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Rethinking Distance Tutoring in e-Learning Environments: A Study of the Priority of Roles and Competencies of Open University Tutors in China




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Abstract

This study aims to identify the priority of the roles and competencies of tutors working in the e-learning environments where the tutors are experiencing the changes brought by reforming traditional TV and broadcasting university to open universities. The mixed methods, DACUM, non-participatory observation, and questionnaires were used to identify the priority of the roles and competencies of tutors. The findings suggested that the priority of the roles and competencies has significantly changed accompanied to the shift of pedagogy from cognitive behaviorist to social-constructivist and connectivist. Changes in the roles of the instructional designer and instructor were highlighted. Significant differences in perceptions of the importance of the roles and competencies corresponding to learning management and technology use also merit further attention.

Keywords: tutor roles, tutor competencies, e-learning, Open University

Introduction

China's open universities were established to build a knowledge economy in China and to further the international movement in distance education. They are described as "new-style" universities with Chinese characteristics and are commissioned to be open to all members of society (China Central Radio and TV University, 2009). Developed from the former Radio and TV Universities (RTVUs), collectively comprising the Dianda system, open universities thus inherit the primary commitment to reduce educational costs for a large number of adult learners at the college level from RTVUs (Wei, 2008). Rather than being one-way learning delivery systems, the universities integrate a variety of modern interactive technologies to strengthen learning support services through a network consisting of one

Central RTVU in Beijing, 44 provincial and direct-controlled municipal-level open universities, 956 prefectural/civic-level regional TVU colleges, 1875 district/county-level work stations, and 3294 teaching and learning centers (China Central Radio and TV University, 2008). Through the nationwide Dianda system, open universities have figured significantly in promoting equity in access to higher education and building social capital for China's economic development (Robinson, Yan, & Mo, 2011).

This century, China's open universities are undergoing a major shift, from the practice of correspondence education to open and distance learning via the Internet, in order to satisfy the growing demands of open and lifelong learning in a rapidly expanding economy. The Ministry of Education regards the establishment of open universities as crucial to constructing a national open and lifelong learning system, which contributes to the formation of a learning society (CCRTVU, 2009). The development of open universities, oriented toward lifelong learning, offers great strategic significance for such a society. Thus, open universities, in a shift from their earlier aim of providing mainly second or sole chances to gain qualifications, have repositioned themselves to work toward a more open and flexible learner-centered education, thus strengthening the university infrastructure for supporting student learning support services (Li, Zhang, Chen, Zhang, & Liu, 2014).

Student learning support services are pivotal for improving open universities' competitiveness in higher education (Tait, 2104). In China, RTVUs have long been designated "second-class" education with high inertia, problematic goals, and disordered management. In contrast to conventional universities, the strength of open universities relates to their learning support services, which are operated primarily by online tutors (Tait, 2003). Online tutors, directly interacting with students, are among the unique characteristics of open universities. Nevertheless, newly established open universities in China have not developed the granular role definition of online tutors (Li et al., 2014). There is lack of detailed documentation on the competencies required of tutors.

This missing detail poses a considerable challenge to specifying the roles of tutors, the competencies required of those roles, and the expected proficiency levels for each competency. This challenge derives from the complexity of the Dianda system. Not only does the system entail a tier of universities, colleges, work stations, and teaching and learning centers, but the consequences are also difficult to describe and more difficult to interpret. Furthermore, the rapid reforms implemented in open universities introduce additional challenges in defining the role and its corresponding competencies. Intertwined with both traditional values and the new missions of open universities, the roles and competencies of tutors are ambiguous and contested. Therefore, this study aims to identify the priority of the roles and competencies of tutors for facilitating the educational reform of China's open universities and to guide the professional development of tutors. More specifically, the study illuminates the roles and competencies of tutors that should be effectively promoted and developed in China in the future and provides data for enabling comparative analyses with other educational systems outside of China.

Review of the Literature

A small but notable set of related scholarly work has rigorously reviewed and synthesized the roles and corresponding competencies of distance education professionals. A comprehensive classification of these roles and competencies can be found in Chen and Feng (2012), Muñoz-Carril, González-Sanmamed and Hernández-Sellés (2013), and Zhang, Li, & Chen (2015). These studies provide inroads

to holistically mapping the state of academic research on the roles and competencies worldwide. However, the state of Chinese research has not been addressed in key English studies. Given that China has the largest open and distance learning (ODL) network in the world (Wei, 2010), it is particularly important to provide new depth to these studies by rigorously integrating studies conducted in the Chinese context.

Globally, different approaches to defining the roles and associated competencies have been adopted. While some scholars (Thach & Murphy, 1995; Williams, 2003; Denis, Watland, Pirotte, & Verday, 2004; Chen, Li, & Feng, 2004; Egan & Akdere, 2005) have provided detailed taxonomies of roles and competencies, several scholars (e.g., Gold, 2001; Anderson, Rourke, Garrison, & Archer ., 2001; Salmon, 2000; Bawane & Spector, 2009; Varvel, 2007; Guasch, Álvarez, & Espasa, 2010; Hong, 2010) have proposed more general frameworks to develop the roles and competencies that are useful for online teaching.

Spanning a wide range of contexts across the world, earlier studies have been complemented by later studies, and proposals for research are continually refined. Thach and Murphy (1995) mapped the top 10 competencies and 11 roles of distance education professionals in their Delphi study. These roles are instructor, instructional designer, technology expert, technician, administrator, site facilitator, support staff, editor, librarian, evaluation specialist, and graphic designer. Williams (2003) added two additional roles (e.g., trainer and leader/change agent) to these 11 roles. Egan and Akdere's (2005) work compared the top 10 competencies of Thach and Murphy's (1995) study with the competencies compiled by Thach (1994) and Williams (2003) and revealed disagreement among researchers regarding the prioritization of distance education competencies. Thach (1994) and Williams (2003) studies emphasized communication competencies as most important from the perspective of expert professional respondents, whereas experienced graduate student-practitioner perceptions of the competencies focused on technology in the Egan and Akdere (2005) studies. Berge's (1995) and Wiesenberg and Hutten's (1996) studies shared certain perspectives on the role and competencies of tutors required for facilitating online discussions in emerging e-learning practice. Then, Berge (2008) complemented his earlier work (Berge, 1995) by attaching the roles to informal learning, collaborative work, and reflexive learning, as new online learning environments, such as virtual worlds, are introduced to distance education. With respect to early studies conducted in other parts of the world, Chen, Li, & Feng(2004) introduced this kind of research to China, using the method of Delphi to identify the roles of distance education professionals working in the Chinese context. As the practice of distance education is rapidly changing in China, scholars have continued to review their analyses and recommendations. Li and Chen (2008) used a DACUM job analysis to further explore the duties, tasks, and competencies that are assigned to six key roles identified in their previous study (Chen et al., 2004).

