations of Learning Environments	27
Diffusions of Innovations	26
Distance Education: A System's View	26
H&Book of Qualitative Research	24
Mind in Society: The Development of Higher Psychological Processes	24
Design Approaches & Tools in Education & Training	22
Self Regulated Learning: From Teaching to Self Reflective Practice	22
Situated Learning: Legitimate Peripheral Participation	22
The Conditions of Learning & Theory of Instruction	21
H&Book of Human Performance Technology: A Comprehensive Guide for Analyzing & Solving Performance Problems in Organizations	20
Constructivist Learning Environments: Case Studies in Instructional Design	19
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The Invisible Computer: Why Good Products Can Fail, The Personal	5
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The Uses of Argument	5

Appendix NN

Data Subset 2005-2009 Cited Authors with $\geq$ 5 Authorships

Data Subset 2005-2009 Most Cited Individual Authors

Variable	All Authors N=9,301				
Jonassen, D. H.	133	Lave, J.	27	Hiltz, S. R.	18
Mayer, R. E.	96	Palloff, r. M.	27	Kolodner, J. L.	18
Garrison, D. R.	88	Reeves, T. C.	27	Salmon, G.	18
Anderson, T.	81	Schon, D. A.	27	Shea, P. J.	18
Ertmer, P. A.	62	Engestrom, Y.	26	Strauss, A. L.	18
Sweller, J.	60	Ifenthaler, D.	25	Tessmer, M. A.	18
Reigeluth, C. M.	56	Becker, H. J.	24	Creswell, J. W.	17
Archer, W.	54	Brown, A. L.	24	CTGV	17
Hannafin, M. J.	51	Dennen, V. P.	24	Grabowski, B. L.	17
Bandura, A.	49	Moore, M. G.	24	ISTE	17
Keller, J. M.	49	Paas, F. G. W. C.	24	Krajcik, J. S.	17
Pintrich, P. R.	48	Duguid, P.	23	McKenney, S.	17
Schunk, D. H.	48	Seel, N. M.	23	Merriam, S. B.	17
Wenger, E. C.	48	Dwyer, F. M.	22	NCES	17
Bonk, C. J.	46	Yin, R. K.	22	Norman, D. A.	17
Duffy, T. M.	45	Baylor, A. L.	21	Paivio, A.	17
Klein, J. D.	43	Cuban, L.	21	Richardson, J. C.	17
Vygotsky, L. S.	42	Kang, M.	21	Rowland, G.	17
Moreno, R.	40	Cifuentes, L.	20	Scardamalia, M.	17
Gunawardena, C. N.	38	Clark, R. E.	20	Simon, H. A.	17
Brown, J. S.	37	Cunningham, D. J.	20	slavin, r. E.	17
Zimmerman, B. J.	37	Dick, W.	20	Squire, K. D.	17
Bruner, J. S.	36	Gee, J. P.	20	Sullivan, H. J.	17
Bransford, J. D.	34	Huberman, A. M.	20	Arbaugh, J. B.	16
Collins, A.	34	Kirschner, P. A.	20	Bloom, B. S.	16
Land, S. M.	34	Miles, M. B.	20	Feltovich, P. J.	16
Richey, R. C.	32	Spiro, R. J.	20	Harasim, L.	16
Rieber, L. P.	32	Hara, N.	19	Kearsley, G.	16
Van Merrienboer, J. J. G.	32	Hmelo-Silver, C. E.	19	Kitsantas, A.	16
Frick, T. W.	31	Newby, T. J.	19	McIsaac, M. S.	16
Johnson, D. W.	30	Oliver, R.	19	Soloway, E.	16
Barab, S. A.	29	Prensky, M.	19	Wedman, J. F.	16
Driscoll, M. P.	29	Reiser, R. A.	19	Brush, T. A.	15
Johnson, R. T.	29	spector, J. M.	19	Guba, E. G.	15
Dewey, J.	28	Swan, K. S.	19	Hegarty, M.	15
Pratt, K.	28	van den Akker, J. J. H.	19	Herrington, J.	15
Rourke, L.	28	Anderson, J. R.	18	Lehman, J. D.	15
Wilson, B. G.	28	Berge, Z. L.	18	Lincoln, Y. S.	15
Gagne, R. M.	27	Chandler, P.	18	Lowenthal, P. R.	15
				Oliver, K. M.	15

