Effectiveness and Problems of Distance Learning

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ABSTRACT

In this paper, attendance in distance learning courses of a cyber university has been surveyed in an effort to verify the effectiveness of distance learning. Based on survey data from 4,749 distance learning participants, major attending place, major reasons for attending online class, fidelity to online classes, attending time per week, perceived educational effectiveness, perceived and relative seriousness of problems, and other variables have been evaluated. The results indicate that perceptional seriousness of the investigated problems is not statistically important. The findings indicate that, among operational problems, self willingness and cheating are the most remarkable. In contrast, the relative seriousness of traditionally recognized problems such as H/W availability and network speed among environmental problems is least remarkable. An analysis of demographic differences such as sex, employment, and school year in terms of seriousness of problems is also performed. The results reveal the existence of statistically significant differences according to sex, employment, and school year with regard to almost all elements of environment, actual current conditions, and seriousness of problems, with the exception of some elements such as attending place and perceived fidelity.

Keywords*: Distance Learning.*

1. INTRODUCTION

In Korea, cyber universities, established by the authority of the Ministry of Education, have assumed leadership in distance education since 2000. There is currently little objection to the quantitative increment of on-line distance education. However, the qualitative effectiveness of on-line distance education needs to be verified. In 2004, Nam surveyed studies related to distance education [1]. There have been some studies about the LMS (Learning Management System) [2][3], as well as the actual current conditions of distance education [4]. Students' preferences for various items such as quantity of one-hour teaching material, constitution, assessments, etc has also been investigated in the Korean context [5]. Moon and Nam meanwhile attempted to identify factors affecting educational results such as score [6].

In this study, attendance in distance learning courses has been surveyed to verify the actual current conditions in terms of major attending place, major reason for attending online class, attending experience, fidelity to online class, attending time per week, perceived educational effectiveness, and perceived possibility of laziness. Traditionally recognized problems have also been evaluated together with the perceived seriousness of problems of distance learning. We tested whether there are statistically significant differences in environment, current conditions, and problems according to sex, employment status, and school year. The obtained results are analyzed and reported.

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2. VERIFICATION OF EFFECTIVENESS AND PROBLEMS OF DISTANCE LEARNING

2.1. Survey methodology

2.1.1. Survey content: The survey is comprised of four categories, statistics of survey respondents, attending environment, attending current conditions, and problems. Multiple-choice and 5-point Likert scale questions are employed. Survey categories and questions are listed in Tab. 1.

Table 1. Survey content

Category	Question
Statistics of respondents	Sex, employment status, school year grade
Attending Environment	Attending place Computer ownership and network class Outdoor attending convenience
Attending current conditions	Attending reason Prior attending experience Perceived fidelity Attending time per week Perceived effectiveness compared to offline class Perceived potential laziness compared to offline class

Problems	Proxy attendance Cheating on exams or quizzes Copying report Network inconvenience Computer facility inconvenience LMS difficulty and inconvenience Disinclination Poor contents Poor operation Over ability

2.1.2. Statistics of survey respondents: We surveyed attendance in the fall semester of 2008 of K cyber university, and received 4,749 replies. As shown in Fig. 1., the ratio of male : female amongst the respondents is 56% : 44%, while the employed ratio is 17%, and school year (freshman : sophomore : junior : senior) ratio is 15% : 20% : 25% : 40%.

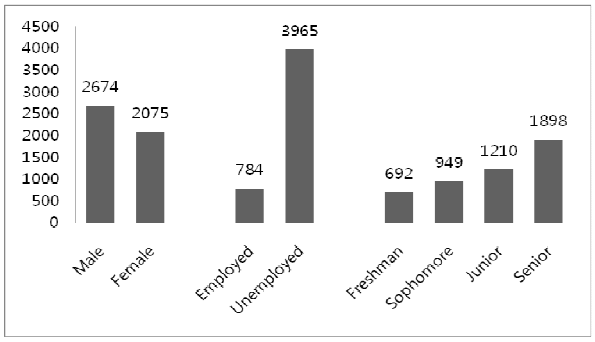

Fig. 1. Statistics of survey respondents

2.1.3. Methodology: We analyzed descriptive statistics using SPSS 15. For the multiple choice problems, the ratio is analyzed while for the Likert scale problems, averages and standard deviations are analyzed.