Among distance education professionals, the roles and competences of tutors are discussed widely in the literature. Although the pedagogical role has dominated discussions (Coppola, Hiltz, & Rotter, 2002; Bawane & Spector, 2009; Feng, 2012; Muñoz-Carril et al., 2013), much attention has also focused on discussions of multidimensional roles (Berge, 1995; Varvel, 2007; Baran, Correia, & Thompson, 2011) in Western contexts. Nevertheless, the social role, the managerial one, and the technological role have been mostly overlooked in the Chinese literature (Zhang et al., 2015). Only in the past decade have a few empirical studies of tutors (Li & Chen, 2008; Feng, 2012; Wang, 2012; Ma & Feng, 2012; Li et al., 2014; Jiang, 2014) emerged. The lack of such studies results from the approach that Chinese studies

tend to adopt in defining and exploring roles and competencies. As started above, few Chinese empirical studies (e.g., Chen, 2008) are conducted similarly to studies conducted in Western contexts wherein task analysis is used to classify roles and competencies. Chinese studies (e.g., Weng, 2012) tend to explore the roles and competencies of tutors in relation to the process of online teaching and subsequently divided the roles and competencies into two segments: preparing teaching and delivering teaching. Such classifications undoubtedly highlight the major roles of tutors, though are likely to neglect the peripheral roles (e.g., social and affective roles) that require tutors to acquire additional competencies. In addition, the majority of these studies were conducted by the staff members of open universities. In these studies, the roles and competencies of tutors are likely to be defined with regard to the three-tier structure of the traditional Dianda system, which is highly structured as one central radio and television university (TVU), 44 provincial TVUs, and 279 prefectural/civic branch schools. Such definition interferes with the potential development of open universities, which aim to provide open and lifelong learning for all members of society.

Methods

This study was conducted in one of China's open universities. The roles of tutors in terms of duties, tasks, and competencies are identified over three phrases, and their priorities are assessed in Phase 4. In Phase 1, we initially identified tutors' roles and competencies by reviewing and summarizing the existing literature. In Phase 2, a DACUM work analysis was conducted to validate and refine the roles, associated tasks, and competencies identified in Phase 1. In Phase 3, interviews were performed to validate and revise the associated tasks for each role and competency identified in Phase 2. In Phase 4, questionnaires were used to collect information that helps prioritize the roles and competencies.

Phase 1: Literature Review and Identifying Roles and Competencies

In Phase 1, keyword searches (e.g., tutor, distance teacher, open university, online teacher, distance learning, online instructor, distance teaching, competence, role, and the Chinese equivalents) were performed in the following online article databases: Web of Science, Springer Online Journals, Google Scholar, ERIC, ProQuest, Scopus, and the China National Knowledge Infrastructure. Reference lists were then used to identify additional relevant articles. Chinese studies conducted using different approaches were selected as the key articles. The studies reported in the selected articles include research conducted with Delphi to examine the role and competencies of distance education practitioners (e.g., Chen et al., 2004), empirical studies completed by university scholars (e.g., Weng, 2012; Jiang 2014), reflective studies that consider practitioners' perspectives, and several studies conducted by staff members of open universities. The diversity of views represented in these studies can generate a comprehensive list of the roles and competencies in a Chinese e-learning context. English studies with a high impact factor and reporting empirical research conducted across a wide range of learning contexts (e.g., the UK, the US, Canada, Belgium, Turkey, UAE, Malaysia, India, Spain) were selected. These key studies indicate, to an extent, the status quo of research on the roles and competencies required for distance education worldwide. The final selection of 37 articles was analyzed to identify the most commonly addressed roles and competencies. The classification of 8 roles and 30 competencies identified in the literature was instrumental in performing the DACUM job analysis conducted in Phase 2.

Phase 2: Validating Roles, Competencies, and Associated Tasks using DACUM

In Phase 2, a DACUM work analysis was used to analyze expert discussions to validate the classification of the roles and competencies drafted in Phase 1. DACUM is an acronym for Developing a Curriculum. It is a facilitated storyboarding process that produces a work analysis graph of an occupation including the major duties, related tasks, as well as the necessary knowledge, skills, and traits. A focus group composing of expert workers is usually invited to produce the work analysis graph by following the facilitated storyboarding process. In this current study, a panel of 11 experts from the Open University of China and Beijing Open University were recruited to identify the roles, competences, and tasks assigned to tutors. The expert panel includes two academics, four administrative managers, three instructors, and two tutors. A consensus was reached in the discussions, and seven roles identified in Phase 1 (i.e., instructor, instructional designer, learning facilitator/advisor, social, evaluator, technologist, and manager/administrator) were validated. The research role was excluded, as it was agreed that tutors are capable of adapting their research practices to different teaching situations by reviewing and reflecting on their experiences. For each role, daily tasks were brainstormed, and 98 critical tasks were identified. Competencies identified in Phase 1 were then matched to the critical tasks assigned to each role. The competencies required to accomplish the 98 tasks were grouped into 20 categories. These 20 groups of competencies were associated with the above seven roles.

Phase 3: Validating and Revising Tasks through Interviewing

Individual interviews with senior administrators including vice presidents and administrative managers were conducted to seek comments on the critical tasks identified in Phase 2. Focus group interviewing was then used to collect feedback from practitioners including tutors and training instructors to ensure content validity of each task. The above interviews yielded a revised framework of seven roles, 20 groups of competencies, and 98 tasks. This framework is used to design the protocol of the questionnaires disseminated in Phase 4.

Table 1

Identified Roles, Competencies and Tasks in Phase 3

Roles	Competencies	Tasks
Instructor	C1.1 Facilitate the cognitive process of course content.	T1.1.1 T1.1.2 T1.1.3 T1.1.4 T1.1.5 T1.1.6 e.g., T 1.1.1 Explain course material to students.
	C1.2 Organize and guide the experiment or practice activities in the course.	T1.2.1 T1.2.2 T1.2.3 T1.2.4 T1.2.5 e.g., T1.2.2 Prepare experimenting equipment or contact practice sites.

