The relationship between Reflective Thinking and Learning Styles among Sample of Jordanian University Students

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Abstract

The purpose of this study is to examine the relationship between reflective thinking and learning styles. Participants of the study consisted of (476) students (male and females) selected randomly from different faculties of Hashemite University. Regression and correlation analysis were used for data. Results indicate that there significant positive correlation between deep learning styles and habitual action, critical reflection reflective thinking. Results also indicate that no significant correlation between   Surface and strategic learning styles and other dimensions reflective thinking.

Keywords: Reflective thinking, Learning styles, Jordanian university students.

Introduction and Theoretical Framework.

One of the topical issues that have attracted widespread attention in educational research is the teaching and learning processes. Of particular interest is a range of student's academic learning issues, including concerns about the efficacy of learning approaches and the levels of reflective thinking demonstrate by students un their academic learning. In recent years, there has been considerable renewed interest in the practice of reflection (Herrington & Oliver, 2002). Boud, Keogh and Walker (1985) define reflection as: "those intellectual and affective activities in which individuals engage to explore their experiences in order to lead to new understandings and appreciations". Another definition of reflection by Andrusyszyn & Davie (1997) is "a personal process that evolves from the cognitive and affective synthesis of ideas and that it may be strengthened through dialogue," with the goal of constructing meaning through the reflection process. Hatton & Smith (1994) describe reflection as "deliberate thinking about action with a view to its improvement".

Dewey (1916) describes five features of the reflective experience in practice:

· Confusion and doubt: learner is confronted with a new situation and/or experience
· Conjectural anticipation: learner begins to evaluate the situation and makes tentative assumptions or hypotheses
· Examination, inspection, exploration, and analysis: learner conducts a thorough evaluation of the situation
· Elaboration of hypothesis: learner further defines the hypothesis and begins to test it against facts
· Testing the hypothesis: learner recreates the situation in order to test the hypothesis.

In describing the role of reflective practice within the professions, Schön (1983) defines reflection in reference to 1) reflection-in-action, that is reflecting while in the midst of problem-solving, and 2) reflection-on-action, that is reflecting on the process of reflection-in-action (as a reflective practitioner). "When someone reflects in action," writes Schön (1983), "he becomes a researcher in the practice context. He is not dependent on the categories of established theory and technique, but constructs a new theory of the unique case". Reflective practitioners engage in a dialogue of reflection with their situation, which allows them to engage in continuous self-education and lifelong learning as researchers-in-practice. Gibbs (1988) also finds that reflection plays an important role in experiential learning, as the process of reflection helps solidify experience in the learner's memory, raising the potential for further learning. Research by Candy, Harri-Augstein, & Thomas (1985) indicates that when students are not taught how to reflect and not provided subsequent guidance in reflective practice, they will not automatically practice or actively engage in reflection. Bourner (2003) notes that "developing students' capacity for reflective learning is part of developing their capacity to learn how to learn". By teaching and guiding learners in the development of their reflective skills, educators thus support students in developing their capacity to learn and better prepare them for lifelong learning. How then do we move instructional design away from a focus on content mastery and toward a focus on acquisition of HOTS and competencies such as critical thinking and reflective practice? According to Bergman (2009), a basic form of generating hots is to ask open-ended questions that require the student to reflect before responding rather than cite facts. Bourner (2006) recommends the use of "searching questions", guiding questions that structure or scaffold the learner's reflective process. In this way, the student is encouraged to think reflectively and to use questions as a way of developing meaning, leading to deeper learning. Defining these guiding questions is critical to supporting the student to reflect in their learning journals effectively (Pulman, 2007). Hatton & Smith (1994) found that an effective strategy was "to engage with another person in away which encourages talking with, questioning, even confronting, a trusted other". Rose & Devonshire (2004) report that instructor guidance in the form of scaffolding of feedback, providing prompts throughout the reflective process, positively influenced the quality and depth of student reflections. To support reflective practice in the classroom, Herrington & Oliver (2002) incorporate activities