2.2. Survey results

2.2.1 Analysis of attending environment: Questions for attending environment are attending place, computer ownership and network class, and attending convenience.

1) Attending place: The results of the question for major attending place to online class are shown in Fig. 2. "At home" was the most dominant answer, accounting for 51% of responses. The next major place was "At school", at 43%. "At the office" accounted for only 5% of responses and other commercial places such as game rooms or Internet cafés were negligible.

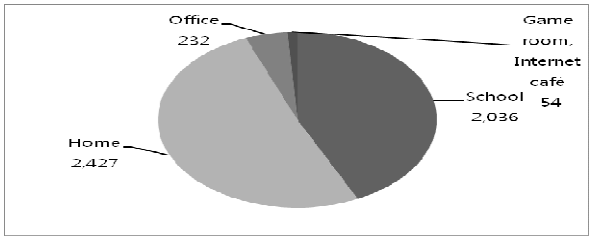

Fig. 2. Major attending place

2) Computer ownership and network class: 88% of respondents had a computer at home connected to a broadband network. Other answers, i.e., "no computer", "no network" and "modem network", stood at less than 5% each, as shown in Tab. 2.

Table 2. Computer ownership and network class

Answers	Response
No computer at home	204(4%)
Have computer at home, but no network	97(2%)
Have computer at home, modem network	261(5%)
Have computer at home, broadband network	4,187(88%)

3) Attending convenience: As shown in Tab. 3, 40% of respondents had a good computer and network facilities and reported no inconvenience in attending online classes at school or the office. However, 24% of respondents had good facilities but experienced some inconvenience in attending online courses. 12% answered that they had poor network facilities, and 10% answered that computers were not sufficient. More working students had restrictions in attending online classes than students in good environments.

Table 3. Attending convenience

Answers	Response
Have facility for attending online class in school, but inconvenient because of poor qualitative capability	554(12%)
Have good facility for attending online class in school, but inconvenient because of poor quantitative capability	471(10%)
Have facility for attending online class in school, and can use but not sufficient	1,144(24%)
Have good facility for attending online class in school, and good to use	1,923(40%)
No network service at office	75(2%)
Good network facility at office, but not free to attend online class	332(7%)
Good network facility at office, and good to use	250(5%)

2.2.2 Analysis for attending current conditions: In order to analyze the attending current conditions, six questions related to attending reason, prior attending experience, perceived fidelity, attending time per week, perceived effectiveness compared to offline class, and perceived potential laziness compared to offline class were posed.

1) Attending reason: "To save time in going to school" garnered 60% of the responses, indicating the future prospect of telecommuting. The most desirable reason from the point of view of online educators, "To attend favorite courses which are not provided at school", stood at 19%. Answers such as "Estimated that the load of online class is less than that of

offline class“ and “Estimated that it is easy to get credits with online class” received 13% and 3%, respectively. which is to blame.

Table 4. Attending reason

Answers	Response
To attend favorite subject, but no class in school	908(19%)
To save time	2,874(60%)
Estimated that the load of online class is less than that of offline class	636(13%)
Estimated that online class is easy course	149(3%)
Recommended by other person	182(4%)

2) Prior attending experience: Almost 39% of respondents had experience and attended 1 class, and 21% had experience and has attended more than 2 classes, indicating that online courses are popular with students.

Table 5. Attending experience of online class

Answers	Response
No experience and attending 1 class	1,503(32%)
No experience and attending more than 2 classes	417(9%)
Have experience and attending 1 class	1,839(39%)
Have experience and attending more than 2 classes	990(21%)

3) Perceived fidelity: The affirmative respondents for perceived fidelity to online class were 69%. Negative respondents were only 8%.

