

AC 2007-1719: ENHANCING LEARNING THROUGH A COLLEGE BASED TUTORING PROGRAM

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Her teaching and research interests are in the areas of inventory management, distribution, logistics, and supply chain management. She has developed and taught undergraduate and graduate-level courses and has supervised graduate student projects, in these areas at the master's level. Dr. Schmidt has worked with many Indiana companies to develop a Logistics training course, revise warehouse layouts, revise facility layouts, and other projects in the Logistics area.

ENHANCING LEARNING THROUGH A COLLEGE BASED TUTORING PROGRAM

Abstract

Technology and technology education changes by the hour making it extremely difficult for university and college instructors and professors stay current on the latest advances in the field, preparing course materials and delivering lectures. It is equally difficult for the students to keep up with this information and they are often left without the opportunity to engage in additional interaction that they might need to understand the materials and successfully complete the course. Professors have office hours however, this time is limited and that time is rarely adequate leaving the student without the resources he or she might need.

In order to address this need, the College of Technology (COT) has introduced a tutoring program designed to provide individual tutoring for students majoring in the COT programs. COT students can request the services of a tutor for technology curriculum as well as required courses that fall outside COT conducted courses, e.g. math and engineering courses. An additional feature of this service is that it is free to the student.

This paper will discuss the process used to identifying tutor and the method of outreach to the students. In addition, this paper will review the findings of a survey that was conducted during the fall 2005 semester. This assessment was designed to establish a baseline for the program and identify areas for improvement. Specific goals included:

- Defining organizational needs and future project objectives
- Identify target performers and establish a baseline of data in data to define success
- Determine possible causes of performance gaps
- Recommend possible performance improvement solutions.

The College of Technology Tutoring Program

The COT tutoring program offers students enrolled in technology core courses and prerequisite courses such as math and physics, the opportunity to get additional academic support with their studies. Students can participate in one-on-one tutoring and/or tabletop sessions which are group study sessions with a tutor present and drop-in sessions which are held one or two evenings a week at a designated time and location, most often technical system and computer labs. This program model gives students a variety of opportunities to get the help they need to succeed.

The program is funded in by a federal grant and is available at no cost to the student. The grant has the following guidelines:

- Only COT students are eligible to receive tutors through the program.
- Only courses covered in semesters 1-4 are eligible for tutor assignment.*
- A student automatically qualifies for a tutor under the following circumstances:
 - If he/she is on academic probation

- If his/her financial aid package is partially funded by this grant
 - If he/she has taken a class and failed it
- *Note: Additional funding was identified making it possible to provide tutoring for all COT students, regardless of their academic year.

Generally, tutors are students who have received a grade of “A” or “B” in a course or its equivalent. Exceptions are made for tutors who have excelled in higher levels of related courses. These are often junior, senior and graduate level students. Prospective tutors complete a hiring process that includes submitting a job application followed by an interview with the tutoring coordinator and confirmation of the applicant’s academic standing.

At the start of each semester the tutoring coordinator conducts a ‘call-out’ for both tutors and students interested in participating in the program. Students are also encouraged by their academic advisors and faculty if there is any concern about the student’s ability to fully grasp the course materials. The tutoring coordinator matches the student with a tutor specializing in the course area for which the student needs help, notifies both the student and the tutor. The student and tutor are left to identify a time and location that fits best with their schedules.

As mentioned earlier, there are also opportunities for students to participate in tabletop and drop-in tutoring sessions. Tabletop tutoring is a feature that was recently added to the program after noticing that many students are more comfortable getting help in groups. Drop-in tutoring is a program that comes in response to a need for occasional course help and lesson reinforcement. While requests for one-on-one tutoring continue to be the most often format requested, tabletop and drop-in tutoring are extremely popular formats.

The overriding aims of this program are to encourage COT program student retention rates and enhance each of our students’ ability to experience academic success. In order to accomplish this aim, it is important to continuously look for opportunities to improve program offerings.

The Survey

Continuous improvement is an expression that is regularly bantered around in industry circles and should become a household phrase in education. Constantly reviewing teaching processes, learning materials and the types of support available to students will go far in offering students quality education. One of the goals of the COT tutoring program is to identify and implement tools and processes that lead to continuous improvement and helped to provide students with the highest quality support for their education.

A survey is valuable tool for obtaining useful information to help in the effort to ensure continuous improvement. Getting feedback from students and tutors is a critical part of improving the quality of service. With the help of students enrolled in a Human Performance Technology course in the department of Education a survey was developed to assist in the identification of way to improve the COT tutoring program. This was the first effort by the COT tutoring program to conduct a survey of any kind and it has served as a platform for changes that include group and drop-in opportunities.

