

Using and Analyzing of Distance Education Model for Adnan Menderes University 5(I) Courses*

Mahmut Sinecen, Fatma Sinecen

Adnan Menderes University, Aydin, Turkey

Osman Sinecen

Pamukkale University, Denizli, Turkey

The different models have led to occurring on education because of transferring, using, accessing, and sharing of knowledge. Today, distance education model is the most important and effective use in these models. The lack of teaching staff and the limited field of education areas are the most important factor in the use of distance education model. Therefore, required courses (Ataturk's Principles and History of Turkish Language, Foreign Language) which are Law 5(I) of 2547 under Article have been transferred to the distance education system instead of formal education in the Adnan Menderes University. In this article, requirements, using reasons and analyzing of the results of this model are given.

Keywords: distance education, infrastructure, 5(I) courses

Introduction

In our country which has adopted the concept of life long education, many state institutions and organizations, especially universities, have added distance education model into their own with advancing technology and Internet infrastructure (Al & Madran, 2004; Altiparmak, Kurt, & Kapidere, 2011; Odabas, 2003; Duzakin & Yalcinkaya, 2008). Distance education is an education model that uses every kind of electronic communication (Sinecen, 2011). With course being followed with distance education, even though there are disadvantages such as students and instructors' not being in the same environment, students's not socializing with each other, and not being able to make correction in case of students wrong knowledge acquisition, there are advantages such as students' being able to reach to the knowledge whenever they want and providing comprehensibleness with interactive contents such as voice-video, being able to listen the courses synchronized and unsynchronized, being able to keep course contents updated, not needing the physical conditions in educational institutions, and expert instructors' being able to give the lecture from their location (Ozarslan, 2008; Cetin, Cakiroglu, Bayilmis, & Ekiz, 2004; Adiyaman, 2002; Sen, Atasoy, Aydin, & Nesrin, 2010; Ekiz, Bayam, & Unal, 2003).

Adnan Menderes University (ADU), with its faculties located in eight different positions and 16 vocational

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Mahmut Sinecen, assistant professor, Ph.D., Engineering Faculty, Adnan Menderes University, Turkey.

Fatma Sinecen, lecturer, M.A., Kosk Vocational School, Adnan Menderes University, Aydin, Turkey.

Osman Sinecen, lecturer, bachelor degree, Education Faculty, Pamukkale University, Denizli, Turkey.

schools and graduate schools, is one of the most distributed structured universities. At this point, assigning instructors and giving lectures is making it difficult in terms of cost, time, and place. In this regard, ADU, with decision taken in session dated 08/08/2014 and numbered 2014-12 has accepted to use distance education for the courses mentioned in article 5(I) of legislation numbered 2547.

In this article, in first chapter, introduction and literature which belongs to distance education system promotion is mentioned. In second chapter, information about hardware and software materials used for ADU distance education infrastructure is given. In chapter three, web site created for ADU distance education and user statistics for this web site are explained. In chapter four, the assessment and evaluation application developed for the distance education performed in ADU is mentioned. In chapter five, results and at last chapter, conclusion and suggestions are mentioned.

Method

Infrastructure of ADU distance education is created in two steps. The first step is preparation of contents and the second step is publication of contents prepared in first step. Different hardware and software products are used for both steps. In this chapter, the hardware and the software used for both steps are explained.

Preparation of Contents

The contents prepared for the courses that students need to take need to be organized for some specific standard. It is important just because the components of software and hardware that need to be used by instructors to provide this service are the most basic and the simplest affect ease of use. With the aim of preparing contest for distance education in ADU, the presentation template shown in Figure 1 is designed and instructors prepare their presentations with reference to this template.