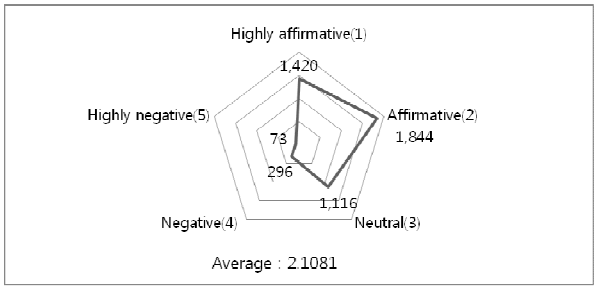

Fig. 3. Perceived fidelity

4) Attending time per week: The answer “less than 1 hour” for attending time per week received 30% of responses and “1 hour to 2 hours” garnered 47%. This shows that the time devoted for 3 credit courses is too short.

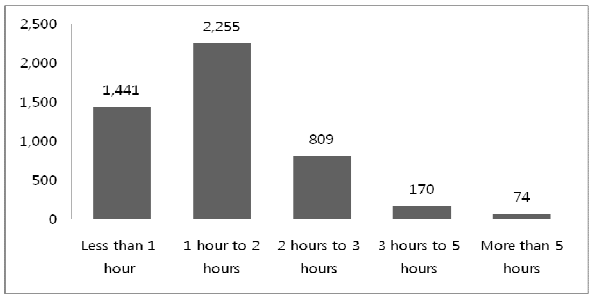

Fig. 4. Attending time per week

5) Perceived effectiveness compared to offline class: The question “Are online courses more effective than offline courses?” received affirmative responses of 34%. However, negative respondents reached 18%, which should warrant educators’ attention. Regardless, these findings provide evidence countering the argument that online courses are inferior to offline courses.

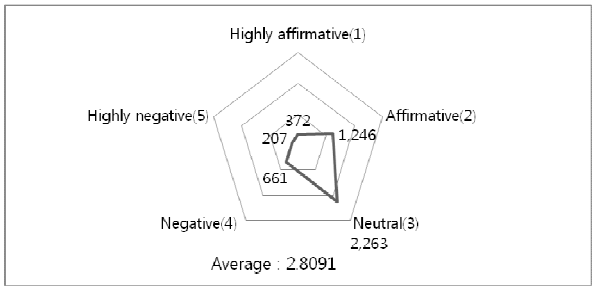

Fig. 5. Perceived effectiveness compared to offline class

6) Perceived potential laziness compared to offline class: The question “Are online courses more susceptible to potential laziness than offline courses?” received 57% affirmative responses. On the other hand, negative answers stood at only 9%. This indicates that educators should find ways to prevent student laziness.

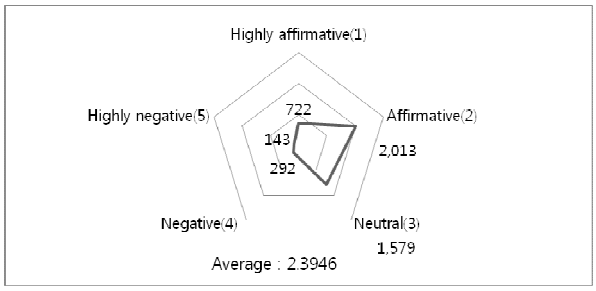

Fig. 6. Perceived potential laziness compared to offline class

2.2.3 Analysis of problems

1) Proxy attendance: 81% of students responded “never” to the question, “Have you had any proxy attendance experience”. However, 2% of respondents reported “almost every time”.

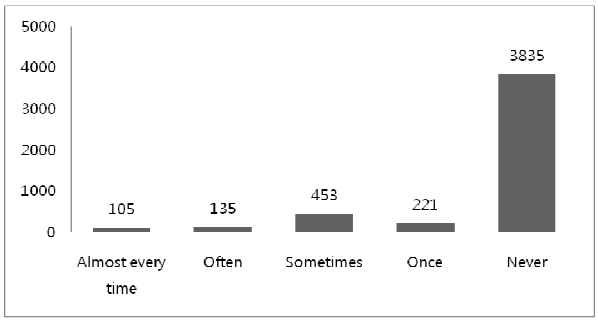

Fig. 7. Proxy attendance experience

2) Cheating on exams or quizzes: 73% of respondents reported no experience of cheating. However, 3% reported "almost every time".

