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Examining a Flow Driven Program in Reading Skill and its Relation to Higher-order Reading Skill (Inference-making) and Self-efficacy

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***Abstract*:** Flow research became prevalent in the 1980s and 1990s in Italy by Csikszentmihalyi and his colleagues. Researchers interested in optimal experiences after Csikszentmihalyi became fascinated by artists who would essentially get lost in their work. This study aims at addressing the issues related to flow or optimal experience and its relation with reading achievement, higher-order reading skill (inference-making) and self-efficacy of a group of EFL learners. The concept of flow refers to the experience felt by individuals when they are deeply involved in an activity. This happens when they strike a balance between their perceived skills and perceived challenge while carrying out an activity. The concept of flow has been already discussed and investigated in the realm of psychology; however, it is in a fledgling state within the domain of reading skill and strategy. One important issue in reading L2 texts is the effect of flow on the performance of L2 learners and their reading achievement. We do not know regardless of the EFL learners' age and gender whether optimal experience of learners plays a role in their reading achievement, inference-making and self-efficacy. Therefore, the purpose of this study was to explore the effect of a flow-driven intervention reading program on L2 reading achievement, inference-making and self-efficacy of the aforementioned learners. To do so, 5 reading passages that were chosen from American English file book (4), were assigned to 46 intermediate EFL learners as participants who were asked to read the texts and complete the flow perception questionnaire, Watson-Glaser critical thinking questionnaire (inference-making), and a self-efficacy questionnaire. A series of t-test (paired-samples and independent-samples) was applied to analyze the collected data. The results indicated that creating optimal experience or flow for EFL learners while reading L2 texts can increase the learners' reading achievement, higher-order ability (inference-making) and their reading self-efficacy.

***Keywords*:** Flow, reading strategy, higher-order ability (inference-making), self-efficacy

1. INTRODUCTION

Originally the term flow was used by Csikszentmihalyi (1975, 1990, 1996, 2000) to refer to an option state of mind in which a person feels cognitively competent, deeply engaged and highly motivated and also experience a high level of enjoyment. According to Mirlohi, Egbert, and Ghonsooly (2011) flow Theory was built up by Csikszentmihalyi (1996), who proposed that learners can experience best learning during tasks characterized by a skills-challenge balance

and by a person‘s concern, control, and intense focus. Learners do not like to do difficult, time-consuming, and dangerous activities, they often tend to do easy activities for which they receive extrinsic rewards. According to James (1890), when we pay attention to the passage of time, boredom seems to increase. During the flow process, attention is entirely invested in moment-to-moment activities in a manner that nothing is left to devote toward the mental processes that contribute to how duration is experienced (Friedman, 1990). As a result when people are deeply immersed in an activity typically report time passing rapidly and also pleasantly (Conti, 2001).

Many scholars consider reading as an important skill, since they believe this skill is a major foundation for being successful in other aspects of language learning, especially in writing skill. Reading also takes a substantial part in applied linguistics studies and in the day-to-day professional life of the language teacher and language learners. Hence, reading is an essential element of a language, and any attempt to teach language without creating a condition for learning reading skill is doomed to failure. When learners are deeply immersed in their reading, annoying sense of time and even emotional problems disappear and reading seems enjoyable and more effective. So far little researcher has been done on the effect of flow on second or foreign language reading (Egbert, 2003; Schmidt & Savage, 1992; Schmidt, Boria, Kassabgy, 1996). Therefore, based on the significance of reading skill as one of the most important determinant of second language learners achievements, the problem is a lack of definitive research to determine the factors which are necessary for reading skill to be effective in second language learning and to reach an optimal experience while reading l2 text. It is indeed necessary to recognize what kind of changes in text book reading and which methods for presenting a text cause texts to create flow in EFL learners. Also it demonstrates the interaction of flow situation in learners’ self-efficacy level and their inference-making level. Therefore, the outcomes of this study can be used for different groups of individuals such as language teachers, language students, psychologists, material developers, language testers and a number of others. The main purpose of this study is to delve into the factors which help learners reach optimal experience while reading l2 texts, and on the other hand, investigating the hypothesized relation among l2 learners flow in reading achievement, higher-order reading skill (Inference-making), and self-efficacy. Considering the abovementioned objectives, this study sought to answer the following questions:

1. Dose the flow intervention program enhances EFL learners’ reading achievement?
2. Dose the flow intervention program enhances EFL learners’ higher-order reading skill (inference-making)?
3. Dose the flow intervention program enhances EFL learners’ self-efficacy?

2. REVIEW OF THE LITERATURE

2.1. Background

Flow is one of the significant key issues that the topic of this research reviews research findings about it during reading text. Specifically, this research examines reading skills and strategies which create flow versus those do not create flow and its relation to English learners inference-making and their self-efficacy in reading and language learning. This research conceptualizes the psychological concept of “Flow”. Flow theory was developed by Csikszentmihalyi (1975), who propose that learners can experience optimal learning during tasks characterized by a skills

challenge balance and by a person‘s interest, control, and intense focus. “Flow state” is the experience of being fully engaged with what people do and it tend to occur by touching, feeling, or talking (in active state) or with in relaxation and peace (in restful state) (Young, 2006). Based on scientific research conducted, Flow model of Csikszentmihalyi demonstrate the emotional states someone can be when understanding a task or activity.it is based on two weighing ratios the challenge level of skill that are equilibrium against each other. According to Flow model of Csikszentmihalyi, These are eight emotional state of mind that someone can be in:

1. *Relaxation* – no anxious or the absence of excitement
2. *Control* – by practicing, skills become automations, with the risk that the skills level is higher than the challenge to perform a certain task.‖
3. *Worry* – by worrying the attention is shifted towards negativity; (imaginary) problem become bigger and solutions do not seem to exist‖
4. *Anxiety* – inactive
5. *Boredom* – dull, exhaustion, fatigued
6. *Flow* – mental state in which people are completely focused on the activity or task, as a result of this the task is carried out successfully.
7. *Arousal* – by increased stimuli people respond more attentively to their environment‖
8. *Apathy* – lack of interest or enthusiasm.