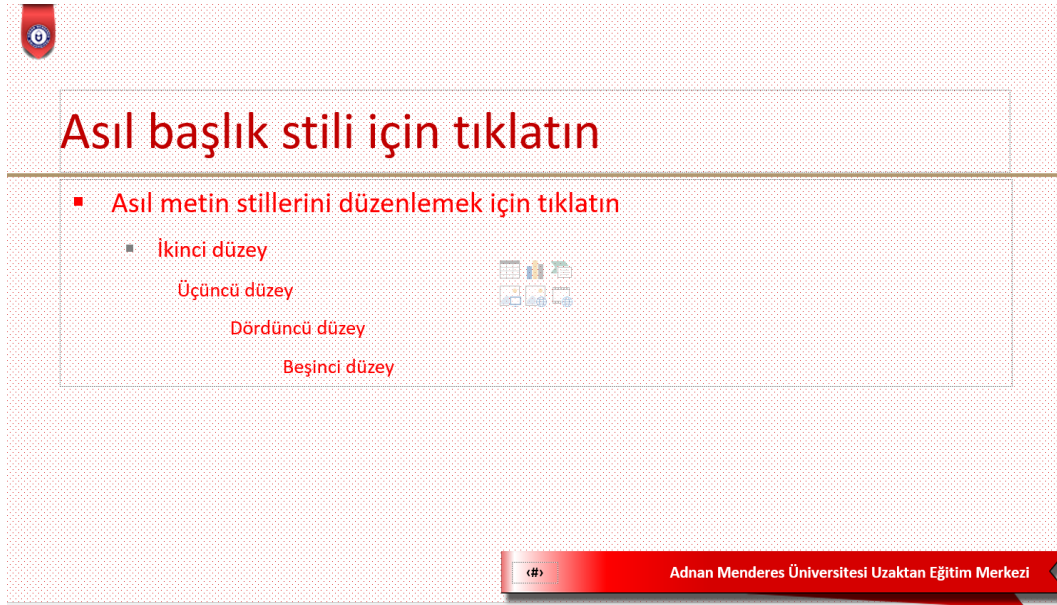


Figure 1. ADU distance education content preparing presentation template.

Software

The software Ispring which is an add-on to Powerpoint is used to prepare interactive presentations. Students,

in the contents prepared by this software, take education connected with scenario that is prepared for the course from the beginning of the subject and until the ending of the subject. Besides, by Ispring software saving presentations as SCORM (Sharable Content Object Reference Model) packets, the copy-paste feature of the person who watches the presentation is disabled.

Just about to use in presentations prepared, a lot of different graphics, animations, pictures, or visual materials are created with Adobe Creative Cloud. By using cloud technology, the contents prepared in this software become available for the instructors who prepared the contents from any computer with Internet connection.

Sometimes, instructors need to use images of some specific parts of various visual or audial materials which are not able to be copied and various special education software from their own computers. In situations like this, by saving needed materials from screen images with Adobe Captivate and Camtasia programs, contents are developed.

To submit the prepared contents to the students, it is needed to create a web site which has a content management system. MOODLE software which is the most used and has the most advanced content management system worldwide about e-learning is used to serve ADU distance education contents. The most important feature of this software is to have an Open Source Code structure and to be able to develop specifically for the person or institution by add-ons prepared by multiple developers.

One of the most important needs of distance education infrastructure is video conference system which is used for giving synchronized educations. Adobe Connect software is preferred in ADU Distance Education infrastructure as the most used video conference system. It is provided for instructors to use the live video conference system for their courses whenever they want by connecting MOODLE as add-on to the Distance Education content management system. Also, the courses given live are automatically saved and are added to web site. Thus, it is provided for ADU students to watch the courses they could not watch whenever they want as unsynchronized.

Hardware

For contents developing, instructors use computers with model of Hp Prodesk 600 G1. To transfer different documents during the presentations in video conference system and to prepare contents, Avermedia Spb350 Hd Document Camera is used. By using document camera, instructors provide dynamic education system by transferring any needed visual object or document to the computer screen. In preparation of course videos, to transfer instructor's voice more clearly by filtering the outer voice, Sennheiser Sc 630 Hd headphone sets are used. When transferring the image of instructors in the course videos, to obtain a clear and HD transfer, Logitech C920 is used. For giving the course and for preparing visual material to increase the effect of cursor on the computer screen, Wacom Intuos PTH-851 Pro Large Graphic Pads are used to make it easier for instructors.

In addition to content developing software and hardware mentioned, it is needed to have storage space and server service to save contents and video visuals. In this regard, because of doing a setup planning as creating a virtualization system for ADU Distance Education infrastructure, physical server to be used is chosen with features given below. In this server, there are two different active servers as video conference and contents management system servers.

- (1) IBM 2*Xeon M4 8CE5-2650 Dual Core Xeon Processor
- (2) 128 GB Ram
- (3) 1.2 TB SAS Disk (3x300 GB+300 GB)
- (4) Server (Video Conference)

Minimum requirements needed for the setup of Adobe Connect software and configuration information within ADU are shown in Table 1.

