

Process Phase Situated Interactive On-Line Learning/Instruction Platform: Role-Play Based Business Operation Management

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Abstract: *Traditional learning/instruction of management accounting is not accordance with the requirements of actual business operation and management condition. This research aimed to develop an innovative instruction tool named as process phase situated interactive on-line learning/instruction platform which was developed particularly for effective learning/instruction of management accounting in order to conform the requirements of actual operation management under dynamic multi-dimensional cross-related condition. In addition, an instruction material named as process phase situated role-play practice was developed as well which was applied together with process phase situated interactive on-line learning/instruction platform. The innovative value of this research solves the disparities between traditional learning/instruction of management accounting and the requirements of actual business operation and management:*

- *Operation management situation simulation under dynamic multi-dimensional cross-related business condition*
- *Process phase situation simulation of continuous optimization of management accounting*
- *User-friendly human-machine interface for manipulative setting of multiple situations autonomously*
- *Learning/instruction/application-in-one on-line platform*
- *Automatic data streaming and calculation*
- *User-friendly human-machine interface for visional express feedback and interpretation*
- *Instant messaging interactive communication platform between instructor and learners*

Keywords: Management Accounting, Process Phase, Situated Role-Play, On-Line Learning/Instruction, Instant messaging about four key words separated by commas

1. INTRODUCTION

The actual business operation and management situation is dynamic process phase multi-dimensional cross-related. The situation of actual management accounting is as same as the actual business operation and management with complex multi-dimensional cross-related factors which affect each other. But traditional learning/instruction of management accounting is running by theory lectures and case study under particular individual operation condition and certain time spot instead of process phase and dynamic changes, which is not in line with the requirements of actual business operation and management. Consequently,

obvious disparities between traditional learning/instruction of management accounting and the requirements of actual business operation and management have been taken place, which affects employment performance significantly. The major disparities are listed as followings:

- Lack of operation management situation simulation under dynamic multi-dimensional cross-related condition
- Lack of process phase situation simulation of continuous optimization of management accounting
- Lack of user-friendly human-machine interface for manipulative setting of multiple situations autonomously
- Lack of situated practical practices of management accounting for business operation and management problem solving
- Lack of the function of automatic data streaming and calculation
- Lack of user-friendly human-machine interface for visional express feedback and interpretation
- Lack of instant messaging interactive communication platform between instructor and learners

Therefore, this research aimed to develop an innovative instruction tool named as process phase situated interactive on-line learning/instruction platform (to be abbreviated as PPSI on-line learning/instruction platform) which was developed particularly for effective learning/instruction of management accounting in order to conform the requirements of actual operation management under dynamic multi-dimensional cross-related condition. In addition, an instruction material named as process phase situated role-play practice was developed as well which was applied together with PPSI on-line learning/instruction platform. The architecture and mechanism of the information system of PPSI on-line learning/instruction platform was designed to solve the following issues:

- How to design and construct operation management situation simulation under dynamic multi-dimensional cross-related condition?
- How to design and construct process phase situation

simulation of continuous optimization of management accounting?

- How to design and construct a user-friendly human-machine interface for manipulative setting of multiple situations autonomously?
- How to design and construct situated practical practices of management accounting for business operation and management problem solving?
- How to design and construct the function of automatic data streaming and calculation?
- How to design and construct a user-friendly human-machine interface for visual express feedback and interpretation?
- How to design and construct a Learning/instruction/application-in-one on-line platform?
- How to design and construct an instant messaging interactive communication platform between instructor and learners?

The core concept of PPSI on-line learning/instruction platform together with the instruction material of process phase situated role-play practice is to integrate the theories of situated learning, role-play instruction and interactive learning/instruction into the construction of dynamic process phase situation and multi-dimensional cross-related situated practice in order to simulate actual business operation and management situation.

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2. THEORY

2.1 Situated learning

Situated learning theory notes that learners merge themselves into practical situation and utilize knowledge and skill in problem solving in order to generate learning performance and effective applications [1] [2]. Therefore, the effective learning is only taken place while learners conduct practical practices under meaningful situation [3] [4]. Lave and Wenger [5] noted that shared practice and member of community of practice developed social interaction between students and experts under practical situation which generate effective knowledge acquisition through collaborative social interaction process [3].