2.2 Flow

Flow experiences have been investigated in a variety of settings and across many various populations. In positive psychology, **Flow**, also known as the **zone**, is the mental state of operation in which a person performing an activity is fully immersed in a feeling of energized focus, full involvement, and enjoyment in the process of activity. In essence, Flow which named by Mihaly Csikszentmihalyi, is characterized by complete attraction in what one does. Csikszentmihalyi paid attention to painters work. They didn’t pay attention about anything when they were painting. When the painting was finished, they lost the interest in it (Csikszentmihalyi, 1988). As a psychologist, Csikszentmihalyi (1988) remarked about artists: they had little extrinsic rewards to motivate them but, instead, enjoy painting because ―it is closest socially acceptable symbolic expression of the artist‘s true desire which are repressed instinctual cravings‖ (1988, p.4).

Maslow (1968) concluded that the artists who Csikszentmihalyi was studying, worked very hard because of the work, itself, rewarding not for external reward. According to Maslow, this step only happens a few times in people‘s lives, and it is the experience of being fully engaged with what people are doing. Flow focuses on motivation and it represents the final experiences in controlling the emotions in learning (Csikszentmihalyi, 1990).

2.2.1. Flow in Education

According to Mirlohy, Egbert and Ghonsooly (2011), flow or optimal experience plays a key role in motivating learners to achieve their goals in learning English. The flow theory has made its way in psychology, sociology, education, advertising, work-related activities, cultural anthropology, religion, and in the context of play and leisure (John Carl III, 2012). One of the first areas was education. The concept of overlearning in education plays a role in a student's

ability to achieve flow. Csíkszentmihalyi (1990) mentioned that overlearning enables the mind to focus on visualizing the desired performance as a singular, integrated action instead of a set of actions. Challenging assignments that (slightly) stretch one's skills lead to Flow (Snyder & Lopez, 2007).

2.2.2. Components of flow

Nakamura and Csikszentmihalyi (2005) identify the following six factors as encompassing an experience of Flow. These aspects can appear independently of each other, but only in combination do they constitute a so-called Flow experience.

1. Intense and focused concentration on the present moment
2. Merging of action and awareness
3. A loss of reflective self-consciousness
4. A sense of personal control or agency over the situation or activity
5. A distortion of temporal experience, one‘s subjective experience of time is altered
6. Experience of the activity as intrinsically rewarding, also referred to as autotelic experience

2.2.3. Flow Questionnaire

The Flow Questionnaire requires individuals to identify definitions of flow and situations in which they believe that they have experienced flow, followed by a section that asks them to evaluate their personal experiences in these flow-inducing situations. The FQ identifies flow as a single construct, therefore allowing the results to be used to estimate differences in the likelihood of experiencing flow across a variety of factors. The other strength of the FQ is that it does not assume that everyone's flow experiences are the same. Because of this, the FQ is the ideal measure for estimating the prevalence of flow (Moneta, 2012).

2.3. Inference-Making

There have been innumerable studies of text inferences in the fields of psychology (e.g., Clark, 1977; Graesser, 1981), artificial intelligence (e.g., Schank & Abelson, 1977; Joshi, Webber, & Sag, 1981; Rieger, 1975), and linguistics (e.g., Halliday & Hasan, 1976; van Dijk, 1979). Most of the psychological research has focused on inferences involving anaphoric reference (e.g., Haviland & Clark, 1974; Garrod & Sanford, 1977) and case inferences such as instruments required by actions (e.g., Bransford & Johnson, 1973; Singer, 1980). The term inference-making has been used in two different senses. One has been used as a general label for a higher-level process that encompasses a series of strategies, and the other in a narrow sense as a specific strategy, included in the broader category by the same name. For example, when the reader attempts to go over the test quickly to get a general idea of what is it about, or to get the gist of it, he/she is using the “Previewing” strategy. This is very different from “Main idea construction”. The restricted meaning of “Inference-making” refers to the use of contextual clues to infer the meaning of lexical item. Therefore, it is important to specify which factors limit inference making. An inference can be made only when the prerequisite general knowledge necessary to make that inference is available (e.g., Ackerman, Silver, & Glickman, 1990; Casteel, 1993).