Table 1

Adobe Connect Video Conference Software System Configuration

		Required	Existing
Hardware	Processor	2 Ghz Quad-Core Intel Xeon or faster	2 Ghz, 4 Core Intel Xeon
	RAM	16 GB RAM or bigger	32 GB RAM
	HDD	4 GB HDD (for setup of Adobe Connect Enterprise), 150 GB HDD and enlarged video storage space	500 GB HDD
	File system	NTFS file system	NTFS file system
Software	Operating system	Microsoft Windows Server 2008 R2 (64 Bit), 2012 R2 (64 Bit)	Microsoft Windows Server 2008 R2 (64 Bit)
	Virtualization	Vmware ESXi 5.x	Vmware ESXi 5.x
	Database	Microsoft SQL Server 2008 R3, 2008 R2, 2012 (64 Bit)	Microsoft SQL Server 2008 R3
Network	Ethernet	100 Mbps (1 Gbps recommended)	1 Gbps
Ports	RTMP	1935	1935
	HTTP	80 or another HTTP port	80 or another HTTP port
	SSL (If active)	443	None
	SMTP	25	25
	External database	1433	1433

Server (Content Management System)

System configuration needed for Moodle content management system and existing for ADU distance education is shown in Table 2.

Table 2

System Configuration for Moodle Contents Management

		Required	Existing
Hardware	Processor	Pentium IV 3.0 Ghz (dual core recommended)	2 Ghz, 2 Core Intel Xeon
	RAM	1 GB RAM (For each simultaneous 10 or 20 users)	8 GB RAM
	HDD	160 MB HDD (for Moodle setup), 5 GB HDD and enlarged video storage space	200 GB HDD
Software	Operating system	Windows XP/2000/2003, Solaris 10, Mac OSX, Netware 6, Linux	Ubuntu 12.04 LTS
	Web server	IIS (Windows) or Apache (Linux)	Apache
	Database	MYSQL 5.1.33, PostgreSQL 8.3, MSSQL 9.0, Oracle 10.2, SQLite 2.0	MYSQL
	Scripting language	PHP minimum 5.3.2	PHP

One of the most important requirement for students and instructors is servers used for distance education to be actively working 7/24. By using Veeam Backup software, it is provided to take backups periodically just to prevent system from collapsing and going back to older version.

Another issue that can occur in distance education is controlling the bandwidth efficiency in access of video or contents. By using NetFlow Traffic Analyzer software, with this issue being under control constantly, it is enabled for web supervisors to do necessary intervention.

For transferring the courses uninterruptedly in case of any electricity interruption, uninterrupted power sources should be used. In this regard, EMERSON Rack type Uninterrupted Power Source (5 KVA) is used to keep system working and actively being used.

Content Sharing (ADUZEM Web Site)

At Adnan Menderes University 5(I) courses distance education infrastructure work, <http://aduzem.adu.edu.tr> web site that is shown in Figure 2 was created for courses and contents of Turkish Language, Atatürk's Principles and History of Turkish Revolution and Foreign Language courses were transferred to this web site. The courses given as live and their recorded videos are hosted in the <http://aduzemconnect.adu.edu.tr> web site. The problem encountered by users about different interfaces is attempted to prevent with inter-sessional connections between these two web sites.

The visitor information, such as instant, demographic, geographic, gender, etc., is taken with the ADUZEM web site Google Analytics connection. In the light of statistical information obtained by this approach, updating the web site is planned. According to the gender information of web site visitors that is shown in Figure 3, it is observed that an approximately equal rate of women and men examines the web site. This approximately equal rate emphasizes that the web site has same significance for each individual type about course tracking.