such as project problem-solving, online journals and diaries, discussion boards, and publication of findings (as a form of reflection-on-action). Hatton & Smith (1994) also identify numerous techniques for fostering reflection, from oral interviews and personal narratives to reflective essays based on practical experiences and journaling. According to Moon (2010), a learning journal is primarily "helpful in personalizing and deepening the quality of learning and in helping learners to integrate the material of learning...and is usually a vehicle for reflection". Learning journals can also help learners to slow the learning pace, give them a stronger sense of ownership of their individual learning process, encourage development of meta-cognitive skills (Moon, 2006), support deep exploration into issues, encourage linking of theory to practice, improve writing skills, support development of critical thinking and learner autonomy, and provide a mechanism for providing instructor feedback (Henderson, Napan, & Monteiro, 2004; Rose & Devonshire, 2004; Morgan, Rawlinson, & Weaver, 2006; Wolf, 2008). Case studies published by Educause (2007) also found that the use of learning journals reduced incidents of plagiarism, helped predict a learner's overall classroom performance, and supported learners in developing technology skills.

Having established the need for reflective thinking and reviewing techniques for developing this skill, how then do we assess reflection? There are those who argue that assessing learning journals is strictly subjective and is akin to assessing learner emotions (Moon, 2010). Hatton & Smith (1994) note that ethical issues can arise in assessing reflections and that the assessment activity must be carefully structured. Issues that should be addressed prior to assessing learning journals include identifying what should be assessed (process or product), how the journal should be graded (adequate or inadequate), who is responsible for developing the criteria for assessment, and what type of work should be assessed (written or oral) (Moon, 2006) Bourner (2003) emphasizes that by assessing student work, educators are guiding the learning process by helping learners to reflect and thus learn through reflection. Churchill (2009) reports that students are more motivated and more likely to blog (and reflect) when their learning blogs are graded. Moon (2006, 2010) recommends assessing learning journals if only to address the increasingly common phenomenon of the "strategic student," who only completes minimum course requirements (i.e., only those elements that are assessed. Bourner (2003) recommends a two step assessment process:

1) identifying that the student is engaged in critical thinking, and 2) confirming that the student demonstrates reflective thinking, basing the assessment "on evidence of the capacity to interrogate experience with searching questions". Bourner states that one must look for evidence of reflective thinking, in particular through references to past and current experiences.

When assessing the final reflective product, most approaches recommend evaluating content based on a scale or level of reflection. Henderson, Napan & Monteiro (2004, and based on Bain, Ballantyne, Packer & Mills, 1999,) examine levels of reflection starting from reporting and responding, then moving to relating, reasoning, and reconstruction. Surbeck, Park Han, and Moyer (1991) describe three categories of reflection for assessment, each monitoring the ability of the student to move from one category to the next as reflection deepens:

1) Reaction, where students describe general reactions to the content and report on activities and any personal concerns or issues;

2) Elaboration, where students further expand on their reactions in different ways, for example, by relating them to a specific event, example, or situation; and 3) contemplation, where students consider these reactions and elaborations in relation to their personal and/or professional life and world view (social, ethical, and moral).

Hatton & Smith (1994, based on Smith, 1992) propose four criteria for identifying types of reflective writing:

· Descriptive writing: describes what has happened (not considered reflective)

· Descriptive reflection: considering multiple viewpoints and explaining what has happened by rationalizing or justifying reasons for the action

· Dialogic reflection: entering into a dialogue with oneself and/or others about an event or action, reviewing potential alternatives, and forming hypotheses

· Critical reflection: considering the social, political, and cultural factors that are influential within the context of the action Additional criteria identified by Moon (2006) include: length, presentation, legibility, and number/regularity of entries; clear and objective description of events; clear relationship of content to the coursework and course objectives; and evidence of creative and critical forms of thinking and deep learning, as well as of speculation and willingness to reassess ideas and pursue further ideas and lines of questioning.

More recently, research investigations have extended to the study of how four stages of reflective thinking relate to students learning approaches (e.g., Leung & Kember,2003; Drew and Watkins,1998; Mezirow,1991; 1998; Phan, 2006; Watkins,2001; Wong and Watkins, 1998) . In particular, the quantitative approach of latent variables (Bollen, 1989; Byrne, 1998; Mueller, 1996) used in these studies has provided evidence attesting to the important positive associations between students approaches to their learning and reflective thinking. This amalgamation of reflective thinking in SAL research (e.g., Biggs et al., 2001; Bernardo, 2003; Kember, Biggs, & Leung, 2004; Kember & Leung, 1998) has resulted in the study of different learning styles as possible sources of

reflective thinking. Leung and Kember's (2003) study on learning styles indicates that the four stages of reflective thinking are related to the tow main learning styles. Confirmatory factor analysis in the case indicated a positive correlation between habitual action and surface approach to learning, and understanding, reflection, and critical reflection and that of deep study approach. Accordingly a surface approach to learning is in line with habitual action, whereas a deep approach to learning is more reflective of the other three types of reflective thinking.

