Applying Anchored Instruction in Crowdsourcing Platforms to Promote Career Competence of Digital Media Students

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Abstract. The gap between the career competence and real needs of operating post significantly affects the development of enterprises. This paper combines the anchored instructional strategies and crowdsourcing to innovate the practice teaching mode of digital media specialty in vocational colleges. The goal is to explore the possibility of improving the career competence of students. A preliminary evaluation is conducted based on a 4-month longitudinal study. Thirty-nine junior students were tracked and 32 of them responded. The instruments included two popular crowdsourcing platforms in China and a testing scale of career competencies. The data was collected via Internet survey first followed by a telephone interview if the students did not respond within a fixed time. The results show that the crowdsourcing platform is an appropriate training environment where students can understand more market needs through the platform and students’ experience has been greatly improved through training and cooperation. In conclusion, the approach proposed in this study is useful in promoting career competence of digital media students in vocational colleges.

1. Introduction
With the rapid development of networking technology, the digital media industry has become the center of the knowledge economy in twenty-first Century, which is undergoing a cross-boundary, integrated and complex development patterns. This increases the needs of practitioners, especially the high-end technical personnel. The digital media is an emerging interdisciplinary area that is based on information science, digital technology and modern art design. The nation attaches great importance to the professional development of digital media. Also, companies are eager to get highly-skilled employees. However, the level of digital media students of vocational colleges in terms of the learning ability is relatively low compared to the counterparts in universities. For these reasons, employees are usually unable to meet the needs of industrial development of high-technical personnel, which negatively influences the identification of personnel. The gap between the career competence and real needs of operating post significantly affects the development of enterprises (Guan, Yang, Zhou, Tian, & Eves, 2016). Promoting the career competence of digital media students becomes increasingly urgent.

As is known to all, the traditional education has some significant limitations. For example, knowledge learned in college that cannot be retrieved when it is needed for out-of- college situation. This is termed as inert knowledge which, from most educators’ perspectives, can be addressed by anchored instruction. This approach takes advantage of students’ natural abilities to learn in authentic contexts and tasks and derives many of its principles from the theoretical framework of situated cognition using problems or tasks as the core (Zydney, Bathke, & Hasselbring, 2014). On the other
hand, the crowdsourcing is a popular phenomenon depending on collective intelligence and Internet, which conforms very much to characteristics of digital media students of vocational colleges. Based on these, this paper combines the anchored instructional strategies and crowdsourcing to innovate the practice teaching mode of digital media specialty in vocational colleges. The goal is to explore the possibility of improving the career competence of students.

The paper is organized as follows. Section 2 reviews the related works. Section 3 describes the proposed innovative model. Section 4 evaluates the model using a longitudinal study. Finally, we draw conclusions and discuss implications in Section 5.

2. Related Works

2.1. Anchored Instruction

The anchored instruction is a major paradigm for technology-enhanced learning which stresses the importance of solving complex problems and placing learning within a meaningful context (Bransford, Sherwood, Hasselbring, Kinzer, & Williams, 1990; Elcin & Sezer, 2014). It typically connects learning contexts to realistic tasks and builds links within and between the content domains to support learning opportunities that are relevant to and extend thinking to other content areas.

In this paradigm, learning and teaching activities should be designed around a presupposed anchor which can be some sort of case-study or problem situation. It is similar to the problem-based learning (PBL) but they have still some differences (Zydney et al., 2014). For example, students in PBL expect more first-hand research on learning resources (Mumtaz & Latif, 2017), while the anchored instruction is closely tied to case-based learning, targeting to explore and discuss a particular task or problem, rather than simply read or watch (Bottge et al., 2015). The students are immersed in a story or scenario that allows them not only to explore the problem, but also to acquire skill sets that can be used in the real world.

Anchored instruction model requires teachers to build interesting and authentic learning contexts with real problems or tasks. Based on the anchors, students complete the problems or tasks by seeking information, teamwork, and reasoning.

Figures 1, 1. Steps of anchored instruction

The main steps of anchored instruction are as follows:
1) Establishing contexts. This is to build a learning environment that is consistent with the ongoing work.
2) Determining tasks. This is to provide questions or tasks relating to learning content in real contexts. The goal is to cast the anchor.
3) Self-regulation. Students try to solve problems individually. Teachers are responsible for providing solutions and clues to the students to complete the tasks.
4) Collaboration. Students address the difficulties in learning through teamwork. They can supplement, deepen and revise the understanding of knowledge.
5) Evaluation. Teachers are required to record students' performance in learning process, and study students' ability of self-regulated learning and externalizing knowledge.