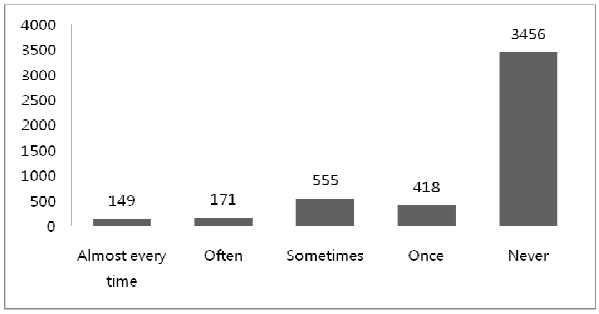

Fig. 8. Cheating on exams or quizzes

3) Copying report: 79% of respondents had no experience of copying report. However, 3% reported they copied almost every time.

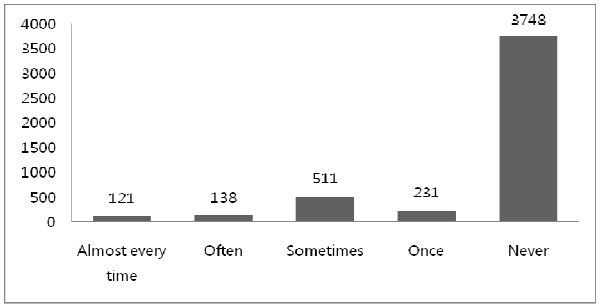

Fig. 9. Copying report

4) Network inconvenience: Only 10% of respondents reported inconvenience, reflecting Korea's good network infrastructure.

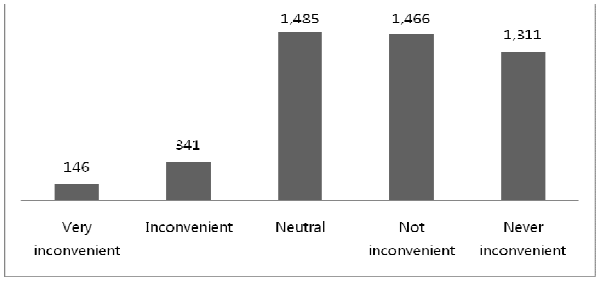

Fig. 10. Network inconvenience

5) Computer inconvenience: 11% of respondents reported inconvenience, indicating good computer facility infrastructure.

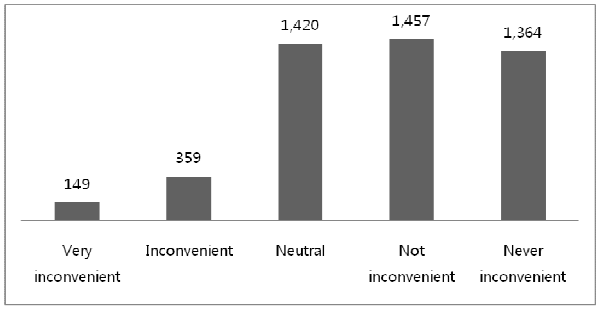

Fig. 11. Computer inconvenience

6) LMS difficulty and inconvenience: The question "Is LMS difficult or inconvenient to use?" received only 10% of affirmative replies.

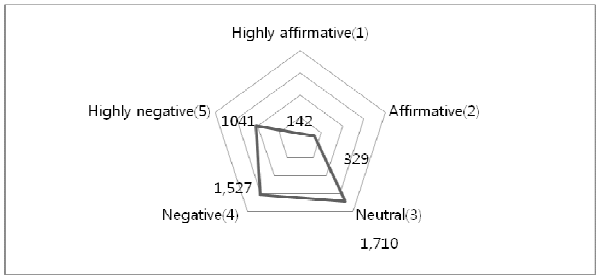

Fig 12. LMS difficulty and inconvenience

7) Disinclination: Disinclination to study received 28% affirmative replies and 33% negative replies, reflecting that there is a problem of fidelity.