Patton, M. Q.	15	Yoshie, M.	12	Wertsch, J. V.	10
Rovai, A. P.	15	Allen, J.	11	Winne, P. H.	10
USDOE	15	Carr-Chellman, A. A.	11	Young, D. B.	10
Zhao, Y.	15	Cocking, R. R.	11	Branch, R. M.	9
Carey, L. M.	14	Doering, A. H.	11	Butler, D. L.	9
Hill, J. R.	14	Kolb, D. A.	11	Chi, M. T. H.	9
Kirkley, J. R.	14	Koszalka, T. A.	11	Corbin, J. M.	9
Lester, J. C.	14	Kozma, R. B.	11	Davis, F. D.	9
Liu, M.	14	Krathwohl, D. R.	11	Derry, S. J.	9
Molenda, M.	14	Martinez-Pons, M.	11	Garcia, T.	9
Papert, S.	14	Marx, R. W.	11	Gardner, H.	9
Pirney-Dummer, P.	14	Nieveen, N. M.	11	Gefen, D.	9
Roblyer, M. D.	14	Schank, R. C.	11	Glaser, R.	9
Rogers, E. M.	14	Seaman, J.	11	Gorham, J. S.	9
Straub, D. W.	14	Thompson, K. R.	11	Greene, B. A.	9
Venkatesh, V.	14	Visscher-Voerman,		Guzdial, M.	9
Ausubel, D. P.	13	J. I. A.	11	Haugland, S. W.	9
Barrows, H. S.	13	Williams, D. C.	11	Holton, E. F. III	9
Bereiter, C.	13	Blumenfeld, P. C.	10	Jacobson, M. J.	9
Dede, C.	13	Carey, J. O.	10	Jones, M. G.	9
Elen, J.	13	Clarebout, G.	10	Kaner, C.	9
Ge, X.	13	Corno, L.	10	Kanuka, H.	9
Glaser, B. G.	13	Coulson, R. L.	10	Kember, D.	9
Gustafson, K. L.	13	Deci, E. L.	10	Kintsch, W. A.	9
Hooper, S. R.	13	Dempsey, J. V.	10	Knowles, M. S.	9
Ma, Y.	13	Fusco, J.	10	Lewis, L.	9
Merrill, M. D.	13	Graham, C. R.	10	Lim, C. P.	9
Rossett, A.	13	Hsieh, Y. C.	10	Lowther, D. L.	9
Savery, J. R.	13	Hung, D.	10	Marra, R. M.	9
Schraw, G. J.	13	Kinzie, M. B.	10	Mason, R.	9
Stake, R. E.	13	Ku, H. Y.	10	NRC	9
Azevedo, R.	12	Lan, W. Y.	10	Park, O.	9
Cleveland-Innes, M.	12	Lee, J.	10	Pea, R. D.	9
Collis, B.	12	Ley, K.	10	Pickett, A. M.	9
Davis, E. A.	12	Lowe, C. A.	10	Ritea, S.	9
Lee, S. H.	12	McLoughlin, C.	10	Rohrer-Murphy, L.	9
McKeachie, W. J.	12	Mumford, M. D.	10	Ross, S. M.	9
Mishra, P.	12	NCATE	10	Ryan, R. M.	9
Parrish, P. E.	12	Nelson, W. A.	10	Savenye, W. C.	9
Piaget, J.	12	Nielsen, J.	10	Schwartz, D. L.	9
Russell, J. D.	12	Novak, J. D.	10	Senge, P. M.	9
Schwier, R. a.	12	Perkins, D. n.	10	Shulman, L. S.	9
Song, S. H.	12	Rosenberg, M. J.	10	Smith, P. L.	9
Stepich, D. A.	12	Schlager, M. S.	10	Visser, J. A.	9