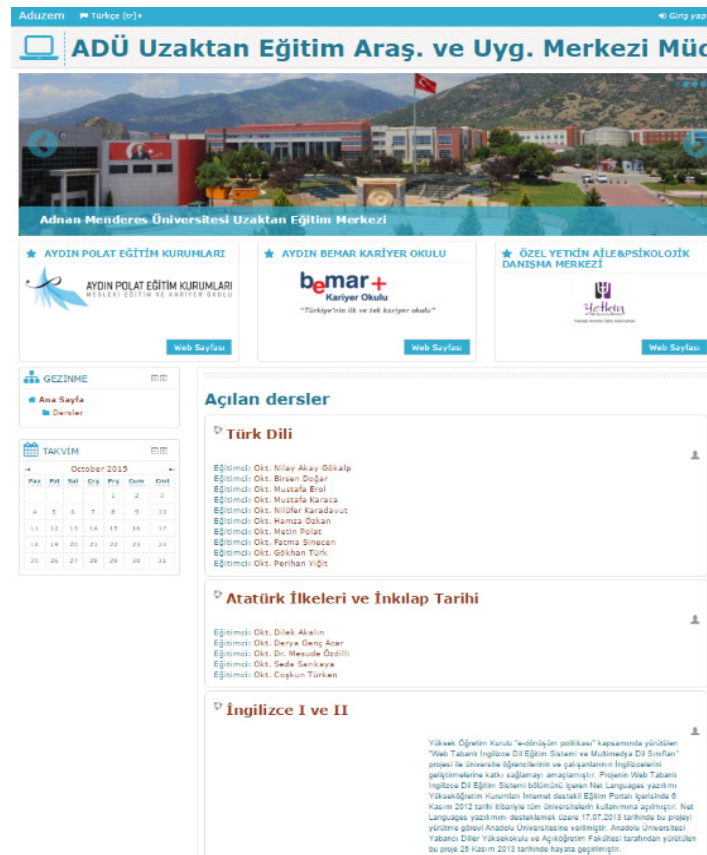


Figure 2. ADUZEM web site.

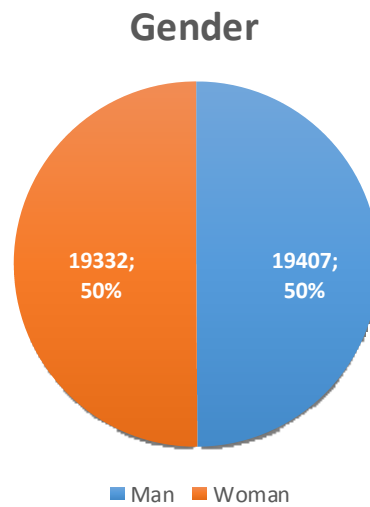


Figure 3. Rates of ADUZEM visitors according to gender.

As shown in Figure 4, age range of 18-24 has higher number of web site visitors than the other age ranges. When it is considered that courses are concerned with the university students, it is expected that 18-24 age group has higher number of visitors. Total number of people in 45 and older age group is 1,349. As a consequence of that, it reveals the thought that this group has a special interest about these courses or people in the foreign countries are aroused curiosity to the Turkish language and history.

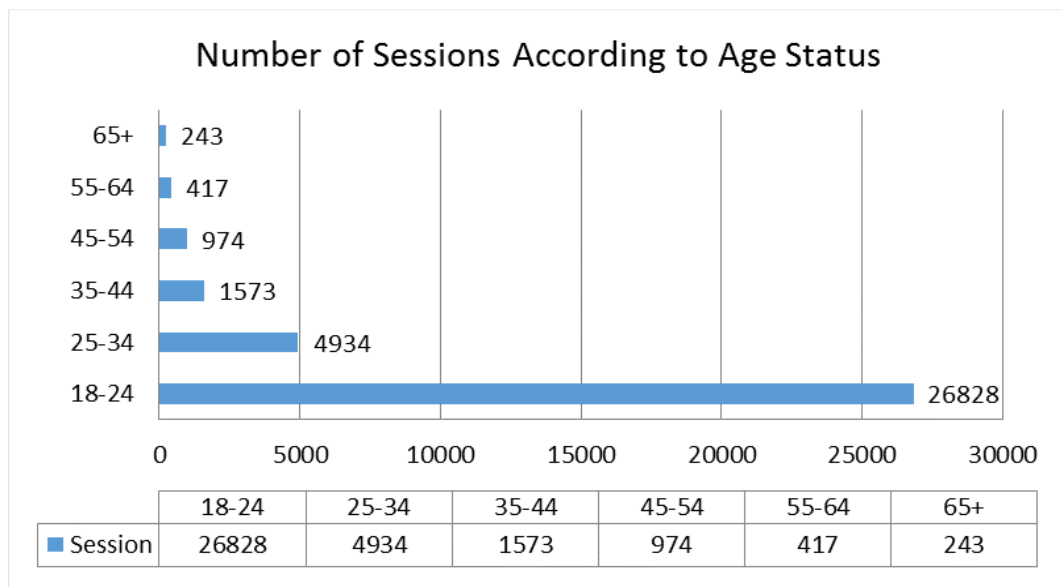


Figure 4. The number of sessions of ADUZEM web site according to age status.

