AGENT FOR INTERACTIVE STUDENT ASSISTANCE: A STUDY OF AN AVATAR-BASED CONVERSATIONAL AGENT'S IMPACT ON STUDENT ENGAGEMENT AND RECRUITMENT AT BGSU'S COLLEGE OF TECHNOLOGY

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ABSTRACT

Dr. Terry Herman, Advisor

As the need for educating traditional and non-traditional students increases and budgets decrease, the demand for higher education institutions to implement creative ways to provide effective customer service to students has never been more critical.

This research studied the potential implementation of an Agent for Interactive Student Assistance (AISA) application in Bowling Green State University's (BGSU's) College of Technology and its impact on student engagement and recruitment. AISA is defined as an interactive, human-like, avatar-based online student assistance application with voice and text recognition that provides answers to students' administrative-related most frequently asked questions. The avatar-based application would provide cognitive responses using voice and non-verbal communication with a 90% accuracy rate.

BGSU College of Technology undergraduate and graduate students during the 2009/2010 and 2010/2011 academic years were the population of this study consisting of 940 students. The approach of this study was quantitative, post positivist with an expected outcome in the form of an alternate hypothesis tested against a null hypothesis. One survey was administered to the population with a response rate of 9%.

Favorable results were found with 91% of students indicating they would or may use an AISA application if provided the opportunity. One proportion z tests showed that, overall, students would not experience a negative impact on engagement and BGSU's College of Technology would not experience a decrease in new students.

This thesis is dedicated to my parents Robert Lynn Orwick and Betty Orwick Brauneller and my grandparents Rosemary Orwick and Clarence Bame who instilled in me the importance of education, a life well lived, and that nothing is impossible. I wish you all were here to share with me the joy of this accomplishment. And to my niece and nephew Emily and Zachary Doss and my stepchildren Jennifer and David Ogden, I pass on the same message.

Think beyond the perceived impossible.

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CHAPTER I. INTRODUCTION

Context of the Problem

As the need for educating traditional and non-traditional students increases and budgets decrease, the need for higher education institutions to implement creative ways to support students has never been more critical. Students are paying high tuition dollars and expect information to be convenient and readily available. It's no longer acceptable for a student to wait to have someone call them back. The Internet age has eliminated the previously accepted premise that answers to questions take time. The expectation now is to have information at your fingertips (Pew Research Center, 2010). Higher education institutions as well as the private sector are finding it necessary to take advantage of new technologies to meet customer service needs and maintain efficient use of sparse employee time.

Another challenge universities face with limited human resources is efficient and effective student recruitment. Higher education institutions are turning to companies such as CollegeWeekLive which hosts online events allowing higher education institutions to showcase their offerings in virtual booths and live chat sessions. Institutions pay a subscription but reach more students in less time with travel eliminated. Students from all over the world can learn about the various institutions and their offerings from home. This appeals to students because information is convenient and available to them from the comfort of their own homes.

Websites typically provide answers to students' questions using text-based information which is normally accessed through search functions. In higher education examples, students access websites or log in to institution networks and search for the information they need. A similar concept is used in CollegeWeekLive. After choosing the booths for the institutions they

wish to tour, students click on links to find information. Media usability is what makes this interaction friendly and easy for the user.

However, new technologies are re-shaping usable media. With the advances in technologies, websites can be more usable and user-friendly than ever before. Media usability is changing from easily accessible links to interactivity and engagement with the use of avatar-based technology and human-like interaction (Turk, n.d.). These advances allow avatars to interact with users in a conversational manner responding with voice tones, facial expressions, and body language. The avatar pushes information to the users based on history and preferences as opposed to users pulling information through search engines. This technology can be extremely powerful and effective if the information provided to the student is accurate. Technology systems are finally reaching the point where voice and text recognition capabilities are more accurate and the ability to interpret the user's intent is becoming a reality. Imagine a student asking the web browser if Technology 1010, a class the student is interested in taking, is offered the upcoming summer semester; and receiving the response that Technology 1010 is not offered this summer but the student's record indicates the curriculum requires Technology 1020 which is offered online May 15th through June 26th.

Higher education administrators might consider the cost effectiveness of avatar-based information delivery systems as a possible solution to their customer service needs. *The Journal of Marketing* reported a study performed on an avatar-based website for a retail shoe store. They found the "…inclusion of an avatar on the screens of a web-based shopping site increased consumer satisfaction with the retailer, made the customer's attitude toward the product more favorable, and increased the customer's purchase intention" (Holzwarth, Janiszewski, & Neumann, 2006).

Purpose Statement

The purpose of this study was to research the potential implementation of an Agent for Interactive Student Assistance (AISA) application in Bowling Green State University's (BGSU's) College of Technology and its impact on student engagement and recruitment. The independent variable was defined as an interactive, human-like, avatar-based online student assistance application with voice and text recognition that provides answers to students' administrative-related most frequently asked questions. The avatar would provide cognitive responses using voice and non-verbal communication with a 90% accuracy rate. The dependent variables were defined as students' perceptions of engagement and the impact on recruitment. The methodology included surveying College of Technology undergraduate and graduate students (2009/2010 and 2010/2011 academic years). Comparisons of students' preferences regarding AISA were made between face-to-face, face-to-face transfer, and online student participants.

Limitations of the Study

The survey to collect data from BGSU's College of Technology students was administered via email. This could create a bias as those that use email as their main form of communication might be more likely to respond to the survey than those that do not use email as their main form of communication.

Survey results were based on students' perceptions of AISA as described to them in the survey as opposed to a physical application.

Only 3% of the face-to-face transfer student population responded to the survey so the results may not be an accurate reflection of that population's preferences.

Sixty-two percent (62%) of the respondents were online students which could bias the results since online students' needs and perceptions differ from face-to-face students.

Based on the qualitative answers, some students may have been under the impression that an AISA application would replace human contact and responded accordingly. The intent of an AISA application was to add to the flexibility and accessibility of obtaining answers to frequently asked questions and supplement other means of communication.

The recruitment research in the study is based on current student responses and does not reflect prospects not yet enrolled in BGSU's College of Technology.

Significance of the Study

Research on the various uses of conversational and/or virtual agents is plentiful. The improving technologies have sparked researchers in the military, corporate, and e-learning environments to investigate uses of the interactive and engaging technology. Gonzaga University in Spokane, Washington utilizes an avatar-based system with the use of their mascot, a dog named Spike (Snell, 2011). However, the mascot is text-based and does not recognize voice commands nor interact non-verbally through facial and hand gestures. Regarding recruitment, the military has successfully implemented conversational agents to speak with prospective recruits.

However, this researcher has found little on interactive student assistance applications used in higher education that incorporate voice recognition and non-verbal communication. Conversational agents are highly effective tools that allow students to obtain answers to their questions at any time without the assistance of support staff. These tools could have significant, positive, impacts on a higher education institution's bottom line and customer service satisfaction.

Definitions and Terms

Anthropomorphism – an interpretation of what is not human or personal in terms of human or personal characteristics (Anthropomorphism, n.d.).

Avatar – a graphic representation that can be animated by means of computer technology (Holzwarth et al, 2006).

Humanoid – having human characteristics or form (Humanoid, n.d.).

Human-Computer Interaction (HCI) – The processes through which human users work with interactive computer systems (Human-computer interaction, n.d.).

Conversational Agents – Conversational agents (CAs) are communication technologies that use natural language and computational linguistic techniques to engage users in human-like, web-based dialogs (Dialog system, n.d.).

Artificial Intelligence (AI) – the study and creation of computer systems that can perceive reason and act. The primary aim of AI is to produce intelligent machines. The intelligence should be exhibited by thinking, making decisions, solving problems, and more importantly by learning. AI is an interdisciplinary field that requires knowledge in computer science, linguistics, psychology, biology, philosophy, and so on for serious research (Artificial intelligence overview, 2010).

Natural Language Processing – From the Natural Language Processing Research Group at the University of Sheffield Department of Computer Science, "Natural Language Processing (NLP) is both a modern computational technology and a method of investigating and evaluating claims about human language itself. Some prefer the term Computational Linguistics in order to capture this latter function, but NLP is a term that links back into the history of Artificial Intelligence (AI), the general study of cognitive function by computational processes, normally

with an emphasis on the role of knowledge representations, that is to say the need for representations of our knowledge of the world in order to understand human language with computers" (Association for the Advancement of Artificial Intelligence, 2010, para. 5).

Face-to-Face Student – a student enrolled in a BGSU College of Technology face-to-face program who never attended another higher education institution.

Face-to-Face Transfer Student – a student enrolled in a BGSU College of Technology program who transferred to BGSU from another higher education institution.

Online Student – a student enrolled in a BGSU College of Technology program that is 100% web-based.

Administrative-related frequently asked questions – procedural questions unrelated to the classroom that students would ask staff personnel. Examples include "How do I register?" or "How do I contact my advisor?"

Student Assistance – ability to answer administrative-related frequently asked questions posed by students in an online, human-like format based on avatar-based technology.

CHAPTER II. REVIEW OF THE LITERATURE

This researcher has chosen to use the word avatar in the title of this thesis, however many other terms are used to express the intended definition of an avatar addressed in this research. Intelligent virtual agent, humanoid avatar, intelligent agent, virtual human, human-like agent, human-like avatar, virtual agent, chatbot, virtual assistant, conversational agent, and interactive virtual character are several examples.

Figure 1. An Example of an Avatar.

This has made the research challenging to address as the definition of the word avatar has many variations. Chatbot.org found 130 synonyms for the agent referenced in this research (130 humanlike conversational AI synonyms, n.d.). In an interview with CRM Magazine, three virtual agent companies provided definitions. The definition that best described the conversational agent researched in this thesis is:

> "Ashutosh Roy, chairman and CEO of eGain: A virtual agent is a human-like bot that understands natural language interactions and guides a visitor though a conversational interface using text and/or speech input and output" (van Kooij, 2010, para. 3).

This definition best describes the functions and interactivity this researcher envisions of the human-like avatar used in the Agent for Interactive Student Assistance application (AISA).

Therefore, the term avatar or conversational agent used in this research will reflect a human-like agent for interactive student assistance and the definition above by Ashutosh is considered the definition of these terms. This differentiates this technology from a chat platform such as the one used at Gonzaga University called Ask Spike which is a text-based search engine with their mascot named Spike as the flat interface as demonstrated in Figure 2. In other words, Spike doesn't move. Spike can speak and text but only responds to text-based questions and he is not capable of eye, hand, or body gestures. Students send text messages via computer or a mobile phone to get answers to their questions (Snell, 2011).

Figure 2. Gonzaga University Ask Spike

This concept is helpful and valuable, but this researcher wishes to take it one step further to engage the user using human-like, 3D avatar technology allowing voice recognition, non-verbal communication, and artificial intelligence. This research will address a student assistance application that will be able to interact with students, find answers to their questions, and intuitively learn about the students' question histories, preferences, and true intentions of their inquiries.

To find literature on humanoid avatar conversational agents, this researcher has used all of the terms mentioned above as keywords to uncover existing research and applications involving this technology.

History/Evolution

Humanoid avatars require the use of Artificial Intelligence (AI) and Natural Language Processing (NLP) for human-computer interaction as conversational agents. Artificial Intelligence strives to create machines that use reasoning and intelligence much like humans do using machine learning algorithms. Natural Language Processing is related to Artificial Intelligence in regard to the cognitive functionality but focuses on the way information is received and conveyed through languages.

The concept of Artificial Intelligence began in the 1940s and came to life in the form of a reasoning program used to solve logical problems called Logic Theorist in 1956 (Robin, 2009). Natural Language Processing began with the development of the first dictionary look-up system in 1948 (Hancox, n.d.). The concept progressed with machine translation systems designed to convert technical documents from German to English after World War II. These early machine translation systems were not very successful and consequently were negatively impacted by funding sources. Linguistics appeared to be a solution with Generative Grammar, "rule-based descriptions of syntactic structures" (Hancox, n.d.) created by Noam Chomsky. This led to many other systems including SHRDLU, a robot that manipulated blocks; LUNAR, a database interface; and LIFER/LADDER, a database interface used to provide information on US Navy ships (Hancox, n.d.).

Efforts continue to advance the Artificial Intelligence and Natural Language Processing concepts. One of the most recent successes is the IBM Watson, a question-answering system using Natural Language Processing that defeated two previous grand champion winners in the game Jeopardy. Watson uses a software called DeepQA that "pursues multiple interpretations of the question, generates many plausible answers or hypotheses, collects evidence for these hypotheses, and evaluates the evidence to determine if it supports or refutes those hypotheses"

(Lally & Fodor, 2011, para. 3). This is made possible through machine learning algorithms that make it possible for computers to learn through history and experience (Kawamoto, 2011).

