An Analysis of World of Warcraft Procedure

According to the 4C/ID Model

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Abstract

World of Warcraft (WoW) is one of the most popular online games. WoW can create a new further learning experience that can be ranged from simple games to incorporating complex graphics and virtual world games populated by a number of players simultaneously. In the field of education and learning experience, many instructional designers have conducted the educational games in the complex learning environment by using the 4C/ID model. Exploration of instructional design models applied into online games procedure will help educators and instructional designers to better understand the conduct of educational online games. This study will propose an analysis of the online game procedure of -WoW- according to the 4C/ID model, and then offers an alternative idea of conducting an Instructional Design with educational games online.
Introduction

Recent instructional theories tend to focus on authentic learning based on real-life tasks as the driving force for complex learning (Merrill, 2002). The general assumption is that such tasks help learners to integrate knowledge, skills and attitudes necessary for effective performance. Authentic learning tasks give learners the opportunity to learn a coordination of constituent skills to make up this performance. Eventually, they will enable learners to transfer from what is learned to their daily life or work settings called “learning experience” (van Merrienboer, Salden, Corbalan, de Croock, Kester, & Paas, 2003). There are several opportunities to extend the experience; for instance, instructors or courses might offer more sophisticated learning in modeling or scripting for better systems development, or stress opportunities for multi-university collaboration that we can see in many kinds of instructional media such as computer simulation, virtual environment, virtual world, electronic games, especially online games.

Online games can create a new opportunity to enrich the educational experience through media-rich immersive learning (Wagner, 2008). Online games have gained the popularity in games, particularly World of Warcraft (WoW), which has become the most successful online game ever. WoW has attracted considerable news media attention (Wagner, 2008). In many educational games, 4C/ID model has been applied to deal with the complexity of the games. Because of the effectiveness of four components in 4C/ID model, many instructional designers often use these effective components to conduct the educational games in the complex learning environment (van Merrienboer, Kirschner, & Kester, 2004). Assimilated with the online game, the tasks are sequentially ordered according to difficulty and are to be performed by players or
learners in simulated or real task environments. The learner’s goal is to solve a complex problem or to complete a complex set of procedures without assistance.

Many novice instructional designers try to integrate games online into the learning environments by conducting the educational online games, especially for kids. Many Websites provide free online kids games that are both fun and educational. Some of those offer kids a safe environment to discover their abilities and learn new skills with interactive and fun computer games. Those games build skills in math, logic, memory, vocabulary, alphabet, spelling, geography, computer skills, color identification, shape identification and other various problem solving. However, most of those games were conducted for main entertain purpose and separate from school instruction or courses curriculum.

This study will use the Delphi technique to gather data from educational games experts about the relationship between the WoW game procedure and the 4C Instructional design model. Then, proposing an analysis of procedure of the online games -WoW- according to the 4C/ID model in order to present an idea of how to use online game procedure in style of the educational environment. Moreover, this study will offer an alternative idea of applying the 4C/ID model with an online game into the classroom environments by conducting an example of the educational online games with some lessons in the real courses curriculum.

**Literature Review**

**Online games**

According to Rollings & Adams (2006), an online game is a game played over some forms of computer network. At the present, this almost always means the Internet or equivalent technology. The expansion of online gaming has reflected the overall expansion of computer
networks from small local networks to the Internet and the growth of Internet access itself (Rollings & Adams, 2006). Online games can range from simple text based games to games incorporating complex graphics and virtual worlds populated by many players simultaneously. Many online games have associated online communities, making online games a form of social activity beyond single player games (Wagner, 2008).

The rising popularity of Flash and Java led to an Internet revolution where websites could utilize streaming video, audio, and a whole new set of user interactivity. When Microsoft began packaging Flash as a pre-installed component of Internet Explorer, the Internet began shifting from a data/information spectrum to on-demand entertainment (Rollings & Adams, 2006). This revolution paved the way for sites to offer games to web surfers. Most online games like World of Warcraft, Final Fantasy XI and Lineage II charge a monthly fee to subscribe to their services, while games such as Guild Wars offer an alternative no monthly fee scheme. Many other sites relied on advertising revenues from on-site sponsors, while others, like RuneScape, let people play them for free with leaving the players the option of paying and unlocking new content for the members (Rollings & Adams, 2006).