In the light of the map that is shown in Figure 5, color change occurs from the darkest blue color towards gray color. The darkest blue color represents the biggest visitor population, light blue color represents the area that has less visitor population, and grey color represents the area that has no visitor. The highest number of users is from Russia after Turkey as it can be seen from Table 3. At the same table, login information of new visitors

and their waiting times in the sub-pages of the web site are also specified. Accordingly, the highest average session duration is from Germany after Turkey.

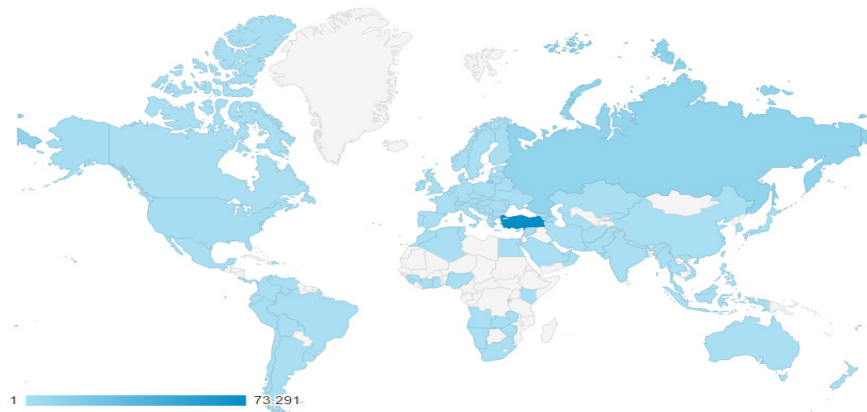


Figure 5. Worldwide visitor demography of ADUZEM web site.

Table 3

Worldwide Login Rates of ADUZEM Web Site

Region	Session	New session frequency	New users	Bounce rate	Page/Session	Avg. session duration
Turkey	73291	69,62%	51026	63,78%	2,59	89,28
Russia	10040	98,11%	9850	99,60%	1,01	1,21
United States	1960	95,31%	1868	81,53%	1,24	44,10
China	239	97,91%	234	89,96%	1,07	24,77
Germany	185	88,11%	163	75,14%	1,83	57,62
India	151	76,82%	116	74,17%	1,60	56,23
United Kingdom	138	90,58%	125	74,64%	1,47	23,89
Japan	136	99,26%	135	92,65%	1,00	12,96
Netherlands	101	88,12%	89	86,14%	1,28	25,11
TOTAL	88347	74,23%	65581	68,96%	2,34	76,42

The highest number of users who log in to the web site across Turkey is from Izmir province after Aydin province (Figure 6). In spite of this, Antalya is the province which is the highest average session duration as it is seen in Table 4.

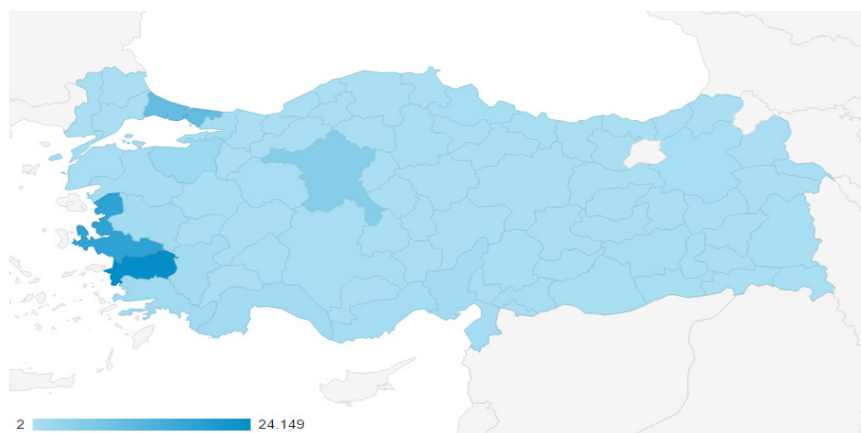


Figure 6. Visitor demography of ADUZEM web site across Turkey.