Sir Tony Dyson, best known for the creation of Star Wars R2D2, has developed iBot2000 technology (Oestreicher, 2009). This allows developers to create a virtual character that can take on different faces depending on the application. It can look like a real human being or a robot so the avatar can be designed to engage varied audiences.

These technologies are advancing allowing researchers to create not just human-computer interaction, but human-like computer interaction through the use of avatars as conversational agents.

Artificial Intelligence and Natural Language Processing

Many higher education institutions are taking advantage of the virtual world Second Life to advise and teach students as well as market and recruit (Papp, 2010). Users can visit college campuses, attend job fairs, and attend military recruiting events accessing virtual worlds and avatars to find answers to their questions. Although this study is not about virtual worlds or Second Life, the researcher is mentioning them as an indication of how technology is progressing and how educational institutions are taking advantage of it. The next step is to incorporate agents outside of a virtual world that allow students to find answers to their questions without human resources and experience the same level of engagement, if not more in some cases, than they would if they communicated with an actual human.

Natural Language Processing is a technology that enhances human-computer interaction and is a popular, effective tool used in creating humanoid avatars. It allows computers to understand the spoken word and eventually interpret the users' true intentions. To some extent, this is already possible with text-based interaction. Google, for instance, will recommend

keywords if the words the user typed didn't make sense to the search engine as demonstrated in Figure 3.

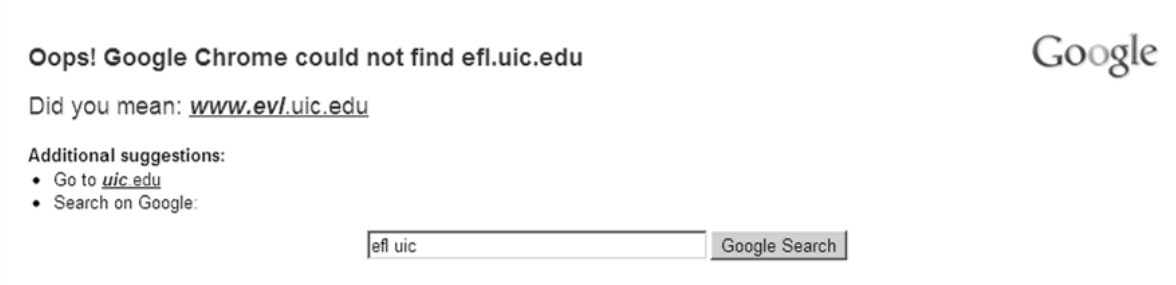

Figure 3. Example of Google Interpreting Users' True Intentions.

The University of Illinois's Electronic Visualization Laboratory (EVL) works with Natural Language Processing for human-computer interaction. EVL has created a model for processing the spoken word to create and manipulate graphics and visualizations (as shown in Figure 4) and "…applies natural language processing and machine learning techniques in the area of data visualization and analysis. Its goal is to automatically translate natural language queries into meaningful representations of data. It constitutes a part of Project Lifelike—a research initiative to provide a more natural alternative for interacting with computers…" (Sun, 2010).

Figure 4. University of Illinois Electronic Visualization Laboratory

Natural Language Processing technology has opened up a new world of opportunities allowing verbal and non-verbal interaction with humanoid avatars. "Humanoid avatars especially provide realistic-looking facial expressions, poses, body languages and natural-sounding speech to help people enhance their understanding of the content and intent of a message, and improve significantly human computer interaction..." (Jin, Xia, Fang, Viet Dung, & Ling, 2009, p. 230)

This study is not about the inner-workings behind humanoid avatars or Natural Language Processing, so it will not go into more detail of the technology. Suffice it to say that it is here and research is being done to create 3D, humanoid avatars which are "not only humanlike, but represent personality and facial emotions based on culture, profession, mood, age, taste…" (Jin et al, p. 231)

According to *Customer Relationship Management Magazine* (van Kooij, 2010), companies such as Vodafone and eBay are already using virtual agents to accommodate at least 750,000 customer service requests per month. There are still challenges, however. These companies aren't necessarily using a speech interface yet nor do they provide a human-like experience. Not all questions can be handled by the agents and actual human supervision is still necessary. The key is to simulate the human experience and have a sophisticated, connected knowledge database that will allow avatars to access information based on keywords. Technologists are making significant advances in these areas.

Uses of Humanoid Avatars as Conversational Agents

According to the Institute for Creative Technologies at the University of Southern California:

> Virtual human agent technology has evolved to a point where researchers are developing characters in virtual reality applications that can act as virtual patients for interpersonal

> skills training, agents that can engage trainees in cultural bi-lateral negotiation training or just act as interactive characters for entertainment or promotional purposes. These virtual human agents have the ability to recognize speech, respond to questions and generate verbal and non-verbal behavior. (Kenny, Parson, Gratch, & Rizzo, 2008, para. 6)

Humanoid avatars are used as conversational agents in various environments as trainers, real estate agents, patrolman, health care professionals, salespersons, web navigators, and conflict negotiation simulators to name a few.

Sgt. Blackwell was created by the University of Southern California's Institute for Creative Technologies and is depicted in Figure 5. Sgt. Blackwell is a "…3D virtual character capable of spoken interaction using ICT natural language processing technology. He appears at human scale on a transparent digital flat display system developed by ICT Mixed Reality Research and Development" (University of Southern California Institute for Creative Technologies, 2011). The Institute uses Natural Language Processing to allow the virtual human Sgt. Blackwell to converse through voice and facial and body language and perform training functions.

Figure 5. Sgt. Blackwell, USC's Institute for Creative Technologies

The military isn't the only environment taking advantage of avatar-based conversational agents. The University of Dayton and Total Quality Systems, Inc. worked together to create the

Automatic Communication Exchange (ACE) avatar (Larsen Quill, 2008). ACE conducts a dialog with airplane technicians to perform "hands free" documentation of the maintenance tasks while the technician continues to work on the plane. This saves technicians countless hours completing paperwork.

An avatar is being developed by the University of Arizona to be used to help law enforcement detect unlawful border crossings. The avatar will have the ability to detect deception in behaviors of those that pass through the kiosk (van Kooij, 2011).

Other uses for avatar conversational agents include simulations for conflict negotiation training. The Virtual Human Project was created by USC's Institute for Creative Technologies and shows how conflict negotiation can be demonstrated using autonomous virtual humans whose opinions change using reasoning as the environment or situation changes. Figure 6 is a depiction of the virtual humans used in the conflict negotiation simulation.

Figure 6. The Virtual Human Project, USC's Institute for Creative Technologies

The Army uses Sergeant Star to assist potential recruits searching for answers to their questions at GoArmy.com. As shown in Figure 7, Sergeant (Sgt.) Star will tell you himself that he is a "dynamic, intelligent self-service virtual guide, created by the Army, that will help you quickly navigate the GoArmy website and retrieve Army-related subject matter, while

simultaneously answering questions and directing communication based on interaction with the user" (GoArmy.com, n.d.).

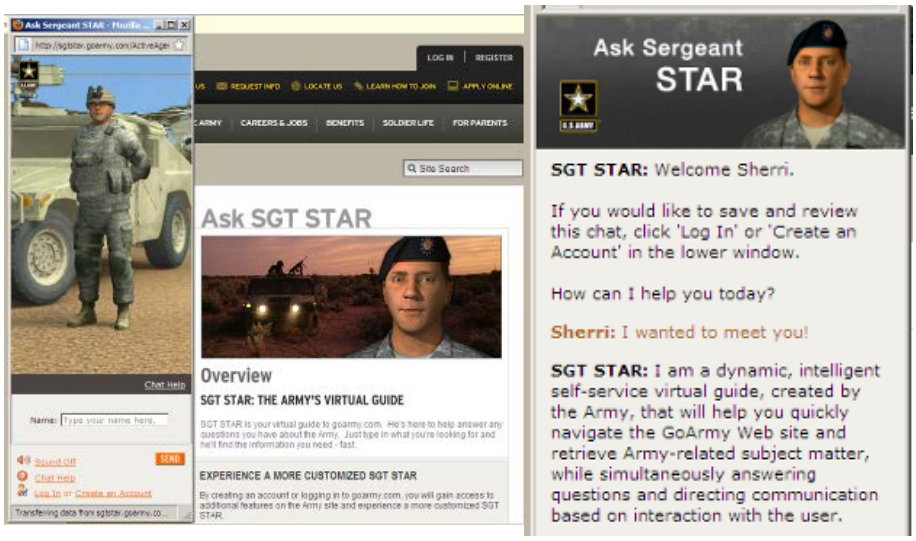

Figure 7. Sergeant Star, United States Army

When Sgt. Star was first launched, the time users stayed on the website tripled (Donnelly, 2006). Users are not required to register to talk with Sgt. Star and their names aren't placed on a mailing list after engaging with him. In addition, when the user is ready to say goodbye, so is Sgt. Star. He doesn't try to persuade the user to stay online. This is a key aspect to Sgt Star's appeal. Users are hesitant to provide information for fear their email inboxes will be flooded with spam and solicitations. In addition, the fear of being pressured to join is eliminated, allowing the user to freely investigate what the Army has to offer.

All the previously mentioned uses of avatar-based technology require the utilization of Artificial Intelligence and Natural Language Processing technologies. As indicated earlier, these are not new terms. According to Charles Rich and Candace L. Sidner (Rich & Sidner, 2009), Artificial Intelligence was predicted to play a much bigger role in the daily lives of humans in 2011 than it actually does. However, it is not to be forgotten or cast aside. The need for what Artificial Intelligence can deliver is here.

Taylor (2009) studied whether a static avatar had an effect on users' social presence when obtaining online answers on Yahoo and found the following:

> Interpreted most literally and narrowly, these results certainly suggest that if one wants a question posted online to be answered, that question should be accompanied by an avatar. More broadly, the results underscore the value of avatars as part of various online forums organized around social support and helping. (p. 19)

Nowak and Biocca (2003) performed a study of the influence of anthropomorphism on presence, co-presence, and social presence in virtual environments. They found that "…people respond socially to both human and computer-controlled entities, and that the existence of a virtual image increases telepresence" (Nowak & Biocca, 2003, p. 481)

When avatars are created to be human-like, users are more likely to develop a connection or a relationship with the avatar (Morrison, 2009). However, Morrison also states "A key component of any successful training or education effort is believability. To learn, students must perceive some level of trustworthiness in the information presented to them regardless of who, or what, is the instructor" (p. 298)**.** This holds true for student assistance. The students must connect with AISA and feel comfortable that the information the application provides is correct in order to engage. If students don't engage with AISA, the likelihood of students using the services decreases. AISA must have the ability to interact with students much like Sgt. Star or Sgt. Blackwell in order to maximize usage and effectiveness. Systems that more easily and accurately provide information to the user will create a better informed student population while simultaneously reducing employee time spent addressing frequently asked questions. The more

accurate, appealing, and interactive the application, the more desirable the application will be to the student.

Summary

With the increasing advances in avatar-based technology, results can be provided that meet and exceed user expectations increasing the use and development of conversational agent technologies. With the ability to simulate human behavior and non-verbal conversations, the potential is endless. The idea that virtual agents could someday replace customer service representatives was considered in the Debate Room on Bloomberg.com's Businessweek website (Gaydos, 2010).

Replacing human positions may be in the future but possibly not as far into the future as one might think. Regardless, it is time to re-think how to engage and connect with users online. In the past, media usability referred to eliminating the number of clicks and limiting the amount of information to make it easier to find desired content. However, media usability is evolving from making it easier for the user to engaging the user. Interaction, engagement, accuracy, and accessibility are key features needed for websites to meet expectations of current and upcoming Internet users.

CHAPTER III. RESEARCH METHODOLOGY

Included in this chapter is a restatement of the purpose of this study, the research questions, participant selection, research design, data collection and analysis, Human Subject Review Board information, timeline, and budget.

Restatement of the Purpose

The purpose of this study was to research the potential implementation of an Agent for Interactive Student Assistance (AISA) application in Bowling Green State University's (BGSU's) College of Technology and its impact on student engagement and recruitment. The independent variable was defined as an interactive, human-like, avatar-based online student assistance application with voice and text recognition that provides answers to students' most frequently asked questions. The avatar would provide cognitive responses using voice and non-verbal communication with a 90% accuracy rate. The dependent variables were defined as students' perceptions of engagement and the impact on recruitment. The methodology included a survey of College of Technology undergraduate and graduate students (2009/2010 and 2010/2011 academic years). Comparisons of students' preferences regarding AISA were made between face-to-face, face-to-face transfer, and online student participants.