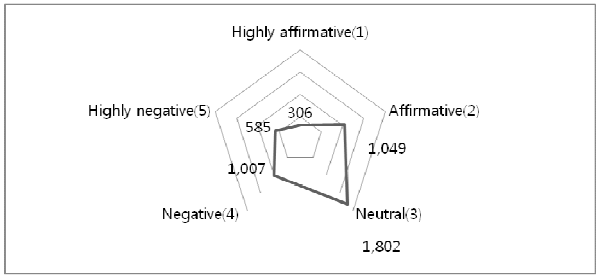

Fig. 13. Disinclination

8) Poor contents: 11% of respondents responded affirmatively, indicating that online course content is at least satisfactory.

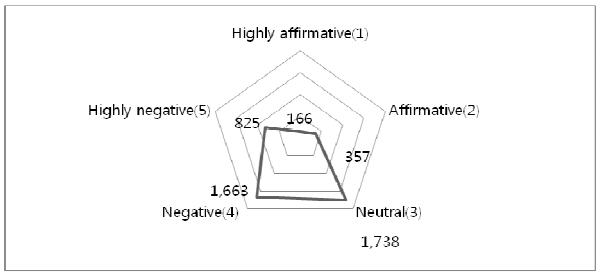

Fig. 14. Poor contents

9) Poor operation: Only 13% of respondents noted inconvenience caused by poor operation, which may be a reflection of good operation.

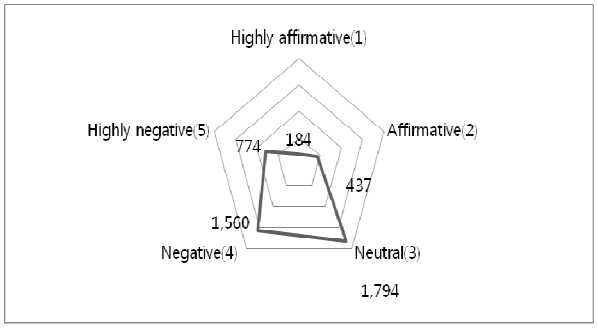

Fig. 15. Poor operation

10) Over ability: 27% of respondents felt a lack of ability or disinterest for the lecture, which points toward problems in lecture selection.

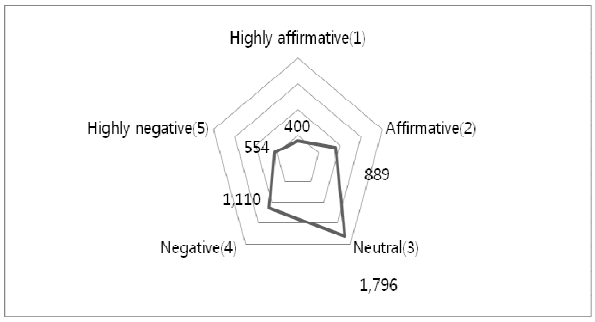

Fig. 16. Over ability

2.3. Implications

Although 69% of respondents responded affirmatively to perceived fidelity and more respondents perceived that online courses are more effective than offline courses, serious consideration should be lent to the finding that 30% of respondents attend less than one hour per week and 47% of respondents study less than 2 hours per week. Such low study hours indicate that the effectiveness of distance learning cannot be guaranteed. One of the most important causes of suspect effectiveness can be the student's reason for attending. The finding that the reason "To save time" won 60% of responses provides evidence of the cause of low study efficacy. 57% of respondents perceived that online courses are more susceptible to potential laziness than offline courses. Also, respondents designated "lack sincerity" as the most important problem of online courses.

The most important problem of distance learning can be disinclination, which garnered 26% of responses. The next most prominent response, at 11%, is related to issues of honesty, such as proxy attendance, cheating on exams or quizzes, and copying report The next is over ability, which received 9% of responses. However, we can find hope from the finding that 21% of students reported "No problem".

