

## The Effect of Flexible Learning Schedule on Online Learners' Learning, Application, and Instructional Perception

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*Learning style has been an important area of study to improve learner satisfaction and learning outcomes. This study examined the effect of flexible learning schedule on learning and application of learning made by a group of undergraduate students. Results revealed flexible learning schedule influenced students' learning. Various reasons why respondents in the study attained high or low degree of perceived learning and application of learning are provided. Discussions about instructional conditions and strategies to enhance learning and application of learning were included.*

Keywords: Online learning, Learning Preferences, Learning Application

Identifying different types of learning styles and their impacts on student learning has been a major field of study in distance education (Ehrman, 1990; Riding & Cheema, 1991; Smith, 1997). From numerous research studies, satisfying online learner's learning style and preference was considered a critical success factor for online instruction (Blickle, 1996; De Raad, 1996; Goff & Ackerman, 1992; Vermunt, 1998; Wolfe & Johnson, 1995). Among many studies focusing on cognitive style and learning preferences, learner's control of learning process was a frequently studied topic in distance education because the online delivery medium has transferred control of learning from instructor to each individual learner (El-Tigi & Branch, 1997). While traditional classroom instruction requires learner to follow certain sequence bounded by time, content, and place, online instruction allows flexible learning modes so students can control their learning path, pace, and contingencies of instruction (Hannafin, 1984). The more the learners can control individual learning environment, the greater chances the learners will motivate their own learning (Steinberg, 1989).

As more adult learners seek for college education delivered through distance education methods, satisfying the learning needs and preferences of this learner population has become a major issue in online instruction. Higher education institutions such as colleges and universities, however, have not been fully meeting the adult learners learning needs to have more accessible, flexible, and convenient ways to take classes. According to MacDonald, Stodel, Farres, Breithaupt, and Gabriel (2001), the characteristics of adult learners who will be best served by the benefits of online instruction are: a) working adults, b) adults who cannot afford long leaves of absence, c) single parents or economically disadvantaged adults, and d) those who need an alternative way to study degree programs for economic, social, personal, or practical reasons. Online instruction, in this regard, has been considered a viable option to satisfy such unique learning needs of adult learners.

Among various conditions for adult learners to control their own learning, learner's self control of the time, sequence, and pace of learning were identified as the major learning preferences needed to be addressed in higher education (Lin & Hsieh, 2001). Even though many studies have verified the effect of self-control over the learning sequence and path during online learning, very few empirical research studies have conducted to identify the effect of self-control of learning schedule on the learning, application of learning, and instructional experience of online learners. Here, the term 'application of learning' refers to the degree to which learners use and apply learned knowledge and skills during instruction or to current and future jobs.

### Questions for Investigation

The purpose of this study was to examine if online learner's learning, application of learning, and instructional quality perceived by a group of undergraduate students who took an online course with flexible learning schedule differ from those perceived by the other group of students who took the same course with fixed learning schedule. Several research questions were developed to investigate the purpose of this study.

1. Do learning and application of learning differ between the flexible and the fixed learning schedule group?
2. What instructional factors and conditions promote or hinder learning and learning application of the different schedule groups?

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## Methodology

This study utilized quantitative research methods. To assess learning and learning application differences between the different schedule option groups of the online course, a group of undergraduate students were asked to participate in this study. The subjects for the study included 102 students (34 male and 68 female) who took an online course at a southeastern university. Among the 102 students, 55 students chose the fixed learning schedule and 47 students chose the flexible learning schedule. Regarding employment status, 16 students were fulltime students, 38 students had part-time jobs, and 48 students had fulltime jobs.

A questionnaire was developed to obtain the students' perceived degree of learning, learning application, and instructional quality of the online course. The questionnaire included question items composed of the eighteen learning objectives of the course. The students were asked to participate the pre and post survey conducted online at the beginning and at the end of each semester. The data sets were collected for all terms including Spring, Fall, and Summer terms between year 2000 and 2002. The online questionnaire used a five point Likert-type scale to measure the degree of learning (1 for "do not understand" to 5 for "completely understand") and application of learning (1 for "none" to 5 for "frequently use").

Regarding the validity of the instrument used for the data collection, it was tested from a previous study that used the same construct that verified the construct validity (author 2000). Overall, a reliability alpha was .95 for the learning and .96 for the learning application scale respectively. Basic descriptive statistics was used to analyze the degree of learning, application of learning, and instructional quality perceived by the students. Paired t-test was used to compare population mean scores for the learning increase before and after the course between groups. Qualitative analysis was conducted to categorize the reasons that promote or hinder learning and application of learning responded by all students.