Research Questions

1. Would College of Technology students utilize an Agent for Interactive Student Assistance (AISA) application to obtain answers to frequently asked questions?
2. Would students' sense of engagement be affected by using an Agent for Interactive Student Assistance (AISA) application versus face-to-face interaction to obtain answers to frequently asked questions?

3. Would the existence of an Agent for Interactive Student Assistance (AISA) application affect students' perceptions of the College of Technology impacting their decision to enroll in a College of Technology program?
4. How do the results of this study differ between face-to-face, face-to-face transfer, and online students?

Participant Selection

BGSU College of Technology undergraduate and graduate students during the 2009/2010 and 2010/2011 academic years were the population of this study consisting of 940 students. This population was selected as they are familiar with College of Technology students' needs, the information they need to obtain, how they obtain the information, and the current processes to do so. The population included face-to-face, face-to-face transfer, and online students. The list of students in the population was obtained from BGSU's Registration and Records office. All 2009/2010 and 2010/2011 College of Technology students were sent the survey allowing each student equal opportunity to participate in the study. Percentages of the population groups (face-to-face, face-to-face transfer, and online,) were compared with the respondents to determine a response rate overall and by group.

Research Design

The approach of this study was quantitative, post positivist with an expected outcome in the form of an alternate hypothesis tested against a null hypothesis. One survey was administered to the population of undergraduate and graduate students. Since an existing survey instrument could not be found to provide the desired data to answer the research questions, a customized, cross-sectional survey was used for this study.

The survey was administered electronically via Survey Monkey. Those surveyed had 2 weeks to respond to the survey. Two reminders were sent to the population to encourage participation.

The survey addressed the independent variable AISA (Agent for Interactive Student Assistance) and the dependent variables student engagement and recruitment. For the survey, it was assumed AISA would have the following capabilities:

- Voice and text recognition
- Highly developed search function and database providing the ability to answer administrative-related questions with a 90% accuracy rate
- Easy mobile and computer access with applications for both iPhone OS and Android platforms
- MAC and PC compatible

Table 1 demonstrates how the survey questions were categorized according to the variables.

Table 1 *Variables and Survey Questions*

Variable Name	Research Question(s)	Item on Survey
Independent Variable: Avatar Student Assistance (AISA) application	**Question 1**: Would College of Technology students utilize an Agent for Interactive Student Assistance (AISA) application to obtain answers to frequently asked questions? **Question 4**: How do the results of this study differ between transfer, online, and traditional students?	See questions 1, 2, 3, 4, 5, 6, 7, 8, 16
Dependent Variable 1: Student Engagement	**Question 2**: Would students' sense of engagement be affected by using an Agent for Interactive Student Assistance (AISA) application versus face-to-face interaction to obtain answers to	See questions 9, 10, 11. 12, and 13

	frequently asked questions?	
Dependent Variable 2: Student Recruitment	**Question 3**: Would the existence of an Agent for Interactive Student Assistance (AISA) application affect students' perceptions of the College of Technology impacting their decision to enroll in a College of Technology program?	See questions 14 and 15

Testing and reliability. The custom survey was field-tested by administering to 10 individuals outside of the College of Technology. This was to not diminish from the College of Technology student population and sample of the study. Revisions after the field test were made based on feedback from the test respondents.

Data collection and analysis.

Null Hypothesis 1: An Agent for Interactive Student Assistance (AISA) application would have a negative impact on student engagement or a negative impact on student recruitment.

Alternate Hypothesis 1: An Agent for Interactive Student Assistance (AISA) application would not decrease students' perception of engagement and it would not negatively impact recruitment.

The data were collected and separated by online students in 100% web-based programs, face-to-face students in on-campus programs, and face-to-face transfer students in on-campus programs. An overall analysis was conducted on all participants as well as on each group separately. The number of the respondents was compared to the population to determine a response rate. The answers for each survey question were grouped according to Table 1 to determine frequency of answers for each research question. The survey answers from all three

sub-groups were analyzed to determine an overall conclusion based on the null and alternate hypotheses. Bias or reliability issues were analyzed and reported. A descriptive analysis of the results is provided as well as this researcher's interpretation and explanation of the interpretation. Based on the hypothesis testing, inferences were made on the population with consideration given for possible bias.

Human Subjects Review Board. The research methodology and instruments were submitted and approved by the Human Subjects Review Board (Appendix A) prior to conducting the study.

Timeline. The following timeline was followed to administer the study:

Submission to HSRB	8/1/2011 through 8/22/2011
Survey/Research	8/21/2011 through 9/5/2011
Data Analysis	9/5/2011 through 9/25/2011

Budget. The budget associated with this study includes the cost of Survey Monkey, Sitepal, and data analysis software.

CHAPTER IV. POPULATION AND RESULTS ANALYSIS

Population Demographics

Surveys were emailed to 940 2009/2010 and 2010/2011 College of Technology students. As indicated in Figure 8, 451 of the population were face-to-face students, 351 were face-to-face transfer students, and 138 were online students.

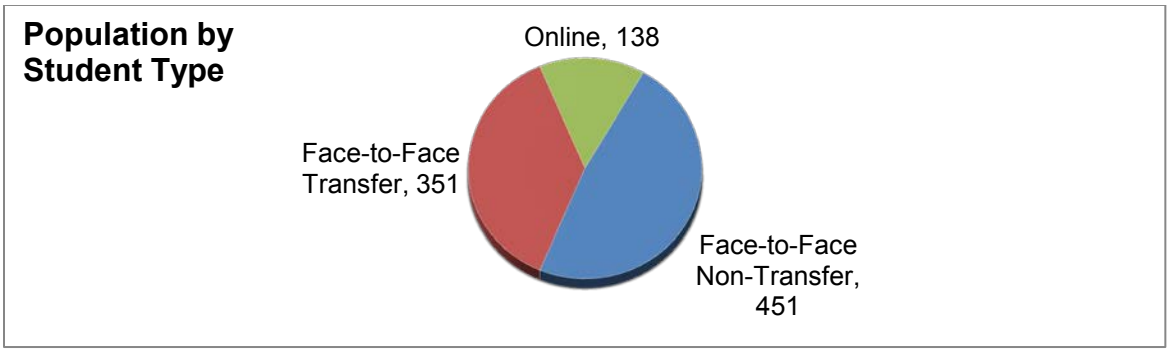

Figure 8. Population by Student Type

Additional demographics of the population include:

- Fifty-nine (59) of the 940 invitees were graduate students and 881 were undergraduate students.
- Seventy-two percent (72%) of the invitees were male and 28% were female as shown in Figure 9.
- A majority of the population was in the 18-23 and 24-29 age groups as shown in Figure 10.
- Figure 11 demonstrates that a majority of the younger age groups were face-to-face students while the majority of older age groups were online students.
- Students from various College of Technology majors were invited to participate as shown in Figure 12.