Vye, N. J.	9	Sternberg, R. J.	8	Resnick, M.	7
Warschauer, M. K.	9	Strudler, N. B.	8	Roschelle, J.	7
Winn, W. D.	9	van Manen, M.	8	Rothwell, W. J.	7
Baddeley, A. D.	8	Wlodkowski, R. J.	8	Russell, M.	7
Barbour, M. K.	8	Wood, D.	8	Salomon, G.	7
Barrett, H. C.	8	Aldrich, C.	7	Saye, J. W.	7
Bichelmeyer, B. A.	8	Alessi, S. M.	7	Schrum, L.	7
Biggs, J. B.	8	Atkinson, R. K.	7	smith, D. A. F.	7
Cates, W. M.	8	Berliner, D. C.	7	Tripp, S. D.	7
Christensen, R.	8	Boud, D.	7	Trollip, S. R.	7
Cohen, J.	8	Brewer, S. A.	7	Tu, C. H.	7
Csikszentmihalyi, M.	8	Campbell, K.	7	Wager, W. W.	7
Dziuban, C. D.	8	Chen, C. H.	7	Weinstein, C. E.	7
ericsson, K. A.	8	Choi, I.	7	Wisher, R. A.	7
Flavell, J. H.	8	Clandinin, D. J.	7	Wittrock, M. C.	7
Graham, S. W.	8	Clark, R. C.	7	Young, J. R.	7
Harmon, S. W.	8	Crawford, C. M.	7	Zittle, F. J.	7
Henri, F.	8	Davis, N. E.	7	Banathy, B. H.	6
Hofer, B. K.	8	Dunlap, J. C.	7	Bannan-Ritland, B.	6
Howland, J.	8	Emery, C. D.	7	Barker, P.	6
Johnson, L. F.	8	Gannon-cook, R.	7	Barron, B. J. S.	6
Johnson, S. D.	8	Gay, G.	7	Baughman, W. A.	6
Johnson, T. E.	8	Gentner, D.	7	Brown, R.	6
Kirkpatrick, D. L.	8	Glazewski, K. D.	7	Bull, G.	6
Kling, R.	8	Graesser, A. C.	7	Cagiltay, K.	6
Knezek, G.	8	Gredler, M. E.	7	Campos, M. N.	6
Koehler, M. J.	8	Hidi, S.	7	Carr, C.	6
Kuutti, K.	8	Higgins, C. A.	7	Chin, W. W.	6
Leont'ev, A. N.	8	Hughes, J. E.	7	Christie, B.	6
Malone, T. W.	8	Kenny, R. F.	7	Chyung, S. Y.	6
McFarlane, A.	8	Kriz, S.	7	Clements, D. H.	6
Moore, D. M.	8	Lajoie, S. P.	7	Collins, M. P.	6
Morrison, G. R.	8	Large, A.	7	Connelly, F. M.	6
Pascarella, E. T.	8	Linn, m. C.	7	Cooper, S.	6
Perez, R. S.	8	Liu, X.	7	Corry, M. D.	6
Ragan, T. J.	8	Mezirow, J.	7	Craig, S. D.	6
Reiser, B. J.	8	Moore, J. A.	7	Davenport, T. H.	6
Renkl, A.	8	Nonaka, I.	7	DBRC	6
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Sandoval, W. A.	8	Pedersen, S.	7	Dickey, M. D.	6
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Shavelson, R. J.	8	Puntambekar, S.	7	Dreyfus, H. L.	6
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Murphy, K. L.	6	Baek, Y. K.	5	Gittleman, s. S.	5
Myers, R. J.	6	Bates, A. W.	5	Gravemeijer, K.	5
NCTM	6	Bebell, D.	5	Greeno, J. G.	5
Nelson, L. M.	6	Bell, B. S.	5	Grove, K.	5
Niederhauser, D. S.	6	Bernard, R. M.	5	Hansen, L.	5
Onwuegbuzie, A. J.	6	Bielaczyc, K.	5	Harris, K. R.	5
Oughton, J. M.	6	Black, P.	5	Heidegger, M.	5
Pajares, F.	6	Boekaerts, M	5	Hernandez-Serrano, J.	5
Parker, A.	6	Bong, M.	5	Hew, K. F.	5
Peck, K. L.	6	Bourdieu, P.	5	Hickey, D. T.	5
Pellegrino, J. W.	6	Briggs, L. J.	5	Hoffman, E. S.	5
Persichitte, K. A.	6	Brophy, S.	5	Hokanson, B.	5
Phillips, D. C.	6	Brown, C. A.	5	Holmberg, B.	5
Pirolli, P.	6	Caine, G.	5	Holum, A.	5
Ravitz, J. L.	6	Caine, R. N.	5	Jefferson, G.	5
Reed, W. M.	6	Catrambone, R.	5	Jehng, J. C.	5

