PERCEPTION TOWARDS PEDAGOGICAL AGENTS AND THEIR EFFECTS ON SELF- REGULATED LEARNING AND PERFORMANCE IN PHYSICS AMONG MALAYSIAN FORM 4 STUDENTS

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Dengan normatnya perkara di atas adalah dirujuk.

2. Sukacita dimaklumkan pihak Universiti telah meluluskan cadangan penyelidikan Y. Brs Profesor/tuan/puan untuk membiayai projek penyelidikan di bawah Dana Kecemerlangan UiTM.

3. Bagi pihak Universiti kami mengucapkan tahniah kepada Y. Brs. Profesor/tuan/puan kerana kejayaan ini dan seterusnya diharapkan berjaya menyiapkan projek ini dengan cemerlang.
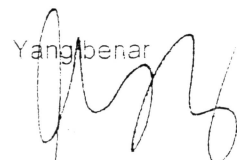
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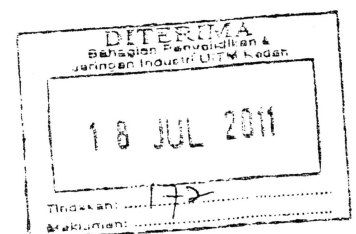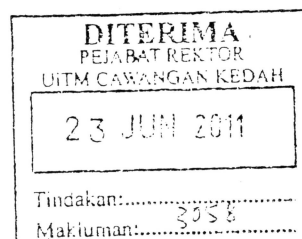| Peringkat Pertama	20%
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5. Untuk tujuan mengemaskini, pihak Y. Brs. Profesor/tuan/puan adalah diminta untuk melengkapkan semula kertas cadangan penyelidikan sekiranya perlu, mengisi borang setuju terima projek penyelidikan dan menyusun perancangan semula bajet yang baru seperti yang diluluskan. Sila lihat lampiran bagi tatacara tambahan untuk pengurusan projek.

Sekian, harap maklum.

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5. Report

5.1 Executive Summary

ABSTRACT

The purpose of this study was to investigate student perceptions toward pedagogical agents and the effects of pedagogical agents on self-regulated learning (SRL) and performance. This study employed the 4 x 2 factorial research design and the first factor was the method of instruction involving online lessons that offered four different types of agents. The second factor was student achievement based on the latest school assessment in physics. The independent variable was the types of agents chosen by the students while the dependent variables were perceptions toward the agents, levels engagement based on SRL and performance in a physics test. The sample of this study consisted of 80 Form Four science students from a rural school. The study found that there were no significant differences in learning support, friendliness, and engagement support between the agents and there were no significant differences in performance in physics by the types of pedagogical agents. For SRL, there were significant differences for the dimensions of organization and critical thinking by types of pedagogical agents but there were no significant differences for rehearsal, elaboration and meta-cognitive self-regulation.

Keywords: Self-regulated learning (SRL), pedagogical agent, high school physics

5.2 INTRODUCTION

Animated software agents figure predominately in new online lesson (Lester et.al 1998). Pedagogical agents are animated life-like characters designed to facilitate learning in computer-mediated learning environments (Baylor 2000). The presence of a life-like character has been found to have a positive effect on learners' interactive experience. By engaging the learner, such agents can create more meaningful learning experiences (Baylor, 2000; Lester, Towns, & FitzGerald, 1999; Towns, FitzGerald, & Lester, 1998) and can in turn positively impact learning performance (Atkinson, 2002; Moreno, Mayer, Spires, & Lester, 2001).

The most common pedagogical agent interface consists of an animated interface, a cartoon character, or a human-like virtual agent whose task is to assist the user, to engage the user into a conversation, to educate the user, or to instruct the user to perform a certain task (Bradshaw, 1997).

Animated pedagogical agents share deep intellectual roots with previous work on knowledge base environments, but they are opening up new is Students can learn and practice skill in virtual world, and the computer can interact with the student through mixed-initiative, tutorial dialogue (Carbonell 1970), in the role of a coach (Goldstein 1976, Burton & Brown 1982) or learning companion (Chan 1996). An animated agent that cohabits the learning environment with students allows teachers to exploit such nonverbal communication. It can use locomotion, gaze, and gestures to focus the student's attention (Lester *et al.* 1999, Noma & Badler 1997, Rickel & Johnson 1997). Agents also use gaze to regulate talking in a mixed-initiative dialogue (Casell et. Al 1994). Head nods and facial expressions can provide Johnson, Rickel and Lester unobtrusive feedback on the student's utterances and actions without unnecessarily disrupting the student's train of thought. All of these nonverbal devices are natural components of human dialogues. Moreover, the mere presence of a lifelike agent may increase the student's arousal and motivation to perform the task well (Lester *et al.* 1997a, Walker, Sproull, & Subramani 1994). Thus, animated pedagogical agents present two key advantages over earlier work: they increase the bandwidth of communication between students and computers, and they increase the computer's ability to engage and motivate students. Animated pedagogical agent share aspect in common with synthetic agent developed for entertainment application (Elliott & Brzezinski 1998) because agent needs to give the user an impression of being lifelike and believable, producing behavior that appears to the user as natural and appropriate.