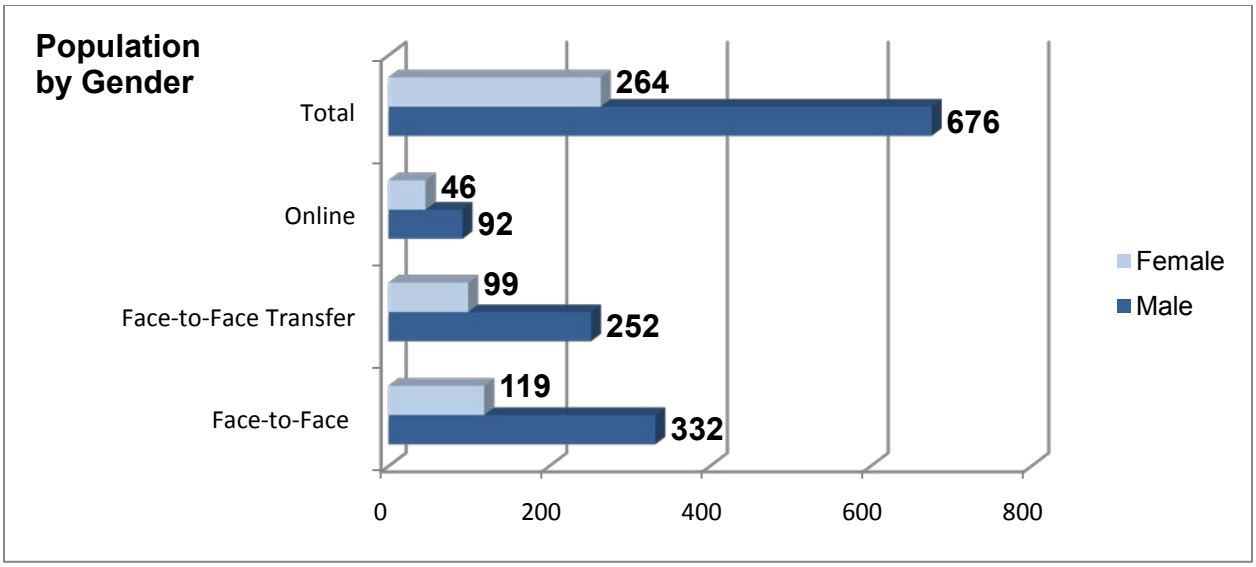

Figure 9. Population by Gender

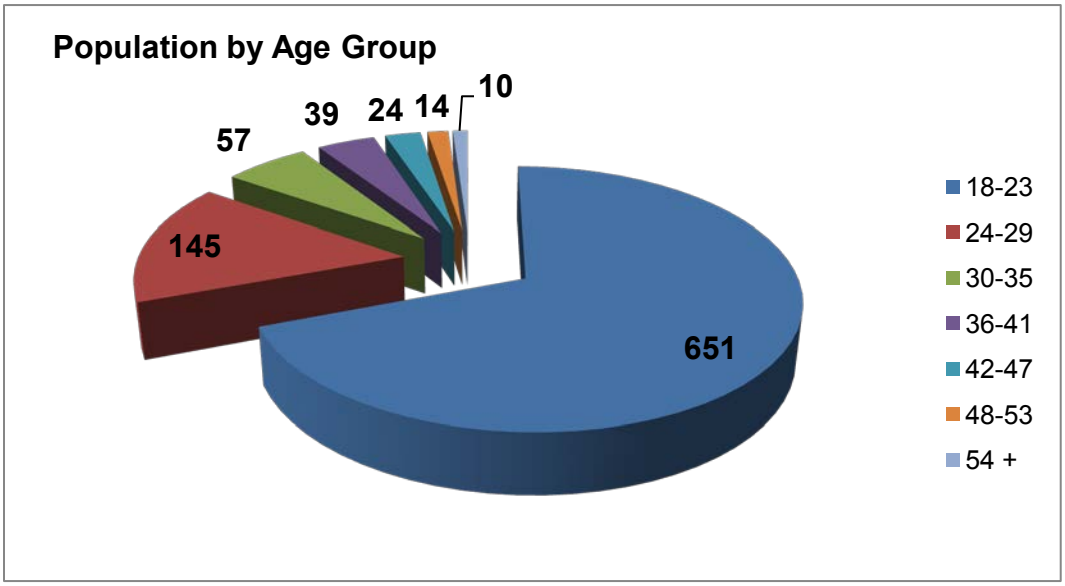

Figure 10. Population by Age Group

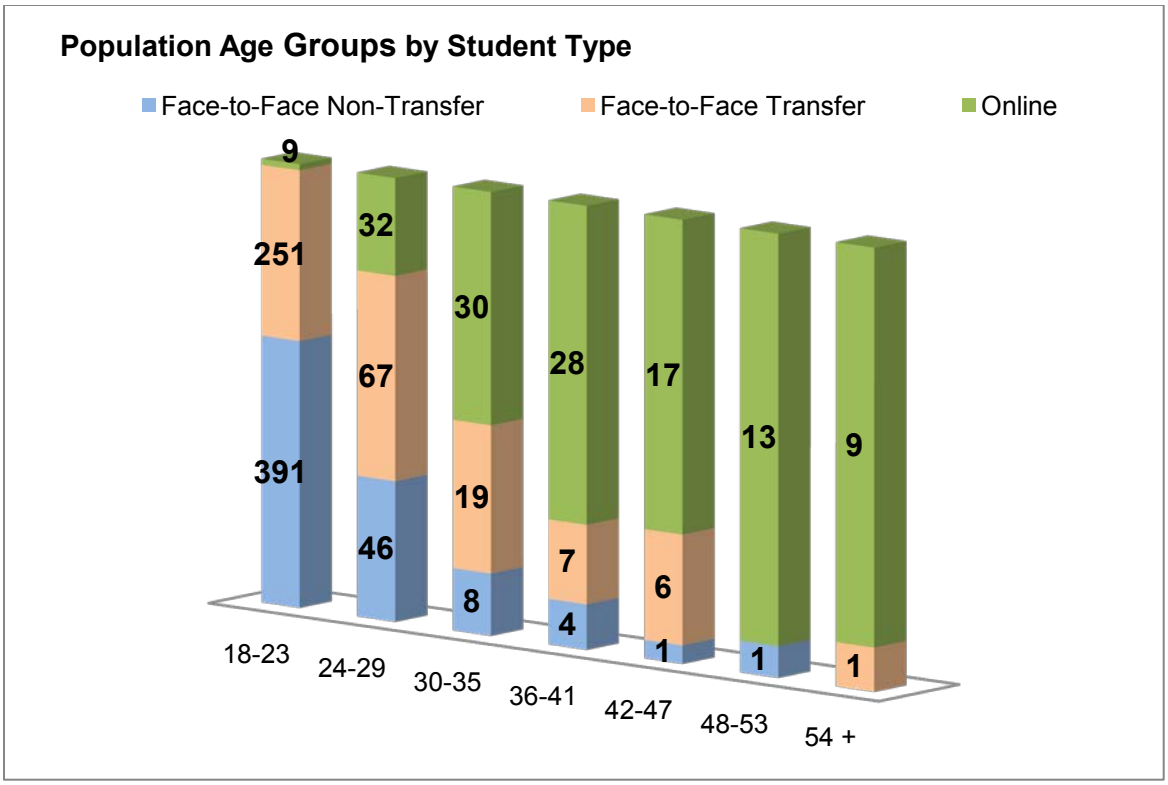

Figure 11. Population Age Groups by Student Type

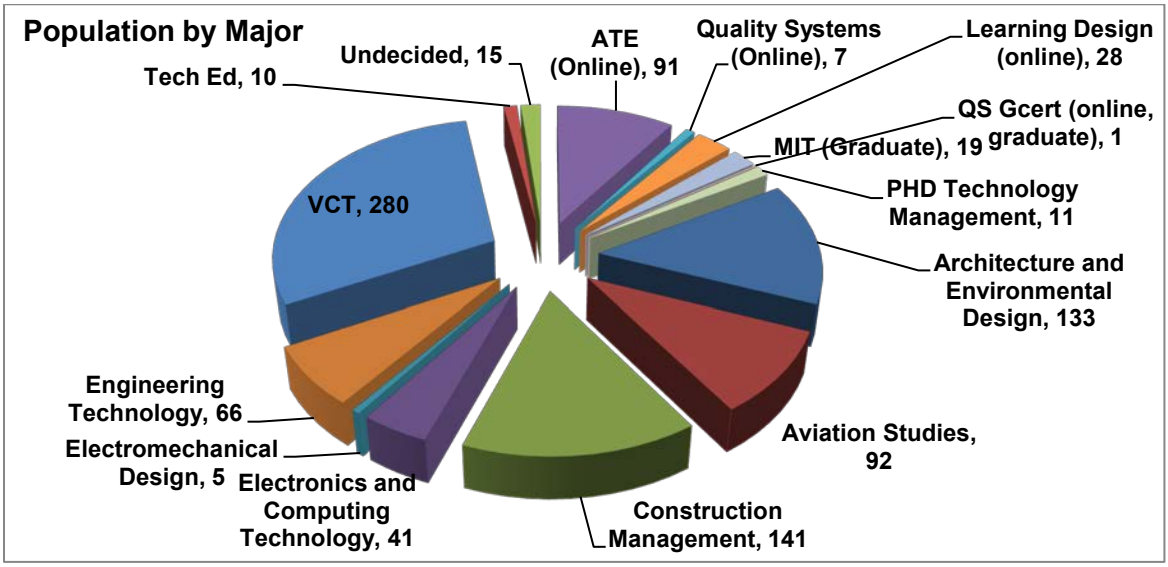

Figure 12. Population by Major

Analysis of the Results

Overall, 9% of the population participated by completing and submitting the survey. As shown in Figure 13, 85 invitees participated in the survey. Twenty three (23) participants were face-to-face students for a response rate of 5%. Nine (9) of the participants were face-to-face transfer students with a response rate of 3%. Fifty-three (53) participants were online students for a response rate of 38%.

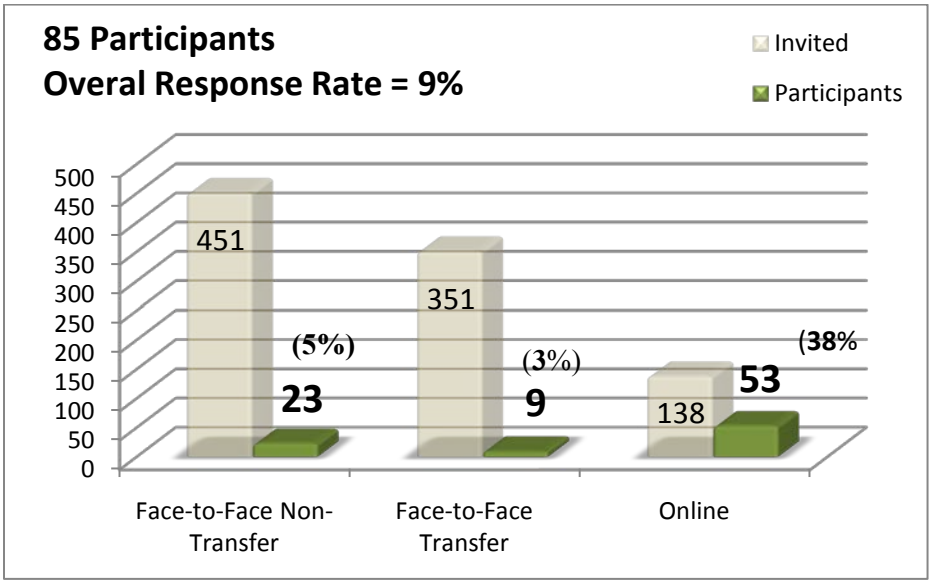

Figure 13. Response Rate

Participant demographics. The 85 respondents were asked to provide their student type (face-to-face, face-to-face transfer, or online student), age, gender, and College of Technology major.

Student type. Sixty two (62%) of the respondents were online students, 11% face-to-face transfer students, and 27% face-to-face non-transfer students.

Age. There were respondents from every age group with the majority of responses from students ages 18 through 41. Figure 14 shows the number of responses from each age group.

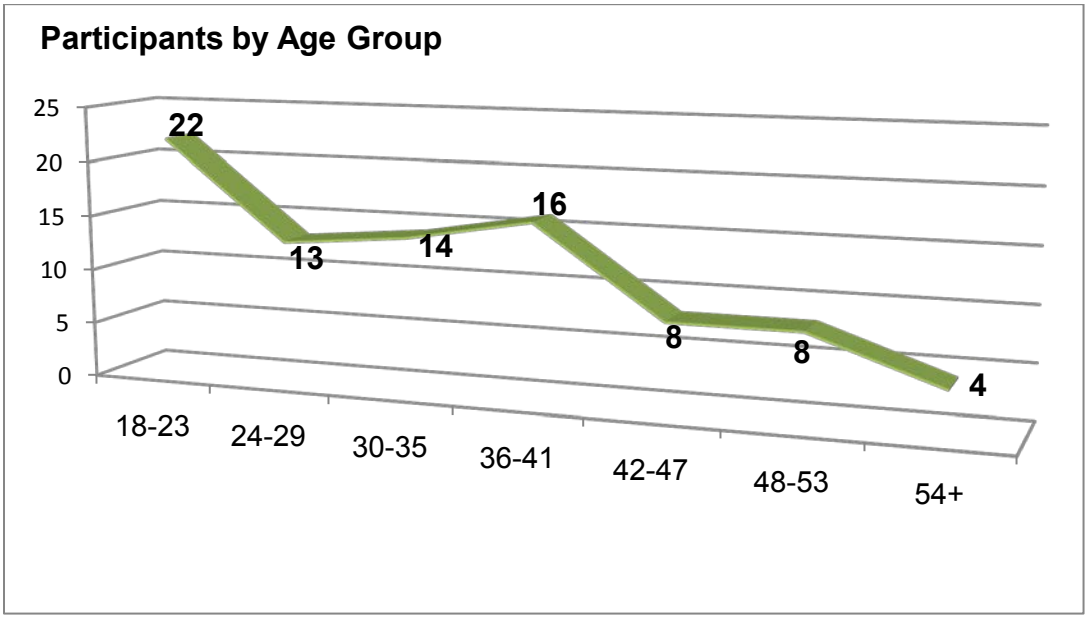

Figure 14. Participants by Age Group

A majority of the respondents in the younger age groups were face-to-face students while a majority of the older age groups were online students as shown in Figure 15.

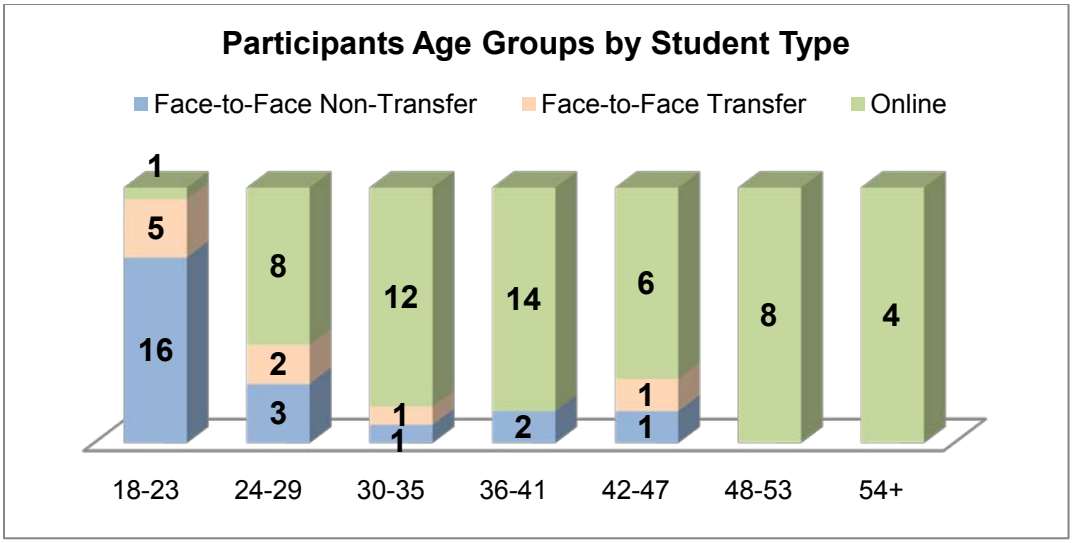

Figure 15. Participants by Age Groups and Student Type

Gender. Sixty percent (60%) of respondents were male and 40% female. Figure 16 shows the breakdown of gender among respondents' student type.

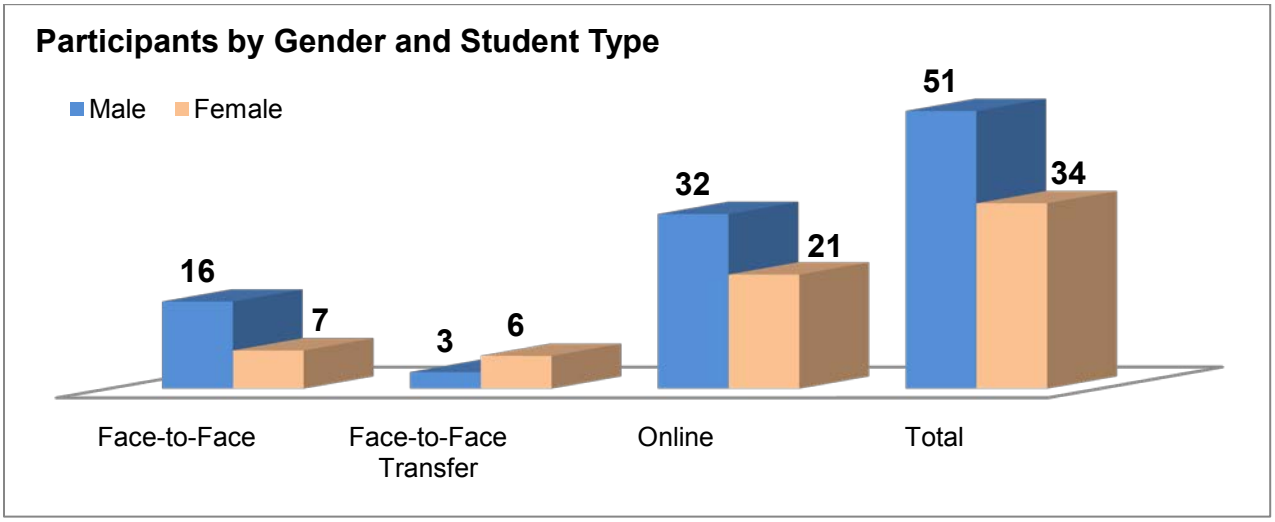

Figure 16. Participants by Gender and Student Type

Major. Respondents represented various College of Technology majors with 48% from the online undergraduate degree Advanced Technological Education. Figure 17 shows the breakdown of participants by major.

