

SAAS: Creation of an e-Advising Tool to Augment Traditional Advising Methods

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Abstract

Advising is a vital component of student academic success in college. This paper describes the design and creation of an electronic Student Academic Advising System (SAAS) to support conventional advising procedures. Use of this SAAS is intended to better guide students through educational process via the use of technology applications.

In addition to evaluating the impact of academic e-advising on the student experience in higher education, this study also explores the two different types of advising (e-advising and traditional/in-person academic advising). The satisfaction levels of the students with both types of advising were also assessed.

The findings offer some awareness into how effective academic e-advising might be used as an alternative/support to traditional, face-to-face advising methods.

Keywords: academic advising, e-advising, proactive advising, automated advising, computer-assisted advising

1. Introduction

The National Academic Advising Association (NACADA) defines academic advising as “a series of intentional interactions with a curriculum, pedagogy, and a set of student learning outcomes. Academic advising synthesizes and contextualizes students’ educational experiences within the frameworks of their aspirations, abilities and lives to extend learning beyond campus boundaries and timeframes” (NACADA, 2006). Consequently, academic advising in a university environment plays a critical role in student academic success by guiding students to make informed decisions about the courses of study that match their interests, abilities, and educational goals. This is assured by Light (2001) who stated that “Good advising may be the single most underestimated characteristic of a successful college experience” (p. 81). It is also supported by King and Kerr (2005) who stated that “academic advising is clearly a key factor in challenging and supporting students in making a successful transition to college, feeling a part of their institutions, and achieving their educational goals” (p. 320).

Although the relationship between student and advisor is one of shared responsibility, researchers confirmed that students need support from knowledgeable academic advisors to engage in effective educational planning and decision-making, and if this support is received, students will more likely continue to graduation. Marc Lowenstein (2005) has found in past research that “An excellent advisor does the same for the student’s entire curriculum that the excellent teacher does for one course”. Furthermore, through the advisor’s in-depth understanding of the university culture, curriculum, and academic requirements, students are assisted with selecting balanced course loads that pave the most efficient path to graduation and enhance students’ overall university experience.

However, as today’s university environments are increasingly digitized and as students are growing more used to online media and its flexibility, the importance of e-advising has increased. E-advising, defined as the usage of online instructional tools in an advising capacity, brings advising to a modality most convenient to students while improving advising efficiency and accessibility, and has been proven to boost student academic success (Al-Omary, 2010; Havice et al., 2009).

Furthermore, in academic advising, face-to-face and telephone contact are not always possible or realistic, and e-advising answers those challenges. Waldner, McDaniel, and Widener (2011) also argued that “faculty advising needs to evolve to include online advising for one simple reason—that is where a majority of growth is taking place” (p. 553).

This paper explores the application of the Student Academic Advising System (SAAS), an e-advising tool that collects student data and stores it in a central database that gives both advisors and students quick, accurate, and extensive information about student study plans, academic performance, and goals. By addressing gaps in current advising programs such as lack of time to focus one-on-one with students, as well as course plan inaccuracies and inefficiencies, SAAS is expected to eliminate many of the challenges associated with traditional advising. While this paper sets forth that SAAS is designed to supplement advising and not replace it, the importance of e-advising on advising quality, timeliness, efficiency and student success is explored.

2. Related Work

In this section, relevant work in the use of computer-based advising in educational systems will be reviewed to spot the key issues that should be considered when constructing a framework for advising students in an e-learning environment.

Academic advisors help increase student success and engagement. Another key benefit of advising is student awareness of the courses they must take in their area of study to further their career goals (Claudia, 2005; Hoff, 2011; Heisserer & Parette, 2002; Hodges, 2005; Leavernard, 2011; Lotkowski, Robbins, & Noeth, 2004; Magolda & King, 2008; Blashak, 2010; Kernan & Wheat, 2008). In addition, academic advising provides students with ongoing one-on-one interactions across multiple years and plays an important role in helping students make decisions at critical transitional moments (Holmes, 2004; Pizzolato, 2008).

In a quantitative study conducted by Wlodkowski, Mauldin, and Campbell (2002), 295 university students were randomly selected from two universities (Regis University and the University of Missouri in Kansas City) to participate. Study results showed that adult learners believe that improved advising would have a positive influence on student retention and might reduce the number of students leaving colleges before graduation.

In addition, in a recent study, Feghali, Zbib and Hallal (2011) studied a web-based decision support tool for academic advising. A total of 20 undergraduate students and five faculty members from Olayan School of Business in Beirut, Lebanon participated in the study, which indicated that the students had high levels of satisfaction with online advisors and believe that online advisors are effective, efficient, useful and helpful tools.

Warren (2005) and Howard (2009) showed that the students were very satisfied with the advising services they received from student support services programs. Similarly, in a study conducted to determine the style of advising used by the current advisor and that preferred by the student, a total of 429 undergraduate students participated. The study’s findings indicated that the students had a high level of satisfaction with the style of advising used by their current advisor, and that they preferred the developmental advising style (Hale, Graham, & Johnson, 2009). Developmental advising is to “understands advising as a system of shared responsibility in which the primary goal is to help the student take responsibility for his or her decisions and actions” (Frost & Brown-Wheeler, 2003, p. 234).

3. Overall Description of the E-Advising System, SAAS

3.1 What is SAAS?

The Student Academic Advising System (SAAS) is a computer program that gathers all the necessary data about a university student’s major such as study plan and student grades, and also collects the personal information of the advisors in a central database to help students plan what individual courses they need to take why and when, which frees up advisers’ time to perform higher level advising. The database uses MS-SQL Server database version 2000 and MS Visual Studio tools such as VB.NET and Visual FoxPro. Figure 1 shows a snapshot of the SAAS main screen.