The three phases of the survey process were instrumental parts of the effort to support the goals of the COT program. Phase one addressed the need to clarify COT organizational needs as they related to the tutoring program. To this end, a discussion between the coordinator and the survey design team was conducted for the purpose of defining an exemplary tutoring program for the COT program (see Appendix A). Another important part of this discussion was to identify organizational needs. These organizational needs included:

1. Organizational opportunity: Assist in the enhancement of the academic performance of the students enrolled in the COT.
2. Organizational Need: Reinforce the organizational retention goals of students enrolled the COT programs by helping them to be academically successful.
3. Reported Performance Gaps: Provide baseline data needed to identify possible performance gaps and highlight COT areas for improvement.

The second phase was to create and distribute surveys for students receiving tutoring and tutors providing tutoring (Appendix B, and C). These online surveys were released to these individuals enrolled in the program via email. This part of the process was managed by the COT tutoring coordinator in order to maintain student anonymity and add validity to the process. An online anonymous survey was adopted for the following reasons:

1. At the time during which the survey was conducted, the COT Tutoring Program has 35 tutors and 50 tutees and data collected from them are the most important and valuable for the performance analysis
2. Information from the tutors and tutees would increase the validity of the data
3. Quantitative data was needed to identify the possible performance gap
4. An online anonymous survey would help keep the confidentiality of respondents and help enhance the validity of the data.
5. Open-ended questions could help collect qualitative data regarding the gaps causes and to provide suggestions on how to improve the program.

The third phase was to collect and assess the data and make recommendations.

Survey Results

As stated earlier in this paper, the results of the surveys are being used to baseline the COT tutoring program and implement several significant improvements to the tutoring program. The broader implication for a program of this kind is improving the success rate of students enrolled in the COT tutoring program and may provide a foundation for other tutoring programs. Questions modeled after the Robinson and Robinson Interview guide (1996) were the foundation for questions utilized in proactively identifying performance need. Goals of the performance assessment were to:

- Identify target performers (where are we doing thing right)
- Collect performance data based on the Exemplary Tutor Profile (Should vs. IS)
- Determine possible causes of performance gaps.
- Recommend possible performance improvement solutions.

Rationale for the interviews is as follows:

- Both the coordinator and the advisors are stakeholders and their inputs are valuable for identifying the causes and possible solutions.
- Qualitative data can help generate content rich information to help understand the culture impacts and background information of the program in COT.
- Qualitative data is helpful in explaining the performance gaps and coming up with possible solutions

The survey questions were designed and revised based on the following:

- Discussions in the first meeting with the survey design team
- The Exemplary Tutoring Profile we generated from various sources: such as the information from exemplary tutoring programs of other schools and the COT Tutoring program documents
 - Brainstormed among the research team members in group meetings
 - The HPT course professor' inputs helped revise the questionnaires
- The performance gap relationship data

Performance gap information provided a solid foundation of information with which to begin making significant improvements to the COT tutoring program. The following represent sample sets of significant decision-making data gathered from the survey. Participants are asked to rate each question using the following criteria: 1- Strongly disagree, 2- Disagree, 3-Neutral, 4- Agree, 5- Strongly agree responses, providing a quantitative base for assessment of the program. Complete survey results are included in the appendix section (see Appendix D).

Skills and Abilities

Question	Topic	Tutor	Tutee (student)
4	Organization, plan and preparation for sessions	50% - neutral ~ disagree	50% - neutral ~ disagree
9	Asks for feedback, ideas and suggestions to be flexible to change my initial teaching plan	33% - disagree	42% - disagree
13	Assess tutee's knowledge level and discuss the learning goals at the beginning communication	40% - disagree	34% - disagree

Motivation & Responsibility

Question	Topic	Tutor	Tutee (student)
10	Enthusiastically motivate tutees to learn	83% - agree ~ strongly agree	50% - agree ~ strongly agree
14	Gives full consideration to have additional meetings if needed	100% - agree ~ strongly agree	75% - agree~ strongly agree
13	Assess tutee's knowledge level and discuss the learning goals at the beginning communication	40% - disagree	34% - disagree

All of the data was used to evaluate the program and identify plans for the future.

Conclusion and Recommendations

Collecting and analyzing both the quantitative and qualitative data collected from the tutors, the tutees, the advisors and the program coordinator, the research team could identify the performance gap and forward the causes analysis and tentative solutions in the hope to close the gap in the tutoring program in COT. In addition to the afore-mentioned information generated in the project, the research team established the performance model of the tutoring program, which can develop job description and a detail plan for each solution. The solution package entails a set of communication actions, training actions, work environment actions, and the implementation of the assessment system.