Table 6. Perceived most important problem

Answers	Response
Proxy attendance, cheating on exams or quizzes, copying report	512(11%)
Network inconvenience	236(5%)
Computer facility inconvenience	169(3%)
Disinclination	1,211(26%)
Poor contents	389(8%)
Poor operation	553(12%)
LMS difficulty and inconvenience	238(5%)
Over ability	442(9%)
No problem	999(21%)

3. STUDY OF DIFFERENCES ACCORDING TO SEX, EMPLOYMENT, AND SCHOOL YEAR

3.1 Study Methodology

We tested whether there are differences in environment, current conditions, and problems according to sex, employment, and school year. We developed nine hypotheses, and performed reliability and chi-square tests using SPSS 15.

3.1.1 Hypotheses: We developed the following hypotheses.

1) Sexual difference in environment
H0: There is no sexual difference in environment
H1: There is difference in environment

2) Sexual difference in current conditions
H0: There is no sexual difference in current conditions
H1: There is sexual difference in current conditions

3) Sexual difference in problems
H0: There is no sexual difference in problems
H1: There is sexual difference in problems

4) Employment difference in environment
H0: There is no employment difference in environment
H1: There is employment difference in environment

5) Employment difference in current conditions
H0: There is no employment difference in current conditions
H1: There is employment difference in current conditions

6) Employment difference in problems
H0: There is no employment difference in problems
H1: There is employment difference in problems

7) School year difference in environment
H0: There is no school year difference in environment
H1: There is school year difference in environment

8) School year difference in current conditions
H0: There is no school year difference in current conditions
H1: There is school year difference in current conditions

9) School year difference in problems

H0: There is no school year difference in problems
H1: There is school year difference in problems

3.1.2 Reliability: In order to verify the reliability of all the elements, we derived the Cronbach's Alpha value using SPSS 15.0 program. As can be seen in Tab. 7., the Cronbach's Alpha value is 0.709, which is far over 0.5. Therefore, we can conclude that the elements show probability to arrive at the same measures with repeated measurements.

Table 7. Reliability statistics

Cronbach's Alpha	N of Items
.709	21

3.2. Study Results

1) Sexual difference in environment: We found there are statistical differences in 'Computer ownership and network class' and 'Outdoor attending convenience', while there is no difference in 'Attending place' between males and females.

Table 8. Chi-square test: Sexual difference in environment

Elements	Pearson Chi-Square value	Asymp. Sig.(2-sided)
Attending place	.586	.900
Computer ownership and network class	46.996	.000
Outdoor attending convenience	40.655	.000

2) Sexual difference in current conditions: We found there are statistical differences in all the current conditions such as 'Attending reason', 'Prior attending experience', 'Perceived fidelity', 'Attending time per week', 'Perceived effectiveness compared to offline class' and 'Perceived potential laziness compared to offline class' between males and females.

Table 9. Chi-square test: Sexual difference in current conditions

Elements	Pearson Chi-Square value	Asymp. Sig.(2-sided)
Attending reason	22.766	.000
Prior attending experience	13.020	.005
Perceived fidelity	32.803	.000
Attending time per week	57.854	.000
Perceived effectiveness compared to offline class	78.490	.000
Perceived potential laziness compared to offline class	35.694	.000

3) Sexual difference in problems: We found there are statistical differences in all problems such as 'Proxy attendance', 'Cheating exam or quiz', 'Copying report' and perceived seriousness of problems such as 'Network inconvenience', 'Computer inconvenience', 'LMS difficulty and inconvenience', 'Disinclination', 'Poor contents', 'Poor operation' and 'Over ability' between males and females.

Table 10. Chi-square test: Sexual difference in problems

Elements	Pearson Chi-Square value	Asymp. Sig.(2-sided)
Proxy attendance	48.193	.000
Cheating exam or quiz	32.015	.000
Copying report	43.513	.000
Network inconvenience	74.965	.000
Computer inconvenience	33.826	.000
LMS difficulty and inconvenience	51.093	.000
Disinclination	66.641	.000
Poor contents	67.899	.000
Poor operation	65.184	.000
Over ability	57.451	.000

4) Employment difference in environment: We found there are statistical differences in 'Attending place', 'Computer ownership and network class' and 'Outdoor attending convenience' between the working students and non-working students.