Advising Sheet

Go to ...

Students						Achievements			Courses			
S	ID	Name	AGPA	CH	W	University	Faculty	Department	Repeated			
1	200213317		2.75	6	-							
2	200310428		2.50	12	-							
3	200320153		3.03	54	-							
4	200410750		2.83	36	-							
5	200411483		2.17	27	-							
6	200411512		1.50	12	1							
7	200411583		2.00	21	-							
8	200411588		3.79	21	-							
9	200411657		2.36	33	-							
10	200411658		3.92	18	-							
11	200411984		3.31	24	-							
12	200420312		1.88	9	-							
13	200420382		2.83	9	-							
14	200420502		1.83	9	-							
15	200510671		0.00	-	-							
16	200510726		0.00	-	-							
17	200510674		0.00	-	-							
18	200510807		0.00	-	-							
19	200510827		0.00	-	-							
20	200510831		0.00	-	-							
21	200510934		0.00	-	-							
22	200510979		0.00	-	-							
23	200511019		0.00	-	-							
24	200511069		0.00	-	-							
25	200511071		0.00	-	-							
26	200511506		0.00	-	-							
27	200511573		0.00	-	-							
28	200511659		0.00	-	-							

Courses Done

CourseID	Course Name	Semester	Grd	Un
500110	Islamic Studies	2004-2	A	UR
600101	English I	2004-2	D+	UR
130130	Statistics	2005-1	X	UR
310100	Information Technology Fundamentals	2005-1	X	UR

Courses Remain

CourseID	Course Name	Un
500120	Arabic Language	UR
500130	General Psychology	UE
514330	Research Methodology	UE
600102	English II	UE

Students's Perfor.

Crs Done: 2 (6 CH)
Crs Remain: 6 (18 CH)
Crs Regist: 2 (6 CH)

Figure 1. SAAS user interface

3.2 SAAS Program Features

SAAS program features address the lack of current advising programs by regularly monitoring student performance and helping manage advisors' huge quota of students. The features of SAAS can be summarized as follows:

- **Student profile:** provides information about the student's marks, completed credit hours, academic warnings, etc.

Update Registration

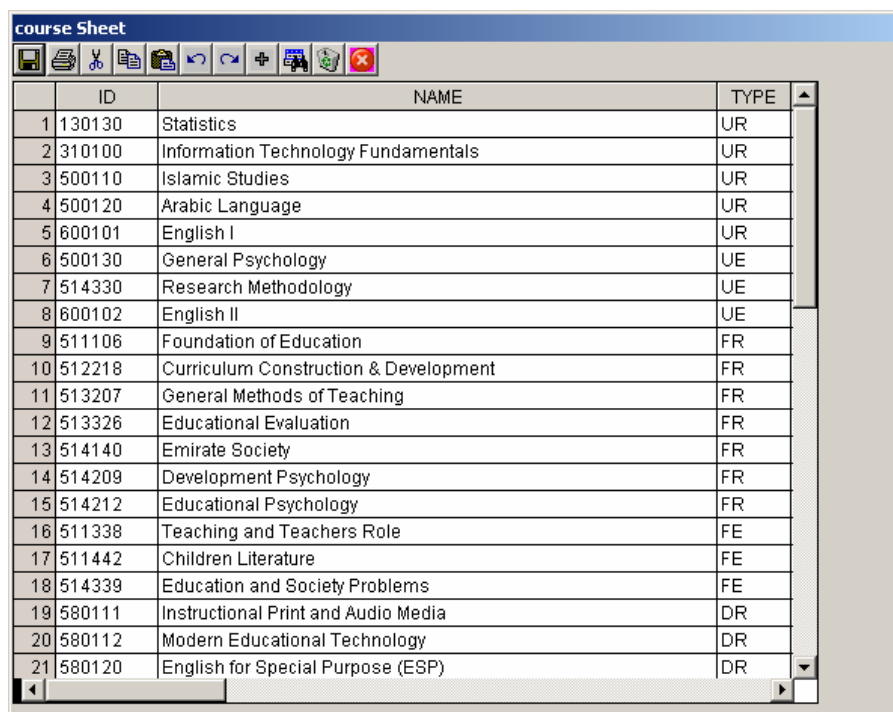
Students						Courses					
S	ID	Name	AGPA	CH	W	Registered Courses in:	CourseID	Course Name	Type	Grd	
1	200213317		2.75	6	-	2005-1	130130	Statistics	UR	X	Save
2	200310428		2.50	12	-		310100	Information Technology Fundamentals	UR	X	Save
3	200320153		3.03	54	-		580111	Instructional Print and Audio Media	DR	X	Save
4	200410750		2.83	36	-		580112	Modern Educational Technology	UR	X	Save
5	200411483		2.17	27	-						
6	200411512		1.50	12	1						
7	200411583		2.00	21	-						
8	200411588		3.79	21	-						
9	200411657		2.36	33	-						
10	200411658		3.92	18	-						
11	200411984		3.31	24	-						
12	200420312		1.88	9	-						
13	200420382		2.83	9	-						
14	200420502		1.83	9	-						
15	200510671		0.00	-	-						
16	200510726		0.00	-	-						
17	200510674		0.00	-	-						
18	200510807		0.00	-	-						
19	200510827		0.00	-	-						
20	200510831		0.00	-	-						
21	200510934		0.00	-	-						
22	200510979		0.00	-	-						
23	200511019		0.00	-	-						
24	200511069		0.00	-	-						
25	200511071		0.00	-	-						
26	200511506		0.00	-	-						
27	200511573		0.00	-	-						
28	200511659		0.00	-	-						