**World of Warcraft (WoW)**

World of Warcraft (WoW) is known as an online role-playing experience set in the award-winning Warcraft universe. Players assume to have the roles of Warcraft heroes as they explore, adventure, and quest across a vast world. As of the connection through the internet, WoW, a "Massively Multiplayer Online Role Playing Game" (MMORPG), allows thousands of players to interact within the same world. In the World of Warcraft, either adventuring together
or fighting against each other in epic battles enables players to form friendships, forge alliances, and compete with enemies for power and glory (Bessiere, Seay, & Kiesler, 2006).

According to the Blizzard Entertainment (2008), WoW is Blizzard Entertainment's fourth released game set in the fantasy Warcraft universe. It was introduced by Warcraft: Orcs & Humans in 1994, and was released in 2004 for celebrating the 10th anniversary of the Warcraft franchise. The first expansion set of the game, the Burning Crusade, was released in 2007. The second expansion set was released in 2008 named Wrath of the Lich King (Blizzard Entertainment, 2008). With more than 11.5 million monthly subscribers, WoW is currently the world's largest MMORPG in those terms, and holds the Guinness World Record for the most popular MMORPG. In April 2008, WoW was estimated to hold 62% of the massively multiplayer online game (MMOG) market (Blizzard Entertainment, 2008).

The development of the WoW took roughly 4-5 years, including extensive testing. The 3-D graphics in WoW use elements of the proprietary graphics engine originally used in Warcraft III. The game was designed to be an open environment where players are allowed to do what they please to. Quests are optional and designed to help guiding players, allow character development, and spread characters across different zones in order to avoid what developers called “player collision”. The game interface allows players to customize appearances and controls, and install add-ons and other modifications (World of Warcraft Preview, 2008).

**Summary of WoW game procedure**

In the WoW, players control a character avatar within a game world in third person (with the option of playing in first person), exploring the landscape, fighting monsters, completing quests and interacting with NPCs (non-player characters) or other players. The player selects the character's race (species), such as Orcs or Trolls for the Horde or Humans or Dwarves for the
Alliance. Players must also select the class for the character, with choices such as mages, warriors and priests available. Some classes are limited to particular races. Players have to accept the quest to perform a mission task for the NPCs.

To create a new character, players have to follow the guideline and must choose between the opposing factions of Alliance or Horde. Characters from the opposing factions can perform rudimentary communication and trade, but only members of the same faction can speak, email, group, and share guilds. A rested bonus system is used, increasing the rate that a character can gain experience points after the player has spent time away from the game. Players will be able to complete the quest and gain the experience from the mission as well as any items or money they are offering as specific rewards. While a character can be played on its own, players can also group up with others in order to tackle more challenging content. In this way, character classes are used in specific roles within a group. When a character dies, it becomes a ghost at a nearby graveyard. Characters can be resurrected by other characters that have the ability, or can self-resurrect by moving from the graveyard to the place where they died. If this location is unreachable, they can use a special NPC known as a spirit healer to resurrect at the graveyard. Also, when players are having trouble completing a quest, finding a certain item/NPC, there are several web sites players can go to for help. Or they can get the quest helper add-on from “curse.addons” downloads.

In advance, players must revisit the areas they have been to collect the quests. They will make traveling to new flight paths. There are reserved for continued collection missions or those that have no limit to the amount players can turn in for reward. In addition, players can always make a character on a different realm, or transfer to another realm, once they are familiar with the game dynamics. Each realm acts as an individual copy of the game world, and falls into one
of four rule-set categories. Realms are either Player versus player (PvP) or Player versus environment (PvE). Roleplay variants of each are also available. Realms are also categorized by language, with in-game support in the language available. Players can move established characters between realms for a fee. Then the player may either select one of their previously made characters or create a new one.

The 4C/ID Model

The four components instructional design or the 4C/ID model was elaborated by van Merrienboer (1997). The model proposes four components to be considered in any design task. Those components compose of (1) learning tasks, (2) supportive information, (3) procedural information, and (4) part-task practice, which are illustrated in Figure 1 depicting the framework of the four components.