	C1.3 Develop course learning recourses.	T1.3.1 T1.3.2 T1.3.3 T1.3.4 e.g., T1.3.1 Collect all sorts of curriculum-related learning resources.
	C1.4 Facilitate productive interpersonal interaction in the course.	T1.4.1 T1.4.2 T1.4.3 T1.4.4 T1.4.5 T1.4.6 e.g., T1.4.2 Guide students in the discussion puts forward his own views.
Instructional designer	C2.1 Develop the tutorial plan of the course for local students.	T2.1.1 T2.1.2 T2.1.3 T2.1.4 T2.1.5 T2.1.6 e.g., T2.1.3 Select and design appropriate tutoring strategies.
	C2.2 Design interaction activities for effective learning.	T2.2.1 T2.2.2 T2.2.3 T2.2.4 e.g., T2.2.3 Design and develop learning support materials and tools needed for the interactions.
Learning facilitator/ advisor	C3.1 Motivate the students.	T3.1.1 T3.1.2 T3.1.3 T3.1.4 e.g., T3.1.2 Help students improve their confidence.
	C3.2 Facilitate group learning.	T3.2.1 T3.2.2 T3.2.3 T3.2.4 T3.2.5 T3.2.6 e.g., T3.2.3 Provide students with tools to support collaboration.
	C3.3 Develop students' self-regulated learning ability.	T3.3.1 T3.3.2 T3.3.3 T3.3.4 e.g., T3.3.4 Help students devise reasonable learning plans.
	C3.4 Offer advice and suggestions based on students' needs.	T3.4.1 T3.4.2 T3.4.3 T3.4.4 e.g., T3.4.4 Recommend solutions to complex non-academic issues to students, such as psychological problem and financial problems.

Technologist	C4.1 Use technologies to facilitate and enhance teaching and learning.	T4.1.1 T4.1.2 T4.1.3 T4.1.4 T4.1.5 e.g., T4.1.3 Use course LMS to manage learning resource.
	C4.2 Help students solve basic technological problems encountered in the learning process.	T4.2.1 T4.2.2 T4.2.3 T4.2.4 e.g., T4.2.2 Recommend students useful recourses for solving technological problems.
Social	C5.1 Build and maintain a cordial learning environment.	T5.1.1 T5.1.2 T5.1.3 T5.1.4 T5.1.5 e.g., T5.1.3 Guide students to appreciate each other.
	C5.2 Resolve student conflicts in an amicable manner.	T5.2.1 T5.2.2 T5.2.3 T5.2.4 e.g., T5.2.2 Find reasons for student conflicts.
	C5.3 Promote the building and developing of a learning community.	T5.3.1 T5.3.2 T5.3.3 T5.3.4 e.g., T5.3.1 Help students to expand their social network in course.
Evaluator	C6.1 Assess students' learning performance in the course.	T6.1.1 T6.1.2 T6.1.3 T6.1.4 T6.1.5 T6.1.6 e.g., T6.1.1 Develop materials and tools required for performance assessment.
	C6.2 Evaluate the course.	T6.2.1 T6.2.2 T6.2.3 T6.2.4 e.g., T6.1.1 Collect students' feedbacks about the course.
Manager/Administrator	C7.1 Monitor individual and group progress.	T7.1.1 T7.1.2 T7.1.3 T7.1.4 T7.1.5 T7.1.6 T7.1.7 e.g., T7.1.3 Contact "silent students."
	C7.2 Manage the progress of instructional interaction activities.	T7.2.1 T7.2.2 T7.2.3 T7.2.4 T7.2.5 e.g., T7.2.1 Develop a reasonable schedule for each interaction activity.

	C7.3 Regulate student behaviors.	T7.3.1 T7.3.2 T7.3.3 T7.3.4 T7.3.5 e.g., T7.3.1 Explain to students behavior norms of the University.

Phase 4: Assessing the Priority of Roles and Competencies with a Survey

In Phase 4, the priority of roles and competencies was assessed by the importance of and relative time spent on tasks via a survey. Most previous studies have prioritized the roles and competencies based on the perspectives of experts and in-service tutors. This study includes the perspectives of students and administrative staff on the importance of tasks, as these two groups of individuals work closely with tutors. The additional viewpoints also increase the accuracy of the findings.

Three different questionnaires were designed to collect such information from the groups of tutors, students, and administrators. Questions were asked with regard to the 98 tasks identified in Phase 3 (see Table 1) Tutors, students, and administrative staff were all asked to evaluate the importance of tasks, while only tutors were asked to evaluate relative time spent on tasks. The importance of each task was measured on a 5-point Likert scale: Very High (=5), High, Moderate, Low, to Very Low (=1). Relative time spent on each task indicated the amount of time required to achieve the task in relation to the total time allocated to accomplish other tasks. Relative time spent on each task was also measured on a 5-point Likert scale, with the following designations: Much More (=5), More, About the Same, Less, and Much Less (=1).

Random sampling was used to select the participations. A total of 535 questionnaires were sent to tutors, students, and administrative staff. Of these, 405 valid questionnaires (207 tutors, 151 students, and 47 administrative staff) were returned.

Cronbach's alpha internal reliability index was used to measure the reliability of the questionnaire. Cronbach's alpha coefficient for the scale was calculated for all seven roles to determine the reliability of the scale. As shown in Table 2, Cronbach's alpha ranged from 0.91 to 0.95, showing high internal reliability of the questionnaire. The internal consistency of the items was measured with the split-half reliability coefficient, which was 0.91.

Table 2

Cronbach's Alpha

Dimensions	Alpha
Instructor	.92
Instructional designer	.91
Learning facilitator/advisor	.95
Technologist	.92
Social	.94
Evaluator	.92

Manager/Administrator	.95
Overall	.91

Results

Task analysis and Priority Levels of the Tutor Roles

According to the analysis of scores on the importance of and relative time spent on the 98 tasks, the importance scale of 77.6% of tasks are higher than 4, which triangulates the classification of tasks produced by the DACUM analysis. By contrast, only 17.3 % of tasks were perceived as relatively time-consuming (>4). The task that obtained the highest score on the importance scale was "explain course content to students" (Task 1.1.1), followed by "guide in-depth learning of course content" (Task 1.1.2), "answer students' questions on course content" (Task 1.1.3), "discover and diagnose students' cognition problem in understanding course content" (Task 1.1.4), and "provide students with suggestions for better mastering course content" (Task 1.1.5). All of these tasks are core tasks of traditional tutoring. The analysis of the 20 tasks with the highest score in terms of importance indicates that 50% of tasks were associated with the Instructor role. The Instructional designer and Evaluator roles each scored 20%. Two tasks related to the Learning facilitator/advisor and Technologist roles scored in the top 20 most important tasks. These tasks are "help students to build up learning confidence" (Task 3.1.2) and "use course LMS to manage learning resource" (Task 4.1.3).

