Meaningful Learning through a Multi-Drafting Feedback Process in a Web-based Learning Content Management Environment

Yehuda Peled
The Western Galilee Academic College
The Ohalo College
ypeled@macam.ac.il

Miri Sarid
The Western Galilee Academic College
School of Health Professions, Tel Aviv University
miris@wgalil.ac.il

Abstract

During the period 2003-2008 a multi-drafting teaching method was tried and formalized. The assumption was that students would react favorably to a mechanism that enables them to excel in every assignment. Preliminary research shows that although there is a positive and significant correlation between the number of drafts submitted per assignment and the final grade, some of the students do not take advantage of the mechanism offered. The results indicate a positive attitude toward (1) Usage of time for multi-drafting; (2) Opportunity to improve grades & excel; and (3) Fairness of grading. This study shows that content management of Web-based learning provides an opportunity for the teacher to improve students' learning by offering continuous revisions of their work through multiple drafts. Accumulating a joint digital portfolio enables the teacher to easily monitor the student's progress per assignment and per course.

Keywords: Multi-Drafting; Web-based learning content management; Procrastination.

Introduction

The difficulty to enhance meaningful learning (Novak, 2002) in undergraduate courses led us to seek ways to enhance meaningful learning through integrating Information Technology (IT) into teaching (Loertscher, 2006). The use of IT in teaching facilitated the integration of formative evaluation as part of the teaching process. Identifying students' misconceptions enables the teacher to give appropriate feedback, thus facilitating meaningful learning (Heinze-Fry & Novak, 1990).

During the 2003-2008 school years, a multi-drafting teaching method was tried and formalized. The method offers the student the opportunity to submit an assignment digitally as many times as needed during a defined timeframe. Throughout that period, the assignment is graded, and suggestions for improvement are offered. Thus the student can refine his work through a continuous dialogue with the teacher. This multi-drafting process (Ferris & Hedgcock, 2004; Hinkel, 2005; Leahy, 2005) creates a digital portfolio (Bobak, 2004; Wiedmer, 1997) of the students work along with the teacher's remarks and suggestions. The multi-drafting process uses the Britannica HighLearn web-based learning content management, which is a Hebrew-language, Web-based course-management tool that allows instructors to develop and deliver academic courses via the Internet.

HighLearn is password protected, thus students and teacher log on with their real identity, allowing transparent information flow. It generates and displays the student's grading, thus enabling him or her to appreciate their improvement with each refined draft.

The student writes the assignment using Microsoft Word, which allows a two-way feedback process, using the Track Changes and Comment functions, thereby building up the student's knowledge and understanding through continuous formative evaluation for every given assignment. The process described here allows the student to reject or accept changes and improvements offered by the teacher.

They are required to submit three assignments per semester. On each assignment, the teacher's assistance is offered through the multi drafting technique, thus providing the opportunity to refine the work. The incentive offered by the teacher is maximum grading.

The assumption was that the students would react favorably to a mechanism that would enable them to excel in every assignment. After four years of practicing the multi-draft technique in dozens of courses, it has become clear that that this assumption is a far cry from reality. A significant number of the students achieved lower grades than expected, and there were also students who failed.

We set out to investigate the influence of demographic characteristics on multi-drafting.

Winnips (2000) relates feedback to different points in the learning experience and sees it as a tool for scaffolding learners. Providing feedback via a web-environment to a series of assignments has the advantage of flexibility; an instructor does not have to be in his office in order to support a student and can turn to student submissions and give feedback wherever the instructor has access to a networked computer (Collis et al., 2001).

There is little or no evidence of research on multi-drafting as a teaching technique in subjects other than English as a foreign language and writing classes.

Formative assessment refers to an assessment that is specifically intended to generate feedback on performance in order to improve and accelerate learning (Sadler, 1998). Formative assessment - like scaffolding — is a collaborative process and involves negotiation of meaning between teacher and learner about expectations and how best to improve performance (Shepard, 2005).

A large percentage of undergraduate students are engaged in frequent procrastination (Solomon & Rothblum 1984), which is a tendency to delay preparing for tests and completing course assignments (Ferrari et al., 1995). There are various reasons for procrastinating. It is associated with test anxiety and writer's block; and it crosses gender and racial categories (Ferrari et-al., 1998).