New Registration in:

CourseID	Course Name	Type	Grd		Save	Erase

Figure 2. Student profile screen

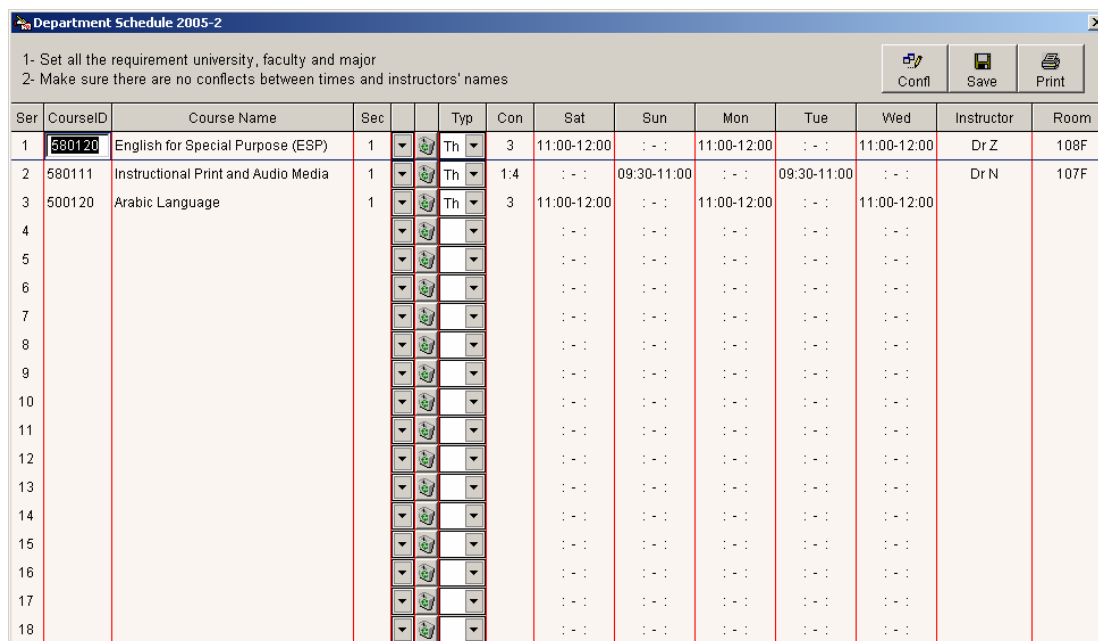
- **Course profile:** provides information about courses, credit hours, prerequisite courses, course semester/year, and contact hours to include any lecture or lab time.



	ID	NAME	TYPE
1	130130	Statistics	UR
2	310100	Information Technology Fundamentals	UR
3	500110	Islamic Studies	UR
4	500120	Arabic Language	UR
5	600101	English I	UR
6	500130	General Psychology	UE
7	514330	Research Methodology	UE
8	600102	English II	UE
9	511106	Foundation of Education	FR
10	512218	Curriculum Construction & Development	FR
11	513207	General Methods of Teaching	FR
12	513326	Educational Evaluation	FR
13	514140	Emirate Society	FR
14	514209	Development Psychology	FR
15	514212	Educational Psychology	FR
16	511338	Teaching and Teachers Role	FE
17	511442	Children Literature	FE
18	514339	Education and Society Problems	FE
19	580111	Instructional Print and Audio Media	DR
20	580112	Modern Educational Technology	DR
21	580120	English for Special Purpose (ESP)	DR

Figure 3. The course profile screen

- **Schedule builder:** helps teachers interactively build major course timetables.



Ser	CourseID	Course Name	Sec	Typ	Con	Sat	Sun	Mon	Tue	Wed	Instructor	Room
1	580120	English for Special Purpose (ESP)	1	Th	3	11:00-12:00	-	11:00-12:00	-	11:00-12:00	Dr Z	108F
2	580111	Instructional Print and Audio Media	1	Th	1:4	-	09:30-11:00	-	09:30-11:00	-	Dr N	107F
3	500120	Arabic Language	1	Th	3	11:00-12:00	-	11:00-12:00	-	11:00-12:00		
4						-	-	-	-	-		
5						-	-	-	-	-		
6						-	-	-	-	-		
7						-	-	-	-	-		
8						-	-	-	-	-		
9						-	-	-	-	-		
10						-	-	-	-	-		
11						-	-	-	-	-		
12						-	-	-	-	-		
13						-	-	-	-	-		
14						-	-	-	-	-		
15						-	-	-	-	-		
16						-	-	-	-	-		
17						-	-	-	-	-		
18						-	-	-	-	-		

Figure 4. Schedule builder screen

- **GPA (semester grade-point average) and AGPA (cumulative grade-point average) calculator:** used to forecast the student's expected AGPA in upcoming semesters.

AGPA Calculation

Student ID: 200213317

Semester: 2007-2 AGPA: 2.33 CHrs: 15 Warn: -

Current Courses:

Course ID	Course Name	Exp Grade
580120	English for Special Purpose (ESP)	B+
580121	Introduction to Instructional System Analysis and Design	B
580122	Introduction to Distance Education	A
580123	Instructional Visual Media	C

Expected CHrs: 27 Expected GPA: 3.13
Expected AGPA: 2.65

Figure 5. SAAS GPA and AGPA screen

- **Ideal scenario for registration:** gives the student the optimum course schedule for the next semester(s).

