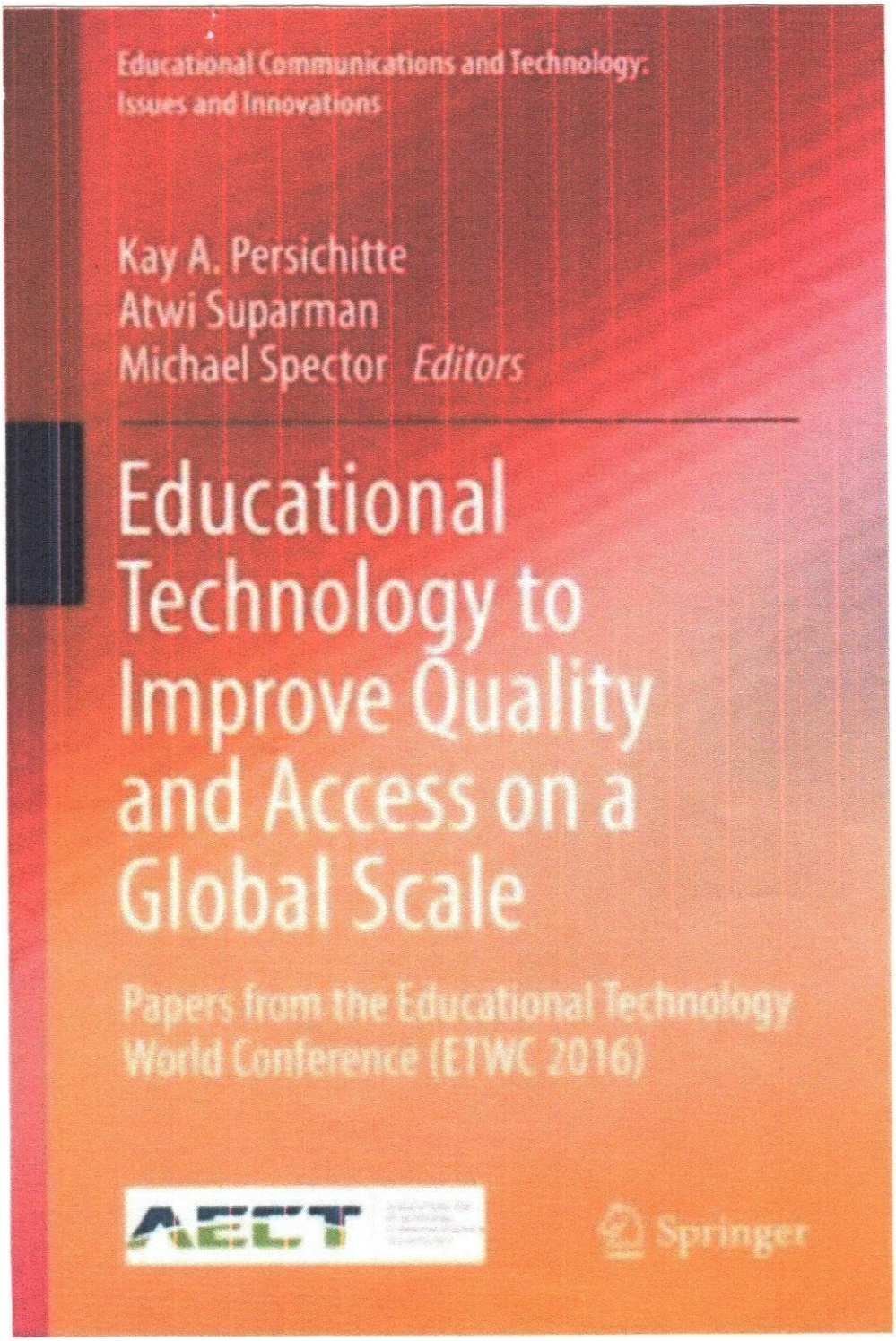
Educational Communications and Technology: Issues and Innovations
Kay A. Persichitte
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Educational Technology to Improve Quality and Access on a Global Scale
Papers from the Educational Technology World Conference (ETWC 2016)
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August 3, 2017

To Whom It May Concern,

Please accept this letter acknowledging a chapter in press in the book, *Educational Technology to Improve Quality and Access on a Global Scale*. I am the Lead Co-Editor of this peer-reviewed volume which is under production and typesetting at this time by Springer Publishing.

Benny Agus Pribadi is the author of Chapter 21 titled, *Use of the Concept Mapping Strategy to Improve Academic Writing.*

Sincerely,

Kay A. Persichitte

Kay A. Persichitte, Ph.D.
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Dear **Authors – Benny A. Pribadi**

My name is **E.Catherine** and I am a project manager at **SPi Global**, based in **Puducherry, India** who will be handling the production of the book, **Educational Technology to Improve Quality and Access on a Global Scale**, on behalf of Springer. I will be your main production contact and will oversee the production of the text of your chapter from manuscript to final print and online files.

