An argument performance task in a virtual classroom for enhancing graduate students’ analytical reasoning

Pattaraporn Amornchai*, Jaitip Na Songkhla*, Siridej Sujiva

*Department of Education Technology and Communications, Faculty of Education, Chulalongkorn University, Bangkok 10330, Thailand
Department of Education Technology and Communications, Faculty of Education, Chulalongkorn University, Bangkok 10330, Thailand
Department of Education Research and Psychology, Faculty of Education, Chulalongkorn University, Bangkok 10330, Thailand

Abstract
An analytical reasoning ability was taken into action in a virtual classroom with a performance task (PT). The performance task activity which focuses on argument was designed based on a logical fallacy, aroused by scenario accompanied with library of related evidences. A virtual classroom simulated a non-graphic learning interaction using Learning Activity Management System. Learners studied in fallacy class and then moved to an individual study mode with selected evidences in order to discuss about argument topics. Finally, learners moved into double-learning that allows discussion of two learners for assessment and conclusion. Using a virtual environment increase an extensive scope of document library that can be different kinds of digital archives.

Keywords: An argument Performance task; Virtual classroom; Analytical reasoning ability

1. Introduction
One of learning processes is to manage intelligence process that continuously enhances person’s ability and promotes opportunities to practically apply thinking skill in real life as a foundation of human development. Thinking and intelligence process require critical reasoning which is vital for graduates who are expected to develop countries, therefore, education system should be indispensably improved to ensure learning efficiency. Unclear...
reasoning of learners can lead to imprecise perspective, thus interrupting connections of ideas and contents. Consequently, thinking concepts become vague or even wrong. Ability to apply analytical reasoning with confidence enhances sensible judgment, thus leading to logical and valid thinking (Boss, 2010 as cited in Banjong, 2013). Krulik and Rudnick (1993) stated that reasoning is one of the important factors of thinking which include many complicated procedures. Reasoning is the summary of basic thinking, critical thinking, and creative thinking.

Reasoning is the routine activity that people apply to support conclusion. However, rationales in discussion may not valid according that people are likely to use reasons repetitively without scrutiny, leading to confusion of communication. Analytical reasoning is required to evaluate validity of concept. Hence, the critical factor of teaching is to encourage learners to apply analytical reasoning that promotes open-minded and fair mentality, concrete assessment criteria, and commitment to find accuracy and clarification.

McDunnigan (2013) defined analytical reasoning as the ability to understand either qualitative or quantitative information in various environments and acknowledge its pattern. The structure of such data depends on the area that a person is interested such as argument structure or trend of mega data. Learning of these insights relies on how effective individual can apply additional information beyond his mindset or in-class learning. Person who fails to apply analytical reasoning will not be able to use additional data to create thinking structure. Kennesaw State University (2013) defined analytical reasoning as the ability to apply knowledge, skills, and information management to analyze ideas, situations, or problems properly and efficiently, either qualitative or quantitative.

This research summarizes factors that promote ability to apply analytical reasoning which are
1. Ability to explain or elaborate clear agreement or objective
2. Analytical skill which includes ability to categorize data types and validity, ability to define direct or inversed relationship of data
3. Ability to evaluate which is about how logically people can select supporting data
4. Ability to summarize which is about logical conclusion.

Critical thinking requires reasons which include argument that support conclusion with judgment, thoroughness, and non-bias perspective. The arguments can vary across subject areas including, Psychology, Logic, Philosophy, Pragmatics and Education. Argumentation involves both thinking skills and communication skills (Kuhn, 2010). Argument deal with various opinions and the goal of an argumentation is to change opinion. A well-reasoned argument has been leaded to a better opportunity to accomplish that goal. The fallacy studies of reasoning have been an important theory that involves several fields including communication studies and critical thinking (Carey, 2000).

Fallacy is a very important strategy for learning because it support learner to reject unrealistic reasons and to understand how the reason is unrealistic. Furthermore, the fallacy will be a good experience for the learner to think and to judge the proper reasons. Fallacy applied in this learning is informal, which is divided into 3 groups which are:
1. Ambiguity – argument that consists of 2 unclear statements or concepts which are related
2. Fallacies of Relevance – relationship of statement that supports or doesn’t support the reason. The relationship can be positive, negative, or neutral
3. Wrong reason based unverified assumption which derived from accusation, or unproven assumption due to lack of supporting evidence so such argument is invalid.

Academicians strongly focus on education success regarding broad and varied analysis, reasoning, and thinking skill (ability to identify assumption based on reason). It is evident that practice of analytical thinking is the learning characteristic of learner in the 21st century, which shifts from learning to doing. Performance Task is about practicing to obtain Performance so as to further in-depth learning which is about how to creativity.