Results and analysis of the data helped to identify an initial direction in which to take the COT tutoring program. Data was divided in to three response groups - communication, training, and work environment, in order to provide an efficient format by which to evaluate the data and identify areas for future program improvement.

Communication Actions

With Stakeholders

- Establish feedback system within the program thought out the semester (mid and final survey every semester).
- Hold workshop to advertise the program to faculties and staffs/ Or participate in the faculty meetings to introduce the program and keep participating to get the supports from faculties
- Participate in COT student council meetings to introduce the program.
- Distribute brochures and posters to each department in COT to advertise the program rather than flyers.

With Target Performer (Tutors)

- Build tutoring program online forum/instant messaging system to help coordinator, tutors and tutees communicate (There are many free forum sites in the internet.).

Training Actions

- Make the tutor training workshop required for new tutors and existing tutors who has the grade point average below 4.5 out of 5 from previous semester.

Work Environment Actions

- Provide more tutoring tool supports (providing a copy of textbook/reserved textbook from library only for tutoring service, reserved study room in library for tutoring sessions, etc.)
- Adapt exemplary tutoring profile to allow tutors to have better understanding of the job expectation and also could be used to design as an assessment tool for tutors.

Conclusion

The COT tutoring program is one of the ways that the College of Technology is addressing the student retention and academic success rate. Feedback from students who are taking advantage of the COT tutoring program is positive. Tracking grades of the students receiving tutoring help has reinforced the success of the program.

At the same time, it is clear that COT tutoring program has plenty of room for improvement. Making program changes such as offering group and drop-in tutoring are examples of the some of the changes that are being made in the program. The survey introduced in this paper will be used to continue to enlist information from tutors and tutees that will lead to continuous improvement of the COT tutoring program.

Exemplary Tutor Profile
College of Technology Tutoring Program

Although intelligence is essential, it is not always a predictor of a good tutor.

Basic Tutor Qualifications

- a. Be currently enrolled as a COT student.
- b. Have taken the courses you wish to tutor or be familiar with the course content and format taught.
- c. Receive an A or B in the course you wish to tutor.
- d. Tutor one or more college students
- e. Be willing to tutor at least 10 hours per week, although our program cannot guarantee 10 hours every week. Hours are flexible and are not guaranteed.
- f. Make a commitment for a minimum two (2) semesters (fall and spring)
- g. Be able to participate in required tutor training sessions.

Characteristic of a good tutor

Attitude - *“If you believe your learner can learn that belief will have a strong influence on the progress that is made.” Peel Literacy Guide*

- a. Positive outlook: believe that circumstances can be changed through actions.
- b. Have self-discipline and a sense of commitment.
- c. Be sensitive and respectful towards others.
- d. Use appropriate language and moderate tone of voice.
- e. Practice good personal hygiene.
- f. Take an interest in the welfare of others.
- g. Have patience. Work slowly up to a more difficult level.
- h. Facilitate/Encourage independence by allowing the students to learn in their own way.
- i. Beware of how your student is responding by using all your senses. It will help you to pace your lessons appropriately, and also help you to identify strategies that work from those that are not effective. Watch out for clues such as yawning or anxious fidgeting to help you identify the right pace.

Skills and abilities - *“The single most important factor influencing learning is what the learner already knows. Ascertain this and teach him accordingly.” David Ausubel (1968)*

- a. Have the ability to share that knowledge through teaching.
- b. Have the confidence to lead group work.
- c. Empathy: ability to feel what another person is feeling.
- d. They must know what it feels like not to understand. They must be creative, able to explain a concept by using stories, drawings, analogies, or metaphors.
- e. Be well organized, with good planning and preparation skills.
- f. Be capable of reflecting on his/her performance.

- g. Whenever a new material is taught, allow for reviews by using sample exercises/questions to ensure if the student understands the material.
 - h. Too much correcting, especially early in your relationship, may discourage the student.
2. **Communication** – *“You can make more friends in two months by becoming interested in other people than you can in two years by trying to get other people interested in you.”*
Dale Carnegie
- a. Have an excellent understanding of English (spoken and written).
 - b. Be able to express yourself clearly, both in speech and writing.
 - c. Be approachable and personable with a wide range of students.
 - d. Be a good listener to surmise where students’ weaknesses are.
 - e. Ask questions to make sure the student is learning, and encourages open communication.
 - f. Ask for feedback from students on how a teaching strategy working for them. Ask for ideas and suggestions, and be flexible to change your plans.
3. **Motivation** – *“When planning for a decade, plant trees. When planning for life, train and educate people.”* Chinese proverb
- a. Desire to help others: willingness to get involved with people.
 - b. Be enthusiastic and able to motivate students.
 - c. Provide students with ongoing support and encouragement.
4. **Responsibility** – *“If you want to know your past - look into your present conditions. If you want to know your future - look into your present actions.”* Chinese proverb