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Preface

From July 31 through August 3, 2016, scholars and students from the field of Educational Technology around the globe gathered in Sanur, Bali, Indonesia, for the inaugural Educational Technology World Conference (ETWC). Participants from over 19 countries were honored with presentations by important government education officials and research scholars. The conference was co-hosted by many Indonesian universities (please see Acknowledgments) and by the Association for Educational Communications and Technology (AECT). As the presiding President of AECT at that time, I was honored to participate in the conference program that was filled with examples of using different technologies to enhance our teaching and to extend the reach of our teaching to learners who do not have physical access to schools and universities. Scholars and practitioners from around the world shared their research and work emphasizing the importance of effectively using and managing technologies to benefit the learner! Participants also shared challenges of their work which reminded us that regardless of our home country or region, we have much in common!

This volume represents the peer-reviewed manuscripts submitted after presentation sessions at 2016 ETWC. The first section contains the papers prepared by four keynote speakers/scholars. In the second section, the 20 authors offer manuscripts describing widely varied topic areas and approaches to their research which are representative of the scope of the conference.

At this conference, we began new collaborations, made new friends, and learned from each other. All conference participants and attendees were welcomed warmly and I will never forget the experience. I close this preface with the words I used to close the conference… *Negara Indonesia indah sekali* (Indonesia is a beautiful country) and *terima kasih* (thank you)!

Laramie, WY, USA

Kay A. Persichitte

Acknowledgments

BENNY'S BOOK

First, I wish to acknowledge the host and co-host institutions for the 2016 ETWC: Universitas Nigeri Jakarta, Universitas Terbuka, Universitas Undiksha, Universitas Pendidikan Ganesha, Universitas Mahendradatta, and Ristekdikti Kopertis 8.

I wish to acknowledge these special people who contributed significantly to the planning of the 2016 ETWC:

- Pak Atwi Suparman, Chair of the 2016 ETWC Organizing Committee
- Pak Djaali, Chair of the 2016 ETWC Steering Committee, Rector, Universitas Negeri Jakarta
- Ibu Tian Belawati, Rector, Universitas Terbuka
- Pak Jampel, Rector, Universitas Undiksha
- Pak Putri Anggraeni, Rector, Universitas Mahendradatta
- Pak Nyoman Jampel, Rector, Universitas Pendidikan Ganesha
- Pak Astawa, Coordinator, Ristekdikti Kopertis Wilayah 8

These reviewers of the manuscripts for this volume also deserve our thanks: Dr. Dennis Beck, Dr. Doris Bolliger, Dr. Tonia Dousay, Dr. Robert Doyle, Dr. Michael Grant, Dr. Dirk Ifenthaler, Dr. Florence Martin, Dr. Megan Murtaugh, Dr. Craig Shepherd, Dr. J. Michael Spector, Dr. Jill Stefaniak, and a *special thanks* for her extensive editorial review support to *Dr. J. Ana Donaldson*.

I also want to recognize the Chairman of our AECT affiliate, the Indonesian Professional Association of Educational Technology (IPTPI), Professor Wibawa, for the continued support and expansion of our field that this professional organization contributes.

Lastly, my acknowledgements would not be complete without a special "Thank You" to His Excellency, the Governor of Bali, for his graciousness and generosity in hosting us at his home for a fabulous cultural dinner and gala during the conference. This was an amazing experience and a wonderful evening with a powerful leader of the Bali people.

Contents

Chapter 21
Use of the Concept Mapping Strategy to Improve Academic Writing

Benny Agus Pribadi

Abstract Academic writing is considered a difficult activity for the majority of academics in Indonesia. Only a few Indonesian lecturers and researchers are able to publish their research papers in reputable international journals. Compared to other Southeast Asian countries such as Malaysia, Singapore, and Thailand, Indonesia ranks last in terms of the number of papers published in reputable international journals. Indonesia has to solve this problem by conducting effective courses in academic writing. One of the approaches that may be used to create an effective writing course is a concept mapping learning strategy. The purpose of this study was to explore the effectiveness of using a concept map learning activity in an academic writing course to increase faculty writing ability. Participants in the course were open and distance learning graduate students enrolled in an academic writing tutorial program. The results of this research indicate that the concept map learning strategy applied to learning activities of academic writing helped the students find and construct the main topical ideas of their academic article. In addition, students showed increased motivation from using the concept map strategy in writing their academic paper projects

1 Introduction

In general, academic writing is still a big problem for teachers and academics in Indonesia. In order to deal with these academic problems, the Ministry of Education and Culture of the Republic of Indonesia has encouraged several teacher training institutions to conduct workshops to improve academic writing skills. Unfortunately, these workshops have not been effective in increasing the academic writing ability of the teachers.