Table 4

Login Rates of ADUZEM Web Site Across Turkey

Region	Session	New session frequency	New users	Bounce rate	Page/Session	Avg. session duration
Aydin	24149	66,36%	16026	58,94%	2,98	103,46
Izmir	17835	68,15%	12155	64,85%	2,42	81,59
Istanbul	10214	70,65%	7216	67,18%	2,40	77,24
Ankara	5353	69,33%	3711	64,51%	2,51	91,44
Bursa	1854	71,47%	1325	63,21%	2,61	89,41
Antalya	1365	71,87%	981	65,27%	2,39	109,80
Mugla	1203	73,90%	889	66,58%	2,32	74,69
Manisa	1088	77,30%	841	68,20%	2,22	73,57
Denizli	1078	75,79%	817	68,37%	2,29	75,96
Adana	980	75,51%	740	70,82%	2,14	69,19
TOTAL	73291	69,62%	51026	63,78%	2,59	89,28

Assessment and Evaluation

In compliance with numbered 1 senate decision “5(I) Courses Executive Essentials” that is received in session dated 08/08/2014 and numbered 2014-12 within the scope of Adnan Menderes University 5(I) courses, it is stated that the Turkish Philology, Atatürk’s Principles, and History of Turkish Revolution and Foreign Language courses will be performed as distance education and for this purpose, preparing the necessary infrastructure is provided. Within this scope, the establishment of 5(I) Courses Coordinatorship that will be responsible of Chairmanship of Departments and instructors related these courses and that will fulfill the test coordination, creation of infrastructure that will provide taking course notes, visual or audial materials online without any compulsory attendance by students are described in accordance with these principles in detail.

Courses that students passed successfully will be seen as “E” (Exempt) in their transcript in accordance with the results of exemption exams which will be held at the beginning of the fall semester of each academic year and with results of exams in the scope of 5(I). Students who pass the course in the final or resit exams will have “P” (Passed) statement in their transcript and students who fail at course will have “F” (Fail) statement in their transcripts. All students attend these exams across the university and success rates of exams are analyzed depending on units of the university (Table 5). In addition, students, by assessing courses, can report their opinions and suggestions about courses via student information system which they use to see exam results.

Table 5

The Number of 5(I) Exam Results of ADU Units in 2014/2015 Academic Year

COURSE CODE NAME OF UNIT	AI101			AI102			TD101			TD102			YD101			YD102		
	P	F	E	P	F	E	P	F	E	P	F	E	P	F	E	P	F	E
Atça VC	259	81	136	353	123	130	280	85	133	236	70	129	256	19	125	132	137	123
Aydın Fac. of Economics	85	14	110	147	27	97	85	6	106	90	5	106	114	3	113	57	40	106
Aydın VC	576	320	299	758	553	278	546	427	308	508	345	283	535	88	258	431	458	303
Aydın Voc. School of Health	156	30	125	208	106	119	150	36	128	148	31	126	153	10	123	122	78	133
Aydın School of Health	166	45	234	230	111	250	145	46	233	143	63	230	185	44	243	137	162	241

(table 5 continued)