2.4. Self-Efficacy

Self-Efficacy was developed by Albert Bandura‘s as part of a larger theory, the Social Learning Theory (Ashford & LeCroy, 2010), which has progressed into the Social Cognitive Theory (Levin, Culkin, & Perrotto, 2001). According to Bandura (1986, 1997) self-efficacy is explained in the theoretical framework of social cognitive theory which stated that human achievement depended on interactions between one's behaviors, personal factors and environmental conditions. Albert Bandura's Social Cognitive Theory emphasizes how cognitive, behavioral, personal, and environmental factors interact to determine motivation and behavior (Crothers, Hughes, & Morine, 2008). According to Bandura, human functioning is the result of the interaction among all three of these factors (Crothers et al., 2008), as portrayed in his Triadic Reciprocal Determinism model (Wood & Bandura, 1989). Over the past two decades, specific attention has concentrated on self-efficacy beliefs, that is, an individual‘s sense of their own capabilities to organize and successfully complete a task (Ghonsooly & Ghanizadeh, 2011). Researches have indicated that self-efficacy beliefs correlate positively with academic achievement and motivation (e.g. Pajares and Miller 1994; Bandura 1997; Pajares 2003), thus substantiating Bandura‘s (1997) contention that learners with higher self-efficacy participate more readily, work harder, pursue more challenging goals, spend more effort toward fulfilling identified goals, and persist longer in the face of difficulty. Bernhardt (1997) describes self-efficacious learners’ characteristics as the following: they feel really confident because of the experiences they have gained in solving problems and the approaches they have developed based on those problem solving experiences.

3. METHOD

3.1. Participants

The participants of the study comprised 46 intermediate EFL learners who were selected according to accessible sampling among EFL learners learning English in language institutes in Mashhad. Their average age was 24 years, and the group included 23 females and 23 males. Of the 46 participants, 34 (%) had been studying English for three years.

After a brief explanation of the purpose of the research, all participants received the language learner proficiency scale. To gather reliable data, the purpose of completing the questionnaire was explained and the participants were assured that their views would be confidential; moreover, the questionnaires were coded numerically and the participants were asked not to write a name on them. They were just required to provide demographic information such as, gender, age, and years of language learning (see Appendix A). The demographic information was important to defining the sample. No participant reported a negative attitude and a great number expressed a positive attitude to English language. All of them believed that learning English as a second language is necessary. Based on this information the survey instrument was given to the 46 participants, i.e., members of the Rashed institute, who were at the intermediate level in learning English.

The survey yield overwhelming responses.

3.2. Instrument

3.2.1. TOEFL Sample Test

To determine the learners' proficiency level, and investigate the homogeneity of EFL learners the study utilized the reading section of TOEFL test from National Textbook Company.

3.2.2. Reading Text

The second section is texts. In order to start the present study, five texts were selected from "American English File book 4". The texts were: "Extreme interview" that is about 336 words, "Can the weather drive you crazy" about 417 words, "Suffering scientists" about 457 words , "Cyberchondriac" about 409 words, and "what your signature says about you" about 446 words.

3.2.3. Flow Perception Questionnaire (FPQ)

There are numerous ways to measure optimal experience (Nakamura & Csikszentmihalyi, 2001, as cited in DelleFave, Massimini, & Bassi, 2011) the majority of which have been concentrated on the individuals' self-report of their experiential state and of their surrounding environment (DelleFave, Massimini, & Bassi, 2011, p. 59). Harre and Secord (1972) asserted that these are regarded as true descriptions depending on human abilities to perceive and describe one self. Thus, for further investigation of the research questions, both Flow Perception Questionnaire and Flow Open-Ended form were employed to provide convincing evidence to capture the flow experience.

In order to obtain the information the researcher used the Flow Perceptions Questionnaire (FPQ), which is shown in Appendix B. Flow Perceptions Questionnaire in English (Cronbach's $\alpha = .82$) was adopted directly from Egbert (2003). This questionnaire was used to measure flow with 14 statements that were designed to determine if upper-intermediate students can reach on optimal experience, or flow, while reading a text as well as the extend of flow that can be reached. These statements are aligned with eight variables of Csikszentmihalyi (1975), which are necessary for reaching flow. By answering this questionnaire, the study found whether texts created flow or not.

For gathering data in the present study five texts from American English file 4 were used. These instruments were given to 46 participants who were EFL learners in English language Institutes. The participants were asked to read the texts and fill out the Flow Perception Questionnaire.

The Perception Questionnaire consisted of 14 items in the Likert formats, having a 5-point scale from 1(strongly disagree) to 5 (strongly agree). According to Mirlohi, Egbert, and Ghonsooly (2011) for the purpose of item intelligibility, the questionnaire was pilot-tested before given to a group of 12 university juniors and the results showed that it was intelligible.

3.2.4. Inference-making

To assess student's inference-making, one of the subtest of Watson-Glaser Critical Thinking Appraisal (WGCTA) was employed. For the purpose of the present study, WGCTA was used because it has widely been employed by CT researchers (e.g. Ghanizadeh, & Moafian, 2011).

3.2.5. Self-efficacy

For assessing EFL learners' self-efficacy in this study the EFL learners' self-efficacy scale in reading comprehension was used which was validated by Ghonsooly and Elahi (2010). This

scale includes 11 5-point likert type items ranging from 5 (strongly agree) to 1 (strongly disagree). The Cronbach alpha coefficient for the scale was 0.78.