Statement of the problem

The teaching and learning processes are influenced by different cognitive variables, important amongst them include student learning approach and reflective thinking. Where he found all of leung and Kember (2003) in their study with university students found that the four stages of reflective thinking were related to the two main learning styles. Therefore, the problem with the current study is to examine the relationship between reflective thinking and learning styles among the students of the Hashemite University.

Study purpose and Questions

The purpose of this study was to examine the relationship between reflective thinking and learning styles among the students of the Hashemite University in Jordan.
The specific study questions that guided this study were:
1 What different reflective thinking do undergraduate students in the Hashemite University in Jordan have?.
2 Are there significant differences in the level of reflective thinking of undergraduate students due to the their sex?.
3 Is there a statistically significant relationship between reflective thinking and learning styles?.

Significance of study

The basic goal of this study is to determine the relationships between reflective thinking and learning styles.
In addition, this study is very important for many reasons:
1. Importance of the subject to which, as of that reflective thinking one of the mental activities that should concern by students and teachers alike, from his role in achieving a deeper understanding of the contents of learning and operations.
2. It opens the door for researcher to conduct related studies in the field of reflective and its relationship to other variables in different university.

Definition of terms

Reflective thinking: active, persistent, and careful consideration of any belief or supposed from of knowledge in the light of the grounds that support it and the conclusion to which it tends (Dewey,1993).
Learning styles: the way of describing the response of student to a learning task and that may, of course, vary from time to time (Biggs, 1993; Rowe & Harris, 2000).

Method
Population and sample of study

The population of this study consisted of (20250) undergraduate students, who were enrolled in the faculties of Hashemite University in the academic year 2011/2012, who represent all levels of study at (HU). For the purpose of this study, a random sample was chosen from the population, it consisted of (476) their ages ranged between 18-22 years.

Instruments

Participants completed measures of reflective thinking, and learning styles. Each is described are following.
Reflective thinking Questionnaire (RTQ)
The reflective thinking questionnaire (RTQ) developed by Kember et al (2000) contains 16 items descriptive of the four types of reflective thinking advocated (Mezirow, 1977, 1991). The items on a five-point scale ((1) definitely agree, (3) only to be used if a definite answer is not possible, (5) definitely disagree) include, for example: "in this course we do things so many times that I started doing them without thinking about" (Habitual action); " to pass this course you need to understand the content" (understanding); "I often reappraise my experience so I can learn from it and improve for my next performance" (reflection); and " this course has challenged some of my firmly held ideas" (critical reflection). Using the same instrument, Leung and kember (2003) reported reliability estimates ranging from (0.58- 0.74) for the four subscales of the RTQ.

Learning styles

The 52-item Approaches and Study Skills Inventory for Students was used to measure the three approaches to

learning adopted by students (Entwistle & McCune, 2004). Participants indicate their relative agreement with statements by using a 5-point Likert-type scale, ranging from 1 (*disagree*) to 5 (*agree*). The Deep approach scale contains four, four-item subscales (seeking meaning, relating ideas, use of evidence, and interest in ideas). The Surface approach scale includes four, four-item subscales (lack of purpose, unrelated memorising, syllabus boundness, and fear of failure). Total scale scores for both the Deep and Surface learning approaches could theoretically range between 16 and 80. The Strategic approach scale consists of five, four-item subscales (organised study, time management, alertness to assessment demands, and monitoring effectiveness). Total scale scores could theoretically range between 20 and 100. Entwistle and McCune reported acceptable reliabilities for the Deep (α = .84), Strategic (α = .80), and Surface (α = .87) scales.

Procedures

The instruments were administered to the participants in their regular classrooms by the researcher. The researcher explained to the participants the purpose and the importance of their participation in this study. In addition, the researcher assured the participants of the confidentiality of their response and that their response would be used only for research purposes.