Ideal Scenario for Registration

Student ID: 200213317 A Semester: 2007-2

My Notes: AGPA: 2.33 Warning: Null Academic age: 12

Student shall register following courses according to their priority

CourseID	Course Name	CH	NH	Typ	Semes	Pre2List
500130	General Psychology	3	3	UE	1	514209 - Development Psychology - FR
512218	Curriculum Construction & Development	3	3	FR	3	513326 - Educational Evaluation - FR 513207 - General Methods of Teaching - FR 514330 - Research Methodology - UE
514209	Development Psychology	3	3	FR	2	514212 - Educational Psychology - FR
514212	Educational Psychology	3	3	FR	3	580225 - Application of Psychology in I - DR 514330 - Research Methodology - UE
580123	Instructional Visual Media	3	1.4	DR	2	580512 - Animation in Multimedia - DE 580511 - Instructional Videography - DE 580510 - Instructional Graphic Design - DE 580212 - Interactive Multimedia Develop - DR
						580312 - Evaluation in Educational Tech - DR

Figure 6. Ideal scenario for registration screen

- **Student performance:** tracks and displays student performance in a graphic format.

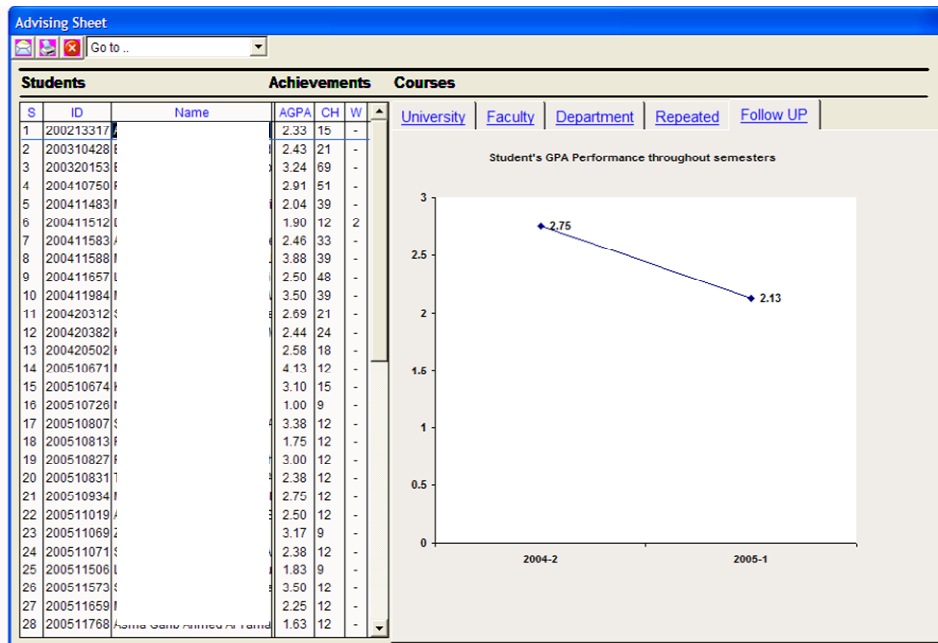


Figure 7. Student performance screen

- **FAQ:** answers commonly asked questions.

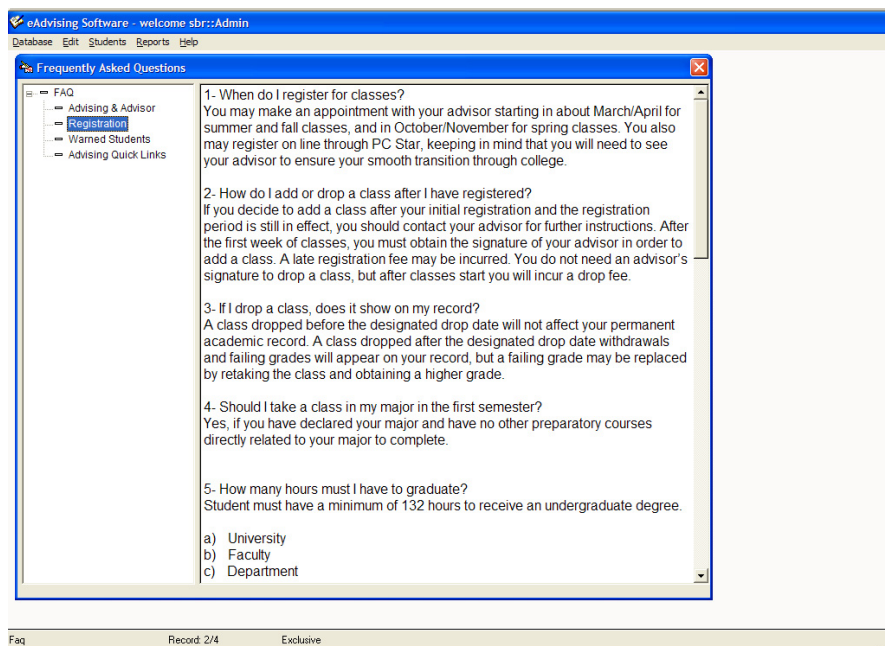


Figure 8. Frequently asked questions screen

3.3 The Benefits of SAAS

The SAAS program provides both students and advisors with benefits that saves time and enables more efficient planning. We can divide the benefits of the SAAS program into two parts: student and advisor (teacher) benefits.

3.3.1 Student Benefits

- Gives them the flexibility to work on academic plans anytime, anywhere.
- Encourages them to think about a realistic graduation plan.
- Gives them the security of knowing their academic plans are accurate.
- Empower undergraduates to be proactive with planning their education.

3.3.2 Advisor Benefits

- Provides structure and accuracy through an interactive environment.
- Decreases the time faculty and academic advisors spend in overcrowded rooms meeting with many students who are asking basic questions that can be easily answered by using SAAS.
- Increases advising session productivity because all relevant information is displayed on the SAAS screen.