3.3. Procedure

3.3.1. Data collection

The rigorous process of data collection started in April 2016, at the beginning of a new semester in language institutes and ended in June 2016, spring semester, roughly after three months. The subjects were invited to participate in the study on a voluntary basis. The questionnaires were given to the 46 intermediate learners of English. The questionnaires were handed out to them during the class time under the supervisions of the researcher. Before distributing the questionnaires, as there was no personal question in the demographic part, the researcher asked the participants to answer the questions as honestly as possible. All of the instruments were administered simultaneously during class hour. The learners were given brief information about the purpose of the questionnaires.

3.3.2. Data analysis

The data were collected and analyzed by using the appropriate analysis procedures. For the data analysis, SPSS 16 (statistical package for social sciences) was used. The results were reported in narrative, tabular, and graphic forms. The distribution was summarized in terms of means, standard deviations, and normality of data. Both an independent-samples T-test and paired-samples T-test were applied to see if there is any significance variance among different reading texts and its relationship of learner‘s self-efficacy level and their inference making.

In this section, the participants and instrument including FPQ questionnaire, self-efficacy questionnaire, and inference-making questionnaire and procedure for data collection and data analysis of study to carry out this thesis were discussed. The result of research questions are reported in the next section.

4. RESULTS

To investigate the flow, self-efficacy and inference-making in pre and posttests of the population of the study descriptive statistics were calculated. The results can be seen in Table 1.

Table 1: *Descriptive statistics of findings of the study of flow, self-efficacy and inference-making*

group			N	Minimum	Maximum	Mean	Std. Deviation
control	pre	flow	23	29	40	33.09	3.10
		Self-efficacy	23	38	46	22.61	2.30
		Inference making	23	5	8	6.87	0.81
	post	flow	23	28	38	32.22	2.70
		Self-efficacy	23	35	46	21.30	3.01
		Inference making	23	4	9	7.43	1.08
experimental	pre	flow	23	28	38	31.70	3.20
		Self-efficacy	23	35	46	22.74	3.20
		Inference making	23	6	9	7.09	0.79
	post	flow	23	42	53	47.65	3.49
		Self-efficacy	23	18	29	39.74	2.90
		Inference making	23	9	13	10.74	1.01

The data are summarized in the following bar chart.

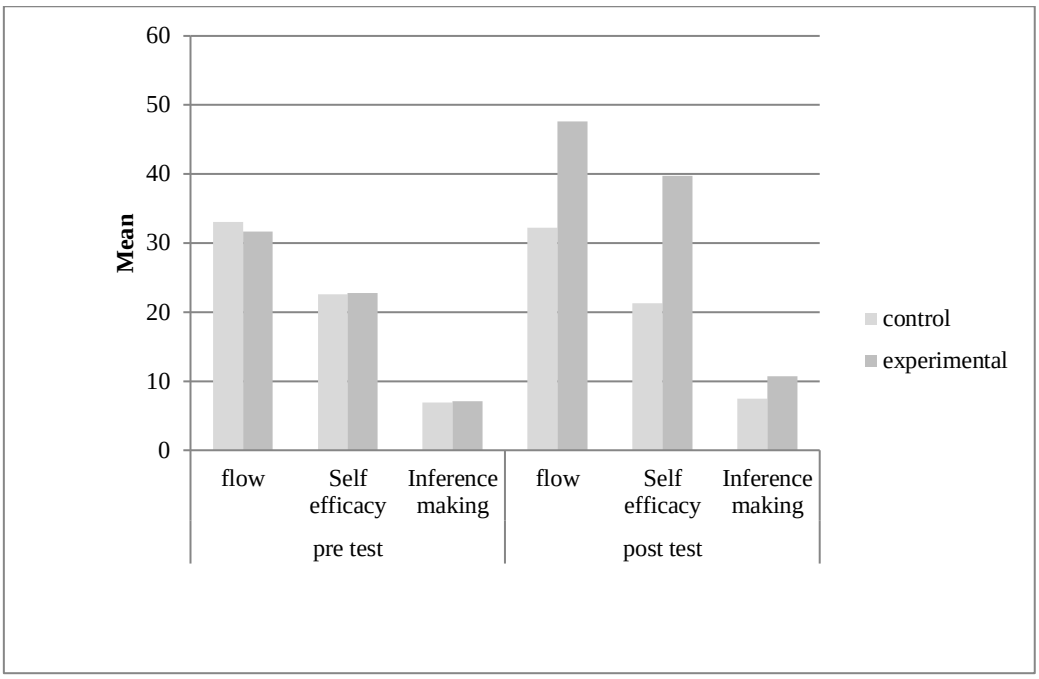

Figure 1: Descriptive statistics of flow, self-efficacy and inference-making in pre and posttests of the population of the study

According to Table 1 and Figure 1, with regard to the activities done in the control group the mean score of them in flow perception questionnaire in pre-test is 33.09 and in post-test is 32.22 that illustrates no much differences in optimal experience rate with respect to the English texts. However, regarding the activities done in the experimental group, the mean score in flow situation in their pre-test is 31.07 and in post-test 47.65 that demonstrate optimal experience increased in this group. Also the mean score of student's self-efficacy and inference-making between pre-test and post-test in the control group do not have much difference (Self-efficacy pre-test (M=22.61, SD=2.30), post-test (M=21.30, SD=3.01)). The result of control group's inference-making pre-test is (M=6.87, SD=0.81) and post-test is (M=7.43, SD=1.08). However, in the experimental group the mean score between pre-test and post-test of self-efficacy increased, (pre-test M=22.74, post-test M=39.74). Also the mean score of the experimental group inference-making pre-test is (M=7.09) and post-test is (M=10.74). So the level of self-efficacy and inference-making in the experimental group increased.