Jenkins, H.	5	Newman, S. E.	5	Szabo, M.	5
Joyce, B.	5	NTIA	5	Takeuchi, H.	5
Kalyuga, S.	5	Palincsar, A. S.	5	Teles, L.	5
Kasper, G.	5	Pan, C. C.	5	Thiagarajan, S.	5
Ketelhut, D. J.	5	Park, S.	5	Thomas, J. A.	5
Kidwai, K.	5	Peck, C. P.	5	Thomas, M. K.	5
King, A.	5	Pekrun, R.	5	Thompson, A.	5
Ko, S.	5	Pershing, J. A.	5	Torrance, E. P.	5
Krueger, K.	5	Philleo, T.	5	Towne, L.	5
Kuh, G. D.	5	Picciano, A. G.	5	Tractinsky, N.	5
Kuhl, J.	5	Plass, J. L.	5	Tsai, C. C.	5
Lamberski, R. J.	5	Plomp, T. J.	5	Tulving, E.	5
Lambert, J.	5	Prejean, L.	5	Turoff, M.	5
Lane, M.	5	Procee, H.	5	Uribe, D.	5
Latchem, C.	5	Pugh, K. J.	5	US Congress Office of	
Le Maistre, C.	5	Rasmussen, K. L.	5	Tech Assessment	5
Lee, C.	5	Richardson, V.	5	Veletsianos, G.	5
Lenhart, A.	5	Riel, M. M.	5	von Bertalanffy, L.	5
Lepper, M. R.	5	Robinson, J. C.	5	von Glasersfeld, E.	5
Li, C. S.	5	Ronning, R. R.	5	Walker, D.	5
Lim, D. H.	5	Ropp, M. M.	5	Wallen, N. E.	5
Lucassen, B. A.	5	Rossen, S.	5	Whipp, J. L.	5
Lundeberg, M. A.	5	Sacks, H.	5	White, J. W.	5
McCombs, B. L.	5	Sage, S. M.	5	William, D.	5
Miltiadou, M.	5	Schank, P.	5	Willis, E. M.	5
Mioduser, D.	5	Shaw, S. M.	5	Willis, J.	5
Moore, A.	5	Smith, D.	5	Wilson, P. L.	5
Moore, J. L.	5	Smith, R.	5	Woods, D.	5
Morris, M. G.	5	Snyder, W. M.	5	Yildirim, S.	5
Murphy, D.	5	Su, B.	5	Zhang, K.	5
Mutlu, M. E.	5	supinski, E. P.	5		
Nardi, B. A.	5	Swan, K. P.	5		

