PTC-632
Content Management and Information Architecture
Assignment #5
Audience and Task Analysis

Background and Project Description

At the Community College where I am employed, a large percentage of students are required to take developmental math courses to prepare for their degree course requirements. These preparatory courses cover topics in basic mathematical computation, as well as two levels of algebra. Both full time and part time faculty teach the numerous sections of these courses offered each semester. A peer tutoring staff provides academic support to students throughout this series of courses.

Developmental students are often at a higher risk of dropping out of college than students beginning in college level courses. Some require up to two additional semesters to complete their Associate's degree, as they have seven or more developmental courses (in math and English) to complete. It is not unusual for developmental students to fail one or more course, magnifying the time required to finish a degree. Students become discouraged, and give up on their dream completing a college education. It is imperative that college staff provide as much support as possible to these at-risk students.

One topic that is particularly difficult for developmental math students to master occurs in the last level of algebra. This is the procedure for

factoring trinomials. Students who do not gain competency in this skill cannot progress to the end of the course and advance to their required college level courses. There are currently three distinguishable methods of factoring trinomials taught at the college: The AC method, the trial and error method and the box method. Developmental professors have the academic freedom to teach whichever method they choose. Remarkably, several professors have even developed new methods that they have named after themselves – the McNulty method of factoring trinomials, for instance.

This situation presents several problems. Part time adjunct professors are not aware of the choice of methods taught at the college, including the pros and cons of each. Peer tutors generally only know the method that they themselves use, and are unable to support students struggling with alternate methods. It is clear that there is a need to supply training for both groups on the three current, prevailing methods for factoring trinomials. These two audiences are very different for a number of reasons. Most notably, the adjunct faculty is not required to learn new methods or complete training, while this is a requirement for peer tutors. Since the needs and attitudes of these two audiences are so different, two versions of this training are necessary.

Audiences: Part time faculty and peer tutors

Part time faculty

For the part time developmental faculty at our institution, I decided to conduct individual interviews. As a part time faculty member myself, I know this audience well. Many adjunct professors hold other full and/or part time positions outside of the institution. As a result, their time is very limited. The most direct (and least likely to irritate) method of gathering information from this group is through personal interviews. The interviews were conduced while walking in the halls, in the faculty lounge and in the building stairwells. The complete interview questions and respective answers are as follows, with a summary of the results in Table 1.

1) How long have you been teaching developmental algebra at this institution?
   a) 6 years
   b) 2 semesters
   c) This is my first semester
   d) 15 years
   e) 5 semesters

2) Have you ever taught college level courses here, or at any other institution?
   a) No, I only teach developmental courses, and only at this institution.
   b) Yes, I have taught college level algebra here and at Kean University.
   c) I have taught college level courses at other institutions. This is my first experience teaching developmental algebra.
   d) I have taught a variety of developmental and college level courses here and at other institutions. I have also taught high school algebra.
   e) I teach both college level and developmental algebra here.
3) What method of factoring trinomials do you teach in your developmental classes?
   a) I used to teach the AC method, but now I teach trial and error.
   b) I use a method that I developed myself.
   c) AC method
   d) Trial and error
   e) Box method
4) Do you present this topic differently in your college level courses?
   a) Not applicable (this instructor only teaches developmental courses)
   b) I use my own method in class, but I allow my students to use whatever method they learned in their previous algebra courses.

c) I always teach the AC method.

d) I still use the trial and error method.

e) Box method – this is really trial and error in a controlled form.

5) Have you ever used other methods of factoring trinomials?

a) Yes. I started with trial and error, used AC for a while then went back to trial and error.

b) No. This is the only method I have ever used.

c) No.

d) No.

e) No.

6) If it were available, would you be open to training in alternate methods?

a) Yes, I would consider other methods.

b) Yes – my students have a hard time with this. I would explore alternate methods if time allowed.

c) Yes. I'm open to alternatives.

d) No. My methods have served me well for 15 years.

e) Yes – as long as it works around my schedule.