The analysis of 15 perceived relative time spent tasks shows that 60% of tasks are related to the Instructor role, 20% to the Instructional design role, and 20% to the Evaluator role. It was found that the rank order of the top four most time-consuming tasks mirrored that of the top four most important tasks, which indicated that these four traditional tasks remain vital to tutors in the e-learning environment. A comparison of the top 20 most important tasks and the 15 most time-consuming tasks indicated that not every most important task is perceived as time-consuming, nor is each of the most time-consuming tasks perceived as important. For example, the task "provide student with suggestions for better mastering course content" (Task 1.1.5) was ranked fifth in terms of importance, yet was not regarded as relatively time-consuming.

Table 3

Descriptive Statistics of the Important Roles and Relative Time Spent

Role	Importance			Relative time spent		
	N	Mean	SD	N	Mean	SD
Instructor	405	4.25	0.51	207	3.94	0.55
Evaluator	405	4.19	0.65	207	3.91	0.70
Instructional designer	405	4.14	0.65	207	3.92	0.67
Learning	405	4.05	0.67	207	3.74	0.76

facilitator/advisor						
Manager/Administrator	405	4.04	0.72	207	3.73	0.74
Technologist	405	4.03	0.74	207	3.77	0.78
Social	405	4.01	0.73	207	3.66	0.81

The descriptive statistics of the importance of each role show that the average scores of all roles are greater than four points, thus indicating that all of the roles identified by the DACUM expert panel were accepted by survey respondents as valid in this study. In terms of importance, the Instructor, Evaluator role and Instructional designer roles received significantly higher scores compared with the other roles. As shown in Table 3, the Instructor role was regarded as the most important role for tutors in the e-learning environment. The descriptive statistics of the relatively time-consuming roles show that the average scores of seven roles are all less than four points, thereby indicating that tutors' work hours are generally evenly distributed across the seven roles, despite the roles having different levels of importance. The Instructor role was rated the most relatively time-consuming role, followed by the Instructional designer and Evaluator roles.

The finding that the scores of the latter three roles on the relative time spent scale were close to four points reveals that more important roles nonetheless consume more time.

The number of important tasks (i.e., tasks with scores on the importance scale equal to or greater than four points) and relatively time-consuming tasks (i.e., tasks with scores on the relative time spent scale equal to or higher than four points) for each role were tabulated. The results of the tabulation are shown in Table 4. Further analysis of the proportion of important tasks and time-consuming tasks for each role showed that the Instructional designer, Instructor, and Evaluator roles include tasks of which more than 80% are important and at least 20% are time-consuming. However, the other four roles did not have any tasks scored as relatively time-consuming. It was also found that the ranked order based on the proportion of important tasks for each role does not precisely match the ranked order based on the average score of each role on the importance scale. For example, all the tasks corresponding to the Instructional designer role were assessed as important. This assessment indicates that this role has the highest proportion of important tasks. This role was ranked third, however, in the ranked order of the average scores of each role on the importance scale.

Table 4

The Number of Important Tasks and Relatively Time-Consuming Tasks

Role	Number of tasks	Number of important tasks	Number of relatively time-consuming tasks
Instructor	21	19	9
Evaluator	10	10	3
Instructional designer	18	12	0
Learning facilitator/advisor	9	7	0
Manager/Administrator	13	6	0
Technologist	10	9	3

Social	17	13	0

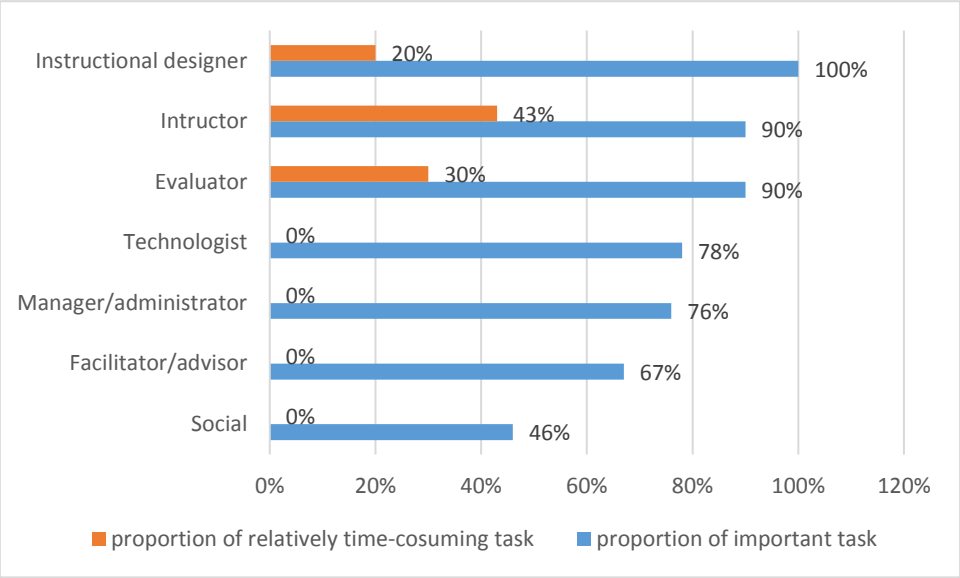

Figure 1. The proportion of important tasks and relatively time-consuming tasks.

Based on the analysis of average scores determined for the seven roles and the proportions of important tasks and relatively time-consuming tasks for each role (as graphically shown in Figure 1), we classified the seven roles into three groups with different priority levels, as shown in Table 5. The Instructor, Evaluator, and Instructional designer roles were designated as belonging to the first priority level group because they not only obtained significantly higher scores on the importance and relative time spent scales but also had a greater proportion of tasks assessed as important (greater than 80%) and relatively time-consuming (at least 20%). The Learning facilitator/advisor, Manager/Administrator, and Technologist roles did not have tasks assessed as relatively time-consuming, though had more than 50% of their tasks assessed as important. Therefore, these three roles were classified as corresponding to the second prioritization level. The Social role was grouped into the third level, as it not only received the lowest average score on the relatively time-consuming scale but also had less than 50% of its tasks assessed as important.