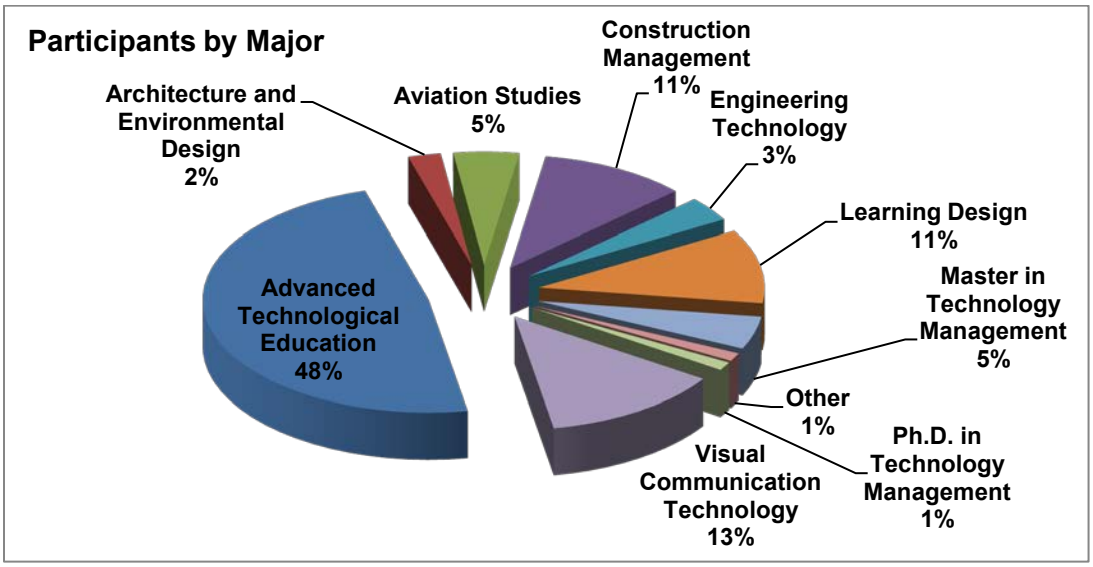

Figure 17. Participants by Major

Graduate vs. undergraduate. The College of Technology major was used to determine if the participant was an undergraduate or graduate student. Fourteen (14) graduate students and 71 undergraduate students participated in the survey.

Survey results. Participants were asked to complete 15 quantitative questions and one qualitative question. All 85 respondents answered each of the 15 quantitative questions and 51 respondents answered the one qualitative question.

Participants were asked how they currently obtain answers to frequently asked questions pertaining to BGSU's College of Technology. Eighty-eight percent (88%) indicated they use email or a website to find answers to their frequently asked questions with 56% of those using email. Eleven percent (11%) said they use the phone or face-to-face conversation. One percent (1%) indicated "other" and specified the following: "I often use phone and/or face-to-face when email does not suffice."

A breakdown of responses based on student type indicates that face-to-face and online students both use email and websites as their primary means to find answers to their frequently asked questions. Seventy-eight percent (78%) of face-to-face respondents use email or a website and 94% of the online respondents use email or a website. Twenty-eight percent (28%) of the face-to-face respondents were transfer students.

When asked who students most often contact to obtain answers to their frequently asked questions, responses favored staff personnel over faculty though the percentage was close with 40% indicating staff and 36% indicating faculty.

Five of the six respondents that indicated "other" as their response to this question added the comments shown in Table 2.

Table 2 *Who Students Contact – Other Responses*

Student Type	Other Response
Face-to-Face Transfer	I usually do not ask, but if I have a question I would contact the staff, secretaries, or office personnel.
Online	Depending on the question: I have not needed to ask many "FAQ" - Sherrie by far has been the most helpful (even if it was to direct me to the correct person). If it was a question for my advisor I would email him directly.
Online	Sherri Ogden
Online	Sherri Ogden
Face-to-Face	A good mix of both faculty and staff.
Online Student	I ask staff and faculty depending on the question.

When asked if participants would utilize an Agent for Interactive Student Assistance (AISA) application, 91% indicated they would or might use AISA as shown in Figure 18.

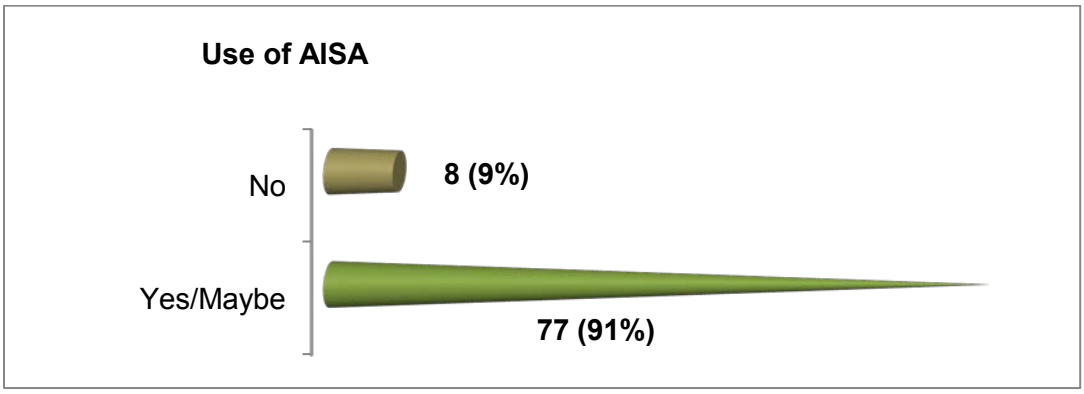

Figure 18. Use of AISA

Forty-nine percent (49%) of participants indicated they might use AISA if given the opportunity and 41% indicated they would use AISA. Nine percent (9%) indicated they would not use AISA. A breakdown of usage by student type is shown in Table 3.

Table 3 *Use of AISA by Student Type*

Student Type	Yes	Maybe	No
Face-to-Face	35%	**48%**	17%
Face-to-Face Transfer	**44%**	**44%**	11%
Online	43%	**51%**	6%
Total	41%	**49%**	9%

Figure 19 shows the use of AISA results by age group. The age groups of students indicating they would or might use AISA are 24-29, 42-47, and 48-53 with 100% in each age group. Of the 9% indicating they would not use AISA, respondents were in the 18-23, 30-35, 36-41, and 54 or over age groups. The lowest percentages indicating they would use AISA are in the 18-23 (77%) and 54 or over (75%) age groups.

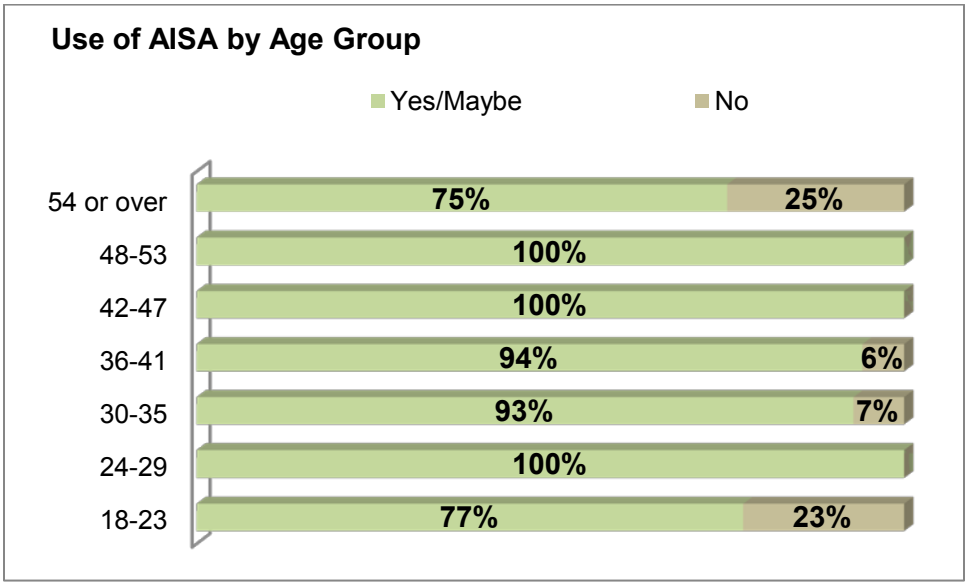

Figure 19. Use of AISA by Age Group

Participants were asked how often they would use the AISA application. The majority of respondents (65%) indicated they would use the application occasionally. Seven percent (7%) indicated they wouldn't use it at all, and 1% indicated they would use it frequently.

Of the 77 respondents that indicated they might or would use AISA, 55 (71%) said they would use it occasionally, 8 (10%) indicated they would use it often, 1 (1%) indicated they would use it frequently, 12 (16%) indicated they wouldn't use it very often, and 1(1%) indicated they wouldn't use it. Table 4 illustrates indication of use broken down by frequency of use.

Table 4 *AISA Frequency of Use*

Participants indicating they would or might use AISA	Yes/Maybe	No
I would use it frequently	1 (1%)	0
I would use it occasionally	**55 (71%)**	0
I would use it often	8 (10%)	0
I wouldn't use it	1 (1%)	5 (63%)
I wouldn't use it very often	12 (16%)	3 (37%)
Total	77 (91%)	8 (9%)

Participants were asked their level of satisfaction with the current response time to receive answers to their frequently asked questions. Thirteen percent (13%) of respondents were very satisfied, 45% were satisfied, 33% were somewhat satisfied, 7% were unsatisfied, and 2% were very unsatisfied.

Of those that use email to obtain answers to their frequently asked questions, 54% were satisfied or very satisfied with the current response time. Of those that use a website, 65% were satisfied or very satisfied. A breakdown is illustrated in Table 5.

Table 5 *Response Time Satisfaction*

Method to obtain answers	Very satisfied	Satisfied	Somewhat satisfied	Unsatisfied	Very unsatisfied
Email	11%	**43%**	36%	9%	0%
Face-to-Face	33%	17%	**50%**	0%	0%
Other (please specify)	0%	0%	**100%**	0%	0%
Phone	**33%**	**33%**	0%	0%	**33%**
Website	10%	**55%**	26%	6%	3%
Grand Total	13%	45%	33%	7%	2%

When asked to indicate their preferred method to obtain answers to their frequently asked questions, 49% of respondents indicated email was their preferred method. Thirty-two (32%) preferred a website, 13% preferred face-to-face interaction, 5% preferred using a telephone, and 1% preferred some type of social media. A comparison of the three groups revealed that face-to-face students prefer a website and email equally with in-person contact as a close second. Online

and transfer students prefer email with a website in second place. Table 6 illustrates the breakdown by student type.

Table 6 *Preferred Method to Obtain Answers to Frequently Asked Questions*

	Website	**Email**	**Phone**	**Face-to-Face**	**Social Media**
Face-to-Face	**8**	**8**	0	7	0
Face-to-Face Transfer	1	**5**	0	3	0
Online	18	**29**	4	1	1
Total	27	42	4	11	1

Table 7 compares age groups and illustrates that all ages prefer email to obtain answers to their frequently asked questions with the exception of those participants in the 42-47 age group who prefer using a website.

Table 7 *Method to Obtain Answers to Frequently Asked Questions by Age Group*

Preferred Method for Frequently Asked Questions	18-23	24-29	30-35	36-41	42-47	48-53	54 or over	Grand Total
Email	**9**	**9**	**7**	**10**	1	**4**	**2**	**42**
Website	6	2	6	5	**5**	2	1	27
Face-to-Face	7	2			1	1		11
Phone			1	1		1	1	4
Social Media (ex: Facebook or YouTube)					1			1

Participants were asked if an AISA application was available would they also want AISA to be able to answer classroom-related inquiries such as questions regarding homework assignments. Forty-seven percent (47%) indicated they would want AISA to answer classroom-related questions while 40% indicated they might. Thirteen percent (13%) indicated they would not want AISA to answer classroom-related questions.

When asked how students think their sense of engagement with the College of Technology would be affected, 46% indicated they did not think they would experience any

impact. However, as indicated in Table 8, analysis by student type shows 52% of the face-to-face students would feel less engaged while a majority of the transfer and online students indicated they would experience no impact on their sense of engagement.