2.2 Role-play instruction

The educational function of role-play instruction involved following five perspectives: 1. Allow students to express actual perception and receive value clarification under no constrain; 2. Assist students to handle unpredictable condition in flexible ways; 3. Help students consider the social responsibility of each other and understand

complicate interpersonal problems through role-play; 4. Role-play under no-pressure simulated situation tolerates mistake or failure without fear and encourages students experience failure without losing learning interest; 5. Instructor facilitates students through scaffolding learning which results in better learning effect by inspiring students' learning motivation and interest [3] [6] [7].

2.3 The application of situated learning in on-line learning/instruction of management accounting

Compared with traditional learning, situated learning was more effective in inspiring students' learning motivation. Even the learning motivation of students participated in peer competition was not improved significantly. Eventually peer competition promoted situated learning [8]. Students were able to prepare well practically once market economy context and problem solving skill were merged into the instruction of management accounting [9]. The management accounting for actual business operation and management is under dynamic and changeable situation; however, most of instruction and curriculum of management accounting was designed as a static model. Therefore, the instruction design of management accounting and the corresponding on-line learning tool as well had to reflect the dynamic changeable situation of actual management accounting; furthermore, embedded into curriculum design and on-line learning/ instruction [10].

2.4 Interaction design for on-line learning/instruction of management accounting

Students were able to acquire in-depth and meaningful learning once on-line learning contained the following interactive learning/instruction in terms of instructor to instructor, instructor to student, student to student, student to instruction material, instructor to instruction material and instruction material to instruction material [11]. Constructing proper information system architecture of on-line learning/instruction is essential in order to apply on-line learning/instruction on theory lectures of mathematic calculation related courses and knowledge acquisition was able to be achieved [12]. It was required to introduce information system technology of on-line learning, particularly generated the interaction for instructor to instructor and student to instruction material, for the instruction of management accounting which involved the instruction material of mathematic calculation such as financial statements in order to construct the bridge for students to link with actual employment needs [13] [14]. The interaction between students and instructor or peers through the discussion board of on-line learning was able to construct better learning environment of effective participation, which promote students' meaningful participation of learning and instruction activities [15]. A user-friendly on-line game which reflected business management accounting effectively was applied for the interaction between students and instruction materials, which encouraged students' proactive learning and resulted

in both instruction and learning quality enhancement [16]. Instant message software tool operated together with on-line learning was able to construct effective interaction between instructor and students [17].

2.5 The knowledge acquisition of instruction/learning community was constructed by the information system architecture design of on-line learning

The information system architecture of on-line learning was designed to facilitate the identification and organization of multi-dimensional knowledge affiliation. Complete knowledge acquisition was able to be achieved by situated practices of multi-dimensional knowledge affiliation in on-line learning consequently [11] [18]. The information system architecture of on-line learning was designed to compromise instruction communities and learning communities, which facilitated the development of instruction/learning and practical practice communities. And it was essential factor of successful social knowledge construction [11].

3. METHOD

An innovative instruction tool named as PPSI on-line learning/instruction platform together with the instruction material of process phase situated role-play practice which was operated on PPSI on-line learning/instruction platform was developed in this research:

3.1 The development of PPSI on-line learning/instruction platform

The platform was developed to conform following innovative value of unique functions which were designed to solve existing disparities between traditional learning/instruction of management accounting and the requirements of actual business operation and management:

- Operation management situation simulation under dynamic multi-dimensional cross-related condition
- Process phase situation simulation of continuous optimization of management accounting
- User-friendly human-machine interface for manipulative setting of multiple situations autonomously
- Learning/instruction/application-in-one on-line platform
- Automatic data streaming and calculation
- User-friendly human-machine interface for visional express feedback and interpretation
- Instant messaging interactive communication platform between instructor and learners

3.2 The instruction material development of process phase situated role-play practice

- In this research multiple situated role-play practices were designed as problem solving tasks to have learners merged into respective business operation and management situation which was simulated by PPSI on-line learning/instruction platform and then learners accomplished problem solving tasks through continuous

optimization of management accounting by independent individual or community.