![Figure 1](image)

**Figure 1** Schematic representation of the four components: learning task, supportive information, procedural or JIT information, and part-task practice (van Merrienboer and Paas 2003, p. 13)
In the 4C/ID model (van Merrienboer 1997; van Merrienboer et al. 2002a; van Merrienboer and Paas 2003), learning tasks are authentic and meaningful real-life experiences that are provided to the learners. The learning tasks are typically performed in a real or simulated task environment, and they confront the learners with all constituent skills that make up a complex skill. The term ‘complex’, as used in complex cognitive skills according to van Merrienboer (1997), is used in the sense that the skills comprise a constituent set (integrated sets of knowledge and skills or recurrent and non-recurrent skills). At least some of those constituent skills involve conscious processing. The term ‘cognitive’, as used in complex cognitive skills, also indicates that the majority of the constituent skills are in the cognitive domain. In this regard, learning tasks allow for simultaneous practice of multiple learning goals (recurrent and non-recurrent constituent skills) so that students learn to coordinate those multiple learning goals. In other words, learning tasks allow simultaneous practice of domain-specific knowledge and cognitive strategies. Each of these components is described below.

**Learning tasks**

Learning tasks are the key component of the model. Concrete, authentic and meaningful whole-task experiences are provided to learners to promote the construction of cognitive schemata and enable the learners to achieve a desired learning goal. These tasks may take many different forms, such as problems, practice activities, case studies, projects and so forth. Learning tasks are organized in a simple-to-complex order, and these learning tasks are categorized by task classes, with a simpler version of the whole task serving as task class 1, a more complex version of the whole task serving as task class 2, and so on (van Merrienboer 1997, 2007; van Merrienboer and Kirschner 2007). For example, if the complex whole task involves conducting a search for literature on a given topic, a simple version of the whole task class would involve
searching in a topic area in which the concepts are clearly defined, working with one database and employing only a few search terms, yielding a limited number of relevant articles. The more complex version of the task class would be a case in which concept definitions within the topic area are unclear, and in which full-text searches have to be performed in several relevant databases and with many search terms interconnected by Boolean operators, so to reduce the number of irrelevant articles likely to be identified (van Merrienboer et al. 2003).

As importantly, learning tasks within the same task class must show high variability in terms of the contexts or conditions in which the task has to be performed. For example, learning tasks for the literature search example may differ with regard to the field of study in which the search is performed and the bibliographical databases that need to be searched (van Merrienboer and Kirschner 2007). The reason for including variable learning tasks is to encourage learners to engage in “mindful abstraction” of schemas by focusing on the underlying deep structure of the problems, rather than on surface features that are often irrelevant to solving the task at hand (van Merrienboer et al. 2002). Several research studies have shown that variability of practice usually results in beneficial effects on transfer of training (e.g., Cormier and Hagman 1987; Shapiro and Schmidt 1982; Singley and Anderson 1989).

**Supportive information**

As the second component of the model, supportive information helps the learning of nonrecurrent aspects of learning tasks, that is, non-routine aspects that require reasoning and problems solving. This information, which is usually presented before learners start work in a particular task class, explains how to approach various types of problems within that class. For instance, an experienced researcher or instructor can describe his or her cognitive strategies or rules of thumb for converting research questions into relevant search terms (van Merrienboer et
Procedural information

Procedural information, the third component of the model, is necessary for learning recurrent constituent skills of learning tasks, that is, routine aspects that can be algorithmically performed according to domain-specific rules or procedures. This information, which is often referred to as just-in-time information, is usually presented in the form of step-by-step instructions that are presented to learners the first time they need to perform a particular constituent skill, and is only presented again if learners cannot recall it when they must apply the skill in subsequent situations (van Merrienboer 1997, 2007; van Merrienboer and Kirschner 2007). For example, a recurrent task in the previous example would be learner ability to compose search queries with Boolean operators. The first time they had to do so, learners would be presented with the step-by-step process for composing such queries. During subsequent instances, they would be told how to do so only if they requested that information (van Merrienboer et al. 2003).