Table 8 *Impact of AISA on Sense of Engagement*

Student Type	A lot less engaged	Less engaged	No difference	More engaged	A lot more engaged
Face-to-Face	4%	**52%**	35%	9%	0
Face-to-Face Transfer	0%	22%	**67%**	11%	0
Online	6%	30%	**47%**	17%	0
Total	5%	35%	**46%**	14%	0

Further analysis indicates that more students in the 18-23 and 24-29 age groups would feel less engaged while those in the 30 and over age groups would not feel an impact on their engagement. Table 9 illustrates the affect of AISA on respondents' sense of engagement by age group.

Table 9 *Sense of Engagement by Age Group*

Sense of Engagement	18-23	24-29	30-35	36-41	42-47	48-53	54 +	Grand Total
A lot less engaged	0	1	0	0	1	2	0	4
Less engaged	**11**	**7**	3	4	2	1	**2**	30
No difference	9	4	**10**	**8**	**3**	**4**	1	**39**
More engaged	2	1	1	4	2	1	1	12
A lot more engaged	0	0	0	0	0	0	0	0

Participants were also asked to indicate why they would feel less or more engaged. Fifty-one of the 85 participants responded to this question. The fifty-one respondents' answers to the previous question indicating level of engagement are as follows: 4 (8%) indicated they would feel a lot less engaged, 26 (51%) indicated they would feel less engaged, 8 (16%) said they would be more engaged, and 13 (26%) stated they would experience no impact in their sense of engagement.

Online students that indicated they would feel less engaged expressed accuracy of the application as a concern as well as the possibility of deepening a disconnect with the college that already exists for online students. Face-to-face students felt the opportunity to develop relationships through human contact would be diminished. Some respondents from both groups didn't prefer an avatar-based interface. The qualitative answers to this question are included in Appendix B.

The online students indicating they would be more engaged expressed easier access would outweigh any lack of personal connection and that using the latest technology while learning about technology was a benefit. Some respondents felt the means in which they obtain information wasn't as critical as obtaining the information, and it would have no effect on their sense of engagement. One face-to-face student respondent indicated they do not ask many questions and AISA may provide a sense of freedom to ask questions thus increasing engagement.

When asked if an AISA application would have an impact on the students' decisions to enroll in a BGSU College of Technology program, 55% indicated it would have no impact. Figure 20 shows the breakdown if impact on recruitment.

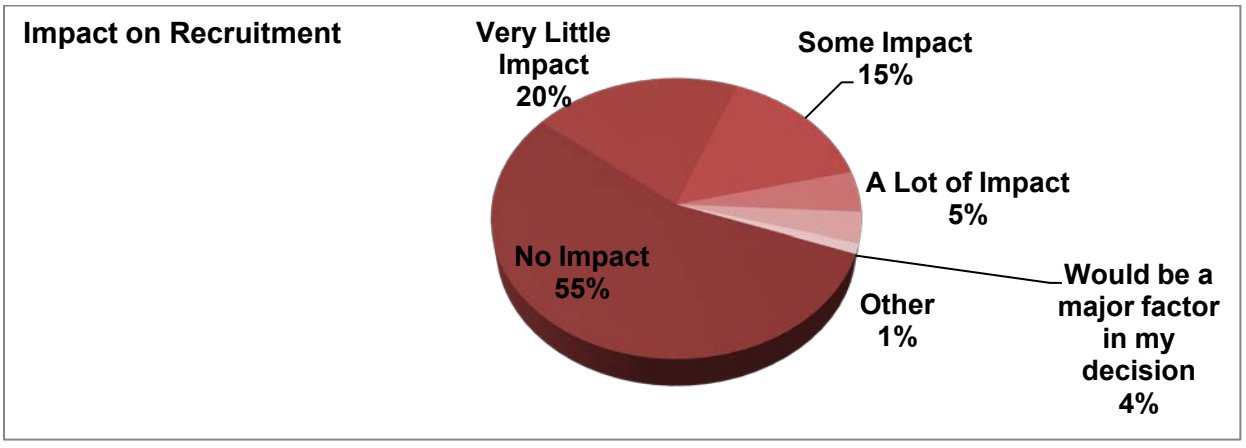

Figure 20. AISA's Impact on Recruitment

When asked what kind of impact AISA would have on their decision to enroll, 73% said AISA would have no impact and 20% indicated it would make them more interested in enrolling in BGSU's College of Technology.

An analysis across all three student groups indicates that the majority in each group do not think AISA would have an impact on their decision to enroll. Twenty percent (20%) of the students would be more interested in enrolling in BGSU's College of Technology if an AISA application was available to them. Of that 20%, 59% were online students, 35% were face-to-face students, and 6% were transfer students as illustrated in Table 10.

Table 10 *Impact on Recruitment*

Student Type	No Impact	More interested	Less Interested	Other	Total
Face-to-Face	**15**	6	2	0	23
Face-to-Face Transfer	**8**	1	0	0	9
Online	**39**	10	3	1	53
Total	**62**	17	5	1	85

When asked how participants felt about having an AISA application available to them to find answers to their frequently asked questions, 38% felt it would be OK, 45% liked the idea, and 10% didn't like the idea. Seven percent (7%) didn't care either way. The results are illustrated in Figure 21.

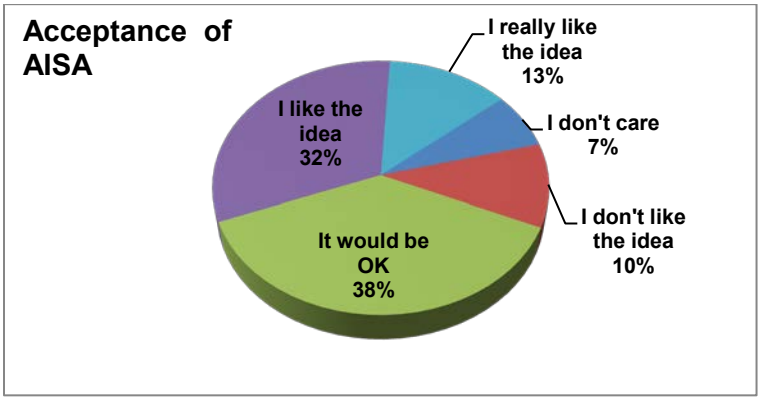

Figure 21. Acceptance of an AISA Application

An analysis by student group indicates that 66% of those that favor the idea of having an AISA application are online students. Table 11 provides a breakdown of answers by student type.

Table 11 *Do Students Like the Idea of Having an AISA Application?*

Student Type	I don't care	I don't like the idea	It would be OK	I like the idea	I really like the idea
Face-to-Face	2	4	**7**	**7**	3
Face-to-Face Transfer	2	0	**3**	2	2
Online	2	5	**22**	18	6
Total	6	9	**32**	27	11

Hypotheses testing. BGSU's College of Technology undergraduate and graduate students during the 2009/2010 and 2010/2011 academic years were the population of this study consisting of 940 students. Fifty-three (53) online students and 32 face-to-face students responded to the survey used in this study for a total of 85 participants and a 9% response rate.

The null and alternate hypotheses addressed in this research were as follows:

Null Hypothesis: An Agent for Interactive Student Assistance (AISA) application would have a negative impact on student engagement or a negative impact on student recruitment.

Alternate Hypothesis: An Agent for Interactive Student Assistance (AISA) application would not decrease students' perception of engagement and it would not negatively impact recruitment.

Hypotheses tests were performed based on overall responses to survey question 12 which addressed engagement and survey question 15 that addressed recruitment. Limitations or bias are included in the Limitations of the Study section in Chapter I of this thesis. Based on the

hypotheses testing, inferences were made on the population with consideration given for possible bias.

For testing purposes, the null and alternate hypotheses were separated into two null and two alternate hypotheses to address impact on engagement and recruitment separately.

Null Hypothesis 1 (H_{o1}): An Agent for Interactive Student Assistance (AISA) application would have a negative impact on student engagement.

Alternate Hypothesis 1 (H_{a1}): An Agent for Interactive Student Assistance (AISA) application would not have a negative impact on student engagement.

Null Hypothesis 2 (H_{o2}): An Agent for Interactive Student Assistance (AISA) application would have a negative impact on student recruitment.

Alternate Hypothesis 2 (H_{a2}): An Agent for Interactive Student Assistance (AISA) application would not negatively impact student recruitment.

Assuming a normal standard distribution, individual one proportion Z tests were performed to test the null hypotheses that an AISA application would have a negative impact on students' sense of engagement, interest in BGSU's College of Technology, and to determine inferences on the population based on a 95% confidence interval.

Hypothesis Test 1 on Engagement – All Respondents.

Of the 85 participants in the study, 34 answered survey question 12 indicating they would feel less engaged or a lot less engaged by utilizing an AISA application. This represents 40% of the sample. Application of a one proportion Z test proved to be statistically significant ($p = .0326$) as indicated in Table 12. Therefore, there is sufficient evidence at the 95% level to reject the null hypothesis and infer the overall population would not experience a negative impact on their sense of engagement.

Table 12 *Null Hypothesis 1 Test – Impact on Engagement All Respondents*

Hypothesis 1 test results:
p : proportion of successes for population
H_{01} : p = 0.5
H_{A1} : p < 0.5

Proportion	Count	Total	Sample Prop.	Std. Err.	Z-Stat	P-value
p	34	85	0.4	0.054232616	-1.8439089	0.0326

Hypothesis Test 2 on Recruitment – All Respondents.

Of the 85 participants in the study, six answered survey question 15 indicating they would be less interested in enrolling in a BGSU College of Technology program if an AISA application was available. The six responses represent 7% of the sample. Application of a one proportion Z test proved to be statistically significant (p = <0.0001) as indicated in Table 13. Therefore, there is sufficient evidence at the 95% level to reject the null hypothesis and infer the population would not be less interested in enrolling in a BGSU College of Technology program due to the existence of an AISA application.

Table 13 *Null Hypothesis 2 Test – Impact on Recruitment All Respondents*

Hypothesis 2 test results:
p : proportion of successes for population
H_{02} : p = 0.5
H_{A2} : p < 0.5

Proportion	Count	Total	Sample Prop.	Std. Err.	Z-Stat	P-value
p	6	85	0.07058824	0.054232616	7.9179616	<0.0001

Given that 62% of respondents in the sample were students enrolled in online programs, overall conclusions on the population could reflect a bias toward the online student population. Therefore, this researcher concluded it would be beneficial to conduct further testing separately on students enrolled in face-to-face programs and students enrolled in online programs to

determine if separate inferences on the online and face-to-face student populations could be made.

Hypothesis Test 3 on Engagement – Online Student Respondents.

The following null and alternate hypotheses were added to this study to determine if the population of online students' sense of engagement would be negatively impacted:

Null Hypothesis 3 (H_{o3}): An Agent for Interactive Student Assistance (AISA) application would have a negative impact on online students' engagement.

Alternate Hypothesis 3 (H_{a3}): An Agent for Interactive Student Assistance (AISA) application would not have a negative impact on online students' engagement.

Of the 85 participants in the study, 53 were students enrolled in online programs. Of the 53 online student participants, 19 answered survey question 12 indicating they would feel less engaged or a lot less engaged by utilizing an AISA application. The 19 responses represent 36% of the online students participating in the sample. Application of a one proportion Z test proved to be statistically significant (p = .0197) as indicated in Table 14. Therefore, there is sufficient evidence at the 95% level to reject the null hypothesis and infer the population of online students would not experience a negative impact on their sense of engagement.

Table 14 *Null Hypothesis 3 Test – Impact on Online Student Engagement*

Hypothesis 3 test results:
p : proportion of successes for population
$H_{0\,3}$: p = 0.5
$H_{A\,3}$: p < 0.5

Proportion	Count	Total	Sample Prop.	Std. Err.	Z-Stat	P-value
p	19	53	0.35849056	0.06868028	-2.0604084	0.0197

Hypothesis Test 4 on Engagement – Face-to-Face Student Respondents.

The following null and alternate hypotheses were added to this study to determine if the population of face-to-face students' sense of engagement would be negatively impacted:

Null Hypothesis 4 (H_{o4}): An Agent for Interactive Student Assistance (AISA) application would have a negative impact on face-to-face students' engagement.

Alternate Hypothesis 4 (H_{a4}): An Agent for Interactive Student Assistance (AISA) application would not have a negative impact on face-to-face students' engagement.

Of the 85 participants in this study, 32 were students enrolled in face-to-face programs. Of the 32 face-to-face student participants, 15 answered survey question 12 indicating they would feel less engaged or a lot less engaged by utilizing an AISA application. The 15 responses represent 47% of the face-to-face students participating in the sample. Application of a one proportion Z test did not prove to be statistically significant (p = .3618) as indicated in Table 15. Therefore, there is not sufficient evidence at the 95% level to reject the null hypothesis and infer the population of face-to-face students would not experience a negative impact on their sense of engagement.