Table 2: *Paired-samples T-test for flow of control and experimental group*

Flow		Paired Differences				t	df	Sig. (2-tailed)
		Mean	Std. Deviation	95% Confidence Interval				
				Lower	Upper			
control	Pre –Post	0.87	3.53	-0.66	2.40	1.18	22	0.250
experimental	Pre –Post	-15.96	4.73	-18.00	-13.91	-16.17	22	.000*

** $p<0.05$*

Based on Table 2**,** a paired-samples T-test was conducted to evaluate the impact of flow intervention program on EFL learners' reading achievement in the control group and experimental group.

In the control group based on the results of pretest and posttest t (22) =1.18, p>0.05 (it is p=0.250), the eta squared statistic (0.05) indicated a moderate effect size. There was not a statistically significant increase on EFL learners' reading achievement. Due to the results in the control group we can conclude that there was not a significant difference between pretest and posttest. In the experimental group there was a statistically significant increase on EFL learners' reading achievement based on the result of pretest and posttest: t (22) =-16.17, p<0.05 (it is p= 0.000). The eta squared statistic (0.92) indicated a large effect size.

If we were to take other samples of EFL learners' reading achievement, we could get a "mean paired difference" in control group tests different from 0.87, so the value for the difference in the case of 95% of confidence interval is from (-0.66 to 2.40).

In the experimental group in this case the 95% is from (-18.00 to -13.91). There was a statistically significant difference between mean scores in the experimental group pretest and posttest (p<0.05), therefore, the flow intervention program enhance EFL learners' reading achievement.

Table 3: *Independent-samples t-test for posttest of flow in control and experimental groups*

		Levene's Test for Equality of Variances		t-test for Equality of Means					
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
								Lower	Upper
post	Equal variances assumed	3.297	0.076	-16.80	44	.000*	-15.4	-17.3	-13.6
	Equal variances not assumed			-16.80	41.4	.000	-15.4	-17.3	-13.6

** p<0.05*

An independent samples t-test was conducted to compare the post test scores for flow in the control group and the experimental group. There was a significant difference in scores for control group (M=32.22, SD=2.70) and experimental group (M=47.65, SD=3.49; t (44) =-16.80, p=.000, two tailed). The magnitude of the differences in the means (mean difference= -15.4, 95% CI: -17.3 to -13.6) was very large (eta squared= 0.86).

Table 4: *Independent samples t-test posttest for inference-making in control and experimental group*

		Levene's Test for Equality of Variances		t-test for Equality of Means					
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
								Lower	Upper
post	Equal variances assumed	0.018	0.893	-10.72	44	.000*	-3.3	-3.9	-2.7
	Equal variances not assumed			-10.72	43.8	.000	-3.3	-3.9	-2.7

**p<0.05*

An independent-samples t-test was conducted to compare posttest scores for the control and experimental groups. There was a significant difference in scores for the control group (M=7.43, SD=1.08) and for the experimental group (M=10.74, SD=1.01; t (44) = -10.72, p=.000, two tailed). The magnitude of the differences in the means (mean difference= -3.3, 95% CI: -3.9 to -2.7) was very large (eta squared= 0.72). There was a statistically significant difference between mean scores in the control group posttest and experimental group posttest ($p<0.05$) and, therefore, the flow intervention program enhance EFL learners' higher-order reading skill (inference-making)

Table 5: *Independent samples t-test posttest for self-efficacy in control and experimental group*

		Levene's Test for Equality of Variances		t-test for Equality of Means					
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
								Lower	Upper
post	Equal variances assumed	0.042	0.839	-21.39	44	.000*	-18.4	-16.8	-20.3
	Equal variances not assumed			-21.39	43.99	.000	-18.4	-16.8	-20.3

*$p<0.05$

An independent samples T-test was conducted to compare posttest scores for the control group and experimental group. There was a significant difference in scores for the control group post-test (M= 21.30, SD= 3.01) and experimental group post-test (M= 39.74, SD= 2.90, t (44) = -21.39, p=.000, two tailed). The magnitude of the differences in the means (mean difference= -18.4, 95% CI: -16.8 to -20.3) was very large (eta squared= 0.85). Based on the significant difference between mean scores in the control group post-test and experimental group post-test , therefore, the flow intervention program enhance EFL learners' self-efficacy.

5. DISCUSSION

The results of this study showed a statistically significant difference between pre and post measures of flow-driven program in reading L2 text and EFL learners' reading achievement. It can be concluded that flow-driven program plays a mediating role in the promotion of EFL learners' reading achievement. How students feel while doing diverse classroom activities can exert an influence on the language learners' learning or performance. One of these effectual feelings is the feeling of flow, by which the learners are absorbed in an activity to the point that they lose track of time and place, and they enjoy doing the activity for its own sake; thus, there is a good possibility that students will do the activity again and again willingly, so their learning and as a result their performance will improve, consequently. Flow experiences often have been noted during native language reading and computer work (Trevino &Webster, 1992). As in Schmidt and Savage's (1992) study of Thai English learners, flow seemed to occur in the L2 texts investigated in this study. Overall, these analyses showed that the higher the flow-driven program, the more likely it was that participants would achieve more while reading L2 texts.