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Most of the workshops on academic writing are not designed to provide students with hands-on experience in writing academic papers. After completing the workshops the students have a good knowledge of writing, but do not have the real skills required to write academic papers. Also, students who participate in the academic writing workshop have low motivation and self-efficacy to finish their academic writing assignments.

Universitas Terbuka (UT), the open and distance learning university of Indonesia, which implements an open and distance learning system, has conducted an inservice teacher education program to enhance teachers' professional qualifications. One of the courses offered by this program is *Academic Writing*.

The course is perceived as a difficult subject by most students. After completing the course, only a few students have gained the ability to write and to publish academic papers. In this situation, it is necessary for UT to explore and find an appropriate learning strategy that can be applied to facilitate students' learning in order to master academic writing. It is necessary for UT to find a learning strategy that can help students produce well-written academic articles.

One of the learning strategies that promise to help students achieve the ability to write academic papers is concept mapping. Concept mapping can be used as a learning strategy to equip the students with the skills to explore and synthesize the knowledge required to write an academic paper. The purpose of this article is to elaborate on the use of concept mapping as a strategy to support open and distance learning students to successfully write academic articles. Each chapter in this Edited Volume is intended to represent an up-to-date and extended version of your paper or presentation at ETWC 2016.

2 Research Questions

Two research questions were explored in this study:

1. What kind of writing problems do students face in completing academic writing assignments?
2. Does the concept mapping learning strategy help students improve their academic writing skills?

3 Research Purpose

The purpose of this article is to elaborate the use of concept mapping as a learning strategy to facilitate the open and distance learning students to produce well-written academic articles. The result of the study will be used as input to improve the *Academic Writing* course.

3.1 *Universitas Terbuka (UT)*

UT was established on September 4th, 1984. The aim of establishing UT as a higher education institution was: (1) to provide a wider opportunity for Indonesian citizens and foreign nationals to obtain a higher education; (2) to provide higher education for those who, because of work or for other reasons, cannot continue their education at face-to-face colleges; and (3) to develop academic and professional education programs in accordance with the real needs that have not been developed by other universities. Recently the total number of UT students **is** 299,317, 59% of which are teachers. The majority of UT students reside on the main islands of Sumatra, Java, Bali, Nusa Tenggara, Sulawesi, Kalimantan, Papua, and overseas (www.ut.ac.id).

The separation between teacher and learner is considered one of the main characteristics of the distance education system (Heinich et al., 2005; Moore & Kearsley, 1996; Simonson, Smaldino, & Zvacek, 2016). In the UT system, education institutions which either partly or fully employ distance education deliver learning content through various types of instructional media. Simonson et al. (2016) describe a typology of instructional media used in distance education: (1) correspondence postal system; (2) prerecorded media; (3) two-way audio; (4) two-way audio with graphics; (5) one-way live video; (6) two-way audio, one-way video; and (7) desktop two-way audio/video (p. 2).

The students have to implement self-directed learning to attain their required learning competencies. Knowles (1995) defined self-directed learning as:

> *"... a process by which individuals take the initiative, with our without the assistance of others, in diagnosing their learning needs, formulating learning goals, identify human and material resources for learning, choosing and implement appropriate learning strategies, and evaluating learning outcomes."* (p. 18).

In self-directed learning, the students have to take initiative to learn and to explore learning materials in order to achieve predetermined learning goals. In addition, the students have to *responsibly complete their learning activities.* Even though the use of media is dominant, UT provides tutorial sessions to support student learning as part of the distance system.

Several modes of tutorial programs—face-to-face and online modes—are provided to support the learning process. Face-to-face tutorials are compulsory for students. Online tutorial programs are offered to all UT students as a form of student support. One of the important courses offered in the Teacher Education Program is the *Academic Writing* course.

The aim of the *Academic Writing* course is to provide academic writing experience and skills for the participants who are enrolled in the Teacher Education Program. The instructional goal of the academic writing course is stated as follows: *"... After completing the academic writing course the student will be able to write an academic paper based on their interest and selected topic."*

In general, the students—primary school teachers enrolled in this Teacher Education Program—have no hands-on or real experience in writing academic

papers. Most of the students view the academic writing course as difficult due to the rigorous learning activities they must complete (Al Badi, 2015).

The academic writing course requires students to habitually read relevant academic materials. They have to explore prior knowledge and decide upon a topic of interest in order to write a proper academic paper. Most of the students have high motivation to attain the predetermined *Academic Writing* course objectives.

3.2 *Academic Writing*

Ericsson, Krampe, and Tesch–Romer in Silvia (2007) noted that writing is a skill not an innate gift or a special talent. Like any advanced skill, writing must be developed through systematic instruction and practice. People must learn rules and strategies and then practice them. In order to be able to write an academic paper properly, it is necessary for the prospective writer to engage in intensive writing practice.

Academic writing is broadly defined as various forms of expository and argumentative prose used by university students, faculty, and researchers to convey a body of information about a particular subject (Nordquist, 2017). Academic writing is required for publications that are read by academics and researchers or presented at conferences.