Part-task practice

The fourth component of the model, part-task practice, may be necessary for selected recurrent constituent skills for which automaticity is desired. Part-task practice begins after the learner has practiced performing the whole task, so that the learner performs this additional practice activity within a context that is meaningful to him or her (van Merrienboer 1997, 2007; van Merrienboer and Kirschner 2007). For example, after learners practice how to search relevant literature, the instructor may provide them with part-task practice on using Boolean operators, so as to help learners achieve automaticity of that skill (cf. Carlson et al. 1989).
Delphi Technique

The Delphi technique is a widely used and accepted method for gathering data from respondents within their domain of expertise (Dalkey, 1972). The Delphi technique is a systematic, interactive forecasting method which relies on a panel of experts. The experts answer questionnaires in two or more rounds. After each round, a facilitator provides an anonymous summary of the experts’ forecasts from the previous round as well as the reasons they provided for their judgments (Rowe & Wright, 2001). Thus, experts are encouraged to revise their earlier answers in light of the replies of other members of their panel. It is believed that during this process the range of the answers will decrease and the group will converge towards the "correct" answer. Finally, the process is stopped after a pre-defined stop criterion and the mean or median scores of the final rounds determine the results (Rowe & Wright, 2001). This technique is designed as a group communication process which aims to achieve a convergence of opinion on a specific real-world issue. The Delphi process has been used in various fields of study such as program planning, needs assessment, policy determination, and resource utilization to develop a full range of alternatives, explore or expose underlying assumptions, as well as correlate judgments on a topic spanning a wide range of disciplines. The Delphi technique is well suited as a method for consensus-building by using a series of questionnaires delivered using multiple iterations to collect data from a panel of selected subjects (Dalkey, 1972).

In this technique, researcher or the person coordinating the Delphi technique facilitates the responses of their panel of experts, who are selected for a reason, usually that they hold knowledge on an opinion or view. The researcher defines the problem and sends out questionnaires, surveys etc. and if the panel of experts accept, they follow instructions and present their views. Responses are collected and analyzed, then common and conflicting
viewpoints are identified. If consensus is not reached, the process continues through thesis and antithesis, to gradually work towards synthesis, and building consensus (as shown in Figure 2).

**Figure 2** The Delphi Technique process
Research Methodology

Propose of this study:

- To present an analysis of the game procedure of WoW according to the 4C/ID Model.
- To propose an alternative idea of creating an Instructional Design with educational online game.

Research question:

How does the WoW game procedure relate to the 4C/ID Model?

Participants:

14-27 experts in educational online games.

Instrument:

The Delphi Technique: 3 rounds of Likert-type survey. The survey questions consist of the relationship between WoW game procedure and the steps of 4C/ID

This study will focus on relationship between the design of 4C/ID model and the procedures of playing WoW. In order to realize the process of the instructional design in conducting an online game, the analysis of the game procedure and the steps of the 4C/ID model will demonstrate in the survey questionnaires in order to gather the data from experts. According to the 4C/ID model, adaptation mainly refers to the mission tasks provided to players while they perform the task and the support information that appeared before and after encountering the missions and quests. The four components of 4C/ID will be adapted to procedure of playing the WoW, learning tasks and supportive information will help players to create and enter to the World of Warcraft. While procedural information will help players solve the problems when they are having in trouble. Finally, past-task practice will be used to support advance players to continue collecting missions, and adds more experiences to familiar themselves with Warcraft
lore in order to complete a quest and make their games more exciting.

**Expected Results**

Applying Instructional design to online games will help educators and instructional designers to create new educational games online. The Four Components Instructional Design is one of many instructional designs that appropriate for the educational games in the complex learning environment. In order to conduct new educational online games, instructional designers should consider the instructional design as a main factor of the successive design. Adaptation of the 4C/ID in the WoW can be compared to other online games and other instructional design models. Using the online game with 4C/ID model might enrich the learning experience to game players in the massively multiplayer online game (MMOG) ever the World of Warcraft (WoW).

For the further study, especially in educational design model, it is usual to invite students into a virtual seminar room to let them look at virtual presentation slides via the questing in WoW, real innovation afterward comes from using the medium to simulate game. Hence, when students are physically distributed, and thus face-to-face teaching is unavailable, having students create a character in WoW is more likely to attract one to pursue. The online game with 4C/ID model can also be used to coordinate distributed group work. Student teams can meaningfully interact with overseas groups to internationalize their experience and learn more about collaboration within far-flung, distributed teams.
References


http://wps.prenhall.com/bp_gamedev_1/54/14053/3597646.cw/index.html