Table 5

The Prioritized Roles of Tutors

Level	Standard	Role
1	Mean $_{important}$≥ 4 and rank in the first three Proportion $_{IT}$≥80%, Proportion $_{RTT}$≥50%	Instructor, Evaluator, and Instructional designer.
2	Mean $_{important}$≥ 4 and rank in the middle 80%> Proportion $_{IT}$≥50%; 0 ≥Proportion $_{RTT}$>50%	Learning facilitator/Advisor, Manager/Administrator, and Technologist.

3	Mean $_{important}$≥ 4 and rank at the bottom 0 >Proportion $_{IT}$≥50%; 0 ≥Proportion $_{RTT}$>50%	Social.

Note. Proportion $_{IT}$ refers to the proportion of important tasks for each role. Proportion $_{RTT}$ refers to the proportion of relatively time-consuming tasks for each role.

Priority Levels of Tutor Competencies

The descriptive statistics of important competencies show that the average scores of most competencies were greater than four points. Only four competencies obtained average scores less than 4. However, all of the competencies scored above 3.9. By analyzing the 10 competencies with the highest average scores on the importance scale, we found that most competencies were linked to the Instructor role, Evaluator role, and Instructional designer roles in the top 10 list, which validated to some extent the importance of these three roles. As shown in Table 6, the first five scores on the importance scale were greater than 4.20. Competency 1.1 "facilitate cognitive process of course content" scored highest, followed by the competency of evaluating the course (C6.2). This finding indicates that participants considered tutors' role in offering useful information and suggestions for improving a course highly important. Notably, the average scores of the three competencies of motivating the students (C 3.1), designing interpersonal interaction for effective learning (C 2.2), and building and maintaining a cordial learning environment (C 5.1) ranked in the top 10 most important competencies, thus suggesting that both relevant practitioners and students in China have been particularly attentive to tutor's competencies in terms of facilitating students' engagement in learning. Additionally, tutors' competencies in enhancing interpersonal interaction were emphasized. This emphasis is indicated by the high scores of C2.2 and C7.2.

Table 6

Descriptive Statistics of the Importance of Competencies

No.	Competency	Mean	Std. Deviation
1	C1.1 Facilitate the cognitive processing of course content	4.49	0.46
2	C6.2 Evaluate the course	4.26	0.68
3	C1.3 Develop course content	4.23	0.67
4	C1.4 Facilitate course interaction	4.20	0.67
5	C3.1 Motivate the students	4.20	0.72
6	C2.1 Develop a tutorial plan for the course for local students	4.14	0.68
7	C6.1 Assess students' learning performance	4.14	0.70
8	C2.2 Design interpersonal interaction activities for effective learning	4.14	0.71
9	C7.2 Manage the progress of interpersonal interaction activities	4.12	0.73
10	C5.1 Build and maintain a cordial learning	4.10	0.73

	environment		
11	C3.3 Develop students' self-regulated learning ability	4.09	0.72
12	C1.2 Organize and guide course experiments or activities	4.04	0.75
13	C4. Use technologies to facilitate and enhance teaching and learning	4.04	0.78
14	C7.1 Monitor individual and group progress	4.04	0.76
15	C4.2 Help students solve basic technological problems encountered during the learning process	4.02	0.84
16	C3.2 Facilitate group learning	4.00	0.75
17	C5.2 Resolve student conflicts in an amicable manner	3.97	0.87
18	C7.3 Regulate student behaviors	3.97	0.91
19	C5.3 Initiate and develop a learning community	3.95	0.81
20	C3.4 Offer advice and suggestions based on student needs	3.92	0.83

To determine the priority levels of the 20 competencies, we calculated the proportion of important and relatively time-consuming tasks corresponding to each competency. The results are shown in Figure 2. Most competencies had more than 50% of tasks assessed as important, while only three competencies had more than 50% assessed as relatively time-consuming. Twelve competencies had no task assessed as relatively time-consuming. Seven competencies had all their related tasks assessed as important but differed in the proportion of relatively time-consuming tasks, which indicated that they may have different priorities. It was also found that the competency rank order of the average score on the importance scale was not identical to that of the proportion of important tasks. For example, C1.1 obtained the highest score on the importance scale but was second most important of all tasks after C1.3.

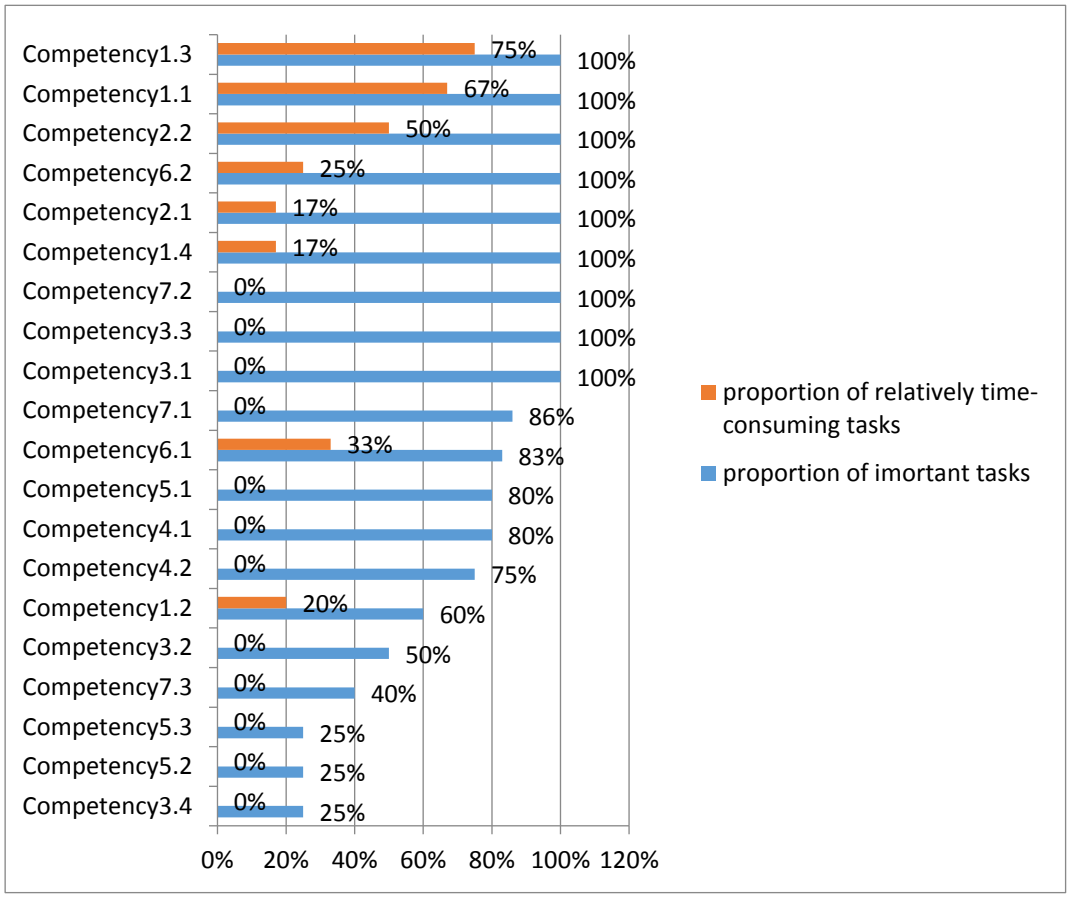

Figure 2. The proportions of important and time-consuming tasks for each competency.