Academic writing is also defined as writing activity done by scholars—students or academics—for other scholars to read. The product of academic writing can take many forms: journal articles, textbooks, dissertations, group project reports, etc. Academic writing is usually done by university students and researchers to convey a body of information about a particular subject. In general, academic writing is expected to be precise, semiformal, impersonal, and objective.

Academic writing has three main characteristics: (1) Academic writing is writing done by scholars for other scholars; (2) Academic writing is devoted to topics and questions that are of interest to the academic community; and (3) Academic writing should present the reader with an informed argument (http://www.depts.washington.edu/owrc).

Villalon and Calvo (2011) noted that writing develops not only communication skills, but also higher-level cognitive processes that facilitate deep learning. The general purpose of academic writing is to present information that demonstrates a clear understanding of a subject. The writer must demonstrate that he/she has a deep understanding of the specific academic topic (p. 16).

The most common purposes in academic writing are to persuade, analyze /synthesize, and inform (http://www.amarris.homestead.com). Writing academic papers is not an easy task as the writer has to find an appropriate topic. In order to be able to write a good journal article, the writers have to compile complex scientific ideas, methodological detail, and statistical analyses into a tight article (Silvia, 2007).

When writing the academic paper, students often face difficulty in selecting the right topic. This is due to their lack of experience in expressing ideas or knowledge in an academic manner. In this sense, Al Murshidi (2014) found that generating ideas about their topics could also be a barrier that hinders students to progress with their writing. Grami (in Al Badi, 2015) stated that: "... Writing could be a difficult

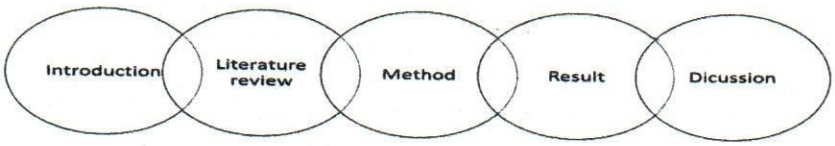

Fig. 21.1 Basic structure of an academic article

skill to be learnt or taught due to the fact that it is not a simple cognitive activity; rather it is believed to be a complex mental production which requires careful thought, discipline and concentration" (p. 66).

Academic writing is comprised of three stages: pre-writing (brainstorming and developing supporting ideas), writing, and post-writing (reviewing and revising). A good academic article requires time, research, preparation, and revision. The simplicity of these steps should not disguise their importance. Following them will ensure collegiate writing proficiency (Raley & Keaton, 2013). Zemach and Rumisek (2005) list six steps that should be implemented in writing an academic paper: (1) choose a topic; (2) gather ideas; (3) organize; (4) write; (5) review structure and content; and (6) revise structure and content. In addition, Johnson (2016) described a systematic process of academic writing that includes the following steps:

- Step 1: Research to gather data.
- Step 2: Pre-draft.
- Step 3: Write a first draft (sloppy copy).
- Step 4: Revise.
- Step 5: Edit.
- Step 6: Share or publish.

An academic paper or article basically consists of related parts: (1) introduction, (2) body of article, (3) conclusion, (4) references. Perneger and Hudelson (2004) noted that the basic structure of a typical research paper is the sequence of introduction, methods, results, and discussion (Fig. 21.1).

Difficulty starting an essay is often the first problems that students face in writing an academic paper due to lack of pre-writing activities and experience. To solve this problem, the prospective writer has to identify the purpose of the paper and then brainstorm ideas to achieve the goal. Brainstorming will work best if the writer does not immediately discount any generated ideas; instead they should write down as many ideas as possible. Brainstorming the ideas can be accomplished using concept map learning strategy.

4 Concept Mapping as a Learning Strategy

Novak and Gowin (1984) noted that the knowledge that we have about a subject area is a construction of the concepts of that knowledge area into a coherent hierarchical system. These concepts are linked together, forming propositions that are

distinctive for each individual. This system can be symbolized by concept mapping. Concept mapping is one technique that allows a person to convey meaning to another in a visual format. Concept maps have been shown to foster a joint understanding between two individuals viewing the same map (Freeman, 2004; Hoover & Rabideau, 1995; Malone & Dekkers, 1984; Novak, 1977, 1998).

Concept maps are graphical tools for organizing and representing knowledge. They include concepts, usually enclosed in circles or boxes, and relationships between concepts that are indicated by a connecting line linking two concepts. Words on the line, referred to as linking words or linking phrases, specify the relationship between the two concepts. We define concept as a perceived regularity in events or objects, or records of events or objects, designated by a label (Novak & Canas, 2006). A concept map can be regarded as a type of graphic organizer that is distinguished by the use of labeled nodes denoting concepts and links denoting relationships among concepts. The links in a concept map may be labeled or unlabeled, directional or non-directional (Nesbit & Adesope 2006). The use of concept mapping will help learners in organizing and structuring their thoughts to further understand information and discover new relationships. Concept maps in general represent a hierarchical structure, with the overall, broad concept connected to subtopics and more specific concepts.