7) Would you be comfortable accessing training via the web?

a) No - I am extremely uncomfortable using the computer

b) Yes, as long as ii doesn't require a lot of time.

c) Yes

d) Absolutely not.

e) Probably not.

Subject a	Subject b	Subject c	Subject d	Subject e
1) How long have you been teaching developmental algebra at this institution?				
6 years	1 year	½ year	15 years	2 ½ years
2) Have you ever taught college level courses here, or at any other institution?				
No	Yes	Yes	Yes	Yes
3) What method of factoring trinomials do you teach in your developmental classes?				
Trial & error	Own Method	AC	Trial & error	Box
4) Do you present this topic differently in your college level courses?				
N/A	No	No	No	No
5) Have you ever used other methods of factoring trinomials?				
Yes	No	No	No	No
6) If it were available, would you be open to training in alternate methods?				
Yes	Yes (time)	Yes	No	Yes (time)
7) Would you access training via the web?				
No	Yes	Yes	No	No

Table1 – Part time faculty interview summary

Part time faculty – Analysis of results

The part time faculty members that I was able to speak with were predictably rushed and concerned with time. The faculty member who had the most experience was the least open to exploring new methods, or reevaluating his own method of teaching this difficult topic. The members who were new to the job seemed more open to the possibility of training. It is interesting, but not surprising, that all four subjects who teach both developmental and college level algebra used the same method for teaching both groups of students. They do not appear to see any difference between students who come to college under prepared, and those who arrive ready for the challenges of college level work. Only two of these faculty members would take the time to access this information on the web. It was clear from body language and tone that this group is not generally open to the idea that an alternate method might be more effective than what they currently teach.

Peer Tutors

I decided to use a short, directed questionnaire to gather information from peer tutors. These part time student workers are difficult to speak to privately, as they tutor during the majority of their working hours. They also take classes themselves, and are busy with their own studies on off

hours. They are focused, successful students who typically respond quickly and accurately to questionnaires placed in their staff mailboxes. I used a combination of Likert-type questions and traditional closed end answers. The peer tutors are familiar with this type of questionnaire, as they use a similar format for their semi annual self-reviews. The questionnaire is below, with a summary of the results in Table 2.

1) Students that I tutor have a difficult time factoring trinomials.

Strongly Agree Agree Disagree Strongly Disagree

2) I use the following method of factoring trinomials:

AC method Trial & Error method Box method Other method

3) I learned this method at:

UCC another College high school (in US) high school (in another country)

4) I am willing to learn alternate methods to assist students.

Strongly Agree Agree Disagree Strongly Disagree

5) I use ALC help sheets while tutoring students.

Strongly Agree Agree Disagree Strongly Disagree

6) I use the web while tutoring students.

Strongly Agree Agree Disagree Strongly Disagree

1) Students that I tutor have a difficult time factoring trinomials.			
Strongly Agree	Agree	Disagree	Strongly Disagree
8	**2**	**0**	**0**
2) I use the following method of factoring trinomials:			
AC method	Trial & error	Box method	other
5	**2**	**0**	**3**
3) I learned this method at:			
UCC	Another college	High school In US	High school Another country
6	**0**	**0**	**4**
4) I am willing to learn alternate methods to assist students.			
Strongly Agree	Agree	Disagree	Strongly Disagree
6	**4**	**0**	**0**
5) I use ALC help sheets while tutoring students.			
Strongly Agree	Agree	Disagree	Strongly Disagree
3	**7**	**0**	**0**
6) I use the web for staff training.			
Strongly Agree	Agree	Disagree	Strongly Disagree
10	**0**	**0**	**0**

Table 2 - Peer Tutor Questionnaire Summary
10 peer tutors surveyed

Peer tutors – Analysis of results

This group of staff members are “in the trenches” with students who are struggling with their courses. They all agree that factoring trinomials is problematic for the students that they tutor. They use a variety of methods

to factor trinomials. Three of the tutors surveyed use methods that are unknown at the college. This is not surprising, since four of the ten were educated outside of the United States. Peer tutors at our institution are required to complete training modules each semester on the web, so they are willing and able to learn new methods. The Academic Learning Centers (ALC) provide a variety of "help sheets" for tutors to use with students, and all of the tutors surveyed use these sheets to assist in their tutoring sessions.