PT (performance task) is developed for to assess skill of specific learner. PT is also a part of CLA-test (Collegiate learning assessment-test). The procedures include problem solving, which require multiples skills, however the most important skill is analytical reasoning. PT is composed of scenario, library documents and questions. The fallacy will be added into PT to screen careless learners. Many academicians define PT in various concepts, for instance, Chun (2010) mentioned that PT is strategy for practical learning process which illustrates the complexities and challenges. Students must then show their skills and knowledge in various fields to complete the task. The further practices of student on problem solving exercise would be needed more than conventional passively selecting answer, to initiate how to apply the information in real-world contexts. Qing, Ni and Hong (2010) reported that the PT is closed to problem-based learning, but the different is only teaching process. PT includes various rules, which learners have to comply in difference situation. Mueller (2012) expressed that the PT is an assignment tools for student, in order to evaluate their performance and to apply it in real world. From previous
reviews, the PT can be concluded that, the complexes scenario learning, based on real life situations, focus on participation of the learners. The learning will combined the various processes for practicing then leading to the sustainable success. From the study of types of PT of Marzono(1992) Willis(1998) Tiwat(2006) and Willis and Willis (2007),researcher has a conclusion of types of PT, PT is divided into 5 types including comparative task, categorization task, decision-making task, problem-solving task, and creativity task.

Virtual classroom is defined in many aspects, for instance, Turoff (1995) mentioned that the virtual classroom is teaching and learning environment settled in a computer-mediated communication system. Yang and Liu (2007) defined virtual classroom as interactive class that facilitate collaboration and liveliness of learners in which teachers can control teaching process like common classroom. Michale (2012) said that structure of virtual classroom is similar to common classroom but the differences include technology and equipment to convey data in which online and distance learning play vital role as virtual learning tools in current education system. New learning tools can fulfill learners’ needs; promote liveliness and attractiveness without limitation in terms of time and location of class (Conrad & Donaldson, 2004). Therefore, virtual classroom support information and idea sharing that learners can participate create pleasant learning environment, thus understanding diversity of each learner.

2. The Aim of the Research

The general aim of this study is creating virtual classroom that support argument performance task to enhance ability of graduates to apply analytical reasoning.

3. Method

This research and develop is divided into 4 steps of An Argument Performance Task in A Virtual Classroom for Enhancing Graduate Students’ Analytical Reasoning as follows;

3.1 Analysis process of argument topic from questionnaire. Argument will be identified to set learning topic and analyze the contents.

3.2 Task preparing process by scenario and questions will be set in this process and verified by specialists.

3.3 Learning process requires pre-test before attending class. Virtual classroom divided in 3 rooms; the first room is for fallacy practice which include 3 situations – 1. Ambiguity  2. Fallacies of Relevance and  3. Reasoning based on unverified assumption. Reasoning can be divided into 4 steps as follows;

1. Identification of argument and reasoning
2. Reasoning support in terms of agreement or disagreement
3. Evidences in terms of contents, documents, verifications to support reasoning
4. Rationale or combination of related content, documents, verifications to create reasons.

Learners have follow 4 procedures of reasoning that promote ability to explain situation. The second classroom is single-thinking room in which 2 types of questions will be asked, which are comparative task and categorization task. PT can be is divided into 7 steps as follows;

1. Target identification consists of expectation of research and selection of performance task that corresponds to learning objective
2. Situation analysis consists of selection of case or situation to be simulated for study
3. Task planning consists of introduction of project to describe activities, outcomes expected, and methodologies
4. Data presentation consists of preparation of findings and facts that are relevant to situation for further analysis
5. Task implementation consists of single and double tasking
6. Task analysis allows learners to share specific and relevant examples for argument
7. Task assessment is the evaluation process based on criteria and scoring levels

Learners have to follow 7 procedures that promote ability to analyze. The last classroom is double-thinking room in which 3 types of questions include decision-making task, problem-solving task, and creativity task. Learners have to follow 7 procedures. Simulation in last classroom enhances ability of learners in evaluation and conclusion. A virtual classroom simulated a non-graphic learning interaction using Learning Activity Management System. Learning Activity Management System has many tools to support the learning such as Noticeboard, Forum, Chat,
Share Resources etc.

3.4 Evaluation process is a step which the learners evaluate by post-test. Post-test will be conducted and findings will be summarized after class. The proposed model of the current study is illustrated in Fig. 1.

![A Proposed Model of An Argument Performance Task in A Virtual Classroom for Enhancing Graduate Students’ Analytical Reasoning](image)

**Fig. 1.** Model of An Argument Performance Task in A Virtual Classroom for Enhancing Graduate Students’ Analytical Reasoning.

**4. Conclusion**

The objective of this research is to create virtual classroom for argument performance task that enhance ability for analytical reasoning of graduates according that analytical reasoning is relevant for learners to propose logical idea and support decision making process. Performance task of reasoning is a method of active learning that allows learners to develop critical skills, especially capability to apply analytical reasoning. Learners will then be able to explain, analyze, evaluate, and summarize, thus facilitating logical thinking. Teachers can apply performance task about argument reasoning in virtual classroom in teaching process to enhance capability of learners in analytical reasoning.

**Acknowledgements**

The research team wishes to thank Chulalongkorn University for providing the fund for this paper. I really appreciate and have special thanks than all my family that helped me to concern my research.
References