Table 15 *Null Hypothesis 4 Test – Impact on Face-to-Face Student Engagement*

Hypothesis 4 test results:
p : proportion of successes for population
H_{04} : p = 0.5
H_{A4} : p < 0.5

Proportion	Count	Total	Sample Prop.	Std. Err.	Z-Stat	P-value
P	15	32	0.46875	0.088388346	-0.35355338	0.3618

Hypothesis Test 5 on Recruitment – Online Student Respondents.

The following null and alternate hypotheses were added to this study to determine if recruitment of the online student population would be negatively impacted by an AISA application:

Null Hypothesis 5 (H_{o5}): An Agent for Interactive Student Assistance (AISA) application would have a negative impact on online student recruitment.

Alternate Hypothesis 5 (H_{a5}): An Agent for Interactive Student Assistance (AISA) application would not have a negative impact on online student recruitment.

Of the 85 participants in the study, 53 were students enrolled in online programs. Of the 53 online student participants, four answered survey question 15 indicating they would be less interested in enrolling in a BGSU College of Technology program if an AISA application was available. The four responses represent 7% of the online students in the sample. Application of a one proportion Z test proved to be statistically significant ($p = <0.0001$) as indicated in Table 16. Therefore, there is sufficient evidence at the 95% level to reject the null hypothesis and infer the online student population would not be less interested in enrolling in a BGSU College of Technology program due to the existence of an AISA application.

Table 16 *Null Hypothesis 5 Test – Impact on Recruitment/Online Student Respondents*

Hypothesis 5 test results:
p : proportion of successes for population
$H_{0\,5}$: $p = 0.5$
$H_{A\,5}$: $p < 0.5$

Proportion	Count	Total	Sample Prop.	Std. Err.	Z-Stat	P-value
P	4	53	0.0754717	0.06868028	-6.1812253	<0.0001

Hypothesis Test 6 on Recruitment – Face-to-Face Student Respondents.

The following null and alternate hypotheses were added to this study to determine if recruitment of the online student population would be negatively impacted by an AISA application:

Null Hypothesis 6 (H_{o6}): An Agent for Interactive Student Assistance (AISA) application would have a negative impact on face-to-face student recruitment.

Alternate Hypothesis 6 (H_{a6}): An Agent for Interactive Student Assistance (AISA) application would not have a negative impact on face-to-face student recruitment.

Of the 85 participants in the study, 32 were students enrolled in face-to-face programs. Of the 32 face-to-face student participants, two answered survey question 15 indicating they would be less interested in enrolling in a BGSU College of Technology program if an AISA application was available. The two responses represent 6% of the face-to-face students in the sample. Application of a one proportion Z test proved to be statistically significant ($p = <0.0001$) as indicated in Table 17. Therefore, there is sufficient evidence at the 95% level to reject the null hypothesis and infer the face-to-face student population would not be less interested in enrolling in a BGSU College of Technology program due to the existence of an AISA application.

Table 17 *Null Hypothesis 6 Test – Impact on Recruitment/Face-to-Face Student Respondents*

Hypothesis 6 test results:
p : proportion of successes for population
H_{06} : $p = 0.5$
H_{A6} : $p < 0.5$

Proportion	Count	Total	Sample Prop.	Std. Err.	Z-Stat	P-value
p	2	32	0.0625	0.088388346	-4.9497476	<0.0001

CHAPTER V. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

This chapter summarizes the purpose of this research and the quantitative and qualitative data analyzed in Chapter IV. It also provides discussion based on the findings, identifies conclusions that can be reached as a result of the data analysis, and summarizes recommendations for future research.

The purpose of this study was to research the potential implementation of an Agent for Interactive Student Assistance (AISA) application in Bowling Green State University's (BGSU's) College of Technology and its impact on student engagement and recruitment.

Summary

Nine hundred and forty BGSU College of Technology students were invited to participate in the study by answering 16 online survey questions. There were 85 respondents with an overall response rate of 9%. Respondents were grouped by three student types: face-to-face (BGSU is the only college they attended and they are enrolled in a face-to-face program), face-to-face transfer (transferred to BGSU and they are enrolled in a face-to-face program), and online student (enrolled in an online program). Given that only 3% of the face-to-face transfer students responded, for purposes of this summary a comparison was made between face-to-face and online student types, grouping the face-to-face transfer and the face-to-face students together. Table 18 illustrates the overall results and the results grouped by students enrolled in online and face-to-face programs.

Table 18 *Data Analysis Summary*

	Overall	Online	Face-to-Face
Invited	940	138	802
Respondents	85 (9%)	53 (38%)	32 (4%)
Male Respondents	51 (60%)	32 (63%)	19 (37%)
Female Respondents	34 (40%)	21 (62%)	13 (38%)

Average Age	33	39	25
Undergraduate	71 (84%)	41 (58%)	30 (42%)
Graduate	14 (16%)	12 (86%)	2 (14%)
Would use AISA	77 (91%)	50 (94%)	27 (84%)
Would not use AISA	8 (9%)	3 (6%)	5 (16%)
Average Age that would use AISA	32	36-41	24-29
Average Age that would not use AISA	29	42-47	18-23
Would feel less engaged	34 (40%)	19 (36%)	15 (47%)
Would feel more engaged	12 (14%)	9 (17%)	3 (9%)
No impact on engagement	39 (46%)	25 (47%)	14 (44%)
Negative impact on recruitment	6 (7%)	4 (7%)	2 (6%)
Positive impact on recruitment	17 (20%)	10 (19%)	7 (22%)
No impact on recruitment	62 (73%)	39 (74%)	23 (72%)

Demographics. Questions 1, 2, 3, and 4 of the survey captured the self-reported student demographics. Students were asked their current age range, gender, College of Technology major, and student type. Below is a summary of the 85 respondent demographics:

- Fifty-three of the respondents (62%) were online students. Thirty two (38%) were face-to-face students.
- Fifty-one (60%) of the respondents were male and 34 (40%) were female.
- The average age of the respondents was 33. The average age of the online student respondents was 39 and the average of face-to-face student respondents was 25.
- 84% of the respondents were undergraduate students.

Research questions. Four research questions were addressed in this study:

1. Would College of Technology students utilize an Agent for Interactive Student Assistance (AISA) application to obtain answers to frequently asked questions?

2. Would students' sense of engagement be affected by using an Agent for Interactive Student Assistance (AISA) application versus face-to-face interaction to obtain answers to frequently asked questions?
3. Would the existence of an Agent for Interactive Student Assistance (AISA) application affect students' perceptions of the College of Technology impacting their decision to enroll in a College of Technology program?
4. How do the results of this study differ between transfer, online, and traditional students?

Research Question 1: Would College of Technology students utilize an Agent for Interactive Student Assistance (AISA) application to obtain answers to frequently asked questions. Forty-two percent **(**42%) of respondents indicated they would use AISA and 49% indicated they might for a total of 91% of the respondents. Only 9% indicated they would not use AISA. Sixty-five (65%) of the total respondents indicated they would use AISA occasionally. Eleven percent (11%) of the respondents said they would use AISA frequently or often. Forty-five (45%) of respondents indicated they liked the idea of having an AISA application and 38% indicated it would be OK. Eighteen (18%) either didn't like the idea or didn't care.

A higher percentage of respondents indicated they might use AISA as opposed to those who indicated they would use AISA. Based on the responses, this appears to be due to skepticism regarding the application's accuracy as well as the fear of diminished human contact. It is this researcher's belief that once students utilize and begin to trust the application, their hesitation would diminish. Email, an electronic means to communicate, is already the preferred method among all respondents. If students find they can obtain accurate answers more quickly by using AISA as opposed to email and that their opportunities to connect with College of

Technology personnel would not diminish, skepticism surrounding these concerns would decrease and the AISA application would become mainstream and accepted.

Research Question 2: Would students' sense of engagement be affected by using an Agent for Interactive Student Assistance (AISA) application versus face-to-face interaction to obtain answers to frequently asked questions? Sixty percent (60%) of respondents felt they would feel no difference in their sense of engagement or would feel more engaged with the College of Technology by using an AISA application. Forty percent (40%) felt they would feel less engaged. Face-to-face students that would feel less engaged were concerned about the lack of human-to-human relationship development. Online students that would feel less engaged were concerned the existing sense of disconnect from staff and faculty would increase. They were also concerned with accuracy of the AISA application. Those that indicated they would experience no impact in engagement or would feel more engaged were mostly online students (67%) indicating the easier and flexible access would be beneficial and appreciated there would be no wait time for responses. A majority of online students, however, felt there would be no impact on their sense of engagement.

The responses by face-to-face students overall were somewhat unexpected. Given a majority of the face-to-face respondents were in the younger age groups, one might anticipate more openness to the new technology. Those having reservations about their sense of engagement overall indicated they did not want to diminish their connection with College of Technology personnel in any way. This appears to be as highly valued by the millennials as it is the older respondents. Whether students attend face-to-face or online, a strong connection with the staff and faculty is critically important. This supports research from the literature review that electronic means of communication need to be engaging, inviting, and interactive allowing

students to experience a sense of connection whether they are using email, a website, or an AISA application.

Research Question 3: Would the existence of an Agent for Interactive Student Assistance (AISA) application affect students' perceptions of the College of Technology impacting their decision to enroll in a College of Technology program? Seventy-five percent (75%) of respondents indicated an AISA application would have very little or no impact on their decision to enroll in a College of Technology program. Twenty four (24%) of respondents indicated it would have at least some impact. Twenty percent (20%) said they would be more interested in enrolling in a College of Technology program and 6% said they would be less interested. Seventy-three percent (73%) said it wouldn't affect their interest in the College of Technology.

The majority felt an AISA application wouldn't affect their interest in BGSU's College of Technology or their decision to enroll. This indicates that using new technologies as a means to communicate is not as highly considered by respondents when deciding to enroll in a BGSU College of Technology program. These responses spark an interest for further research to determine why and identify the factors that are considered.

Research Question 4: How do the results of this study differ between transfer, online, and traditional students? Twenty-seven percent **(**27%) of respondents were face-to-face students, 11% were face-to-face transfer students, and 62% were online students. Given only 9 of the 85 responses were from transfer students, for this analysis both face-to-face categories will be combined into one for a comparison between online and face-to-face students.

Ninety-four percent (94%) of online and 78% of face-to-face respondents currently use a website or email to find answers to their frequently asked questions. When asked which forms of

communication students prefer to use, 87% of online and 69% of face-to-face students indicated a website or email. None of the face-to-face respondents indicated the telephone would be their preferred method and only 8% indicated they preferred face-to-face interaction. Eight (8%) of online students indicated phone was their preferred method and 2% indicated face-to-face interaction was preferred to obtain answers to their frequently-asked questions. Ninety-seven percent (97%) of face-to-face students are at least somewhat satisfied with the current response time to receive answers to their frequently asked questions. Eighty-seven percent (87%) of online students indicated the same.

Forty percent (40%) of online students contact faculty for answers to their frequently-asked questions in comparison to 53% of face-to-face students. Fifty-three percent (53%) of online students contact staff to obtain answers to their frequently asked questions in comparison to 41% of face-to-face students.

Ninety-four (94%) of online students and 84% of face-to-face students might or would use an AISA application. Online students indicating they would not use AISA were in the 30-35, 36-41, and 54 or over age groups. Face-to-face students that indicated they would not use AISA were in the 18-23 age group. Seventy-five percent (75%) of both face-to-face and online students would use AISA at least occasionally. When asked if they would like to also use an AISA application to obtain answers to classroom related questions in addition to administrative-related questions, 87% of online and 88% of face-to-face indicated they might or would.

Nine percent (9%) of face-to-face and 17% of online students felt their sense of engagement with the College of Technology would increase with the use of an AISA application. Forty-seven percent (47%) of face-to-face and 36% of online respondents indicated they would

feel less engaged. Forty-three percent (43%) of face-to-face and 47% of online respondents indicated they would experience no difference in their level of engagement.

Seventy-four percent (74%) of online students indicated AISA would have very little or no impact on their decision to enroll in the College of Technology while 78% of face-to-face students indicated the same.

Overall, 75% of face-to-face and 87% of online students either liked the idea of having an AISA application or thought it would be OK.

Inference on the population. This section summarizes the results of the hypotheses tests using a 95% confidence interval.

Overall, hypotheses tests showed the existence and utilization of an AISA application would not diminish students' sense of engagement or their interest in enrolling in a BGSU College of Technology program.

Breakdown by student type indicated a somewhat varying result. Interest in BGSU's College of Technology would not be decreased for online students or face-to-face students if an AISA application were to exist. Online students' sense of engagement would also not be diminished. However, the null hypothesis that face-to-face students would experience a decrease in their sense of engagement could not be rejected and therefore an inference that face-to-face students would not experience a decrease in their sense of engagement could not be made.