COURSE CODE NAME OF UNIT	AI101			AI102			TD101			TD102			YD101			YD102		
	P	F	E	P	F	E	P	F	E	P	F	E	P	F	E	P	F	E
School of Phy. Edu. and Sports	347	85	47	338	130	37	203	93	25	186	85	22	187	21	34	119	68	34
Bozdoğan VC	131	23	67	210	50	61	131	33	64	139	30	62	147	9	66	97	83	64
Çine VC	90	45	89	150	43	84	94	57	96	91	35	77	78	17	64	63	40	65
Davutlar VC	4	60	1	5	2	1	3	-	-	3	1	3	3	-	4	-	-	4
State Conservatory	-	-	1	-	-	1	-	-	-	-	-	-	1	-	-	-	-	-
Didim VC	145	-	120	189	104	95	148	89	126	133	55	99	42	22	2	41	29	5
Faculty of Dentistry	-	-	22	-	-	22	-	-	22	-	-	22	-	-	22	-	-	22
Faculty of Education	321	37	230	377	128	241	-	-	-	-	-	-	-	-	-	-	-	-
Fac. of Arts and Sci.	330	49	247	430	146	217	269	52	223	245	67	217	286	18	176	206	222	190
Fac. of Com.	2	-	42	5	3	37	2	-	42	2	1	42	5	1	36	4	2	36
Kar. Mm. İnci VC	264	86	155	340	186	147	230	133	152	214	94	129	264	46	155	152	176	155
Koçarlı VC	55	26	29	68	49	20	57	31	25	42	32	28	53	8	28	36	34	26
Köşk VC	108	35	114	158	62	105	102	45	116	94	35	121	112	19	117	64	80	117
Kuyucak VC	146	46	59	221	100	47	127	72	64	130	41	59	158	15	56	91	88	51
Fac. of Engineering	68	19	129	64	18	126	55	22	129	50	5	126	-	9	14	-	1	14
Nazilli Fac. of Eco. and Adm. Sci.	710	126	897	1002	241	826	689	97	879	664	128	891	855	64	870	611	473	881
Nazilli VC	488	214	295	674	414	250	487	309	277	419	214	272	444	74	264	653	548	396
Naz. Voc. School of Health	64	6	99	136	5	97	72	16	93	69	17	99	64	4	95	68	45	101
Söke Fac. of Business	45	6	141	52	25	122	44	6	140	43	12	143	101	4	8	53	62	8
Söke VC	487	198	197	602	385	176	465	313	222	394	282	189	418	61	192	253	283	183
Söke Voc. School of Health	64	15	56	98	30	52	51	20	54	61	20	52	59	7	51	37	40	52
Söke School of Health	127	6	174	229	23	152	126	7	168	126	8	170	121	1	168	102	63	167
Sultanhisar VC	228	92	167	348	129	125	209	118	175	188	78	157	195	25	142	143	104	143
Faculty of Medicine	-	3	151	3	2	157	2	-	153	1	2	159	-	1	159	-	1	159
Faculty of Tourism	119	13	198	147	78	160	115	22	195	113	61	187	19	2	3	19	21	3
Tou. and Hotel Man. Col.	53	24	42	136	70	67	50	25	36	16	14	9	15	3	9	14	6	9
Fac. of Veterinary	10	3	65	21	8	64	8	5	66	9	5	67	9	1	67	5	5	67
Yenipazar VC	386	106	200	613	211	165	369	152	181	338	118	190	399	36	169	210	216	175
Fac. of Agriculture	118	22	164	223	69	136	113	34	150	103	26	148	135	11	146	118	94	154
TOTAL	6152	1835	5102	8535	3631	4664	5427	2351	4781	4998	1980	4614	5413	643	3979	4038	3659	4187
AI101: Atatürk's Principles and History of Turkish Revolution I AI102: Atatürk's Principles and History of Turkish Revolution II TD101: Turkish Philology I TD102: Turkish Philology II																		
													YD101: Foreign Language I			YD102: Foreign Language II		
													P: Passed			F: Fail		
																E: Exempt		

Optical form that is used in exams is prepared by 5(I) courses coordinatorship and is printed by the printing house. Eighty grams of A4 paper is used for optical forms instead of special exam paper. The questions which should be answered by the students in exams are augmented after instructors who are tasked by Departments of Turkish Philology, Atatürk's Principles, and History of Turkish Revolution and School of Foreign Language prepares the questions. Optical forms are scanned by the scanner-enabled photocopier instead of optical readers, are analyzed by the software that is developed by 5(I) coordinatorship, and are transferred automatically to

student information system and the interfaces that enable students to examine their exam paper online (<http://sonuc.adu.edu.tr>). Thus, the objections of the students are prevented in advance.

Results

Passing/Failure information depending on exam results of the students is obtained by Student Information System (OBIS) which is prepared by ADU Information Technology Department Software Branch Office. The total number of students registered was determined as 12,309 by year 2014 (Table 6). There is an expected difference between the number of registered students and number of students who attend to exams of 5(I) courses because of the various reasons such as lateral transfer, external transfer, and second university. In addition, the number of students differs from the attendance of students who register to courses in the previous year and take exams in new academic year.

Table 6

The Number of Registered Students According to Daytime and Evening Education in 2014/2015 Academic Year

Year	Daytime Education			Evening Education			Final Total
	Man	Woman	Total	Man	Woman	Total	
2014	3946	4469	8415	2156	1738	3894	12309

According to 5(I) courses execution principles, students of Adnan Menderes University have a right that enables to take an exam of required or all 5(I) courses at the same time. In this regard, the number of students that take an exam according to type of university units in 2014/2015 academic year is shown in Table 7. Percentual equivalent of passing rates obtained by using Equation 1 according to units of the university and types of courses is shown in Table 8. Acceptance of students of Vocational College into the university with open admission and lack of interest of students seems to be an important factor in this low success rate. In addition, Table 8 provides information that students have low level passing rate at YD102 coded course that is one of the foreign language courses.