Table 11. Chi-square test: Employment difference in environment

Elements	Pearson Chi-Square value	Asymp. Sig.(2-sided)
Attending place	1030.992	.000
Computer ownership and network class	27.971	.000
Outdoor attending convenience	2753.637	.000

5) Employment difference in current conditions: We found there are statistical differences in the current conditions such as 'Attending reason', 'Prior attending experience', 'Attending time per week', 'Perceived effectiveness comparing to offline class' but no differences in 'Perceived fidelity', and 'Perceived potential laziness compared to offline class' between the working students and non-working students.

Table 12. Chi-square test: Employment difference in current conditions

Elements	Pearson Chi-Square value	Asymp. Sig.(2-sided)
Attending reason	84.421	.000
Prior attending experience	322.821	.005
Perceived fidelity	7.518	.111
Attending time per week	28.608	.000
Perceived effectiveness compared to offline class	11.199	.024
Perceived potential laziness compared to offline class	5.980	.201

6) Employment difference in problems: We found there are statistical differences in the perceived seriousness of problems such as 'Proxy attendance', 'Copying report', 'Network inconvenience', 'Computer inconvenience', 'Poor operation', and 'Over ability' but no differences in 'LMS difficulty and inconvenience', 'Cheating on exams or quizzes',

'Disinclination', and 'Poor contents' between the working students and non-working students.

Table 13. Chi-square test: Employment difference in problems

Elements	Pearson Chi-Square value	Asymp. Sig.(2-sided)
Proxy attendance	15.423	.004
Cheating exam or quiz	3.916	.417
Copying report	11.503	.021
Network inconvenience	12.274	.015
Computer inconvenience	11.525	.021
LMS difficulty and inconvenience	7.483	.112
Disinclination	8.032	.090
Poor contents	8.556	.073
Poor operation	11.756	.019
Over ability	10.087	.039

7) School year difference in environment: We found that there are statistical differences in 'Computer ownership and network class' and 'Outdoor attending convenience', while there is no difference in 'Attending place' among school year.

Table 14. Chi-square test: School year difference in environment

Elements	Pearson Chi-Square value	Asymp. Sig.(2-sided)
Attending place	88.012	.900
Computer ownership and network class	36.465	.000
Outdoor attending convenience	95.058	.000

8) School year difference in current conditions: We found there are statistical differences in the current conditions such as 'Attending reason', 'Prior attending experience', 'Attending time per week', 'Perceived effectiveness compared to offline class' and 'Perceived potential laziness compared to offline class' but no difference in 'Perceived fidelity' among the school year.

Table 15. Chi-square test: School year difference in current conditions

Elements	Pearson Chi-Square value	Asymp. Sig.(2-sided)
Attending reason	45.835	.000
Prior attending experience	263.541	.005
Perceived fidelity	116.434	.111
Attending time per week	94.849	.000
Perceived effectiveness compared to offline class	44.043	.000
Perceived potential laziness compared to offline class	37.335	.000

9) School year difference in problems: We found there are statistical differences in the perceived seriousness of problems such as 'Proxy attendance', 'Cheating on exams or quizzes', , 'Network inconvenience', 'Computer inconvenience', 'LMS difficulty and inconvenience' 'Disinclination', 'Poor contents' 'Poor operation' and 'Over ability' but no difference in 'Copying report' among school year.

Table 16. Chi-square test: School year difference in problems

Elements	Pearson Chi-Square value	Asymp. Sig.(2-sided)
Proxy attendance	27.124	.007
Cheating exam or quiz	22.137	.036
Copying report	19.349	.080
Network inconvenience	27.417	.007
Computer inconvenience	41.147	.000
LMS difficulty and inconvenience	21.567	.043
Disinclination	61.169	.000
Poor contents	35.719	.000
Poor operation	38.731	.000
Over ability	49.275	.000

4. CONCLUSIONS

We surveyed attendance in distance learning courses of a cyber university to verify the effectiveness of distance learning based on survey data from 4,749 distance learning participants.