According to McQuillan and Conde (1996), a number of their participants who were nonnative English speakers did report flow in reading in English. Moreover, investigating the results of posttest in two experimental and control groups showed a significant increase in optimal experience or flow and students' achievement while reading L2 texts in the experimental group.

To make an inference, information from the text and a taught Knowledge base had to be recalled and integrated. Moreover, Cain, Oakhill, Barnes and Bryant (2001) believed that less skilled comprehenders may simply have poorer memory of the information necessary for inference generation. An inference may not be made because of a failure to recall the knowledge-based item or the correct premise from the text or because of failure to integrate the two (Cain et al. 2001). It can be concluded interest in a text can facilitate recall of knowledge, and that is why the findings of this study support the above statement. This finding is in line with theoretical contention and empirical studies highlighting the positive role of inference-making in successful reading achievement while reading L2 texts. According to Bagheri and Ghanizadeh (2015), individuals who benefit from a higher level of inference-making should logically perform better on reading skill. In this research the results of the present study have proposed the answer of this question. Encountering problems make students apply inference-making strategy more in flow situation. And investigating the results of posttest between control group and experimental group showed that inferential level in the experimental group had a greater increase. This result showed that in a group that students are more immersed in reading L2 texts the inference-making strategy has been concluded at a higher level.

One of the important affective factors is self-efficacy which was introduced by Bandura (1986) as one of social cognitive theory components. Self-efficacy is a factor that can differentiate successful learners from unsuccessful learners. The results of this study are in contrast with those of Cubukcu (2008). According to Cubukcu (2008), there is no difference between high self-efficacious learners and low self-efficacious learners in language anxiety. Based on the results of pretest and posttest in two control group and experimental group, self-efficacy had a significant increase among experimental group pretest and posttest. Also investigating the results of posttest between control and experimental group have shown that self-efficacy rate was higher in the experimental group. So with regard to the third question, the researcher found a positive relationship between the participants' optimal experience or flow in reading L2 texts and their self-efficacy in reading comprehension. The findings of the study are in agreement with those of Chen (2007), cited in Rahimi & Abedini, 2009). Chen's (2007) results and those of the present study both indicate that EFL learners' self-efficacy is an important factor in the achievement of higher scores in English language skills such as reading comprehension. According to the results foreign language learners who experience flow while reading a text are higher self-efficacious participants and performed better in reading achievement.

6. CONCLUSION AND IMPLICATIONS

One of the important skills for being successful in language learning is reading skill. Therefore, any attempts to teach reading skill without creating a flow condition do not create practical and positive results. This study investigated the effect of intervention of flow in reading

achievement and its relation with higher-order reading skill (inference-making) and self-efficacy based on the control and experimental groups. Taken together, the yielded results of the present study lead to this conclusion that inclusion of effective factors and techniques as some tools of achieving optimal experience or flow while reading L2 text, not only increased the level of EFL learners' inference-making but also helped them to solve their problems in reading achievement by high level of self-efficacy.

The results of this research suggest some pedagogical implications for researchers, EFL teachers as well as EFL learners, material developers, institute supervisors. Making EFL learners familiar with flow, its condition, and its wonderful effect on learning is one of teacher's pivotal responsibilities. Moreover, English teacher not only can create flow condition for EFL learners, they can also encourage them use higher-order ability such as inference-making and increase their self-efficacy in flow condition. Also if material developers take the concept of flow seriously and think over designing tasks leading to flow, they can increase the effectiveness of pedagogical orientations of their English books and other materials content quality to let learners experience more enjoyable learning.

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Appendix A: TOEFL SAMPLE TEST

3 • 3 • 3 • 3 • 3 • 3 • 3

Directions: In the rest of this section you will read several passages. Each one is followed by several questions about it. For questions 31–60, you are to choose the one best answer, (A), (B), (C), or (D), to each question. Then, on your answer sheet, find the number of the question and fill in the space that corresponds to the letter of the answer you have chosen.

Answer all the questions following a passage on the basis of what is stated or implied in that passage.

Read the following passage.

For people who like to have a rich copper-tone tan even in winter, there is now an alternative to ultraviolet parlors or expensive trips to the tropics. It is called the superpod. A $400 novelty item, the superpod is a casket-size plastic bubble made of a new acrylic known as Perspex. The material lets in 90 percent of the ultraviolet rays from the sun, permitting bathers to stay outdoors for an all-over tan even in below-freezing temperatures. Like a solar panel, the capsule converts sunshine into heat to create a greenhouse effect.

Example I

Sample Answer
Ⓐ Ⓑ Ⓒ ●

Where can you use the superpod?

(A) In ultraviolet parlors.
(B) Only in the tropics.
(C) In a greenhouse.
(D) Anywhere outdoors.

The passage says that the superpod allows bathers to stay outdoors in below-freezing temperatures. Therefore, you should choose answer (D).

Example II

Sample Answer
● Ⓑ Ⓒ Ⓓ

The purpose of the superpod is to
(A) help people to get tanned
(B) provide heat to greenhouses
(C) change sunlight into heat
(D) show the use of a new plastic

The passage says the superpod is an "alternative to ultraviolet parlors". Therefore, you should choose answer (A).

After you read the directions, begin work on the questions.