Academic:

- a. Keep a regular schedule for tutoring.
- b. Be on time and always let the student know of a schedule change in advance.
- c. Find a safe, clean, quiet, and appropriate place for the meeting with the agreement of student. For example, KNOY hall study lounge, HIKS undergraduate library 24 hours lounge, etc.
- d. Assess student’s skills and discuss goals at the first meeting with a student
- e. Cooperate with coordinator to help the student to achieve the goal and improve academic status
- f. Plan and prepare teaching materials in advance.
- g. Use resources for practical exercises, e.g., worksheets or computer packages.
- h. Do not help students’ homework in the tutoring section, but instead, help them to enhance their understanding of the course materials.
- i. Monitor and assess students' work and academic improvement.
- j. Give a full consideration to the additional meetings during exam periods other than the regular meetings, and make your schedule flexible.
- k. Maintain confidentiality concerning students’ personal information.

Administrative:

- a. If your student starts miss sessions without notice, contact the program coordinator. The coordinator will contact the student to determine interest in continuing.
- b. Promptly report any changes in status or contact information about you or your student. Jot a quick email or leave a message at the Tutoring Program Office. It is important that our records are updated.
- c. If, for any reason, there is any type of incompatibility between the tutor and the student please report your concerns to the office. Efforts will be made to resolve the issue and/or reassign the student
- d. Submit your log sheet and time card every other weeks

Appendix B

**College of Technology
Tutoring Program - Tutors**

This survey is designed to gather information that allows the Tutoring Program to better help students within the College of Technology to be academically successful in their careers. Your time in completing this survey is important and very much appreciated. *This survey is anonymous and your answers are completely confidential.*

General information

Gender:

- Male
- Female

Age:

- 17 or less
- 18- 23
- 24-29
- 30-35
- 36 or more

Major:

- Mathematics
- Computer Graphics
- Physics
- Computer Science
- Other _____

Academic Level:

- Freshman
- Junior
- Sophomore
- Senior
- Graduate Master Student
- Graduate PHD student
- Other _____

Appendix B

Tutoring Experience:

- 1 Semester
- 2 Semesters
- 3 Semesters
- More than 3 semesters

Tutored course(s): (check all that apply)

- MAT
- PHYS
- CGT
- Other _____

How did you know about the Tutoring program?

- Advisor
- Friend
- Professor
- Department
- Callout or other publicity
- Other _____

Briefly describe what motivated you to approach to the Tutoring program:

Tutoring Skills Survey

Please rate your level of agreement with the statements below:

1. When providing tutoring to help students improve their academic performance, I...
2. Have a positive outlook that their performance in the course can be enhanced.
3. Have patience to slowly work up to a more difficult level.
4. Encourage independence by allowing them to learn in their own way.
5. Try to identify with their feelings.
6. Organize, plan and prepare myself for each tutoring session.
7. Use samples, exercises, and questions to help them understand and review the material.
8. Express myself clearly in both speaking and writing.
9. Am approachable to a wide range of student personality styles.
10. Ask questions to double check that they understand.
11. Ask for feedback, ideas and suggestions to be flexible to change my initial teaching plan.
12. Enthusiastically motivate them to learn.
13. Provide them with ongoing support and encouragement.
14. Come to the sessions on time.
15. Let them know of any schedule change in advance.
16. Assess their knowledge level and discuss the learning goals at the beginning.

17. Give a full consideration to having additional meetings 'If' needed.
18. Maintain confidentiality concerning their personal information.

Tutoring Experience Survey

Please indicate the level of agreement to the statements below.

1- Strongly disagree, 2- Disagree, 3-Neutral, 4- Agree, 5- Strongly agree

1. I have the knowledge and skills to be a good tutor
1 2 3 4 5
2. I put forth much effort to help my tutees overcome their course difficulties
1 2 3 4 5
3. I have the physical, mental, and attitudinal capacity to help others improve their academic performance
1 2 3 4 5
4. I am clear about my role and responsibilities as a tutor
1 2 3 4 5
5. I know exactly what is expected from me as a tutor
1 2 3 4 5
6. I receive feedback from the Tutoring Program on how well I helped my tutees
1 2 3 4 5
7. I have the tools, equipment, and a suitable environment needed to provide my tutoring services
1 2 3 4 5

Please provide any other information you consider important to help us improve the Tutoring Program.