The 20 tutor competencies were classified into four groups according to their priority levels indicated by their average scores, as shown in Table 7. Figure 2 shows that all tasks corresponding to C1.1, C1.3, and C2.2 were rated as important, and more than 50% of tasks for the three competencies were assessed as relatively time-consuming. In addition, the three competencies were ranked in the top five in the rank order of average scores on the importance scale. Therefore, the three competencies were classified into the first priority level group and were regarded as core competencies for tutors in the e-learning environment. The next group, which represents the second priority level, contains seven competencies, which not only ranked among the top 10 competencies with the highest average score on the importance scale but also had more than 80% of their tasks scored as important. Some of the competencies in fact had 100% of tasks scored as important, indicating that these competencies were highly important for tutors to perform well in the e-learning environment. Six competencies were classified as the third priority level because there more than 50% but less than 80% of their tasks were scored as important, indicating that they are necessary for supporting good tutor practices in the e-learning environment. Finally, four competencies with an average score on the importance scale less than four points were classified as the lowest priority level, given that they not only obtained the lowest scores on the importance scale but also had the fewest of their tasks ranked as important.

Table 7

Priority Levels of Tutor Competencies

Level	Standard	Competency
No.1	$Mean_{important} \geq 4$ and ranked in the top five Proportion $_{IT}$=100%, $Proportion_{RTT} \geq 50\%$	Competency 1.3, Competency 1.1, Competency 2.2
No.2	$Mean_{important} \geq 4$ and rank in the middle Proportion $_{IT}$=100% or 100%> Proportion $_{IT} \geq 80\%$, Proportion $_{RTT} \geq 0$	Competency 6.1, Competency 6.2, Competency 1.4, Competency 2.1, Competency 3.1, Competency 3.3, Competency 7.2
No.3	$Mean_{important} \geq 4$ and rank in the middle 80%> Proportion $_{IT} \geq 50\%$, 50%>Proportion $_{RTT} \geq 0$	Competency 7.1, Competency 5.1, Competency 4.1, Competency 4.2, Competency 1.2, Competency 3.2
No.4	$Mean_{important} < 4$ and rank at the bottom Proportion $_{IT}$<50%, Proportion $_{RTT}$= 0	Competency 7.3, Competency 5.2, Competency 5.3, Competency 3.4

Note. Proportion $_{IT}$ refers to the proportion of important tasks. Proportion $_{RTT}$ refers to the proportion of relatively time-consuming tasks.

Differences in Perceptions of the Importance of Roles and Competencies

Two groups of individuals closely related to tutors, namely students and administrative staff at Beijing Open University, were also invited to participate in the survey as well as tutors. To examine if these three groups hold different perceptions regarding the importance of tutor roles and competencies in the e-learning environment, we performed a multivariate analysis of variance (MANOVA) to examine the differences in average scores on the importance scale for 7 roles and 20 competencies among the three groups.

Before conducting MANOVA, Levene's test was used to assess the equality of variances for each role importance variable and each competency importance variable calculated for three groups. The results of Levene's test showed that variances of the populations from three group samples for each role importance variable and each competency importance variable are equal ($p>0.05$), indicating that the assumption for the ANOVA is not violated.

A MANOVA was performed on the seven role importance variables as combined dependent variables. With the use of Wilks' criterion, it was found that the combined dependent variable was significantly affected by group (Wilks' Lambda =0.744, $F(14, 792) = 3.05$, $p < 0.05$). Univariate tests for significance indicated that there exist significant differences in technologist ($F=4.35$, $p<0.05$, $\eta 2=0.02$) and Manager/administrator roles ($F=4.30$, $p<0.05$, $\eta 2=0.02$) among group. The Post-hoc test indicated that tutors and students confer greater importance to the Technologist and Manager/administrator roles than do administrative staff (See Table 8).

Table 8

Differences in Role Importance among Three Groups

Roles	Tutor [a]		Student [b]		Administrative staff [c]		F	η2	Post-hoc test
	M	SD	M	SD	M	SD			
Technologist	4.20	0.61	4.10	0.74	4.01	0.53	4.35**	0.02	ac* ,bc*
Manager/ Administrator	4.09	0.68	4.06	0.75	3.76	0.72	4.30**	0.02	ac* ,bc*

*p<0.05.

**p<0.01.ab refers to the significant role importance difference between tutor and student, and the rest is similar.

Then, a MANOVA was performed on the 20 competency importance variables as combined dependent variables. With the use of Wilks' criterion, it was found that the combined dependent variable was significantly affected by group (Wilks' Lambda =0.896, F (40, 766) =3.199, p <0.05). Univariate tests for significance indicated that there exist significant differences in C1.1 "Facilitate the cognitive process of course content" (F=4.43, p<0.01, η2=0.02), C4.2 "Help students solve basic technological problems encountered in the learning process" (F=11.63, p<0.05, η2=0.06), C7.1 "Monitor individual and group progress" (F=3.54, p<.01, η2=0.02), and C7.3 "Regulate student behaviors" (F=4.99, p<.002 , η2=0.02) among groups. The Post-hoc test indicated that the administrative staff confer less importance to C4.2, C7.1, and C7.3 than do tutors and students, and no significant difference was found between tutors and students. For C1.1, tutors' average score was significantly higher than students' score and administrative staff's score, while no significant difference was fond between students and administrative staff (See Table 9).

Table 9

Differences in Competency Importance among Groups

Competencies	Tutor[a]		Student[b]		Administrative staff [c]		F	η^2	Post-hoc test
	M	SD	M	SD	M	SD			
C1.1	4.55	0.43	4.42	0.49	4.40	0.42	4.43*	0.02	ab* ,ac*
C4.2	4.09	0.82	4.10	0.78	3.48	0.98	11.63*	0.06	ac* ,bc*
C7.1	4.05	0.73	4.10	0.76	3.77	0.85	3.54*	0.02	ac* ,bc*
C7.3	4.06	0.87	3.96	0.94	3.60	0.93	4.99**	0.02	ac* ,bc*

*p<0.05.