A concept map is a visual organizer that can enrich student understanding of a new concept. Using a graphic organizer, students think about the concept in several ways. Most concept map organizers engage students in answering questions such as, "What is it?" "What is it like?" "What are some examples?" Concept mapping deepens understanding and comprehension (http://www.readingrockets.org).

The use of concept mapping provides benefits to all students across many content areas (social studies, mathematics, Spanish as a second language, vocabulary, reading, and writing), multiple grade levels (first through senior high school), and different student populations (regular education students and students with learning disabilities) as verified in an experimental study conducted by Asan (2007).

The use of concept maps in the academic writing process offers several benefits for learners: (1) helping students brainstorm and generate new ideas; (2) encouraging students to discover new concepts and the propositions that connect them; (3) allowing students to more clearly communicate ideas, thoughts and information; (4) helping students integrate new concepts with older concepts; (5) enabling students to gain enhanced knowledge of any topic; and (6) evaluate the information.

Several studies have been done regarding the implementation of the concept mapping strategy in the academic writing process. Villalon and Calvo (2011) studied the use of a concept map as a visual organizer and cognitive organizer. Their study noted that a concept map can be used as part of learning activities, as a form of scaffolding, or to trigger reflection by making conceptual understanding visible at different stages of the learning process. In addition, the authors noted that the precision of using a concept map depends on the level of summarization (number of concepts) chosen.

Lee (2013) conducted a study aimed at examining the use of concept mapping technique in a course module for Korean language learning with US college stu-

dents. The results of the study indicated that concept mapping enhanced the students' achievement in writing academic articles. Lee also found that peer collaborations for constructing concept maps did not support improvements in composition scores.

Kozminsky, Kozminsky, Nathan, and Horowitz (2012) conducted a study related to the implementation of the concept map strategy to teach academic writing. They found that concept mapping instruction and application during pre-writing activities contributed to the accessing and use of prior knowledge for written essays and improved the rhetorical structure in comparison to a control instruction group. However the use of concept maps in pre-writing did not relate to the quality of the writing product.

The use of concept mapping as a learning strategy not only provides benefit in academic writing, but also in other fields or subjects. Vanides, Tomita, and Ruiz-Primo (2005) conducted a study of the use of concept mapping strategy in science and found that concept mapping allowed students to think deeply about science by helping them to better understand and organize what they learned, and in helping them to store and retrieve information more efficiently. Students also improved in their ability to articulate concepts and challenge their thoughts about science when they discussed their maps with each other.

Wan Mohamed and Omar (2008) conducted a study on the use of concept mapping to facilitate writing assignments. The findings of their study indicate that concept mapping can be a tool to facilitate students in writing assignments. Students of all levels, whether primary school level, secondary school level, undergraduates level or postgraduate level may benefit from constructing a concept map prior to actually writing their assignments because it helps them generate ideas, enables them to identify relationships among ideas or other content, and visually organize what is going to be written (p. 4).

The benefits of using concept mapping for writing and learning purposes are listed by Weiderman and Kritzinger (2003) as follows:

- Users can distinguish between essentials and nice-to-know outcomes.
- Set ways of thinking are challenged.
- Concepts which are key to more than one discipline can be identified.
- Appropriate learning materials can be selected.
- Provide a basis for discussion.
- Support a holistic style of learning.

Kozminsky et al. (2012) researched the use of concept mapping in facilitating writing activities. The results showed that the advantages gained from concept mapping instruction during the planning phase were not translated into writing quality. The students were able to take advantage of prior knowledge in the introduction section of the essays.

Villalon and Calvo (2011) studied the use of concept maps as cognitive visualizations of writing assignments. The results of their study noted that the concept map as a tool for cognitive visualization supported writing activities by scaffolding the author's reflection during the process of writing and served to encourage them to revise their work.

In general, the use of concept maps provides positive contributions for students to generate topics and subtopics and to create an outline for writing academic papers. Students can elaborate their existing knowledge to generate topics and subtopics required in writing academic papers. Concept maps as visual organizers help students to: (1) organize new information; (2) make meaningful connections between the main idea and other information; and (3) compose the paper.

5 Research Method

This study used the research and development model of Gall, Gall, and Borg (2007) which adopts the systematic design of instruction model of Dick, Carey, and Carey (2005). Borg et al. define the research and development method as:

> ... the use of research findings to design new products and procedures, followed by the application of research methods to field test, evaluate and refine the products and procedures until they meet specified criteria of effectiveness, quality, or similar standards.

This model was applied to design develop a tutorial program on academic writing for UT.