Table 7

The Total Number of Students Who Take the Exam According to 5(I) Courses in 2014/2015 Academic Year

	AI101	AI102	TD101	TD102	YD101	YD102
VOCATIONAL COLLEGE	7242	9635	7671	6780	5751	7128
COLLEGE	1350	1773	1157	1072	1031	1122
FACULTY	4496	5421	3731	3740	3252	3634
TOTAL	13088	16829	12559	11592	10034	11884

$$\% \text{ Passing Rate} = \frac{\text{Passing (Final or Resit)} + \text{Exempt (Exemption Exam)}}{\text{The Total Number of Students who Take the Course}} \quad \text{Equation 1}$$

$$\text{VC (AI101 Course \% Passing Rate)} = 100 * \frac{3651 + 2208}{3651 + 1383 + 2208} = 80,90$$

Table 8

Percental Passing Rates of All Students Who Take the Exam According to 5(I) Courses in 2014/2015 Academic Year

	AI101 (%)	AI102 (%)	TD101 (%)	TD102 (%)	YD101 (%)	YD102 (%)
VOCATIONAL COLLEGE	80,90	73,51	74,76	77,91	92,00	65,78
COLLEGE	88,15	81,16	85,22	84,14	93,31	73,35
FACULTY	93,51	86,26	93,46	91,66	96,49	74,66

According to exams for each course, Passing/ Failure/ Exempt status are shown in Table 9 based on type of units. It is seen that the highest passing rate is for YD101 course with 94% according to percental equivalent of passing rates which are determined between each other based on types of course and unit. Calculation of this rate is done according to Equation 2.

Table 9

The Number and Percental Rates of 5(I) Courses Passing/Failure Rate of Vocational College Students in 2014/2015 Academic Year

COURSE CODE	AI101			AI102			TD101			TD102			YD101			YD102		
TYPE OF UNIT	P	F	E	P	F	E	P	F	E	P	F	E	P	F	E	P	F	E
VC	3651	1383	2208	5131	2552	1952	3521	1936	2214	3207	1498	2075	3380	460	1911	2593	2439	2096
C	693	160	497	933	334	506	524	171	462	471	170	431	508	69	454	372	299	451
FAC	1808	292	2396	2471	745	2205	1382	244	2105	1320	312	2108	1524	114	1614	1073	921	1640
TOTAL	6152	1835	5101	8535	3631	4663	5427	2351	4781	4998	1980	4614	5412	643	3979	4038	3659	4187
	P (%)	F (%)	E (%)	P (%)	F (%)	E (%)	P (%)	F (%)	E (%)	P (%)	F (%)	E (%)	P (%)	F (%)	E (%)	P (%)	F (%)	E (%)
VC	59,3	75,4	43,3	60,1	70,3	41,9	64,9	82,3	46,3	64,2	75,7	45,0	62,4	71,5	48,0	64,2	66,7	50,1
C	11,3	8,7	9,7	10,9	9,2	10,8	9,7	7,3	9,7	9,4	8,6	9,3	9,4	10,7	11,4	9,2	8,2	10,8
FAC	29,4	15,9	47,0	29,0	20,5	47,3	25,5	10,4	44,0	26,4	15,8	45,7	28,2	17,7	40,6	26,6	25,2	39,2

$$\% \text{ Course Passing Rate} = 100 * \frac{\text{Passed} + \text{Exempt}}{\text{Passed} + \text{Fail} + \text{Exempt}} \text{Equation 2}$$

$$\% \text{ YD101} = 100 * \frac{5412 + 3979}{5412 + 643 + 3979} = \%94$$

Conclusion and Discussion

The most important advantage provided by the realized system on the basis of units is that it has minimized issues for assignments of instructors for the courses of 5(I). Assessment and evaluation of students' are realized according to final and resit exams which are on the end of the semester, depending upon 5(I) courses executive rules.

Even though distance education alone is sufficient for the courses and sharing the knowledge, the need of creating individual units about some subjects such as preparing contents or evaluation of students' exams confronts. Besides, it is a must to create an office for instructors to prepare the contents.

With distance education infrastructure, universities having a financial gain and students' satisfaction level about 5(I) courses increasing, are a sign of suitability this education model. Besides, with Distance Education Research and Application Center Directorship which is newly constituted in Adnan Menderes University being completed an important transition process, the opportunity to make preparation for Undergraduate Degree, Associate Degree, Top-up Degree, and Graduate Degree which are thought to be opened upcoming years is provided.

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