## Context of the Online Course

The online course was developed to teach curriculum content in program evaluation for undergraduate students. The online course included thirteen learning modules and the workload of one module was equivalent to that of one week's classroom instruction. Four sub learning sections comprised one learning module. All students were asked to attend the first and last class meeting for course orientation and group project presentation respectively. At the first meeting each student was allowed to choose a learning schedule option among the two: weekly fixed schedule and self-paced flexible schedule. The self-paced flexible schedule provided four to five learning modules for a longer period of time (4 to 5 weeks) so students could manage his or her learning schedule accommodating individual work, other studies, and family duties. After selecting a schedule option, students in each schedule option were divided into peer groups composed of three to five students. Each peer student group was involved in a group project and various online discussion activities for group engagement and learning.

## Results

### *Degree of Learning and Application*

It was identified that the students attained a significant increase in learning overall. For all students, the mean score of the perceived learning was 3.15 before the instruction. The population post mean score measured after the instruction was 4.01. Mean difference between the pre and post assessment was found to be significant at .05 level using paired t-tests.

Table 1. *Difference in Perceived Learning by Schedule Option*

Variable	N	Mean (SD)		Paired Sample T-Test		
		Pre	Post	Diff (SD)	t-stats	Sig.(2-tailed)
Fixed schedule	55	3.21 (.54)	3.99 (.74)	.79 (.80)	-7.260	.000*
Flexible schedule	47	3.09 (.89)	4.03 (.63)	.94 (.99)	-6.559	.000*
All	102	3.15 (.72)	4.01 (.69)	.86 (.89)	-10.00	.000*

\* Significant at <.05 level.

When the students' perceived application of the eighteen learning objectives during the semester was calculated, the population mean score identified was 3.83, which implies that the students could use and apply their

learning to a fairly high degree. Further analysis was conducted to compare the learning increase between the different schedule option groups. From this analysis, the p-value for the mean difference between the comparison groups, as a whole, was not found to be significant. When the mean differences were calculated for the regular spring/fall semesters, however, the p-value of learning differences between the different schedule option groups was found to be significant. The difference in learning application mean scores was not a significant one between the comparison groups.

Table 2. *Mean Differences in Learning and Application by the Different Types of Semester*

Terms	Category	N	Learning Diff. (SD)	p value*	Application (SD)	p value*
Fall/ Spring	Fixed	46	.72 (.70)	.021	3.88 (.71)	.353
	Flexible	31	1.15 (.89)		3.72 (.73)	
Summer	Fixed	9	1.10 (1.22)	.245	3.87 (.94)	.998
	Flexible	16	.54 (1.07)		3.87 (.61)	

\* Exact significant value (2-tailed significance).

It was identified the most frequently replied comments about the likeness of the flexible learning schedule were the convenience of the flexible schedule to take the online course followed by the students' control of time and learning processes. Psychological reasons such as less stressful and rushed were another benefits indicated by the students. One example of the negative effect of the flexible schedule was procrastination during taking the online course.

Table 3. *Comments Made by the Students in Flexible Learning Schedule*

Comments	Frequency (%)
It fitted my schedule.	16 (29)
- <i>With my work schedule</i>	8
- <i>With my other class schedule</i>	6
- <i>With other personal schedule (family care, doctoral appointment)</i>	2
I could manage my time for study and assignment completion.	12 (21)
I could learn at my own pace and control my learning.	12 (21)
The flexible schedule helped my learning psychologically.	7 (13)
- <i>My stress to study and complete assignments was decreased.</i>	5
- <i>I didn't feel rushed.</i>	2
It provided more time to focus on learning.	4 (7)
It didn't help. I prefer weekly schedule option.	4 (7)
Procrastination negatively affected my learning.	1 (2)

#### *Reasons for High or Low Perceived Learning and Application*

From the students' responses of the reasons for high or low learning and application experienced during the online course, various reason categories could be analyzed. In answering the survey questions, the students were allowed to provide the three most influencing reasons supporting or hindering their learning and application. As collectively, the reasons in instructional ineffectiveness were identified as the most influential factor (70%) negatively affecting the students' learning for the online course. From the various reasons under instructional ineffectiveness category, "lack of instructional clarity to explain the learning content" and "difficult learning content" were found to be the most influential reasons accounted for 60% of the responses in instructional ineffectiveness.