3.4 Using SAAS

SAAS is a flexible, user-friendly, and easy-to-install program. SAAS users fall into three groups: administrators, advisors, and students. The SAAS collects and displays all advising activities online, while protecting advisor and student privacy through security controls set up by the SAAS administrator. The administrator holds the database administrator role, and must have a technical background in SQL Server, Windows networking, and database programming. The administrator has the ability to grant advisors full access to the database of students in their advisee list so they can add, update, and view student records.

Students are required to register in advance to activate their SAAS accounts. The system requires that students input their full name, ID, major, and advisor ID along with an email address, which results in a system password being emailed to the student within 24 hours. Students are restricted to accessing only their personal records through password protection, and the system is designed to ensure that student records are only accessed by those permitted to see them. Figure 9 summarizes the SAAS usage process.

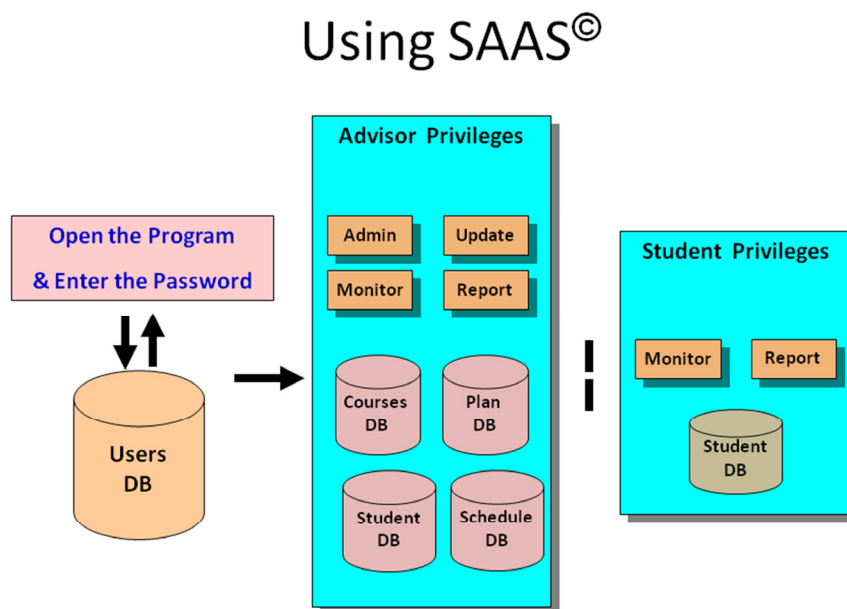


Figure 9. Using SAAS

3.5 SAAS Databases

The main purpose of SAAS is to automate the advisement process and facilitate it. To effectively accomplish this process, the database must maintain the most important data about students. This data is:

- The student's personal information
- The set of courses the student needs to complete his/her degree

- The courses the student has completed (successfully/unsuccessfully) with grades
- The courses that have not yet been taken by the student
- Course information

These items are captured in a database comprised of four main parts as below:

- The study plan database
- The course database
- The student database
- The schedule database

Advisors are given the right to add, modify, and view the records of these databases while the students are able to run some program applets to get the following information:

- Ideal scenario for registration
- Next semester's courses
- Records information
- AGPA calculation
- Schedule
- List of electives necessary for choosing a minor
- Frequently asked questions (FAQs)

3.6 SAAS Reports

SAAS reports are divided into three parts:

- Students
- Courses
- Department Plan

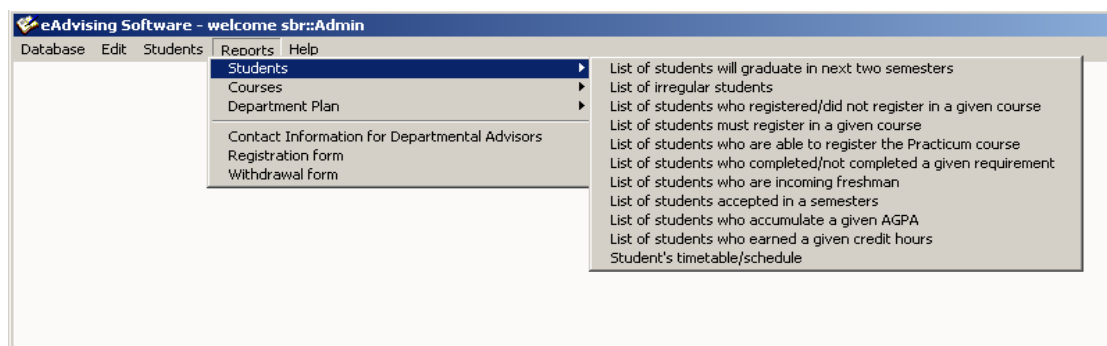


Figure 10. Using SAAS

3.6.1 Student Reports

- Lists students who will graduate in the next two semesters
- Lists delayed students
- Lists students who registered/did not register for a given course
- Lists students who must register for a given course
- Lists students who are able to register for the practicum course
- Lists students who completed/did not complete a given requirement
- Lists incoming freshman
- Lists students accepted for semesters

- Lists students who accumulated a set AGPA
- Lists students who earned given credit hours
- Lists students' timetables/schedules

3.6.2 Course Reports

- Lists courses with number of students registered in a semester
- Lists courses offered in a given semester
- Lists courses offered in a given year
- Lists courses offer in the next semester
- Lists instructors' names for each section

3.6.3 Plan Reports

- Lists courses according to type (practical, theory and tutorial)
- Lists courses with/without prerequisite(s)
- Lists courses that belong in a given elective domain(s)
- Lists courses according to requirement type (university, faculty and major)
- Lists courses categorized by given keyword(s) such as multimedia, training and so on

4. Methodology

This study was designed to provide an explicit and clear answer to the following questions:

- Do Educational Technology students perceive e-advising to be more efficient than traditional face-to-face advising?
- Does Educational Technology students' experience with the e-advising change their perception of its effectiveness?