**p<0.01. ab refers to the significant competency importance difference between tutor and student, and the rest is similar.

Discussion and Conclusion

New Requirements for Tutors in the Educational Reform of China's Open Universities

This study supported the argument in the existing literature that new requirements for the roles and

competencies of tutors in the e-learning environment will emerge (Berge, 1995; Shepherd, 2003; Denis et al., 2004; Darabi, Sikorski, & Harvey, 2006; Chang, Shen, & Liu, 2014). Specifically, three new roles for tutors in the Chinese learning context were found, namely the Instructional designer, Manager/Administrator, and Social roles, expected of Open University tutors in the e-learning environment. Some new roles are even more highly prioritized. Traditional tutor roles were also found to be necessary, though with new tasks and a changed focus. Correspondingly, new tutor competencies are required, and their priority must be revised as well.

Among the new tutor roles emerging in the e-learning environment, the pedagogical role is worth noting. In the history of the Dianda system, tutors did not assume this role because distance education courses in China were dominated by cognitive behaviorist pedagogy for several decades, despite distance teaching having shifted from the TV and Radio broadcasting mode to the online teaching mode. Distance teaching in cognitive behaviorist courses is based on knowledge transmission. Thus, the tutor assuming the Instructional designer role in cognitive behaviorist courses considers the design of knowledge organization and representation as their core task. Accordingly, the course is typically designed before being delivered to students. Course design is mainly conducted, moreover, by a team of individuals, typically including a course manager, a content expert, an instructional designer, a media designer, and a technology developer. Tutors are not involved in course design and development. Tutors' responsibility, rather, is to provide local students with cognitive support after students consume the course materials. However, the current study shows that, among all tutor roles, the Instructional designer role was ranked at the first priority level. This role not only was ranked highest by participants in terms of importance but also obtained the third highest average score on the importance scale. All tasks associated with this role were scored as important, and 20% of the tasks were scored as relatively time-consuming. The above findings suggest a necessary change in defining the tutor's role for facilitating the educational reform of China's open universities.

Concerning the changes of the traditional roles of tutors, the instructor role deserves attention. This role was traditionally entailed explaining course content and answering students' questions. However, this role has changed in the e-learning environment according to the results of the present study. As instructors, tutors are expected to develop useful learning recourses and to facilitate productive learning interactions. These two tasks were also regarded as more important than were traditional tasks. It is indeed a dramatic change for the instructor role. Previously, tutors in open universities were not required to help develop learning recourses or to facilitate interaction. In the cognitive behaviorist pedagogy, the teaching materials were considered predefined, and learning was conceived of as an individual process.

The new requirements regarding tutors' roles and competencies found in the current study evidence a shift in pedagogy within the open universities in China. In recent years, encouraged by an in-depth understanding of learning as well as the development of two-way communication technologist, social-constructivist pedagogies have been gradually adopted by a large number of online courses offered by China's open universities. "Social-constructivist pedagogy acknowledges the social nature of knowledge and of its creation in minds of individual learners" (p.84), and placed more importance on social construction and representation, multiple perspectives and awareness that knowledge is socially validated (Anderson & Dron, 2011). Social-constructivists view online teaching as a social activity. Hence, the social-constructivist instructional design of courses imputes greater importance to

facilitating productive interaction and social construction rather than organizing and representing knowledge. It is difficult for traditional course teams to design and develop social-constructivist teaching activities well in advance. On the one hand, this difficulty arises due to the dynamic essence of teaching activities with social characteristics. On the other hand, it is challenging to design an activity for all students, as great differences exist among learners in terms of culture, education context, social role, age, and background knowledge. Therefore, to implement a social-constructivist course, the course team must invite tutors to refine and optimize predesigned teaching activities for local learners and rely on tutors to organize and facilitate the social activities required for learning. This involvement by tutors is necessary because tutors know more about local students and are situated at the shortest transactional distance from the student.

In conclusion, new requirements for tutors found in the present study indicate that tutors no longer play a peripheral role in the distance teaching activities of open universities in the e-learning environment. This finding supports the work of Shelley, White, Baumann, & Murphy (2006) that indicated the roles that tutor assume will continue to change in response to shifts in technology, the development of learning environments, and political and institutional factors such as funding and quality control procedures. In the e-learning environment, tutors will assume a core role in influencing a shift toward constructivist pedagogy and in designing course content. The findings of this study also echo the arguments that the traditional division between course development and learning support has been gradually blurring in online environments (Thorpe, 2002; Tait, 2014). Namely, in the context of the e-learning environment, the current study questions the efficacy of the old model of teaching in which course designs precede learner support. Additionally, tutors should assume a key role in fusing course design and learner support. Equipped with the competencies identified in this study, tutors are likely to design, develop, and manage online courses by themselves, using powerful and easy tools, and abundant open educational resources (OERs) available online. This changing role makes tutors effectively identical to teachers delivering online courses in traditional universities and individuals delivering online courses in their own name, such as Khan Academy. Thus, as highlighted by Tait (2014), the division of labor for course teaching in the second generation of distance education may no longer be necessary. A special position for supporting local students in some online courses must not be established. Instead, tutoring could be offered by the instructors who develop the course, as well as being offered to any student through the Internet.

The Priority of Learning Management and Technology Use

In this study, the roles and competencies corresponding to learning management and technology use scored at the medium level with respect to priority. To some extent, this scoring resulted from administrative staff's lower ratings. A significant difference was observed in perceptions of the importance of roles and competencies regarding the two aspects between administrative staff and the other two groups, namely tutors and students. Tutors and students considered relevant roles and most competencies as important, while administrative staff held a different view.