The systematic design of instruction model (Dick et al., 2005) consists of several steps: (1) identify instructional goal; (2) conduct instructional analysis; (3) analyze learners and context; (4) write performance objectives; (5) develop assessment instruments; (6) develop and select instructional materials; (7) develop instructional strategy; and (8) design and conduct formative evaluation of instruction.

The steps of the Systematic Design of Instruction model are shown in Fig. 21.2.

The first step of this study was collecting data regarding students' prior knowledge, skills, motivation and learning experience in writing an academic paper. The purpose of this phase was to gather input for defining the instructional goal. Based on the results of data analysis of the first phase, the instructional goal of the tutorial program was: *"After completing this academic tutorial program the students will be able to write an academic paper based on the selected topic and academic writing rules."* To achieve this instructional goal, it was necessary for the students to engage actively in the learning process.

The instructional analysis process was implemented to determine the subcompetencies that students need to write an academic paper. The instructional analysis procedures were applied to identify the relevant skills and subordinate skills and information required for a student to achieve the goal (Dick et al., 2016). This step was followed by developing writing performance objectives related to the stated instructional goal.

Developing the assessment instruments was the next step along with creating an academic writing rubric to measure learning. This phase was followed by developing and selecting instructional materials that would be used to facilitate students' ability to write an academic paper.

The concept map approach was used as the primary instructional strategy to support the face-to-face tutorial sessions. The class consisted of 30 students ($N = 30$) in

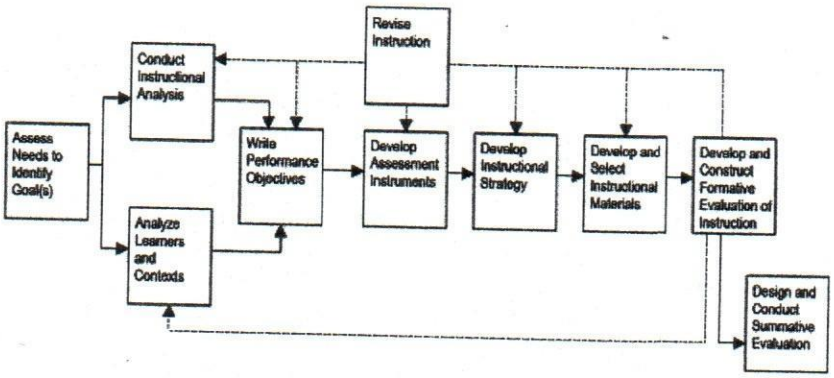

Fig. 21.2 The systematic design of instruction model. Source: Dick, W., Carey, L, & Carey, J. O. (2016). *The systematic design of instruction*. Columbus, Ohio: Pearson.

the academic writing face-to-face tutorial program. The tutorial program consisted of the following learning activities:

- Determining the idea or topic of the academic paper.
- Developing the outline of the academic paper.
- Reviewing and revising the outline of the academic paper.
- Writing the draft of the academic paper.
- Reviewing and revising the draft of the academic paper.
- Finalizing the academic paper.

During the tutorial session, students had to be taught how to use concept maps. In addition, the formative evaluation step consisted of one-to-one, small group, and field trial sessions in this study. During the study, students were observed, tested, and interviewed regarding the use of concept mapping in the academic writing tutorial program. This was done to gather valid information regarding student difficulties in learning academic writing.

The data were collected and analyzed to reveal the benefits and challenges of using the concept mapping learning strategy in writing an academic paper. In addition, pretest and posttest sessions of the field trial were conducted to measure the impact of using the concept map learning strategy to enhance students' knowledge of academic writing.

6 Results and Discussion

Collecting data regarding the students' prior knowledge, skills, motivation, and experience in writing an academic paper indicated that the majority of the students have a low level of knowledge in doing academic writing. In addition, they have no hands-on experience in writing academic papers. However, they have high motivation to be competent in writing academic articles. The students' motivation in

learning academic writing skills is high because they recognize that writing skills will help them improve their future academic career as a teacher.

The stated instructional goal was analyzed through an instructional analysis process to determine the sub-competencies or skills that the students had to master in order to be able to write an academic paper based on a selected topic and rules of the academic writing process.

The results of the instructional analysis process resulted in the following learning objectives and topics: *(1) To explain the importance of academic writing for teachers and academics; (2) To generate the ideas or topic for an academic article by using concept mapping strategy; (3) To review the written ideas or topic for an academic article; (4) To compose the outline of the academic article; (5) To review the outline of the academic article; (6) To write a draft of the academic article; (7) To review the draft of the academic article; (8) To finalize the draft of the academic article; and (9) To explain the procedure of academic writing.*

The tutorial program of *Academic Writing* was designed and developed based on the analyses of the previous steps. The design and development phase of the tutorial program involved a content expert and instructional designer to provide input to ensure the effectiveness of the program.