Environmental Analysis

Part time faculty

The environment will vary for the part time faculty who use this training. It is possible that they will take the time to sit, read and absorb the material in a quiet office or lounge. It is also possible that they will review the material while walking to class. Regardless of the environment, the goal for this group is to attract their attention immediately, and hold it long enough to provide sufficient information. Since there is no requirement for them to use the training, they are likely to assess and accept or reject the document within the first few lines. The challenge with this audience will be to seize their attention and provide information as quickly as possible.

Peer tutors

The peer tutor environment is much more stable. These students will access the training in one of two places. The first will be with students who they are tutoring. They will sit and move through the steps with the student to help them learn the method. The second environment will be in the student computer lab, via the training website. They will use the same document, but will have a much quieter and peaceful environment in which to experience the training. The challenge with this audience will be to outline the steps with enough detail that it is clear to them in either environment.

Task Analysis

I chose observation for the task analysis, due to the varied methods used for these types of problems. I observed the two audiences for whom the training is designed, but also the students who will ultimately benefit from this training.

Students

I feel that this group is important to observe, since the methods will be conveyed to them from the two audience groups. I have observed countless students over the years attempting to factor these problems. When students begin the task of factoring trinomials, they typically try to lay the problem out to look like one of the three methods. This is where the

problems begin, since the three methods take very different paths to arrive at the same result. Students who do not use a systematic approach to these problems rarely find the correct answer.

Faculty

I was able to observe three faculty members presenting this topic, each using one of the three different methods.

The trial and error method, as its name implies, is not procedural. The faculty member discussed the signs that were required to achieve the end result, then clearly listed all of the possible combinations of factors and checked them by multiplying back to find the correct pair. He also discussed methods to make an educated guess at the correct combinations to save time and effort.

The AC method is procedural. This instructor listed the steps on the board and methodically followed them in a practice problem. He then gave similar problems with different signs to provide an example of each scenario. He also stressed how the method is used in a very specific situation, and that students had to identify the problem correctly.

I observed the box method performed by the professor who created the procedure. She explained that it was essentially a controlled method of trial and error. She listed the steps and performed them on a practice

problem. Much like the instructor who demonstrated the AC method, she provided four examples illustrating each combination of signs.

Peer Tutors

I observed two peer tutors explaining this topic, each using the trial and error method. The tutors were both very intelligent, successful students, but both of their explanations lacked procedure. They were able to see the correct combination (much as the trial and error instructor pointed out in his presentation) but were unable to explain the process to the students. Interestingly, one of the students (with whom the tutor was using the trial and error method) indicated that her teacher taught with the AC method. Since the tutor did not know the AC method herself, she explained the problem using the trial and error method.

Conclusion

The results of the audience analysis, task analysis and environmental analysis point clearly to the need for training in the three prevalent methods of factoring trinomials. The differences in the audiences indicate that the training should be customized for two groups: Part time faculty and peer tutors. The content will be the same and single sourced for use in both applications.

The training for part time faculty will include:

- A short introduction on the special needs of developmental students
- Quick, clear procedure for three methods, including pros and cons of each method
- One example problem for each method
- Training provided in paper form (via mailbox distribution), and downloadable on the web
- Training provided to all part time developmental faculty with a particular focus on new hires

The peer tutor training will include:

- Clear, systematic instructions on the three separate methods of factoring trinomials
- Four examples of each method, with increasing difficulty to provided clarity of procedure
- Procedure provided on paper help sheets to use while tutoring students
- Help sheets downloadable on the web for tutor training