3 • 3 • 3 • 3 • 3 • 3 • 3

Questions 31 – 36

During the 1920's the Broadway musical, now widely thought to be the United States' unique contribution to the universal list of theater genres, came into being. Its forebears were certainly the Viennese operettas of Franz Lehar and Oscar Straus. Yet the musical differs from them in that it utilizes a credible plot, music and lyrics of equal importance, strong chorus and ensemble work, and expert choreography. Unlike the earlier operettas and musical comedies in which the company was clearly divided into musicians, dancers, and actors, the Broadway musical requires a cast in which every member can sing, dance, and act with skill and energy. These demands have for two decades dictated the training policies of most of the leading theater schools in the United States.

31. The ancestors of the musicals that were seen in the United States in the 1920s were

(A) American musical comedies.
(B) Viennese operettas.
(C) Viennese plays.
(D) American operas.

32. The main importance of the Broadway musical to America is that

(A) it is different from other kinds of American musical.
(B) it is America's particular gift to world theater.
(C) it contains many different elements.
(D) it is a large scale American enterprise.

33. Which of the following may NOT be used to distinguish a Broadway musical from other, earlier kinds of musical?

(A) Its plot is fairly believable.
(B) The words and music have the same importance.
(C) The dancing is very professional.
(D) It is extremely theatrical.

34. In the kind of musicals that came before the Broadway musical there was a greater emphasis placed on

(A) more specialized roles.
(B) general co-operation.
(C) a wide range of abilities.
(D) chorus work.

35. The author of the passage implies that some theater schools in the United States are very much interested in finding

(A) more varied plays.
(B) tougher training programs.
(C) an increasing number of students.
(D) students possessing many abilities.

36. The paragraph following the passage most probably discusses

(A) how the Broadway musical was developed overseas.
(B) the activities of theater schools in the United States.
(C) the relationship of the Broadway musical to other forms of musical.
(D) what each member of a company must do in a Broadway musical.

GO ON TO THE NEXT PAGE

3 • 3 • 3 • 3 • 3 • 3 • 3

Questions 37–42

Dolphins emit rapid streams of high-pitched clicks, some audible to us, some ultrasonic. It is probable that the "melon", the bulging dome on the front of a dolphin's head, has something to do with beaming the sonar signals forward, but its exact workings are not understood. As in the case of bats, there is a relatively slow "cruising rate" of clicking, rising to a high speed (400 clicks per second) buzz when the animal is closing in on prey. Even the "slow" cruising rate is pretty fast. The river dolphins that live in muddy water are probably the most skilled echolocators, but some sea dolphins have been shown in tests to be pretty good too.

37. All the sounds made by dolphins
    (A) are ultrasonic.
    (B) can be heard by humans.
    (C) are loud.
    (D) are high in pitch.

38. The "melon" can be found
    (A) among sonar signals.
    (B) on a dome.
    (C) on a dolphin's head.
    (D) among a stream of clicks.

39. Scientists are not sure about
    (A) how some dolphins emit sounds.
    (B) the composition of sonar signals.
    (C) the pitch of the dolphin's clocks.
    (D) the function of the "melon".

40. The rate of clicking in dolphins increases when
    (A) they get near their targets.
    (B) they approach bats.
    (C) the cruising rate accelerates.
    (D) they get excited.

41. River dolphins are good at
    (A) locating melons in muddy water.
    (B) cruising at pretty high speeds.
    (C) using sounds to find objects.
    (D) beating sea dolphins in tests.

42. Which of the following is the best title for the passage?
    (A) Sea and river dolphins.
    (B) The cruising rate of dolphins.
    (C) The quality of dolphins' sounds.
    (D) Dolphins and echolocation.

GO ON TO THE NEXT PAGE

3 • 3 • 3 • 3 • 3 • 3 • 3

Questions 43–48

Aristotle is important today not because his work serves as an aid to prediction, but because he really founded the systematic study of human society. Through his enormous influence, the thought has become firmly established in the collective Western consciousness that societies change in an ordered manner, and that there are underlying rules to govern the process. Once you accept such a belief, it follows that if you are observant, or assiduous, or perhaps just lucky, you can find the rules and will be able to devise a powerful new forecasting technology, as a result of which you and your fellow men will have gained some degree of control over that vast area of life hitherto reserved for palmists, astrologers, oracles, and readers of chicken's entrails.

43. Aristotle's chief importance today comes from
    (A) his predictions of the future.
    (B) his analysis of human communities.
    (C) his systematic approach to prediction.
    (D) his being the first to study oracles.

44. Thanks to Aristotle
    (A) there has been a great growth in collective consciousness.
    (B) societies have been changing in an ordered manner.
    (C) it is widely believed that societies change in an orderly manner.
    (D) astrologers have been greatly aided in making predictions.

45. There is a widespread belief that the development of society may be controlled by
    (A) modern technology.
    (B) Aristotle's influence.
    (C) certain rules.
    (D) systematic study.

46. To devise ways of foretelling the future one quality that may well be needed is the ability
    (A) to work hard.
    (B) to be firm.
    (C) to be straightforward.
    (D) to be determined.

47. The writer implies that
    (A) palmistry and astrology were not very popular in the distant past.
    (B) new techniques of making predictions give men greater control over their lives.
    (C) reading chicken's entrails was an effective way of forecasting the future.
    (D) the study of human society used to be done solely through oracles.