To answer the above questions, both qualitative and quantitative approaches have been employed in conducting the study. The framework for gathering the research data was varied: questionnaires and reports from students were used to support and explain the quantitative data, as well as simple qualitative data in the form of comments.

The independent variable was the integration of the e-advising system into the Department of Educational Technology (DET) program. The dependent variable of the study was the impact of the duration of exposure to e-advising on the students' perception experience and of the students' overall e-advising development scores.

The development of an e-advising system in order to facilitate student learning and address their needs requires continuous assessment and improvement. The design, assessment and modification of the e-advising effectiveness are a continuous and collective process (Aiken-Wisniewski et al., 2010; Campbell et al., 2005).

Accordingly, a 'waterfall model' was used. A waterfall model is a basic sequential software development process (Figure 11).

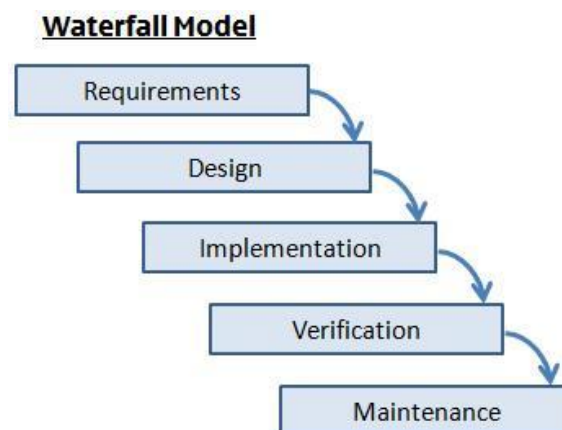


Figure 11. Phases of the waterfall model

The steps to applying this model to SAAS can include:

- Acknowledgment by the institution that improved academic e-advising is desirable.
- Collecting comprehensive information about students, derived from numerous sources including student records, surveys, questionnaires, etc., in order to determine the academic advising needs of individual students.
- Ensuring that sufficient personnel and resources are available to address students' advising needs.
- Prioritizing academic advising needs and reviewing and modifying the suggested academic e-advising system accordingly.
- Designing and implementing an e-advising system evaluation process and implementing the SAAS.
- Collecting suggestions and feedback which is necessary to ensure wide dissemination of the results of the e-advising system.
- Modifying the system as needed.

4.1 Participants

The participants of this study comprised of 40 female undergraduate students, both UAE and Omani nationals, enrolled in the Educational Technologies Department (ETD) at Ajman University of Science and Technology (AUST). The 40 participants represented 30% of the total number of student enrolled in the ETD. The participants remained constant and the same for the entirety of the study from 2007 until 2009 with the exception of one less student in 2009-10. The perceptions of the participants were examined and monitored at one-year intervals during three consecutive phases: second-year (G1 2007-08), third-year (G2 2008-09), and fourth-year of study (G3 2009-10).

4.2 Evaluating the SAAS System

For continuous improvement of academic advising services, it was vital to evaluate the current advising system and improve it. Because surveys are the most commonly used tool in assessing student satisfaction of the advising experience (Carlstrom, 2012; Robbins, 2009), in 2007 the authors developed an evaluation survey at AUST to gather information from student participants about their views of the academic advising program at ETD. The goal of this implementation was to analyze academic advising services from the point of view of the advisees and to revise the services to meet the students' academic needs and demands at AUST.

The survey was designed to measure the effectiveness of the traditional face-to-face academic advising process in the ETD at AUST in the first semester of the 2007-08 academic year. A sample of 40 students (the researcher's advisees) was selected to take the survey and was designated (G1). Based on the survey results, an SAAS system was developed and implemented for one year for the same group. This SAAS replaced traditional advising in the first and second semester of the subsequent 2008-09 academic year after which the same 40 students (G2) were asked to take the same survey given in 2007-08.

Starting with the first semester of the 2009-10 academic year, the research base were academically advised through both traditional method and using the e-advising tool (SAAS), and students (G3) again responded to the survey after the semester ended.

4.3 Using the Five-Point Likert Scale

To record their perceptions of the academic advising system, G1, G2 and G3 were asked to respond to a questionnaire, which consisted of eight Likert scale items. The response options for each question were: (5) Strongly Agree, (4) Agree, (3) Undecided, (2) Disagree; and (1) Strongly Disagree in addition to a comments section which allowed students to give specific feedback and suggestions.

Table 1. The five-point likert scale

Question	5	4	3	2	1	Comments
1- Assists with academic course scheduling and registration						
2- Gives advice about programs of study/academic regulations and policies						
3- Explains your appeal rights and the appeals process						
4- Assists with planning the timing of required courses and with the selection of electives						
5- Helps you select/change a major and get the degree you need						
6- Explains program and university requirements						
7- Suggests ways to overcome academic difficulties						
8- Discusses options for jobs/education after graduation						

Using a five-point Likert scale, participants were asked to respond to the statements in Table 1 with regard to their perceptions of using academic advising system as a learning tool.

The questionnaires were distributed at the first (pre-test) and the last (post-test) meeting of the class. A total of (119) completed questionnaires were received over the three-year period from G1 (40), G2 (40) and G3 (39).