Most of the students attended distance e-learning at home and school. A small number of students used game rooms and Internet cafés for e-learning attendance. 88% of respondents had a computer at home with a broadband network. Still, 55% of the respondents reported problems in attending convenience at school or the office. The reason to attend distance learning "To save time in going to school" was noted by 60% of the respondents. The most desirable reason from the point of view of the educators, "To attend favorite courses which are not provided at school", stood at only 19%. The reasons "I think that the load of online classes is less than that of offline classes" and "I think that it is easy to obtain credits with online classes" received response of 13% and 3%, respectively. The affirmative respondents for the question about perceived fidelity to online class were 69% while negative respondents were only 8%. However, the answer "less than 1 hour" for attending time per week received 30% of response and "1 hour to 2 hour" garnered 47%, reflecting that the time devoted for 3 credit courses is too small. The question "Are online courses more effective than offline courses?" received 34% affirmative replies while negative respondents reached 18%, providing evidence against the argument that online courses are inferior to offline courses. The question "Are online course more susceptible to potential laziness than offline courses?" garnered 57% of affirmative respondents while negative answers tallied only 9%, which means that teachers should find ways to prevent student laziness. As for proxy attendance, 81% of the respondents replied "never". Also, 73% and 79% replied that they never cheated on examinations or copied others' report. However, 3% replied that they always cheated and copied other's report. As for computer and network inconvenience, the respondent's answers reflected a strong infrastructure. As for perceived problems, 'LMS difficulty and inconvenience', 'Poor

contents' and 'Poor operation' received only 10% or more affirmative replies, while affirmative responses to 'attitude of disinclination' and 'over ability' were as high as 27% and 28%.

We performed hypothesis test for the differences in environment, current conditions, and problems according to sex, employment, and school year. We could not find statistical identification in environment, current conditions, or problems between male and female except for attending place. Furthermore, we could not find statistical identification in environment or in many criteria of current conditions and problems between working students and non-working students. However, we found identification in 'Perceived fidelity', and 'Perceived potential laziness compared to offline class' in current conditions and 'LMS difficulty and inconvenience', 'Cheating on exams or quizzes', 'Disinclination', 'Poor contents' and 'Over ability' were perceived problems between working students and non-working students. Also, we could not find statistical identification in environment, current conditions, or problems among school year except for attending place. However, we found identification in 'Perceived fidelity', 'Copying report', 'LMS difficulty and inconvenience' and 'Cheating on exams or quizzes' among school year.

We anticipate this feedback from students will provide important information for attaining efficient and satisfactory education in the field of online distance education.

REFERENCES

[1] S. Z. Nam, "A Taxonomy for Studies on Korean Cyber Universities," *e-Business Research, vol. 1, no. 1*, 2004, pp. 107-121.

[2] M. W. Kim, H. T. Lee, and Y. S. Oh, "Design and Implementation of an Adaptive Learning Management System for Personalized Learning," *The Journal of the Korea Contents Association, vol. 4, no. 1*, 2004, pp. 8-17.

[3] K. H. Jung, and J. H. Son, "Performance Evaluation and Implementation Strategy for Virtual University," *Korean Management Review, vol. 30, no. 1*, 2001, pp. 109-134.

[4] Y. S. Lee, and G. S. Yoo, "LMS Architecture and Implementation Strategy for e-learning," *Korea Multimedia Society, vol. 6, no. 4*, 2002, pp.56-67.

[5] T. H. Kim, and Y. M. Seo, "Analysis of Factors Affecting the Effectiveness of Cyber-Education," *Journal of Information Technology Applications & Management, vol. 8, no. 2*, 2001, pp. 71-90.

[6] S. K. Moon, and S. Z. Nam, "A Study on the Educational Effectiveness of e-Learning," *The Journal of the Korea Contents Association, vol. 7, no. 1*, 2007, pp. 161-168.

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