Appendix OO

Data Subset 2005-2009 Cited Academic Publications with ≥ 5 Citations

Data Subset 2005-2009 Cited Academic Publications

Variable	All Journal Citations N=9,813
ETR&D	321 (3%)
J of Educational Psychology	124
Educational Technology	117
J of Educational Computing Research	91
Educational Researcher	84
Review of Educational Research	78
Performance Improvement Quarterly	76
J of Technology & Teacher Education	72
Educational Psychologist	68
British J of Educational Technology	65
Tech Trends	65
J of Research On Computing in Education	62
J of Asynchronous Learning Networks	59
Instructional Science	57
American Educational Research Journal	56
American J of Distance Education	55
Educational Psychology Review	54
The American J of Distance Education	41
Distance Education	40
J of Computer Assisted Learning	40
Computers & Education	39
J of Research On Technology in Edu	39
Computers in Human Behavior	38
J of The Learning Sciences	38
Contemporary Educational Psychology	37
J of Edu Multimedia & Hypermedia	35
International J of Instructional Media	34
Cognition & Instruction	30
Cognition & Instruction	30
Cognitive Science	27
J of Educational Technology	27
Educational Leadership	26
J of Distance Education	26
Educational Technology & Society	25
J of Research in Science Teaching	25
MIS Quarterly	25
Communication Education	24

J of Computer Based Instruction	24
Learning & Instruction	24
American Psychologist	23
Internet & Higher Education	23
J of Educational Research	22
J of Experimental Psychology	22
Creativity Research J	21
J of Applied Psychology	21
Teachers' College Record	21
The Internet & Higher Education	21
Psychological Review	20
International Review of Research in Open & Distance Learning	19
Quarterly Review of Dis Education	19
Teaching & Teacher Education	19
Teaching of Psychology	19
J of Computing in Teacher Education	18
J of Experimental Education	18
J of Teacher Education	18
Training	18
Training & Development J	18
Computers in The Schools	17
New Directions for Teaching & Learning	17
International J of Human Computer Studies	16
J of Interactive Learning Research	16
J of Personality & Social Psychology	16
Phi Delta Kappan	16
Australian J of Educational Technology	15
Educause Review	15
Innovations in Education & Training International	15
International J of Edu Research	15
International J of Science Education	15
J of Educational Technology Systems	15
Performance & Instruction J	15
The Chronicle of Higher Educaton	15
Educational Media International	14
J of Instructional Development	14
Learning & Leading with Technology	14
Online J of Dis Learning Adminstration	14
Science Education	14

THE Journal	14
Contemporary Issues in Technology & Teacher Education	13
J of Instructional Psychology	13
Information Systems Research	12
Open Learning: The J of Open & Distance Learning	12
College Teaching	11
Acadmey of Management Review	10
Adult Educaton Quarterly	10
Decision Sciences in The J of Innovative Education	10
Education	10
J of Higher Education	10
Management Science	10
Simulation & Gaming	10
Applied Cognitive Psychology	9
Assessment & Evaluation in Higher Edu	9
Communications of The Acm	9
Human Resource Dev Quarterly	9
International J of Artificial Intelligence in Education	9
International J of Educational Telecommunications	9
International J On Elearning	9
J of Learning Sciences	9
Personnel Psychology	9
Technology & Learning Magazine	9
The Quarterly Review of Distance Edu	9
Behavior, Research Methods, Instruments, & Computers	8
Cyberpsychology & Behavior	8
Edu & Psychological Measurement	8
Educational Psychology	8
Human Factors	8
International J of Edu Technology	8
J of Computers in Mathematics & Science Teaching	8
J of Computing in Childhood Education	8
J of Curriculum Studies	8
J of Verbal Learning & Verbal Behavior	8
Language Learning & Technology	8
The Modern Language Journal	8
Business Communication Quarterly	7
ECTJ	7
Harvard Business Review	7