48. The paragraph following the passage most probably discusses
    (A) the kind of society which Aristotle lived in.
    (B) the effects of such things as palmistry on human society.
    (C) the evolution of ideas about the nature of society.
    (D) the effects of close observation of past societies.

GO ON TO THE NEXT PAGE

3 • 3 • 3 • 3 • 3 • 3 • 3

Questions 49–54

Some chemical substances have the potential to crystallize in two alternative ways. Graphite and diamonds, for instance, are both crystals of pure carbon. Their atoms are identical. The two substances differ from each other only in the geometric pattern in which the carbon atoms are packed. In diamonds, the carbon atoms are packed in a tetrahedral pattern which is extremely stable. This is why diamonds are so hard. In graphite the carbon atoms are arranged in flat hexagons layered on top of each other. The bonding between layers is weak, and they therefore slide over each other, which is why graphite feels slippery and is used as a lubricant. Unfortunately you can't crystallize diamonds out of a solution by seeding them, as you can with some other chemical substances.

49. According to the passage, the way to distinguish graphite from diamonds is to look at their respective
    (A) degree of carbonization.
    (B) atoms.
    (C) geometric patterns.
    (D) degree of crystallization.

50. What factor makes diamonds so hard?
    (A) Their special shape.
    (B) Their difference from graphite.
    (C) Their degree of crystallization.
    (D) The arrangement of the carbon atoms.

51. Why do layers of graphite atoms slide?
    (A) They are weakly joined together.
    (B) They are flat.
    (C) They are hexagonal.
    (D) They are placed on top of each other.

52. Graphite is used as a lubricant because
    (A) it is easy to crystallize.
    (B) it is extremely soft.
    (C) it is rather slippery.
    (D) it can be seeded out of a solution.

53. It can be inferred from the passage that no attempts are now being made to crystallize diamonds out of a solution because
    (A) this is more easily done with other substances.
    (B) diamonds are such hard substances.
    (C) seeding is a very difficult process.
    (D) it is not possible by seeding

54. Which of the following is the best title for the passage?
    (A) Two kinds of carbon.
    (B) Two kinds of crystallization.
    (C) The uses of diamonds and graphite.
    (D) The uses of different chemical substances.

GO ON TO THE NEXT PAGE

3 • 3 • 3 • 3 • 3 • 3 • 3

Questions 55 – 60

The Moon revolves once on its axis each time it orbits the Earth, thus always presenting the same face to Earthbound observers. However, even to the unaided eye this unchanging face shows two contrasting types of landscape – dark, plain-like areas of low relief, and brighter, decidedly more rugged regions which cover about two-thirds of the surface. Early astronomers mistakenly referred to the smooth dark areas as *maria* (or seas), giving the name *terrae* (or lands) to the bright upland regions. The terms have persisted since, even though the Moon's surface has long been known to be completely waterless.

55. The Moon's revolution is responsible for
    (A) the way it orbits the Sun.
    (B) the way its own axis is referred to.
    (C) the way Earthbound people can observe it.
    (D) the way it is presented in history books.

56. To us the Moon's face
    (A) never changes.
    (B) changes as we move our position.
    (C) always changes.
    (D) sometimes changes.

57. On the Moon there are
    (A) many kinds of landscapes.
    (B) light and dark areas.
    (C) very few contrasts.
    (D) only low plains to be observed.

58. One third of the face of the Moon we can see is composed of
    (A) very rough areas.
    (B) light areas.
    (C) low-lying areas.
    (D) upland areas.

59. One mistake early astronomers made was
    (A) to confuse the words *maria* and *terrae*.
    (B) to ignore the smooth dark areas.
    (C) to consider some areas to be seas.
    (D) to think that the upland regions were bright.

60. It is probable that the paragraph after the passage discusses
    (A) the revolutions of the Moon on its axis.
    (B) the use of incorrect terminology in history.
    (C) the different views of early astronomers.
    (D) the upland regions, the *terrae* of the Moon.

THIS IS THE END OF SECTION 3

IF YOU FINISH BEFORE TIME IS CALLED, CHECK YOUR WORK ON SECTION 3 ONLY.
DO NOT READ OR WORK ON ANY OTHER SECTION OF THE TEST.

STOP STOP STOP STOP STOP STOP STOP

Appendix B:

Flow Perception Questionnaire (FPQ):

Directions: statements 1 through 14 refer to how you feel about reading the text you just read. Please indicate whether you (5) strongly agree, (4) somewhat agree, (3) neutral/no opinion, (2) somewhat disagree, (1) strongly disagree, by marking the appropriate choice. Please give your first reaction to each statement, and mark an answer for every statement.

Flow Perception Questionnaire:		strongly agree	somewhat agree	neutral/no opinion	somewhat disagree	strongly disagree
1	This task excited my curiosity.					
2	This task was interesting in itself.					
3	I felt that I had no control over what was happening during this task.					
4	When doing this task I was aware of distractions.					
5	This task made me curious.					
6	This task was fun for me.					
7	I would do this task again.					
8	This task allowed me to control what I was doing.					
9	When doing this task, I was totally absorbed in what I was doing.					
10	This task bored me.					
11	During this task, I could make decisions about what to study, how to study it, and/or with whom to study.					
12	When doing this task I thought about other things.					
13	This task aroused my imagination.					
14	I would do this task even if it were not required.					