Table 2. Likert scale results

	G1 (N=40)					G2 (N=40)					G3 (N=39)				
Item	5	4	3	2	1	5	4	3	2	1	5	4	3	2	1
1	0	0	15	20	5	0	0	30	10	0	12	14	13	0	0
2	0	0	12	18	10	0	0	30	10	0	11	18	10	0	0
3	0	0	10	25	5	0	30	0	10	0	15	19	5	0	0
4	0	0	5	30	5	0	35	0	5	0	10	19	10	0	0
5	0	0	5	30	5	0	0	30	10	0	10	25	4	0	0
6	0	0	15	25	0	0	25	0	15	0	4	30	5	0	0
7	0	0	11	19	10	0	0	30	10	0	10	15	14	0	0
8	0	0	10	15	15	0	25	0	15	0	10	19	10	0	0
	0	0	83	182	55	0	460	360	170	0	410	636	213	0	0
Total	668/1600					990/1600					1259/1600				
%	41.75					61.875					78.687				

Table 2 summarizes the results of the Likert scale questions (pre-/post-test).

The top common comments and feedback which were suggested by the students include:

- *It would be quite helpful to have an Arabic interface for the system*
- *The system should provide us the latest updates all academic changes including course numbers, times courses are offered, elective vs. required courses, etc*
- *The system should be interactive*
- *It would be handy to have tutorials that show the use of each feature in the system*

Student comments and feedback were taken into consideration and incorporated into the recommendations and future challenges of this study.

Table 3. Descriptive statistics of responses

Question No.	Group	N	Min	Max	Mean	Std Deviation
1	G1	40	1.00	3.00	2.2500	0.66986
	G2	40	2.00	3.00	2.7500	0.43853
	G3	39	3.00	5.00	3.9744	0.81069
2	G1	40	1.00	3.00	2.0500	0.74936
	G2	40	2.00	3.00	2.7500	0.43853
	G3	39	3.00	5.00	4.0256	0.74294
3	G1	40	1.00	3.00	2.1250	0.60712
	G2	40	2.00	4.00	3.5000	0.87706
	G3	39	3.00	5.00	4.2564	0.67738
4	G1	40	1.00	3.00	2.0000	0.50637
	G2	40	2.00	4.00	3.7500	0.66986
	G3	39	3.00	5.00	4.0000	0.72548
5	G1	40	1.00	3.00	2.0000	0.50637
	G2	40	2.00	3.00	2.7500	0.43853
	G3	39	3.00	5.00	4.1538	0.58663
6	G1	40	2.00	3.00	2.3750	0.49029
	G2	40	2.00	4.00	3.2500	0.98058
	G3	39	3.00	5.00	3.9744	0.48597
7	G1	40	1.00	3.00	2.0250	0.73336
	G2	40	2.00	3.00	2.7500	0.43853
	G3	39	3.00	5.00	3.8974	0.78790
8	G1	40	1.00	3.00	1.8750	0.79057
	G2	40	2.00	4.00	3.2500	0.98058
	G3	39	3.00	5.00	4.0000	0.72548

Table 3 provides descriptive statistics of responses.

As mentioned earlier in this study, perceptions regarding the usefulness of using the e-advising tool have been investigated through the use of questionnaires. In this matter, questionnaires were sent to students in three phases coded (G1) (G2) and (G3). After receiving back the questionnaires, responses were coded and analyzed using SPSS statistical package edition 16.

As it can be seen in the table, students perceptions are changing positively in terms of means of responses when comparing (G1) (G2) and (G3) for all questions attempted. For example, in question 1, mean response was 2.25, 2.75 and 3.97 for G1 G2 and G3 respectively.

However, the positive difference of students' responses in G1 G2 and G3 were tested using Kendall's W test of differences. Table (3) provided below presents the results of the test. As seen in the table, students' perceptions regarding the usefulness of the use of the e-advising tool were positively and significantly different with regard to the three phases G1 G2 and G3. All questions were significantly different at the 0.001 level. These results provide conclusive evidence that those students' perceptions regarding the use of e-advising are significantly positive in general.

Table 4. Test of differences

Question No.	Group	Mean Rank	Chi-Squared	Sig. Level
1	G1	1.35	57.217	0.000
	G2	1.83		
	G3	2.82		
2	G1	1.28	59.312	0.000
	G2	1.87		
	G3	2.85		
3	G1	1.14	57.149	0.000
	G2	2.15		
	G3	2.71		
4	G1	1.06	59.837	0.000
	G2	2.38		
	G3	2.55		
5	G1	1.19	67.129	0.000
	G2	1.87		
	G3	2.94		
6	G1	1.31	43.512	0.000
	G2	2.04		
	G3	2.65		
7	G1	1.26	58.864	0.000
	G2	1.94		
	G3	2.81		
8	G1	1.23	46.881	0.000
	G2	2.12		
	G3	2.65		

The above results affirmed that students differ in their preferences for academic e-advising. It is no surprise that some students favor specific features of the e-advising system (SAAS) which include:

- (1) Student profile
- (2) Course profile
- (3) Schedule builder
- (4) GPA
- (5) Ideal scenario for registration
- (6) Student performance
- (7) FAQ

To assess student preferences towards SAAS features, students were asked to rate the importance of each feature based on their importance and contribution to their academic performance.

Therefore, participants rated these features on a scale from one to five, with one referring to the least important of SAAS features, and five referring to the most important in helping participants pursue their university education. In order to compare these responses, the data were ranked and analyzed to find significant differences in the responses of the three groups. Taking those average scores, the researchers ranked the features from one being the top average score to seven being the feature with the lowest average scores for each of the three groups.

An average of all the rankings was then taken (Table 5).