2.2. Crowdsourcing Education
In recent years, the term crowdsourcing, first coined by Howe (2006), is one of the key elements of Web 2.0 era, referring that a company or institution outsources the work and tasks that carried out by the employees in the past to a non-specific public network in a free and voluntary manner (Bate et al., 2017). It is a distributed problem-solving and production process that addresses tasks to an undefined, large group of people or community (Li & Hongjuan, 2011). Many educational researchers attempted to apply crowdsourcing techniques in education to enhance social collaboration and skills etc. through authentic tasks and collective intelligence of humans (Ashikawa, Kawamura, & Ohsuga, 2017). Corneli and Mikroyannidis (2012) conducted a role-based analysis of online learning communities in terms of crowdsourcing education on the web. They investigated the concept of crowdsourcing in education though analyzing two open online learning communities so that educators can better extract general recommendations for building communities and applying crowdsourcing techniques in educational contexts. Solomon, Ariffin, Din, and Anwar (2013) reported that the uses of crowdsourcing in higher education can explore at how crowdsourcing had been practiced presently in higher education institutions through several projects. They categorized the crowdsourcing in higher education into four primary strategies, i.e. crowd wisdom, crowd creation, crowd funding, and crowd voting. The work of how crowdsourcing leads to the innovation and learning outcomes was conducted by Way, Ottenbacher, and Harrington (2011) who aims to provide support for crowdsourcing as a method of enhancing learning outcomes and knowledge retention while fostering critical thinking skills for a technologically based learning generation.

The theoretical underpinning of crowdsourcing lies in the social constructivism which determines that learning is an activity of social networking (Barak, 2017). Social constructivism emphasizes the importance of culture and context in understanding what occurs in society and constructing knowledge based on this understanding (Lynch, 2016). It is based on specific assumptions about reality, knowledge, and learning, which can be used to interpret the use of crowdsourcing in education. Based on this, the crowdsourcing is used for educational purposes by some researchers such as Blackwell, Travis, Arbuckle, and Ross (2016), little works have reported how to combine the crowdsourcing with useful instructional model, e.g. the anchored instruction, to promote career competence of students.

3. The Proposed Model
This model uses the anchored instruction strategy on the crowdsourcing platforms, and cultivates the students' career competence through teaching and learning process as shown in Fig 2. In the model, the teaching content is not only the presented materials, but also the crowdsourcing tasks matching the teaching content. Learning is not passively accepting knowledge, but acquiring knowledge and competence by accomplishing the tasks. Specifically, the implementation of model has the following steps.

1) Introducing platforms. Based on the anchored instruction, teachers create a real learning context and guild students to learn in platforms.

2) Receiving tasks. This step is also called anchoring. Teachers act as gatekeepers who issue tasks that are close to the zone of proximal development of students.

3) Decomposing tasks. Teachers guide students to learn and decompose the task into sub-tasks.

4) Planning tasks. Students formulate the appropriate solutions according to the employer's requests. They establish small working groups of 2 to 3 people depending on the complexity of tasks. Students control the learning progress and master corresponding knowledge and skills during the period of completing tasks.

5) Completing tasks. Students complete a designing work and submits it to the employer. This step is also called unmooring which echoes anchoring.

6) Evaluating tasks. The evaluation is achieved by employers, teachers and students. First, employers determine the winning bids, the alternative bids and the fails after submission. The winning bids reflect whether their work really meets the market demand.
7) Tracking tasks. After submitting the work to the employers, the student will observe the works submitted by other Witkeys in addition to tracking their own bids.

Figure 2. The mode of using anchored instruction in crowdsourcing platforms

In this model, teachers are not the lecturers in the traditional class teaching, but the collaborators and directors. In addition to motivate students, teachers guide students to face difficulties, and solve the problems actively. The learning content, method and effect are corresponding to the real tasks, methods and results in the workplace. Students can not only operate the software, but also complete a number of design works using task-oriented method. In the completion of the task, students are not simply imitate, but take the initiative to collect tasks and communicate with employers or customers.

4. Evaluation Method

4.1. Evaluation Target
This section evaluates the proposed instructional model using a 4-month longitudinal study which starts from the beginning of the final term till one month after students entering the entrepreneurs. The evaluation target is to examine whether or not the proposed instructional model can be used to promote the career competences of digital media students.

4.2. Participants
The study tracks 32 junior students (12 boys and 20 girls) of digital media specialty of a vocational college in southwest region of China. The ages range from 18 to 21 years old. It is worth noting that the subjects of the experiment are freshmen, the first year of vocational training, when students have not fully mastered the use of digital media-related software and the ability of completing tasks independently. After graduation, students will enter the digital media-related enterprises to engage in the design and development of creative products. The study adopts crowdsourcing education which is based on real tasks released on crowdsourcing platforms. Students complete tasks under the guidance of anchored instructional strategies. Finally, there are 7 samples are lost and 32 samples respond.