Appendix C

**College of Technology
Tutoring Program - Students**

This survey is designed to gather information that allows us to better help students within the College of Technology to be academically successful in their careers. Your time in completing this survey is important and very much appreciated. *This survey is anonymous and your answers will be completely confidential.*

General information

Gender:

- Male
- Female

Age:

- 17 or less
- 18- 23
- 24-29
- 30-35
- 36 or more

Major:

- Mathematics
- Computer Graphics
- Physics
- Computer Science
- Other _____

Academic Level:

- Freshman
- Junior
- Sophomore
- Senior
- Graduate Master Student
- Graduate PHD student
- Other _____

How many semesters have you been tutored:

- 1
- 2
- 3
- More than 3 Semesters

Tutored course(s):

- MAT
- PHYS
- CGT
- Other _____

How did you know about the Tutoring program?

- Advisor
- Friend
- Professor
- Department
- Callout or other publicity
- Other _____

Briefly describe what motivated you to approach to the Tutoring program:

Tutoring Experience Survey

Please rate your level of agreement with the statements below:

When being tutored, my tutor...

1. Has a positive outlook that my performance in the course can be enhanced.
2. Has patience to slowly work me up to increasingly difficult levels.
3. Encourages independence by allowing me to learn in my own way.
4. Identifies himself/herself with my feelings.
5. Organizes plans and prepares him /her for each tutoring session.
6. Uses samples, exercises, and questions to help me understand and review the material.
7. Expresses himself/herself clearly in both speaking and writing.
8. Is approachable...
9. Asks questions to double check that I am understanding.
10. Asks for feedback, ideas and suggestions to be flexible to change his/her initial teaching plan.
11. Enthusiastically motivates me to learn.
12. Provides me with ongoing support and encouragement.
13. Comes to the sessions on time.
14. Lets me know of any schedule change in advance.

15. Assesses my knowledge level and discusses learning goals at the beginning of our sessions. Gives full consideration to having additional meetings 'If' needed.
16. Seems to be trustworthy concerning my personal information.

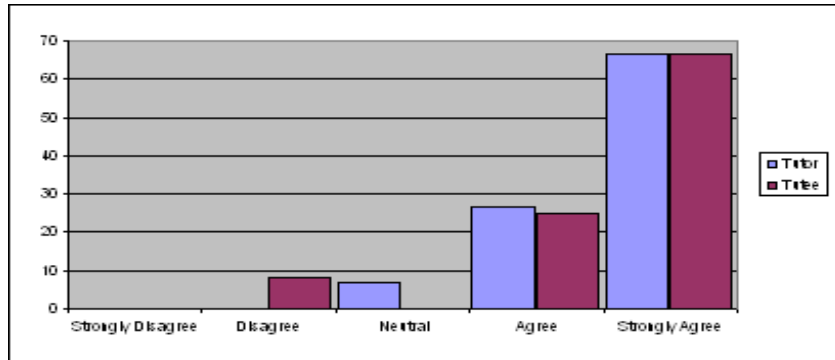
Please provide any other information you consider important to help us improve the Tutoring Program.

Appendix D

When being tutored, your tutor...

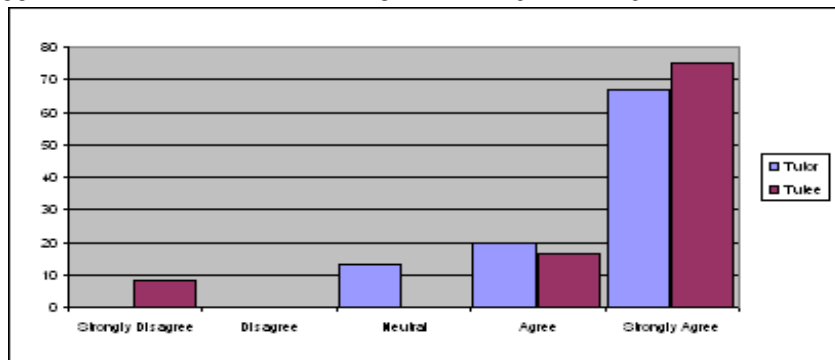
- 1 Has a positive outlook that my performance in the course can be enhanced

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Tutor	0	0	7	27	67
Tutee	0	8	0	25	67



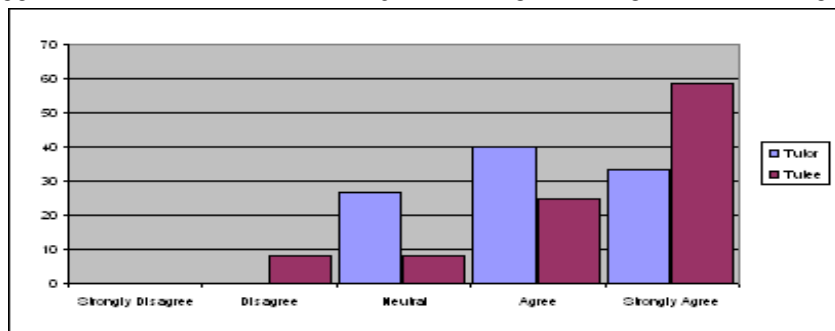
- 2 Has patience to work slowly up to a more difficult level.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Tutor	0	0	13	20	67
Tutee	8	0	0	17	75