Table 4. *Reasons for Low Perceived Learning by Schedule Option*

Reason category	Fixed (%)	Flexible (%)	All (%)
Instructional ineffectiveness	29 (66)	30 (75)	59 (70)
- <i>Not explained clearly</i>	6	8	14
- <i>Learning content was too difficult</i>	4	7	11
- <i>Some content was confusing and unclear</i>	6	4	10
- <i>Too much content for a given time</i>	5	2	7
- <i>Not enough feedback on individual assignment</i>	2	2	4
- <i>Format of reading material was not clear</i>	0	4	4
- <i>Lack of immediate feedback or support</i>	2	1	3
- <i>Little interaction with other students and instructor</i>	2	1	3
- <i>Too much class assignment</i>	1	1	2
- <i>Technical difficulty to view multimedia content</i>	1	0	1
Lack of personal effort	3 (7)	3 (8)	6 (7)
Lack of interest in the learning content	3 (7)	3 (8)	6 (7)
Lack of opportunity to use learning	4 (9)	1 (3)	5 (6)
Not related to my work	3 (7)	1 (3)	4 (5)
Personal dislike of online instruction method	2 (5)	1 (3)	3 (4)
Procrastination of learning	0 (0)	1 (3)	1 (1)
All	44	40	84

Some reasons seemed to influence the students' learning positively. Similar to the reason categories found for low learning, those reasons in instructional effectiveness were most frequently answered by the respondents as they influence learning (46%). Among them, some reasons were more frequently replied than others as they positively affected students' learning. They were "clear and concise learning content," "usefulness of class assignment and projects," and "review and repetition of learning." From these findings, the clarity of learning content was identified as the most influential factor for the students' learning in this study. As one contrasting pattern of students' responses, the students with flexible learning schedule perceived personal motivation as a more important factor for their high learning (12 responses) than the students with fixed learning schedule (1 response) did. Personal learning effectiveness, on the contrary, was found to be more important factor positively affecting learning for the students with fixed learning schedule.

Table 5. *Reasons for High Perceived Learning by Schedule Option*

Reason category	Fixed (%)	Flexible (%)	All (%)
Instructional effectiveness	40 (45)	39 (46)	79 (46)
- <i>Clear and concise learning content</i>	18	10	28
- <i>Usefulness of class assignment and projects</i>	6	13	19
- <i>Review and repetition of learning</i>	4	9	13
- <i>General instructional effectiveness</i>	7	2	9
- <i>Technology support for learning</i>	1	1	2
- <i>Quality reading material</i>	1	1	2
- <i>Unique teaching method</i>	1	1	2
- <i>Quality communication and interaction</i>	1	1	2
- <i>Appropriate chunking of learning content</i>	0	1	1
- <i>Good instructional sequence</i>	1	0	1
Related to my current or future jobs	10 (11)	7 (8)	17 (10)
High interests in the learning content	8 (9)	9 (11)	17 (10)
Previous learning	9 (10)	8 (9)	17 (10)
Opportunity to practice learning	10 (11)	5 (6)	15 (9)
Personal motivation for learning	1 (1)	12 (14)	13 (7)
Personal learning effectiveness	10 (11)	3 (4)	13 (7)
Other reasons	1 (1)	1 (1)	2 (1)
All	89	84	173

Various reasons were found to positively or negatively influence students' application of learning during online learning. Some reasons seemed to affect students' learning application positively as well as negatively. Those are "opportunity to use learning," "because of high or low learning," and "relatedness to students' jobs and tasks." These reasons accounted for 74% and 88% of all responses for the reasons of low and high learning application respectively. Two reasons were found to more negatively affect the learning application of the students with fixed learning schedule than that of the students with flexible learning schedule. Those are "not enough opportunity to use during class" and "lack of motivation to apply learning." "Opportunity to review learning through quizzes," "applicable learning content to my work," and "personal interest" were found to more positively affect the application of learning for the students with fixed learning schedule while "personal motivation to apply" was found to more positively affect the application of learning for the students with flexible learning schedule.

Table 6. *Reasons for Low Perceived Learning Application by Schedule Option*

Reason category	Fixed (%)	Flexible (%)	All (%)
Lack of understanding of learning content	8 (30)	9 (43)	17 (35)
Not related or applicable to my job	6 (22)	8 (38)	14 (29)
Not enough opportunity to use during class	5 (18)	0 (0)	5 (10)
Lack of motivation to apply	4 (15)	1 (5)	5 (10)
Too much content to apply for a given time	1 (4)	2 (9)	3 (6)
Learning activities were not related	2 (7)	0 (0)	2 (4)
Lack of opportunity to use learning in my job	1 (4)	0 (0)	1 (2)
Not stressed to apply	0 (0)	1 (5)	1 (2)
All	27	21	48

Table 7. *Reasons for High Perceived Learning Application by Schedule Option*

Reason category	Fixed (%)	Flexible (%)	All (%)
Opportunity to use learning	42 (62)	39 (64)	81 (63)
- Opportunity to use in class assignments/projects	23	21	44
- Opportunity to use in my job	13	13	26
- Opportunity to review learning through quizzes	5	0	5
- Opportunity to use in personal situation	1	3	4
Because of high learning	10 (15)	7 (11)	17 (13)
Applicable learning content to my work	10 (15)	5 (8)	15 (12)
Personal motivation to apply	0 (0)	7 (11)	7 (5)
Personal interest	5 (7)	2 (3)	7 (5)
Because of repetition of information	1 (1)	1 (1)	2 (1)
All	68	61	12