Information Technology & Disabilities	7
Innovate: J of Online Education	7
J of Computer Mediated Communication	7
J of Educational Information & Media	7
J of Management Information Systems	7
J of Vocational Education & Training	7
Turkish Online J of Distance Education	7
Action in Teacher Education	6
American J of Education	6
Assessment in Education: Principles, Policy & Practice	6
Behavior & Information Technology	6
Cognitive Psychology	6
Community College Review	6
Early Childhood Education Journal	6
Education Week	6
Educational Technology Review	6
European J of Psychology of Education	6
First Monday	6
Foreign Language Annals	6
Harvard Educational Review	6
Ieee Transactions On Prof Comm	6
Information & Management	6
J of Education for Business	6
Memory & Cognition	6
Mind, Culture, & Activity	6
Review of Research in Education	6
Scientific Inquiry Journal	6
Teacher Education Quarterly	6
Tesol Quarterly	6
Theory into Practice	6
AACE Journal	5
American Educator	5
Annual Review of Psychology	5
Chronicle of Higher Education	5
Community College J of Research & Practice	5
Curriculum Inquiry	5
Educational Studies in Mathematics	5
Educause Quarterly	5
Higher Education Research & Dev Society of Australasian Newsletter	5

Human Development	5
Information Technology in Childhood Education	5
Annual	
Interfaces	5
J of Applied Social Psychology	5
J of Child Psychology & Psychiatry	5
J of Computing in Higher Education	5
J of Counseling Psychology	5
J of Educational Media	5
J of Social Psychology	5
J of Staff Development	5
J of Vocational Behavior	5
Nurse Education Today	5
Org Behavior & Human Decision Processes	5
Personality & Social Psy Bulletin	5
Psychology Bulletin	5
Reading Research Quarterly	5
Research in Higher Educaton	5
School Science & Mathematics	5
Science	5
Soviet Psychology	5
Teacher Education & Speical Education	5

Appendix PP

Data Subset 2005-2009 Cited Reference Works with $\geq$ 5 Citations

Data Subset 2005-2009 Most Cited Reference Works Determined by Frequency

Variable	All Book Citations N=5,613
Handbook of Research in Educational Communications and Technology	62
Instructional Design Theories and Models: A New Paradigm of Instructional Theory	60
Self-Regulated Learning: From Teaching to Self-Reflective Practice	27
Mind in Society: The Development to Higher Psychological Processes	26
Situated Learning: Legitimate Peripheral Participation	23
Case Study Research: Design and Methods	21
HandbookoOf Distance Education	20
Trends and Issues in Instructional Design and Technology	19
Educational Media and Technology Yearbook	17
Psychology of Learning for Instruction	17
The Reflective Practitioner: How Professionals Think in Action	15
Building Learning Communities in Cyberspace: The Reality of Online Teaching	14
Qualitative Research and Case Study Applications in Education	14
Social Foundations of Thought and Action: A Social Cognitive Theory	14
The Conditions of Learning	14
The Systematic Design of Instruction	14
Constructivist Learning Environments: Case Studies in Instructional Design	13
Diffusion of Innovations	13
Handbook of Self-Regulation	13
Communities of Practice: Creating Learning Environments for Educators	12
Naturalistic Inquiry	12
Theoretical Foundations of Learning Environments	12
Cognition, Education and Multimedia: Exploring Ideas in High Technology	11
Constructivism and The Technology of Instruction: A Conversation	11
Educational Design Research	11
Electronic Collaborators: Learner Centered Technologies for Literacy Apprenticeship, And Discourse	11
Instructional Technology: Past, Present, And Future	11
Computers as Mindtools for Schools: Engaging Critical Thinking	10
Digital Game-Based Learning	10
How People Learn: Brain, Mind, Experience, And School	10