The design and development phase of this study was followed by the formative evaluation phase. This formative type of evaluation consisted of the following sessions: one-to-one, small group, and field trial.

In one-to-one sessions, the observation results indicated that all respondents enjoyed the tutorial program. Implementing the concept mapping strategy in writing activities allowed the students to easily determine and elaborate the themes and topics for their academic paper project. In this sense, Senita (2008) noted that the development of concept maps allows students to see how ideas are connected.

In small group sessions, the respondents shared a positive response when working on their writing project. We found that the concept map learning strategy implemented in the program helped the respondents to generate proper topics of their academic writing paper. This is related to the findings of the concept mapping study done by Chang, Chen, and Sung (2002). Sung and Chen (in Villalon & Calvo, 2011) noted that all approaches to concept mapping improve text comprehension and summarization skills. An example of the students' writing projects is shown in Fig. 21.3.

In addition, the results of the small group sessions indicated that the students were able to develop a systematic outline of their paper. This outline was then used as a guideline to continue their academic writing project.

The concept map learning strategy was implemented in all phases of the academic writing process. The students were directed to determine topics and subtopics that would be used for writing an academic paper. In this activity, the students implemented the concept map strategy to determine the topic and to develop the outline of their academic paper. Observations indicated that the students felt enthusiastic and enjoyed the process of selecting the topic and composing the outline of

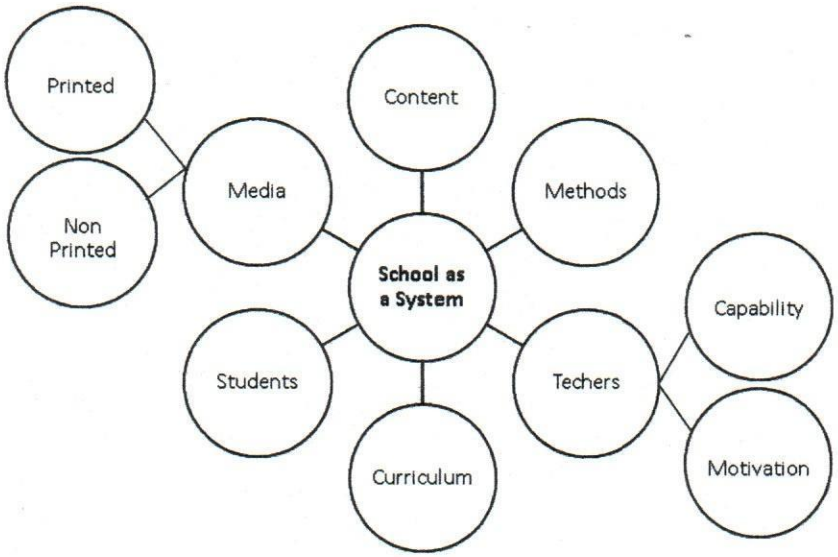

Fig. 21.3 Concept map of school as a system created by students

their academic paper. Additionally, the students were able to generate ideas and to elaborate their previous knowledge related to the selected topic.

At the end of the tutorial, the respondents were directed to write a draft of their academic paper based on their selected topic. A rubric for the academic writing paper was prepared to grade students' academic paper projects. SMART (specific, measurable, attainable, realistic, and time) criteria from the Elements of a Successful Research Paper were used to grade the quality of the students' academic paper. These criteria are described in the following table (Table 21.1).

Additionally, an interview guide was used to gather information regarding the students' responses to using the concept map learning strategy on their academic writing assignment.

The result of field trial sessions indicated that students were able to identify appropriate topics for their academic paper. The concept map learning strategy indeed helped the students generate ideas to be used to compose an outline of the paper. In this sense, the use of a concept map enabled students to explore and utilize their prior knowledge in creating a foundation for the topic of the academic writing paper.

At the end of the face-to-face tutorial program, the students were able to compose and write the draft of the academic article which was based on their previous article outline. The interviews conducted with the students indicated that all of the respondents enjoyed and were satisfied with the use of concept map strategy implemented in the academic writing face–to-face tutorial program. The majority of the respondents ($N = 30$) noted that: "...the use of concept map strategy assists the students in finding and composing, and elaborating the topics in the academic article."

Table 21.1 Elements of a successful academic paper

Criteria	Description
Specific	An academic paper should be specific. It should focus on the given subject of research—answering a specific research question—and it should be consistent with the written topics or subjects
Measureable	An academic paper must consist of specific, proven research, and research sources and relevant literature must be included
Attainable	An academic paper must provide a thesis statement, one that answers the research question and contributes to the knowledge of the given subject. It should answer the stated research question and should be based on an existing body of knowledge
Realistic	An academic paper must be objective and realistic. It should present interpretations, arguments, or evaluations. In addition, it should be based on valid evidence from reliable sources
Time	An academic paper must note the scope and limitations of the research paper

Source: http://www.gradesaver.com/writing-help/

7 Conclusions

The concept map strategy which is defined as a visual organizer helps in connecting students' present and previous knowledge. The concept map strategy allowed the students to generate relevant ideas and topics required in writing their academic paper. Generally speaking, the use of concept mapping in writing activities made it easier for UT students to select relevant topics and develop them in an outline for their academic article. The use of the concept mapping strategy did not assist the students in completing the academic paper writing project, because, ultimately, the process required deep understanding of the topic.