## Discussion

### *Effect of Flexible Learning Schedule on Students' Learning and Application*

From the data analysis, it was identified that allowing the flexible learning schedule in online instruction seemed to significantly affect students' learning for regular semester terms, but not for the short terms during the summer. The 'no significant learning difference' finding for the summer term students may be due to the indistinguishable scheduling condition during the summer, which provided 2 or 3 learning modules weekly for the fixed learning schedule group students while 4 learning modules were allowed for the flexible learning schedule group students. Among many reasons, convenience of flexible learning schedule (to work, other studies, and personal matters) and the freedom to control students' learning time and learning processes according to their personal learning preferences were found as the influential factors affecting students' learning for the flexible learning schedule group. This finding supports many previous research studies (Blickle, 1996; De Raad, 1996; Goff & Ackerman, 1992; Vermunt, 1998; Wolfe & Johnson, 1995) claiming satisfying student's learning style and preference is a critical success factor for online instruction.

### *Instructional Factors and Conditions Affecting Learning and Application*

This study identified the most influential variable for students' learning as instructional effectiveness that accounted for 70% of the reasons for low learning and 46% of the reasons for high learning replied by all students.

When further analysis was conducted to classify the diverse responses constituting the reasons in instructional effectiveness, several sub categories of instructional factors and conditions were emerged. Those were: a) clarity of instructional content and appropriate instructional level (66% and 35% of the reasons in instructional effectiveness for low and high learning respectively), b) usefulness of instructional activities (46% of the reasons in instructional effectiveness for high learning), c) instructional feedback and interaction (17% of the reasons in instructional effectiveness for low learning), and d) appropriate amount of learning content and workload (15% of the reasons in instructional effectiveness for low learning). For learning application, opportunity to apply learning during or outside the instruction was the most influential factor answered by all students. These findings elicit some meaningful discussions to design and deliver quality online instruction for college students. The first issue is the instructional clarity in delivering online instruction. Compared to traditional instruction, online instruction lacks immediacy to correct or clarify unclear instructional contents and communications. The problem of instructional unclearness is also influenced by each individual student's different level of instructional readiness or subject knowledge in taking online courses. To solve this kind of instructional problem, instructors of online courses are strongly advised to adjust the difficulty level of each segment of instructional content and apply instructional variation to meet students' learning level as collectively. This task can be done in actual instructional settings or through a peer review composed of other instructors and a sample of students.

Selecting good instructional activities satisfying the students' learning needs is another task to enhance online instruction. Several instructional strategies are deemed effective for this purpose. First, to make students' learning experience meaningful, the learning content must be "applicable." As Baldwin and Ford (1988) recommend, this kind of learning condition can be achieved by making learning content identical or at least similar to the actual application settings where students would be involved. Second, to address the issue of making applicable learning, online instructors need to promote reflective activities that assist learners to apply their learning to personal situations during instruction, which will eventually result in far transfer (Clark & Taylor, 1992). Some recommended learning activities promoting applicable learning are: a) a step-by-step guided practice after a segment of instruction, b) follow-up individual practice to reinforce the guided practice, and c) independent practice through class assignments that have similar construct with different application content to result in far learning transfer.

Promoting quality interaction during student learning has been another instructional design issue in online instruction (Jones & Jo, 1998) and was not an exception in this study. Among many practices recommended by other researchers addressing this issue, some are passive while others are proactive. Typical examples of the passive interactions would be providing immediate feedbacks on students' questions and timely technical support when they encounter computer or network problems during learning. It is generally recommended that instructors should provide these kinds of feedback and support within 24-hour time frame to satisfy learners or no later than 48 hours to avoid students' complaints. Some effective proactive interactions that the researcher has applied to online instruction were: a) asking short questions checking the understanding of major learning content at frequent intervals during instruction, b) sending students' learning progress report on a regular base to promote students' motivation for learning achievement, and c) asking students to take a learning review quiz at the beginning of each learning module to promote longer retain of the previously learned content.

## Conclusion

This study has identified learning and application made by a group of undergraduate students who took an online course in program evaluation. Several meaningful findings were revealed for the effect of the fixed or flexible learning schedule on learning and application of learning in an online learning environment. While many research studies in HRD have addressed organizational and performance issues, this study focused on instructional issues in online learning environment to solve learning and application of learning issues. Values of the study results to new HRD knowledge are empirically verifying how flexible learning affects online learners learning and application of learning in general. Some instructional design issues to increase students' learning and application were identified and discussed. Even though this study revealed how the flexible learning schedule affected students' learning and application of learning in online learning context, the study findings are limited to online learning environment occurred in college settings. For the generalization of this finding, another set of studies using a broader population are strongly recommended.

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