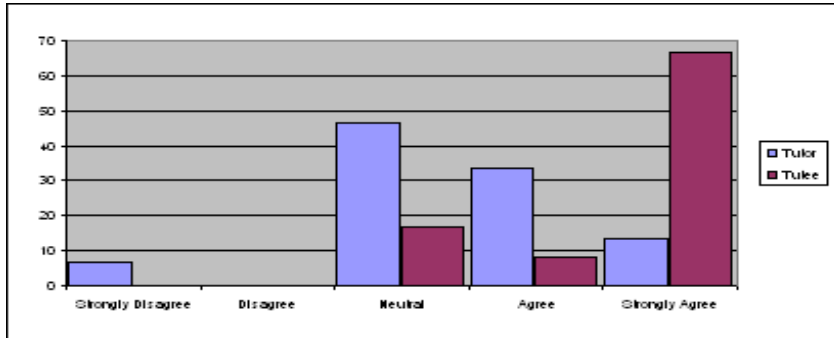
- 3 Encourages independence by allowing me to learn in my own way.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Tutor	0	0	27	40	33
Tutee	0	8	8	25	58



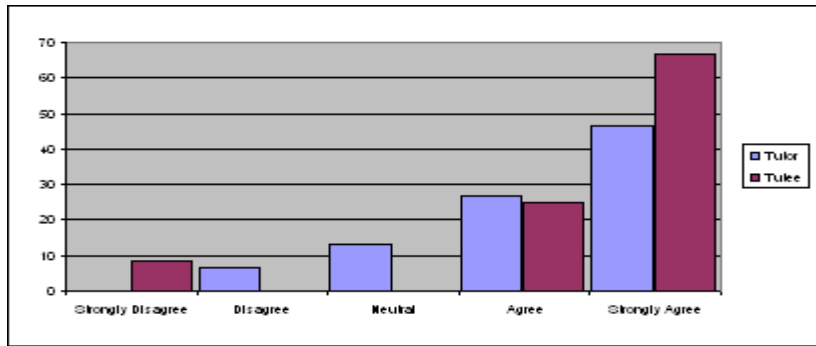
4 Organizes plans and prepares him /her for each tutoring session.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Tutor	7	0	47	33	13
Tutee	0	0	17	8	67



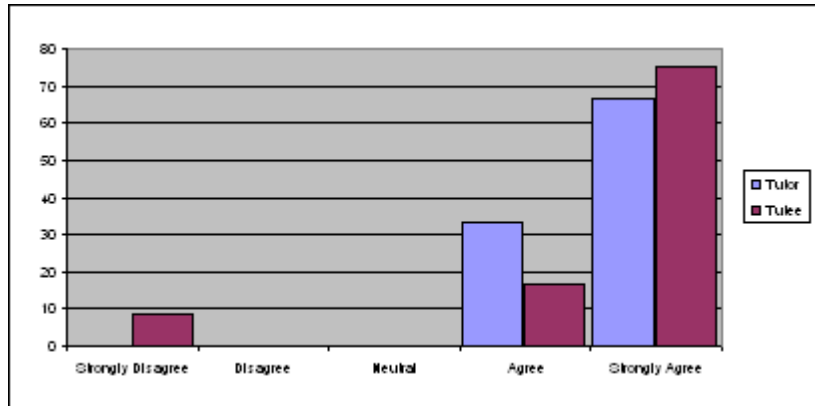
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	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Tutor	0	7	13	27	47
Tutee	8	0	0	25	67



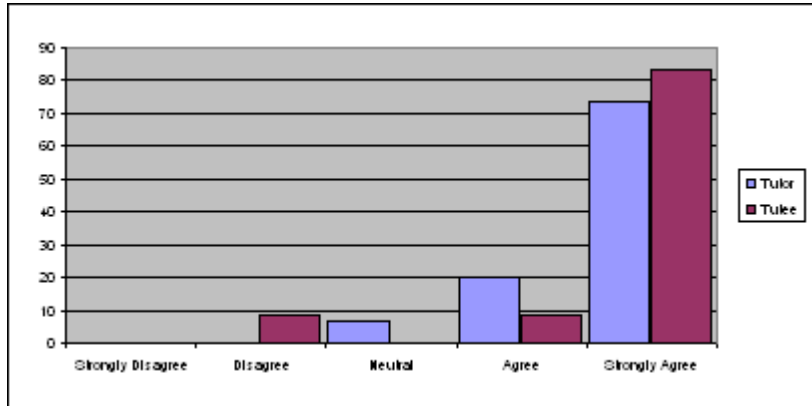
6 Expresses himself/herself clearly in both speaking and writing