Tools and Analysis

The data was acquired from two sources:

a. Study 1

Data from the Britannica HighLearn web-based learning content management (BHWBLCM) (preliminary research)

b. Study 2

A Likert multiple choice 1-5 points scale questionnaire consisting of 23 items, dealing with attitudes toward multi-drafting in learning. The questionnaire was comprised of five main factors:

1. Perceiving multi-drafting as an opportunity to improve grades & excel (Cronbach's α=0.91).
2. Multi-drafting as a fair way for grading (fairness) (Cronbach's α=0.76).

3. Attitudes toward benefiting from the time allowed for the multi-drafting process (Cronbach's α=0.80).
4. Attitudes toward the amount of time (time frame) allowed for the multi-drafting process (r=0.15).
5. Excuses against multi-drafting as a technique for enhancing learning motivation (r=0.20, $p < .01$).

Method

327 college students sampled from first, second and third year students, 72% female and 28% male. The mean age of the participants was 28 years (SD=8.8 years). The sample consisted of Jewish, Druze, Muslim and Christian students (Table 1).

Table 1. Sample characteristics

		N	%
Gender	Male	82	27.8%
	Female	213	72.2%
Children	Y	87	26.6%
	N	240	73.4%
Age	<25	59	54.9%
	26+	10	49.1%
Marital status	Married	93	30.1%
	Unmarried	218	69.1%
Religion	Muslim	65	21.2%
	Christian	19	6.2%
	Druze	32	10.5%
	Jewish	188	62.2%

Note: Some of the data does not add up to n=327 as a result of missing values in reporting.

Findings

Study 1

Data on 462 students' assignments was extracted from the BHWBLCM, regarding the number of drafts submitted during the course and their final score. 38 assignments scored zero as the student had not submitted.

A significant correlation *(r=.49, p < .001,n=462)* was found between the number of drafts submitted by a student per assignment and the final score. The student's grade in the course was compared using 1-way ANOVA using three groups: students who submitted their work two, four and six times. As Table 2 indicates, significant differences were found between the three groups; the more submissions, the higher the student's grade.

Table 2. Means and SDs' of grades according to number of submissions

	Number of drafts		
	2	4	6
M	64.49	79.46	88.37
SD	18.88	16.68	11.70
n	192	149	121

$F_{(2,459)} = 83.37, p < 0.001.$

The higher number of submissions, the higher the grade. The data is based on 500 assignments. 38 assignments scored zero as the students did not submit at all.

Study 2

In order to explore the nature of multi-drafting, comparisons were conducted of the multi-drafting factors (attitudes toward usage of time for multi-drafting; perceiving multi-drafting as an opportunity to improve grades & excel; multi-drafting as a fair way for grading; perceiving multi-drafting as a technique for enhancing learning motivation) according to demographic characteristics.

Two-way Manova (gender X marital status) revealed significant differences between male and female students (*Multivariate* $F_{(5,276)} = 2.92, p = .01$), and married and non-married students (*Multivariate* $F_{(5,276)} = 4.00, p < .01$).

Univariate ANOVA showed that female students perceive the multi-drafting learning method as an opportunity to improve their grades more than male students $(F_{(1,280)} = 5.91, p < .02)$, and as a method with more grading fairness $(F_{(1,280)} = 7.51, p < .01)$. They use time for multi-drafting more than male students $(F_{(1,280)} = 6.83, p < .01)$ (for means see table 3).

A main effect of marital status indicated a significant difference between married and unmarried in the way they relate to fairness of grading $(F_{(1,280)} = 10.47, p < .001)$. It seems that these differences stem from the effect reported earlier of the Gender X Martial status interaction.

In a similar manner, a significant interaction effect of gender X marital status showed that unmarried men (M=3.50, SD=.99) and women (M=3.57, SD=.87) reported similar means for their usage of time as a tool in multi-drafting $(F_{(1,280)} = 4.27, p < .05)$, while married men (M=3.05, SD=1.03) perceive the usage of time as less efficient for multi-drafting then married women (M=3.66, SD=.91).