The implementation of concept maps as a learning strategy in writing the academic paper provided some benefits: (1) helping students to brainstorm and to generate new ideas in writing; (2) encouraging students to discover new and relevant concepts and the propositions that connect them; (3) allowing students to articulate ideas and information clearly; (4) helping students to integrate new concepts with prior concepts; and (5) enabling students to enhance their knowledge to elaborate the topic.

References

Al Badi, I. A. H. (2015). *Academic writing difficulties of ESL learners*. Proceedings of the WEI International Academic Conference, Barcelona: Spain.

Al Murshidi, G. (2014). UAE university male students' interests impact on reading and writing performance and improvement. *English Language Teaching, 7*(9), 57–63.

Asan, A. (2007). Concept mapping in science class: A case study of fifth grade students. *Educational Technology & Society, 10*(1), 186–195.

Chang, K. E., Chen, I. D., & Sung, Y. T. (2002). The effect of concept mapping to enhance text comprehension and summarization. *Journal of Experimental Education, 71*, 5–23.

Definition of academic writing. (n.d.). Retrieved from www.grammar.yourdictionary.com

Elements of a successful research paper. (n.d.). Retrieved from http://www.gradesaver.com

Freeman, L. A. (2004). *The power and benefits of concept mapping: Measuring use, usefulness, ease of use, and satisfaction.* Proceedings of the first international conference on concept mapping. Pamplona, Spain.

Gall, M. D., Gall, J. P., & Borg, W. R. (2007). *Educational research: An introduction.* Boston: Allyn and Bacon.

Johnson, A. P. (2016). *Academic writing: Process and product.* Lanham, MD: Rowman & Littlefield.

Knowles, M. S. (1995). *Design for adult learning.* Alexandria, VA: ASTD.

Kozminsky, E., Kozminsky, L, Nathan, N., & Horowitz, R. (2012). *Concept mapping and writing.* Proceedings of the fifth International Conference on Concept Mapping. Valletta, Malta.

Lee, Y. (2013). Collaborative concept mapping as a pre-writing strategy for learning: A Korean application. *International Journal of Information and Education Technology, 3*(2).

Moore, M. G., & Kearsley, G. (1996). *Distance education: A system view.* Belmont, CA: Wadsworth Publishing.

Nesbit, J. C., & Adesope, O. O. (2006). Learning with concept and knowledge maps: A meta-analysis. *Review of Educational Research, 76*(3), 413–448.

Nordquist, R. (2017). *Academic writing glossary of grammatical and rhetorical terms.* Retrieved from https://www.thoughtco.com/what-is-academic-writing-1689052.

Novak, J., & Gowin, D. (1984). *Learning how to learn.* New York: Cambridge University Press.

Perneger, T. V., & Hudelson, P. M. (2004). Writing a research article: Advice to beginners. *International Journal for Quality in Health Care, 16*(3), 191–192.

Raley, J., & Keaton, M. (2013). *How to write a good academic paper.* Retrieved from https://www.scribd.com.

Senita, J. (2008). The use of concept maps to evaluate critical thinking in the clinical setting. *Teaching and Learning in Nursing, 3*(1), 6–10.

Silvia, P. J. (2007). *How to write a lot: A practical guide to productivity.* Washington, DC: American Psychological Association.

Simonson, M., Smaldino, S., & Zvacek, S. M. (2016). *Teaching learning at a distance: Foundations of distance education.* Charlotte, NC: Information Age Publishing.

Teaching and learning with concept map. Retrieved from http://www.inspiration.com.

The six steps of the writing process. Retrieved from www.wikidot.com.

Vanides, J. Y., Tomita, M., & Ruiz-Primo, M. A. (2005). Using concept map in the science classroom. *Science Scope, 28*(8).

Villalon, J., & Calvo, R. A. (2011). Concept maps as cognitive visualizations of writing assignments. *Educational Technology & Society, 14*(3), 16–27.

Weiderman, M., & Kritzinger, W. (2003). Concept mapping – A proposed theoretical model for implementation as a knowledge repository. *ICT in Higher Education.*

What is academic writing? Retrieved from www.debrabell.com

Wan Mohamed, W. A., & Omar, B. (2008). *Using concept map to facilitate writing assignment. Proceedings of the third international conference on concept mapping.* Estonia & Helsinki, Finland: Tallinn.

Zemach, D. E., & Rumisek, L. A. (2005). *Academic writing: From paragraph to essay.* New York: Macmillan.

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