Existing literature shows that the managerial role usually has a lower priority for online teachers compared with the pedagogical role. The Manager/Administrator role is identified by Denis et al. (2004) as the peripheral role of an e-tutor. The role is ranked fifth among seven identified roles of the academic counselor in the Indira Gandhi National Open University (Mishra, 2005) and seventh among eight

identified roles of the online instructor in the study of Bawane and Spector (2009). Further interviews with administrative staff highlight another reason for the lower priority attributed to the managerial role. That is, there has been a specialized position, the learning counselor, created in the Open University that is responsible for managing learning. The respondents interviewed considered that tutors could become involved in, but must not invest much energy into, learning management work because learning counselors were responsible for this work. By contrast, we argue that learning management would receive a higher priority in the e-learning environment for the following two reasons. First, with the acknowledgement and implementation of social-constructivist and connectivist pedagogies in online courses offered by open universities, social interaction would be the indispensable and in fact a pivotal learning activity, which cannot be performed efficiently without the teacher's management and intervention. Thus, in the e-learning environment, learning management is a concern regarding not only the learning process of an individual but also the efficiency and quality of both teaching and learning. Second, recent years have witnessed an increasing interest in storing big data on the teaching platform, which are perceived to provide valuable and meaningful information to teachers to support learning. Based on learner data stored in the platform, the tasks of monitoring online learning process and engagement, diagnosing learning problems and providing early warning and individualized interventions would be key features of future online tutoring. Thus, learning management would be the basis of most online tutoring activities. Above all, learning management would extend tasks and become the key for effective and efficient tutoring in the e-learning environment. Hence, a greater number of tutor training programs on learning process management and learning analysis must be developed.

Contrary to suggestions on the importance of technology proficiency for distance teachers in early studies (Thach & Murphy, 1995; Williams, 2003; Denis et al., 2004; Egan & Akdere, 2005), the role and competencies corresponding to technology use did not receive higher priorities in the present study, a finding congruent with the conclusions inferred from the studies of Bawane and Spector (2009) and Darabi et al. (2006). As explained by Darabi et al. (2006), "the conspicuous absence of technological concern among the rated tasks stems from the fact that qualified DE instructors nowadays are proficient in the use of computers and software as an integral part of their job. Carrying out the logistical and even pedagogical tasks in a DE environment seems almost impossible without the instructors' technological proficiency" (P114). This statement indicates that technology proficiency has been a basic requirement for qualifying as an Open University tutor in China today. Thus, basic technology training must not necessarily be a priority for tutors.

The Priorities of Tutor Roles and Competencies Compared with Previous Studies

The current study classified seven identified tutor roles into three priority levels and 20 identified competencies linked to the seven roles into four priority levels. These classifications were established using the scores on the importance scale and relative time spent scale of each task associated with roles and competencies by tutors, administrative staff, and students in a Chinese open university. The roles and competencies with higher priority levels were suggested to be cultivated as priorities in training programs for tutors and to be the core objectives of tutors' professional development. Compared with most studies, which have focused solely on the perceptions of experts or in-service e-tutors/e-teachers, this study broadened the considered perspectives on the priority of tutors' roles and competencies by seeking the views of students and staff related to tutoring.

All open universities expect tutors to assist with student support services. According to Tait (2000), student support in open universities involves three basic functions: cognitive, affective, and systemic functions. Previous studies have shown that the core roles of tutors in open universities are usually regarded as facilitating individual students' cognition of course content through interaction with the student. For example, Denis et al. (2004) asserted that the roles linked to interaction between the tutor and the learners should be regarded as central roles of online tutors. In Mishra's (2005) study on academic counselors of IGNOU, three roles, namely assessor, coach, and tutor, received the highest scores of importance. The findings in the current study accord with the previous studies in that the Instructor and Evaluator roles are classified as the first priority level. However, it was found that the priority of tutors' roles has changed with the reorientation of tutors' role in distance teaching triggered by the shift of distance education pedagogy in the e-learning environment. In particular, the priorities of the Instructional designer role and the developing learning content competency were found as pivotal for informing changes in the tutor's role in China's open universities.

Notably, the roles corresponding to the first priory level in the present study are consistent with the e-instructor's roles that are delegated a high priority in relevant studies in broader online education contexts, including online learning and blended learning in traditional universities and schools. For example, Bawane and Spector (2009) rank the priority of pedagogy role (associated with the Instructor and Instructional designer roles in the present study) and the evaluator as first and third place among eight roles of the online instructor, respectively. Chang et al. (2014) found that university faculty in Taiwan rank content expertise, instructional design, and learning assessment as having the three highest priorities among seven e-instructors' competencies. This finding reveals that tutors no longer provide merely cognitive support to students; rather, they are also involved in course design and development, which involvement in turn informs the fusion of course development and student support in open universities of China. This finding also echoes Darabi et al.'s (2006) arguments that the priority for online instructors is course maintenance, as is common for traditional face-to-face instructors; for online instructors, the logistical aspects of DE are relatively new and therefore more salient.

Tutors are typically expected to provide emotional support to students because tutors would influence students' satisfaction regarding the education services provided by open universities. In the e-learning environment, the social role of tutors has been highlighted as a component of emotional support (González-Sanmamed, Muñoz-Carril, & Sangrà, 2014; Baran, Correia, & Thompson, 2011; Guasch et al., 2010), which was suggested to affect the learning process and outcomes. The social role is identified by Berge (1995) as one of four necessary roles assumed by instructors in CMC situations and is ranked fourth in terms of the priority of eight roles associated with online instructors in Bawane and Spector's (2009) study. However, the social role is ranked lowest in the present study. This low ranking may indicate that this role is required at early stages in a Chinese open university to promote online teaching based on social-constructivist pedagogies. Chinese tutors/students/administrators have begun to understand the importance of interaction for learning. However, they have not fully realized the significance of social environments to foster individual sense making and social knowledge construction. Thus, relevant training on social-constructivist pedagogies and building social environments for learning would be necessary for in-service tutors.

The competencies related to facilitating the cognition of course content and communicating with students have usually been emphasized as core competencies of e-tutors or e-instructors (e.g., Denis et

al., 2004; Mishra, 2005; Muñoz-Carril et al., 2013; Chang et al., 2014). However, another two competencies linked to the facilitator/advisor role, "motivating students" and "developing students' ability of self-regulated learning," are ranked as higher priorities by tutors in the e-learning environment in the current study as well, as important as the competencies related to learning assessment and instructional design. On the one hand, this ranking reflects that open universities in China have placed notable emphasis on the development of the distant learning student. On the other hand, it also reveals students' urgent expectation for tutors to help them adapt to more independent online learning environments. Generally, most distance students in China have been unprepared for independent learning and lack intrinsic motivations to learn. Before the online teaching reform of open universities in China, students did not need to possess new abilities because the learning activities were organized in classes at local learning centers and were primarily characterized by lecture formats. However, with the application of social-constructivist and connectivist pedagogies in open university courses, an increasing number of learning activities will be conducted online by students themselves, thus requiring students to develop self-regulated learning abilities. Thus, training tutors in open universities to learn how to motivate students to learn and develop self-regulated learning abilities is an urgent task.

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