Teaching Tip

End Users and Developers in Systems Analysis and Design

Bassam Hasan
Department of IMES
University of Toledo
Toledo, OH 43606

ABSTRACT

Traditional approaches to teaching systems analysis and design (SAD) courses present students with little opportunity to understand SAD concepts and recognize their practical value. This paper presents an alternative and innovative approach to teaching systems analysis and design. In the hands-on approach described in this paper, student groups are divided into end users and system developers. End-users are given limited access to actual business system applications. Systems developers attempt to design those systems based on end users' specifications and descriptions. In the second half of the semester, the roles are reversed, i.e. end users become developers and developers become end users, and new systems are introduced. At the conclusion of the course, students compare their designs with the actual systems that they have designed. Consequently, students get to experience and feel how end users specify their information requirements and how systems' developers perceive and integrate these requirements into a new system.

Keywords: Systems analysis and design, applications, system developers, end users

1. INTRODUCTION

Systems analysis and design (SAD) is a very important subject for students to comprehend and experience. Almost all information systems (IS) and computer science (CS) educational programs offer at least on course in SAD. The objective of any typical SAD course is to demonstrate the various steps, known as systems development life cycle (SDLC), that need to be followed in planning and designing a new information system to ensure the development of a high-quality system that will eventually achieve its goals.

To underscore the SAD concepts and skills discussed in the classroom, almost all instructors require students to complete a semester-long group projects. However, students often analyze and design an imaginary system to solve a fictitious business case. A main deficiency in this approach is that students do not get the opportunity to create or interact with the actual systems that will be "born" out their specifications and designs. As a result, students never be able to evaluate their work or know how their plans and designs turned out in real life. Consequently, this approach fails to: (1) illustrate the importance of systems analysis and design; (2) demonstrate the relationship between a system's design and the quality of the actual system; and (3) how developers and users differ in their perceptions of the proposed system and its functions.

The above teaching and learning limitations associated with SAD courses may be overcome by providing students with real systems and applications to design and work with. If supplemented with hands-on examples, SAD can be a very interesting subject to instructors and a challenging, practical, and valuable course to students. This paper describes a practical approach to teaching SAD that makes the subject more enjoyable to instructors and students. More importantly, the hands-on approach described here enhances students' understanding of the subject and provides them with a solid hands-on experience with systems analysis and design.

2. PRACTICAL APPROACH TO SAD

Every instructor who has taught SAD knows that students lose interest in the course and become bored very quickly. It is not unusual in a SAD course to see students becoming tired, distracted, or uninterested in class discussions and lectures. To make the course more enjoyable to students, instructors often assign students into groups and require each group to plan and design a fictitious system for an imaginary business problem. Although this approach may enhance students' group-work skills, it does not provide hands-on, practical SAD skills because neither the system nor the problem is real. As a result, there will be no feedback or a benchmark for student to evaluate their work and they will never know how their systems will look like after development.

As an alternative to the structured approach described above, I offer a more practical approach that utilizes actual business applications. First, I describe the actual applications (systems) that were used in the course. Second, I describe how those applications were used and how students were able to interact with the systems as end users and systems as developers.

2.1 Applications

With the assistance of students in an advanced programming course, I developed six minor but fully-functional business applications. The applications interacted with small MS Access databases. Using these applications, end users (i.e. students) can retrieve data from the database, run SQL queries, manipulate data, and save the results back into the database; send the output to sequential files; or print one or more of several pre-designed reports. Other applications were used to enter, validate, and process sales orders based on three tables in a database. The objective was to allow system developer groups to redesign these applications based on the requirements and specifications of the end users.

2.2 End User and Developers

There were about eighteen students in the course. Students formed three groups with six students in each group. In the first half of the course, three students in the group assumed the roles of end users; the other three were systems developers. Three systems were used in the first half of the course, i.e. one system for each group. The roles were switched in the second half of the course and three new systems were used.

End users were allowed limited and individual access to their respective systems. Each end user (student) was allowed to use the system more than once for a total of two hours. Furthermore, to stimulate their conceptual understanding of the systems, end users were not allowed to take notes or write anything while interacting with the systems. However, they were allowed to print out reports. Then developers would interview the end users to get their requirements and collaborate with them about the system to be designed. Each group was requested to submit a complete system design plan that contained the scope of the systems, interviews with end users, requirements identification, input/output file design, design of the database, processes logical design, and interface design of the current systems and the suggested new features.

As described above, in the second half of the course, the roles were swapped. End users became developers and developers. New and slightly different systems were introduced. The new systems had somewhat different interface and capabilities. Each group had to design the second system the same way they designed the first one based on users specifications. At the end of the course, all group members were given access to all the systems to compare their designs with the actual systems. Thus, each student was an end user of one application and a developer of another application.

3. CONCLUSION

The hands-on approach seems to motivate students and stimulate their interest in SAD. It gave students an opportunity to design real systems that some of their group member had seen and used. This approach gave the students (end users) a mental picture of how the system should look like and what it should do once it is implemented. Developers tried to capture this mental picture or abstraction of the intended system from the users.

Throughout the exercise, students looked very engaged, focused, and challenged. Previous research has demonstrated that users and developers foster different perceptions and abstraction of information systems (Foster & Franz, 1999). Accordingly, this approach allowed students to experience SAD from the end users' as well as developers' perspectives and provides them with solid SAD skills.

Two important points must be made clear for anyone interested in using this approach. First, this approach was used in a small class. Therefore, it may be difficult to employ the approach described here in larger classes. Second, not every one has to develop real applications to be used in a SAD course. The Internet offers many free applications that can be downloaded and used for educational purposes.

4. REFERENCES

Foster, S. Thomas and Charles R. Franz [1999], "User involvement during information systems development: a comparison of analyst and user

perceptions of systems acceptance." Journal of Engineering and Technology Management, 16, pp. 329-348.

AUTHOR BIOGRAPHY

Bassam Hasan is an assistant professor of MIS at The University of Toledo. He received a Ph.D. in MIS from The University of Mississippi. His research interests include end user training, systems development, and end user computing. He teaches in the areas of systems design and development, database management, and programming.

Information Systems & Computing
Academic Professionals

STATEMENT OF PEER REVIEW INTEGRITY

All papers published in the Journal of Information Systems Education have undergone rigorous peer review. This includes an initial editor screening and double-blind refereeing by three or more expert referees.

ISSN 1055-3096