- The instructor played as a scaffolding facilitator to communicate with learners and/or learners communicated with each other in their learning community in the problem solving process through instant messaging interactive communication of PPSI on-line learning/instruction platform, which resulted in situated role-play practices.
- The instruction material drove learners to utilize corresponding knowledge to conduct operation and management problem solving in situated role-play practices in order to accomplish problem solving through learning-by-doing activities.

3.3 Design and construction of process phase situation

This research designed and constructed required process phase situation through PPSI on-line learning/instruction platform together with the instruction material of process phase situated role-play practice, which facilitated learners conduct situated role-play practices in order to accomplish situated management accounting practices that simulated actual business operation and management problem solving:

- Operation management situation simulation under dynamic multi-dimensional cross-related condition
- Process phase situation simulation of continuous optimization of management accounting

4 RESULT

4.1 The construction of PPSI on-line learning/instruction platform and corresponding process phase situation

Management accounting of star-up venture was taken as a baseline in this research. PPSI on-line learning/instruction platform was developed as financial statements format under MS Excel base. Three statements were involved in terms of venture portfolio fund allocation statement, profit and loss statement and cash flow statement. Considering actual needs and limitation of instruction/learning, the followings conditions were leave out in terms of stock, payment term, non-operating investment and revenue, follow-up capital asset investment. The construction of major functions of PPSI on-line learning/instruction platform and corresponding process phase situation were shown as followings:

4.1.1 User-friendly human-machine interface for manipulative setting of multiple situations autonomously

- Instructor was able to set up specific business operation and management problem situation by autonomously manipulating respective parameter setting of three financial statements applied in PPSI on-line learning/instruction platform.
- Learners were able to conduct business operation

and management problem solving by autonomously modifying respective setting of three statements through identifying root causes from three statements and corresponding data.

4.1.2 Automatic data streaming and calculation between multiple financial statements

- Multi-dimensional cross-related influence of business operation and management situation was simulated by automatic data streaming and calculation between multiple financial statements of PPSI on-line learning/ instruction platform.
- Automatic data streaming and calculation between multiple financial statements reduced learners' recognition load by eliminating manual data affiliation and calculation.

4.1.3 User-friendly human-machine interface for visual express feedback and interpretation

- User-friendly human-machine interface of PPSI on-line learning/ instruction platform provided visual express feedback in the form of both financial statements and statistic diagrams, which enhanced the effectiveness of data interpretation and problem identification in order to promote problem solving performance.

4.1.4 Instant messaging interactive communication

- LINE instant messaging was utilized together with PPSI on-line learning/ instruction platform in order to realize the real-time communication between learners or between instructor and learners, which enhanced knowledge affiliation and application.
- Learning community, developed through utilizing LINE instant messaging communication, constructed systematic knowledge applied in operation and management problem solving.

4.1.5 Learning/instruction/application-in-one on-line platform

- All functions mentioned above together with process phase situation construction facilitated instructor to conduct management accounting instruction of business operation and management problems through utilizing PPSI on-line learning/ instruction platform to simulate dynamic multi-dimensional cross-related business operation and management situation. Learners learned how to apply knowledge in situated practices of business operation and management problem solving on PPSI on-line learning/instruction platform. Learning/instruction/application-in-one on-line platform was constructed consequently.

4.2 The instruction material development of Process phase situated role-play practices

Operation and management problems, designed as problem solving tasks which simulated actual business operation and

management situation, were developed as process phase situated role-play practices for learners in this research. The corresponding financial statements of management accounting, simulated the characteristics of financial statements under the situation of problem solving tasks, were designed by the instructor and set in PPSI on-line learning/ instruction platform. Then learners applied knowledge in problem solving tasks and conducted interpretation and optimization according to real-time visual express feedback of PPSI on-line learning/ instruction platform. The problem solving tasks developed as instruction material in this research were listed as followings:

- Over equipment investment of initial venture founding results in shortage of working capital
- Over store construction investment of initial venture founding results in shortage of working capital
- Over variable cost results in low gross profit rate
- Over fixed cost results in low net profit rate
- Insufficient cash flow

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