Table 3. Means and SD values according to gender and marital status

		Male			Female			Total		
		Unmarried	Married	Total	Unmarried	Married	Total	Unmarried	Married	Total
Opportunity to improve grades	M	3.91	3.71	3.85	3.99	4.17	4.05	3.97	4.04	3.99
	SD	.91	.76	.87	.72	.76	.73	.78	.78	.78
	N	58	23	81	142	61	203	200	84	284
Fairness of grading	M	4.11	3.46	3.92	4.11	4.05	4.09	4.11	3.89	4.05
	SD	.73	1.03	.87	.68	.82	.72	.69	.92	.77
	N	58	23	81	142	61	203	200	84	284
Usage of time	M	3.50	3.05	3.38	3.57	3.66	3.60	3.55	3.49	3.53
	SD	.99	1.03	1.02	.81	.91	.84	.86	.97	.89
	N	58	23	81	142	61	203	200	84	284
Need more time	M	3.03	3.04	3.03	2.83	2.91	2.85	2.89	2.95	2.90
	SD	.76	1.08	.86	.94	.83	.91	.89	.90	.89
	N	58	23	81	142	61	203	200	84	284
Excuses	M	2.81	3.17	2.91	2.91	2.98	2.93	2.88	3.04	2.93
	SD	.85	.82	.85	.97	.87	.94	.93	.85	.91
	N	58	23	81	142	61	203	200	84	284

Discussion

Since a significant proportion of the students (42%) did not take advantage of the mechanism offered, we can assume that some of them may be procrastinators (Ferrari, et al., 1995; Schroeder, 2002; Lee, 2005). On the other hand, those who did take full advantage of the multi-drafting mechanism (26%), may have experienced flow state (Lee, 2005), which is an intrinsically enjoyable condition and is accompanied by a number of positive experiential characteristics, including feelings of control and enjoyment of the process (Csikszentmihalyi, 1991). Consequently, one can assume that students who experience flow state are not likely to put off their learning tasks until later (lee, 2005). There is a need to explain why 32% of the students do not take full advantage of the multi-drafting mechanism offered. Based on Ellis & Knaus, (1977); Rothblum et al., (1984) and Schroeder, (2002), which report that the majority of college students procrastinate to some extent, it is reasonable to assume that they are procrastinators to some extent.

The data from study 2, which looks for the influence of demographic characteristics on multi-drafting factors, reveals that there are two major demographic issues that influence some of the multi-drafting factors. Those are marital status and gender. The factors affected by gender are perceiving the multi-drafting learning method as an opportunity to improve grades and excel; a learning method with more fairness for grading; and the use of time for multi-drafting.

Female students perceive the multi-drafting learning method as an opportunity to improve their grades more than male students, meaning that there is a positive correlation between submitting the assignment on time and the need to excel among female students that is greater than among male students. The positive correlation between submitting the assignment on time and the need to excel is supported by other studies that have found a moderate to strong negative correlation between academic procrastination and academic performance (Steel, et al., 2001; Van Eerde, 2000). Masson et al., (2004) and Uzun Özer, et al., (2009) report that male students procrastinate more frequently on academic tasks than female students.

The joint effect of the factors Use of Time for Multi-Drafting and an Opportunity to Improve Grades and Excel is expressed by higher scores per assignment. Thus according to the findings of study one, which shows the correlation between number of drafts and grade, female students achieve higher grades per assignment in a multi-drafting based learning than male students. As research shows that females, as compared with males, report lower levels of procrastination (Blunt & Pychyl, 1998; Saddler & Sacks, 1993), we can assume that the above trait is related to academic procrastination.

Of the various aspects of curriculum implementation, assessment is probably the least developed across higher education. Thus, students' grading will be a single occurrence as it will be an outcome of a summative evaluation. Shepard (2005) claims that formative assessment – like scaffolding – is a collaborative process and involves negotiation of meaning between teacher and learner about expectations and how best to improve performance. Thus students regard multi-drafting as a fair way of assessment since they identify the effort put in by the teacher, who in order to maintain the multi-drafting, takes upon himself a huge amount of work, and through the drafts he conducts a dialogue with the student, thus acting as a mentor to each of the students.

The findings in this research confirmed the assumption that meaningful learning can be achieved through formative evaluation. The incentive used to draw the students into extra work is the promise given at the beginning of the course for them to complete the assignment with

higher scores. Yet, as can be seen from Table 2, over 75% of the students did not take advantage of the offer.

Although the findings show a direct correlation between the number of drafts submitted and the final grades, not all the students found this opportunity worth their while.

The majority of students claim that although multi-drafting requires additional work, it is still justifiable in order to improve grades and excel. They also agree that the opportunity of on-going revision of their work increases theirs learning motivation. There is a correlation between the students' willingness to put in extra work in order to improve grades and their notion of fairness in grading. This finding is supported by Marks, (2000); Ghaith, (2003); Jackson et al., (1999) and Crossman, (2007).

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