Then, the question booklets were distributed and instructions were given to the participants on how to answer them. The participants' responses were scored by the researcher and were entered into the computer for statistical analysis. The data were analyzed using the SPSS package**.**

Results and Discussion

To facilitate understanding the results of this study, questions of this study are divided into three questions**.**

Results related to study question (1): What different reflective thinking do undergraduate students in the Hashemite University in Jordan have?.

To answer this question, the student's means and stander deviations were calculated and reported in Table 1.

Table 1: mean and stander deviations of students' reflective thinking

Reflective thinking	Mean	SD
Habitual action	2.41	0.41
Understanding	2.91	0.42
Reflection	2.54	0.46
Critical reflection	3.25	0.47

As table 1 shows, that the scores obtained from all sub-scales of the reflective thinking inventory indicate a positive situation. From sub-scales of the represent higher level of critical reflection, understanding, reflection and habitual action.

Results related to study question (2): are there significant difference in the level of reflective thinking of undergraduate students due to their sex?.

To answer this question, mean and stander deviations and t-test were calculated and reported in table 2.

Table 2: mean and stander deviations and t-test of student's reflective thinking

Sex	Male		female		t	significant
Reflective thinking	Mean	SD	mean	SD		
Habitual action	2.44	0.43	2.40	0.40	0.027	0.780
Understanding	2.82	0.39	2.95	0.43	0.074	0.786
Reflection	2.44	0.43	2.59	0.48	0.940	0.355
Critical reflection	3.18	0.60	3.29	0.39	3.860	0.052

As table 2 shows, no significant difference in the level habitual action, understanding, reflection and critical reflection reflective thinking between male and female**.**

Results related to study question (3): is there a statistically significant relationship between reflective thinking and learning styles?.

To answer this question, the correlation coefficients between reflective thinking and learning styles are presented in table 3.

Table 3: correlation between reflective thinking and learning styles

Learning styles	deep	Surface	strategic
Habitual action	0.26*	0.10	0.03
Understanding	-0.11	0.03	0.15
Reflection	-0.05	0.12	0.01
Critical reflection	0.27**	-0.13	0.08

*(p<0.01)

*(p<0.05)

Table 3 shows that the habitual action and critical reflection reflective thinking are positively related to the deep learning styles (p=0.01). The critical reflection reflective thinking are positively related to the deep learning

styles (p=0.05). This results mean the habitual action and critical reflection reflective thinking is influenced of the deep learning styles university students. The size of this correlation indicate that generally high levels of habitual action and critical reflection reflective thinking are related to high levels of students deep learning styles, and if one the variable increases, the other will increase, as well. This finding is consistent with previous research by leung and kember (2003); Phan, (2006, 2008); Amidu (2012) which found a positive correlation between habitual action and critical reflection and deep learning approach.   Also, the habitual action, understanding, reflection and critical reflective thinking are not related with the surface and strategic learning styles.

Multiple Regression Analysis:
Table 4 shows the results of multiple regression analysis using learning styles as predicted to reflective thinking.
Table 4: Results of regression analyses predicting scores of learning styles of Habitual action reflective thinking.

Learning styles	R	R²	F	β	t
Deep				0.315	2.781
Superficial	0.300	0.090	2.991	0.106	1.056
Strategic				-0.118	-1.041

Results given in table 4 show that the deep, surface and strategic learning styles is a significant predictor of habitual action reflective thinking (R²= 0.090, F= 2.991, p=0.05). This results was supported by the close moderate correlation between the third variables (r= 0.09). approximated 9% of the variance of the students habitual action reflective thinking was accounted by learning styles.

Table 5: Results of regression analyses predicting scores of learning styles of critical reflection reflective thinking.

Learning styles	R	R²	F	β	t
Deep				0.306	2.706
Superficial	0.304	0.092	3.089	-0.129	-1.290
Strategic				-0.760	-0.760

Results given in table 4 show that the deep, surface and strategic learning styles is a significant predictor of critical reflection reflective thinking (R²= 0.092, F= 3.089, p=0.05). This results was supported by the close moderate correlation between the third variables (r= 0.304). approximated 30% of the variance of the students critical reflection reflective thinking was accounted by learning styles.

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