4.3. Instruments
The study uses two crowdsourcing platforms in China to support anchored instruction. One is the Zhubajie website. The service transaction category covers creative design, website construction, network marketing, copywriting planning and life service etc. The website has tens of thousands of service providers to offer customized solutions for businesses, public organizations and individuals, which transform the creativity, intelligence, and skills into business and social values. The other platform is called the Time and Wealth website, which is also a representative crowdsourcing platform in China that supports all the corresponding people around the world to transform their knowledge, wisdom and creativity into treasure. The people who use the crowdsourcing platforms are named as
witkey in China (Yu, Ming, & Xiong, 2013) whose jobs are to provide online creative services for various organizations, enterprises, organizations, social organizations and individuals (Han & Cen, 2014).

In literature (Kuijpers & Scheerens, 2006), there are totally four career competencies which are also used in this study. They are respectively the competency to reflect on personal capacities and motives regarding a career (Murphy & Ensher, 2001), the competency to explore the labor market and specific work environment for suitable work (Ball, 1997), the competency to plan and act on one’s own learning and working processes, and the competency to show and discuss one’s capacities and values regarding work, thereby increasing one’s choices in career development. In addition, the abilities regarding information collection and processing, communication and planning, and teamwork are included in the interviewing outline. The instrument was delivered via Internet survey first followed by a telephone interview if the participants did not respond within a fixed time.

4.4. Results
The results show that the Zhubeajie and Time-and-Wealth websites are suitable platforms for cultivating career competence of students in vocational colleges. After using the crowdsourcing platforms, students (62.5%, n=20) understand more market needs and know clearly how to make their works become commercial products. Students (50%, n=16) understand the business and corresponding standards more which are laying the foundation for future work. For example, twenty-one students (65.6%) had clearly said:

“From Zhubeajie and Time-and-Wealth websites, I understand more market needs and what kind of work is economically valuable. I am more skilled in Photoshop and CorelDraw software and know how to communicate with customers to complete a commercial work.”

Students (81.2%, n=26) can outlook the future work and methods through training. Commodity projects in platforms broaden their horizon, increase their experience, and make them Clear learning about the goal of designing relevant software (93.7%, n=30). Students realize that they should collaborate with customers when designing commercial products, just as 71.9% of respondents (n=23) told the authors that:

“Zhubeajie website is a good exercising platform for me. It has a lot of designing tasks that I can do my best to try. Also, I can observe works done by other people to expand my horizons.”

The tasks from the market is complex. It is critical to transform the market needs to corresponding tasks that are appropriate for students. The difficulty of tasks has significantly impacts on the enhancements the students’ competences. If the tasks are too simple, the students have no enthusiasms. On the other hand, if the tasks are too difficult, students do not have the sufficient confidences.

5. Discussion
This study indicates that using the anchored instruction in crowdsourcing platforms improves the traditional practice teaching mode of digital media specialty in higher vocational education. From the pedagogy point of view, teachers no longer transfer the knowledge linearly, but utilize the crowdsourcing tasks i.e. the anchors in learning where students acquire meaning construction and relevant skills by completing the on-going project. Learning content is the real project rather than textbooks, which is closer to the market environment. In addition, the reward mechanism after winning the bidding stimulates the learning enthusiasm and initiatives. The evaluation of the level of students is not only based on the teacher’s subjective rating, but also consider the market and peer evaluations, focusing on the emotion, attitude and the ability of knowledge transfer.

The model proposed in this study has the following pedagogical implications. First, it can improve the occupational skills. Students complete different types of crowdsourcing tasks with the help of professional designers, which enhances the students’ artistic creativity, technical performance as well as professional skills. Second, it can promote comprehensive abilities of students. The completion of crowdsourcing tasks not only requires mastery of professional knowledge and skills, but also requires professionalism of planning, arrangement and communication, among others. The model requires students to use their knowledge reserves to settle new problem domains. Students will work like a professional designer which plays a significant role of enhancing the professionalism and literacy. And
third, it can facilitate employment. After learning, students have a certain degree of work experience which is urgently needed in markets. At the same time, crowdsourcing websites can promote students’ employment status, leading the entrepreneurship in the career. Students can use the experience of taking tasks on the websites to set up a working studio after graduation. It can transform the role of students to prospective staffs.

Besides, the student's experience has been greatly improved through training in crowdsourcing platforms, and the completion of commercial works stimulates the confidences and motivations of students. Later in the study, we will conduct crowdsourcing training to develop students' confidence which is undoubtedly positive in the development of entire professions.

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