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Tutor	0	0	0	33	67
Tutee	8	0	0	17	75



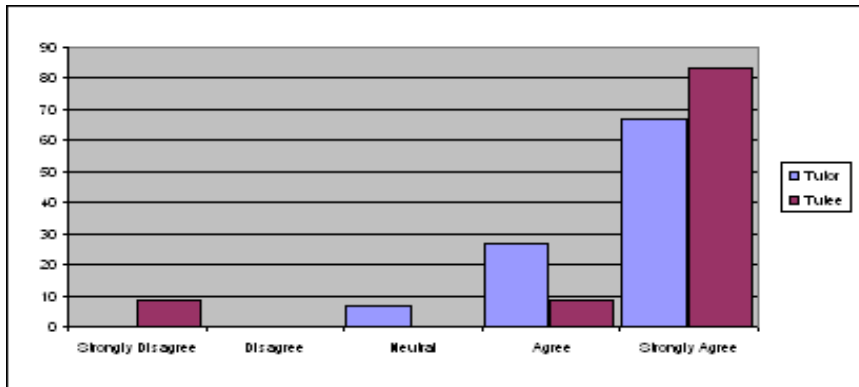
7 Is approachable to me

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Tutor	0	0	7	20	73
Tutee	0	8	0	8	83



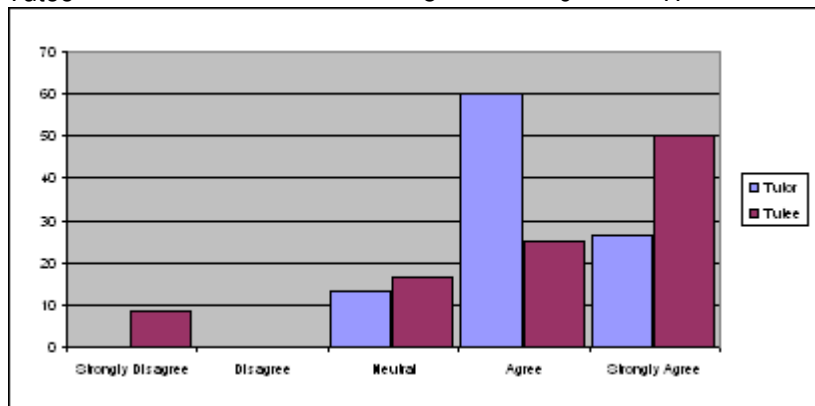
8 Asks questions to double check that I am understanding

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Tutor	0	0	7	27	67
Tutee	8	0	0	8	83



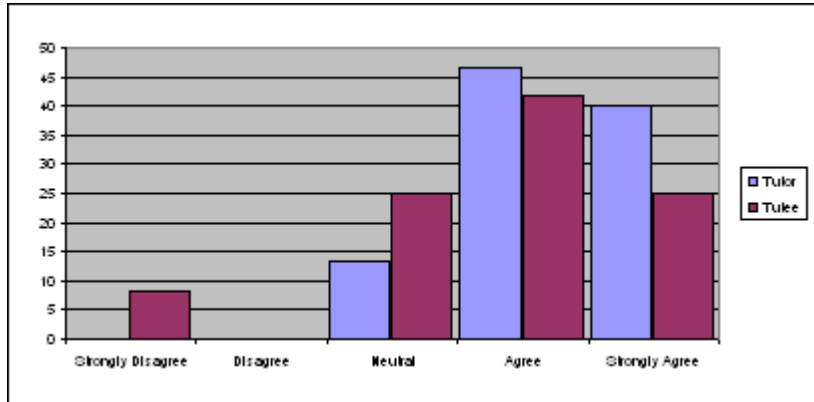
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	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Tutor	0	0	13	60	27
Tutee	8	0	17	25	50



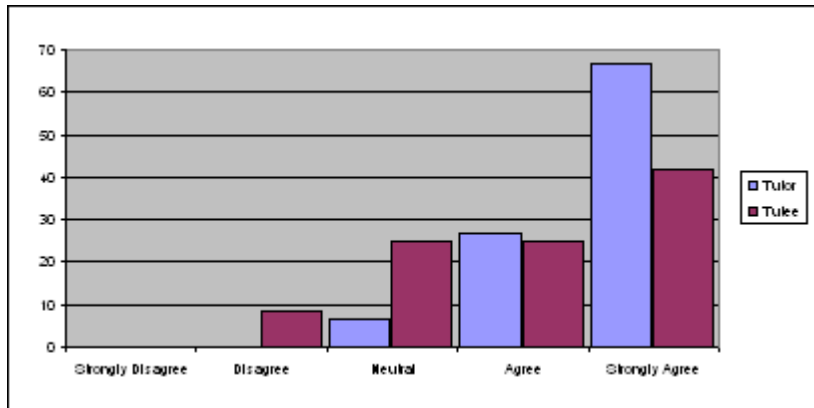
10 Enthusiastically motivates me to learn