Learning Theories: An Educational Perspective	10
Multimedia Learning	10
Perspectives on Activity Theory	10
Qualitative Data Analysis: An Expanded Sourcebook	10
Qualitative Research and Evaluation Methods	10
Taxonomy of Educational Objectives	10
The Discovery of Grounded Theory: Strategies for Qualitative Research	10
What Video Games Must Teach Us About Learning and Literacy	10
Distance Education: A System View	9
Distributed Cognitions: Psychological and Educational Considerations	9
Instructional Design Theories and Models: An Overview of Their Status	9
Qualitative Inquiry and Research Design: Choosing Among Five Traditions	9
The Cambridge Handbook of Multimedia Learning	9
Web Based Instruction: What It Is and Why Is It?	9
Educating the Reflective Practitioner: Toward A New Design for Teaching and Learning in The Professions	8
Experimental Learning: Experience as The Source of Learning and Development	8
Handbook of Qualitative Research	8
How We Think: A Restatement of the Relation of Reflective Thinking to The Educative Process	8
Instructional Design	8
Mental Representations: A Dual Coding Approach	8
Self-Efficacy: The Exercise of Control	8
Self-Regulated Learning and Academic Achievement: Theoretical Perspectives	8
The Culture of Education	8
Handbook of Human Performance Technology: Improving Individual and Organizational Performance Worldwide`	7
Learning by Expanding: An Activity Theoretical Approach to Developmental Research	7
Learning to Solve Problems with Technology: A Constructivist Perspective	7
Statistical Power Analysis for The Behavioral Sciences	7
Teaching and Learning Online: Pedagogies for New Technologies	7
The Fifth Disciplines: The Art and Practice of the Learning Organization	7
Thought and Language	7

Acts of Meaning	6
Collaborative Learning Through Computer Conference: The Najaden Papers	6
HandbookoOf Research on Teacher Education	6
Knowing, Learning, And Instruction: Essays in Honor of Robert Glaser	6
Motivation in Education: Theory, Research, And Applications	6
Online Collaborative Learning: Theory and Practice	6
Research Design: Qualitative, Quantitative, And Mixed Methods Approaches	6
Task Analysis Methods for Instructional Design	6
The Art of Case Study Research	6
The Social Psychology of Telecommunications	6
A Taxonomy for Learning, Teaching, And Assessing: A Revision of Bloom's Taxonomy of Educational Objectives	5
Actual Minds, Possible Worlds	5
Basics of Qualitative Research: Grounded Theory Procedures and Techniques	5
Cognition and Instruction: Twenty-Five Years of Progress	5
Cognitive Psychology and Instruction	5
Constructivism in Education	5
Context and Consciousness: Activity Theory and Human Computer Interaction	5
Cooperative Learning: Theory, Research, And Practice	5
Democracy and Education	5
Design and Development Research: Methods, Strategies, And Issues	5
E Moderating: The Key to Teaching and Learning Online	5
Educating the Net Generation	5
E-Learning in the 21st Century: A Framework for Research and Practice	5
Elements of Quality Online Education, Practice and Direction	5
Emoderating: The Key to Teaching and Learning Online	5
Emotional Design: Why We Love or Hate Everyday Things	5
Engaged Learning with Emerging Technologies	5
Enhancing Adult Motivation to Learn: A Comprehensive Guide for Teaching All Adults	5
Experience and Education	5
How to Design and Evaluate Research in Education	5
Instructional Technology for Teaching and Learning: Designing Instruction, Integrating Computers, And Using Media	5
Instructional Technology: Foundations	5

Learning Together Online: Research on Asynchronous Learing Networks	5
Meaningful Learning Using Technology: What Educators Need to Know and Do	5
Older Adults, Health Information, And The World Wide Web	5
Principles of Instructional Design	5
Problem Based Learning: A Research Perspective on Learning Interactions	5
Qualitative Data Analysis: A Sourcebook of New Methods	5
Researching Lived Experience: Human Science for an Action Sensitive Pedagogy	5
Self Regulation of Learning and Performance; Issues and Educational Applications	5
Social Learning Theory	5
The Psychology of Learning and Motivation	5
The Role of Interest in Learning and Devleopment	5
Theory and Practice of Online Learning	5
Transformative Dimensions of Adult Learning	5
Trends in General Systems Theory	5