Table 5. SAAS feature ranking

NO.	Features	G1 (N=40)	G2 (N=40)	G3 (N=39)
1	Student profile	2.56	3.86	4.42
2	Course profile	2.80	4.00	4.31
3	Schedule builder	3.97	4.65	4.73
4	GPA calculator	3.39	4.37	5.00
5	Ideal scenario for registration	4.00	4.32	4.79
6	Student performance	2.60	4.12	4.45
7	FAQ	3.77	3.97	4.65
Total Average		3.22	4.04	4.62

Table 5 shows the respondents' ranking of the top features as collectively ranked.

The three groups as a whole considered that “ideal scenario for registration”, “schedule builder” and “GPA calculator” were the most important features. While all respondents were fairly equal in their perception of the three top features, there was a wide variation in the rankings of the top feature: G1 ranked “ideal scenario for registration” and G2 rated “Schedule builder” while “GPA calculator” as the most beneficial feature.

The disparity in perceptions and feature preferences could possibly be as a result of the different experiences that the three groups have undergone as they transitioned from being ‘hesitant’ second-year e-advising users (G1), to ‘proficient’ e-advising users in the fourth year of their academic program (G4).

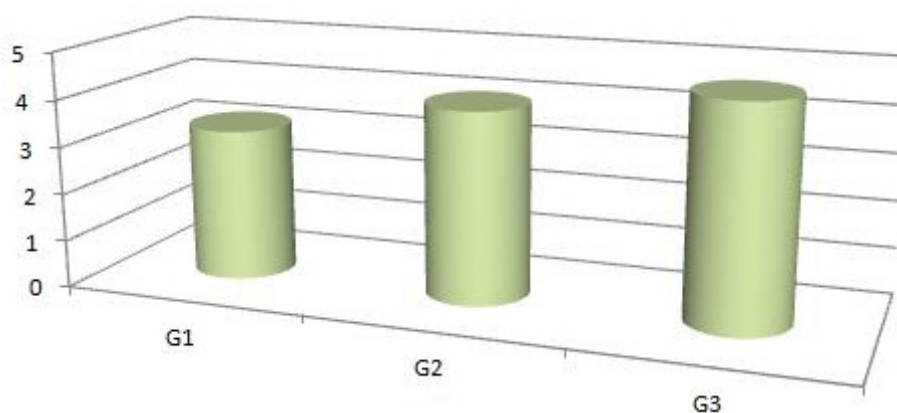


Chart 1. Participant ranking of e-advising features

5. Summary and Discussion of Results

Survey score results showed that the satisfaction percentage for the traditional method of advising measured 41.75%, while the percentage for e-advising alone was 61.875%, and for both systems together (traditional and e-advising), the percentage of satisfaction from respondents reached 78.687%.

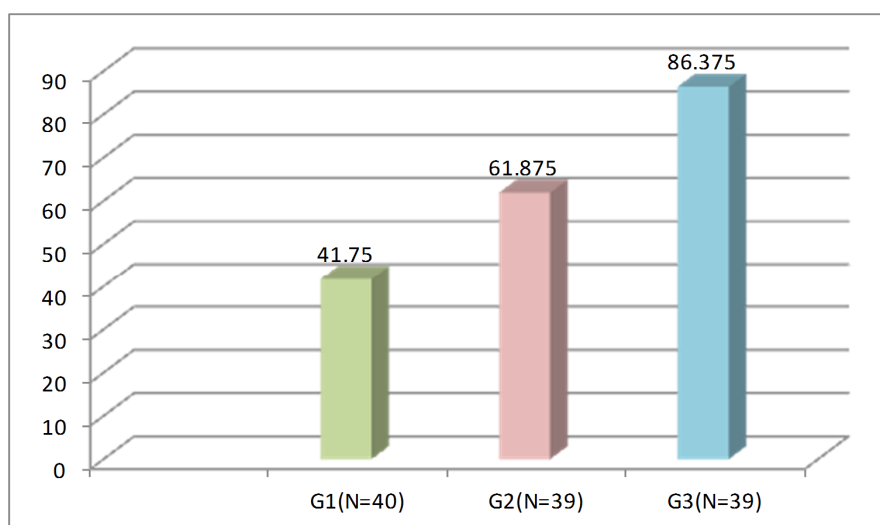


Chart 2. Effective academic advising increases student satisfaction rates

Description: Results confirmed that respondent students preferred e-advising and traditional advising methods used together.

Although the data collected signified that participants realized a good degree of usefulness from the e-advising system, analysis of the primary data concludes that students appear to favor mixing/blending the e-advising system with the traditional face-to-face approach to academic advising. Thus, participants' attested that mixing/blending approach to an e-advisor plays a key role to students' perception, academic success and a positive role in reaching graduation.

6. Recommendations

Driven by the study results, the plan moving forward is to extend the SAAS to accommodate more usage scenarios. Future plans encompass the following aspects:

- a. Arabizing the current version of the SAAS
- b. Incorporating advisor and student feedback about the SAAS
- c. Adding important dates and university events
- d. Addressing unusual cases in advising by making the students aware of:
 - Courses that are not offered every semester
 - Modification in courses' number of credits, names and numbers, prerequisites/co-requisites, content, etc.
 - Courses that have to be taken before/during/after a particular semester within a specific degree program

6.1 Future Challenges

- **Interactive Registration System:** promoting positive interaction/relationships between adviser and advisee by allowing the student to have an active degree of input into timetable planning. This can be achieved by creating an interactive academic advising experience through an interactive registration system.
- **Orientation Videos:** adding 3-5-minute orientation videos that can assist students with navigating through the e-advising platform. This can be achieved using video software programs such as Windows Movie Maker, Nero.

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