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Tutor	0	0	13	47	40
Tutee	8	0	25	42	25



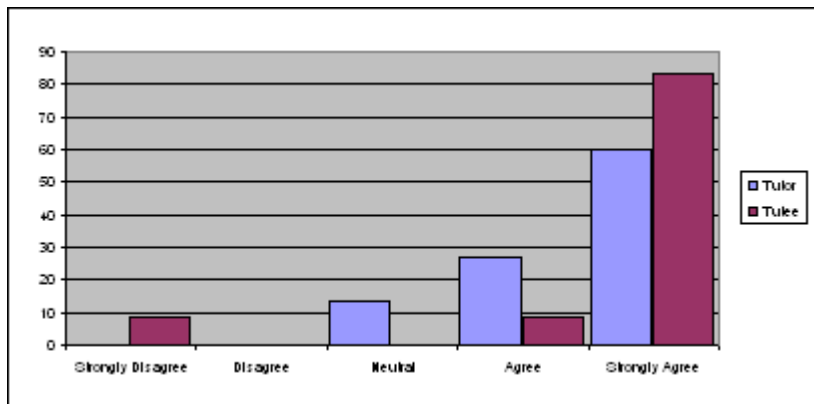
11 Provides me with ongoing support and encouragement

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Tutor	0	0	7	27	67
Tutee	0	8	25	25	42



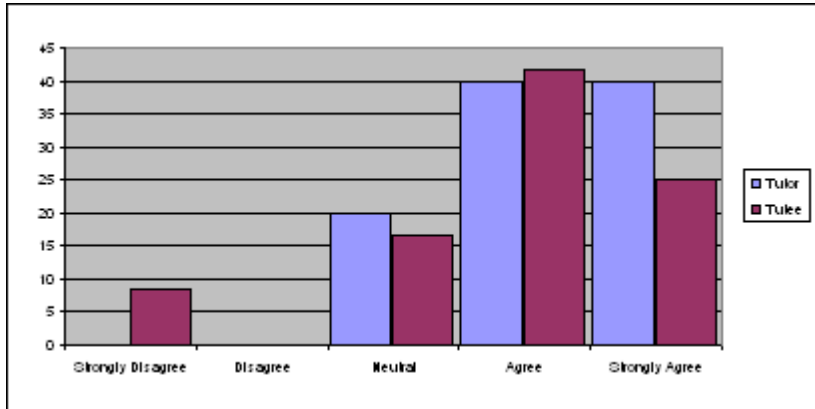
12

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Tutor	0	0	13	27	60
Tutee	8	0	0	8	83



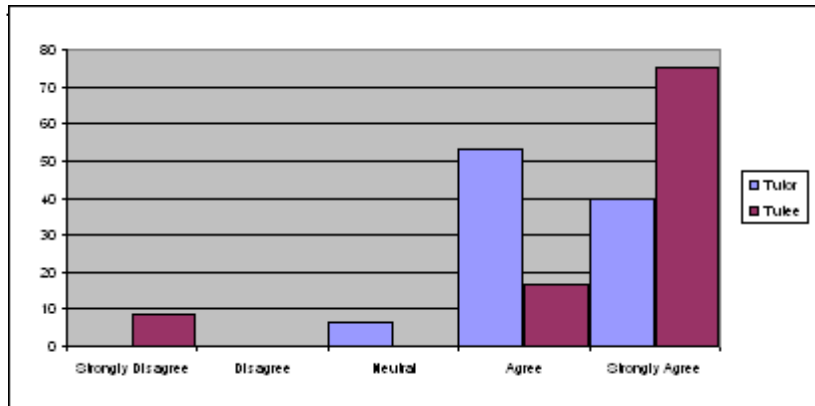
13 Assesses my knowledge level and discusses the learning goals at the beginning

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	(%)
Tutor	0	0	20	40	40	
Tutee	8	0	17	42	25	



14 Gives a full consideration to additional meetings If needed

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Tutor	0	0	7	53	40
Tutee	17	0	0	17	75



References

Robinson & Robinson (1996). *Performance consulting: Moving beyond training*. Berrett-Koehler; San Francisco