Discussion. Analysis of the data brought forth two of the four research questions as critical points of analysis: Would the students use AISA and would they feel less engaged?

Fifteen percent (15%) of the face-to-face students indicated they would not use AISA compared to 6% of the online students. It is somewhat unexpected that 15% of the face-to-face respondents indicated they would not use AISA given all those providing such response were

between the ages of 18 and 23. Only 77% of the respondents in the 18-23 age group indicated they would use AISA. This compares to the 93%-100% in all other age groups with the exception of age 54 or over which was 75%.

Review of previous research indicates students in the younger age groups are used to getting answers to their questions quickly (Pew Research Center, 2010). This would lead one to assume that students in the younger age groups would be more welcoming of an AISA application. However, the results of this research show that of the 9% of respondents that would not use AISA, 63% were in the 18-23 age group with the remaining 37% in the 30-35, 42-47, and 54 or over age groups. Only 3% of respondents between the ages of 29 and 54 indicated they would not use AISA.

This researcher believes one contributing factor to this result is that the respondents in the older age groups were primarily online students. They are familiar with using technology to attend classes and are accustomed to using an online environment to find answers to their questions.

Other factors could have contributed as well. From the qualitative responses, this researcher wonders if some answered the questions with the assumption that AISA would replace all other interaction with faculty and staff. That was not the intent. AISA was to be presented as an additional means of support and used for frequently asked, less involved questions. It seems evident from the qualitative responses that students were not willing to sacrifice human contact for interaction with an avatar. A second possible contributing factor could be that a majority are satisfied with the current response times to obtain answers to their questions indicating they may be less willing to accept, or do not feel they are in need of, another form of communication.

The more difficult question to address is the students' sense of engagement. Some online students indicated they would be more engaged due to the flexible hours of access and the quick response time. However, divided between the face-to-face and online students were comments about human interaction and accuracy.

While a majority (60%) of respondents indicated they would experience no difference or feel more engaged by the use of AISA, it was surprising to this researcher to see that 56% of the respondents that would feel less engaged by using AISA came from the 18-23 and 24-29 age groups. Forty-two (42%) of those respondents indicated a lack of opportunity to build relationships through face-to-face contact as a reason for the decrease in their sense of engagement. Even more interesting is that 63% of those indicating the lack of relationship-building as a reason for the decrease in engagement also indicated their preferred method to get answers to their frequently asked questions is a website or email, not face-to-face. One participant indicated they like to "speak" to someone even if it is through email. Despite indicating the lack of relationship-building as a reason for decreased engagement, 88% of respondents currently use email or a website to get answers to their frequently asked questions and 92% are at least somewhat satisfied with that means of communication. Only 8% of face-to-face and 2% of online respondents indicated they prefer in-person interaction.

Interesting questions surface as a result of this data. Do students feel that email and websites are relationship-building tools? If an interactive humanoid-based application became main stream, would that also become an accepted relationship-building tool? Would it make a difference if the avatar represented a member of the faculty or staff? These are questions to ponder for future research.

It occurs to this researcher that higher education requirements of avatar-based technologies may differ from requirements demanded in retail (Holzwarth et al, 2006), online forums (Taylor, 2009), or other customer service organizations (vanKooij, 2010). The data from this research suggests a key requirement is to simulate the human experience and pay particular attention to the sense of engagement with the user. In addition, it is critical to provide accurate answers that address the questions students have. It is clear there is a direct connection between the use of AISA, sense of engagement, and trust. The sense of connection, knowledgebase, and search engine capabilities are critical aspects to a successful AISA application.

Conclusions

Overall, respondents indicated they would use an AISA application at least occasionally and a majority would not feel less engaged by doing so. Based on the results of this study, one can infer that the population of students enrolled in online programs would not experience a negative impact on their sense of engagement with the College of Technology. The same inference could not be made for students enrolled in face-to-face programs, however. Recruitment would not decrease by the existence of an AISA application in both face-to-face and online student populations. Online students seemed to be more accepting of an AISA application than face-to-face students, despite the younger age groups of the face-to-face students.

As indicated in the literature review, engagement and interactivity are required for a successful student assistance application. Other key components are trustworthiness and believability (Morrison, 2009). Eighty-one percent (81%) of students prefer and 88% utilize either email or a website to find answers to frequently asked questions. These results indicate that electronic means to finding answers to questions is preferable over in-person and phone contact for both face-to-face and online students.

Based on the respondents' comments, this study appears to support other research indicating that electronic means to obtain information is preferred but that trustworthiness, believability, interactivity, and engagement are key components to a successful avatar-based student assistance application. In addition, this research revealed that relationship-building is a key concern.

Results indicate that an AISA application would be used by students and has the potential to save employee time and money. This researcher envisions an AISA application similar to Sergeant Star (GoArmy.com) as an initial implementation providing web guidance, text recognition, and vocal responses. The initial application could be used to learn students' preferences and the detail of their frequently asked questions. This information would be used to move toward an application that simulates a web-based version of the humanoid Sergeant Blackwell (University of Southern California Institute for Creative Technologies, 2011) utilizing natural language processing and machine learning technologies to interact with body language and voice recognition with the capability to learn about the user. The application would link to BGSU's system providing log-in and storage capabilities allowing the application to record and retrieve user's preferences, intentions, and history.

The key factors of a successful application, however, must not be forgotten. Avatar-based technology for higher education must not take away from the human contact students expect but add to the flexibility of obtaining answers to less difficult, frequently asked questions easily, quickly, and timely.

Recommendations

Future research could address limitations of this study. A sample with more stratification across age groups and student types would be preferred. Questions that have arisen as a result of this study and should be considered for future research are as follows:

- What are students' preferences for relationship-building?
- Do students view email and websites as relationship-building tools?
- Would an AISA application provide shy and less engaged students the sense of freedom to ask more questions?
- What avatar characteristics would students prefer to allow a strong sense of engagement?
- Would it make a difference if the avatar used in the application represented a BGSU College of Technology faculty or staff member?
- What is the percentage of importance of rapid answers versus face-to-face time with faculty and staff and does that differ between online and face-to-face students?
- Why do some online students currently feel disconnected?
- What are the main factors students consider when deciding to enroll in a BGSU College of Technology program?

It is also recommended that a time savings analysis versus implementation cost comparison be conducted on an AISA application. How much time would an AISA application save faculty and staff given it is believable, trustworthy, and accurate? In what ways can the skepticism surrounding accuracy be addressed?

Given the fact that avatar-based technology is being used in various other areas and 91% of respondents would use an AISA application, the results of this study indicate the technology warrants further research for use in higher education.

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APPENDIX A

Human Subject Review Board Approval Letter

BGSU
Bowling Green State University

Office of Research Compliance
309A University Hall
Bowling Green, OH 43403-0183
Phone: (419) 372-7716
Fax: (419) 372-6916
E-mail: hsrb@bgsu.edu

August 18, 2011

TO: Sherri Orwick Ogden
VC&TE

FROM: Hillary Harms, Ph.D.
HSRB Administrator

RE: HSRB Project No.: H12T013GX2

TITLE: *Agent for Interactive Student Assistance: A Study of an Avatar-based Conversational Agent's Impact on Student Engagement and Recruitment at BGSU's College of Technology*

You have met the conditions for approval for your project involving human subjects. **As of August 18, 2011, your project has been granted final approval by the Human Subjects Review Board (HSRB).** **This approval expires on August 9, 2012.** You may proceed with subject recruitment and data collection.

The final approved version of the consent document(s) is attached. Consistent with federal OHRP guidance to IRBs, **the consent document(s) bearing the HSRB approval/expiration date stamp is the only valid version and you must use copies of the date-stamped document(s) in obtaining consent from research subjects.**

You are responsible to conduct the study as approved by the HSRB and to use only approved forms. If you seek to make any changes in your project activities or procedures, send a request for modifications to the HSRB via this office. Those changes must be approved by the HSRB prior to their implementation.

You have been approved to enroll 250 participants. If you want to enroll additional participants you must seek approval from the HSRB.

Good luck with your work. Let me know if this office or the HSRB can be of assistance as your project proceeds.

Comments/ Modifications:
Please add text equivalent to the HSRB approval/expiration date stamp to the "footer" area of the electronic consent form (see attached for specific text).

c: Dr. Terry Herman

Research Category: EXEMPT #2

BGSU.
BOWLING GREEN STATE UNIVERSITY
Visual Communication & Technology Education
College of Technology

CONSENT DOCUMENT

My name is Sherri Orwick Ogden and I am a Learning Design graduate student in the College of Technology at Bowling Green State University. I am inviting you to participate in my thesis research study on the use of avatar-based technologies. You were selected to participate in this study because you are currently a student at Bowling Green State University and were a student in the College of Technology during the 2009/2010 and 2010/2011 academic years.

The purpose of this research is to study the potential use of an avatar-based student assistance application designed to answer students' frequently asked questions and the impact it would have on students' perceptions of engagement and recruitment. The application used as an example for this study is called Agent for Interactive Student Assistance (AISA). AISA would provide answers to students by speaking or texting, and would have human-like characteristics allowing the student to interact with AISA.

The use of avatar-based technologies in higher education is limited. This research could assist higher education institutions make significant improvements in the areas of student satisfaction and operational efficiencies.

The data collection methodology used for this study is a customized survey administered by eSurveysPro and accessible from a BGSU Wiki. Data will be collected using eSurveysPro on a password-protected, stand-alone computer and will be analyzed by the researcher, Sherri Orwick Ogden. All responses will be kept confidential and reported information will be in aggregate form to protect personal information. Your identity will not be revealed in any published results unless you specifically request identification.

By clicking on the link provided, you are indicating that you have been informed of the following:

- You voluntarily consent to participate in this research investigation.
- There is no anticipated risk involved in your participation of this study, which includes the completion of this survey.
- The survey consists of 16 questions and will take approximately 3-5 minutes to complete.
- Your participation will only involve the completion of this survey.
- You must be 18 years of age or older to participate in this study.
- You may refuse to participate in this survey or withdraw your consent and discontinue participation in this study without penalty and without affecting your relationship with the University.
- Electronic transmissions have some security risks so confidentiality cannot be 100% guaranteed.

260 Technology
Bowling Green, OH 43403-0280
Phone: 419.372.2437
Fax: 419.372.6066
BGSU Web Site: http://www.bgsu

BGSU.
BOWLING GREEN STATE UNIVERSITY
Visual Communication & Technology Education
College of Technology

After submission of the survey, remember to clear your browser's cache and page history in order to protect your privacy. If you decide to complete the survey on a work computer, please be aware that some employers use tracking software to monitor and record keystrokes, mouse clicks, and web sites visited. This could impact the confidentiality of your responses. Therefore, you may wish to complete the survey on your home computer or public computer.

If you have any questions or comments regarding this study or would like to see the results, please feel free to email me at sorwick@bgsu.edu or contact me by telephone at 419-372-9676. You may also contact my advisor Dr. Terry Herman, at hermant@bgsu.edu or 419-372-7265. If you have any concerns about the conduct of this study or rights as a research participant, please contact the Chair of the Human Subjects Review Board at hsrb@bgsu.edu or by phone at 419-372-7716.

Thank you for your time.

Sherri Ogden

Sherri Orwick Ogden

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Bowling Green, OH 43403-0280

Phone 419.372.2437
Fax 419.372.6066

BGSU Web Site: http://www.bgsu.edu

Email Inviting Students to Participate

Hello (first name)! I'm working on my thesis research and I need your assistance. Please take 3-5 minutes to meet AISA, an avatar!

Yes…this is one of those "please participate in my thesis survey" invitations, but I believe this research could really help College of Technology students.

So, I'm hoping you'll take 3-5 minutes of your time to meet AISA, an avatar, and tell me how you feel about avatar-based technology and how it might help students get answers to their most frequently asked questions.

Click here to access the Survey and Consent Information

Project Description:

I am a graduate student in the College of Technology and am completing my thesis. My idea is the potential use of an interactive, avatar-based student assistance application. Here are the basics:

- Would students welcome an avatar-based Agent for Interactive Student Assistance (AISA) application to obtain answers to their frequently asked questions?
- AISA would be accurate 90% of the time.
- To use AISA, students would go to the website, ask the avatar a question using speech or text, and receive an answer using the same means from a human-like avatar.
- The avatar would also take to the student to a webpage for additional information.

For this study, I have named the example avatar "Agent for Interactive Student Assistance" (AISA). She is just an example. Should an application based on AISA actually be implemented, the avatar would be more human-like with body movements and facial expressions - just like humans!

I hope you'll take a minute to carefully read the consent form, meet AISA, and participate in my study by completing the survey:

Click here to access the Survey and Consent Information

Thank you for your time!

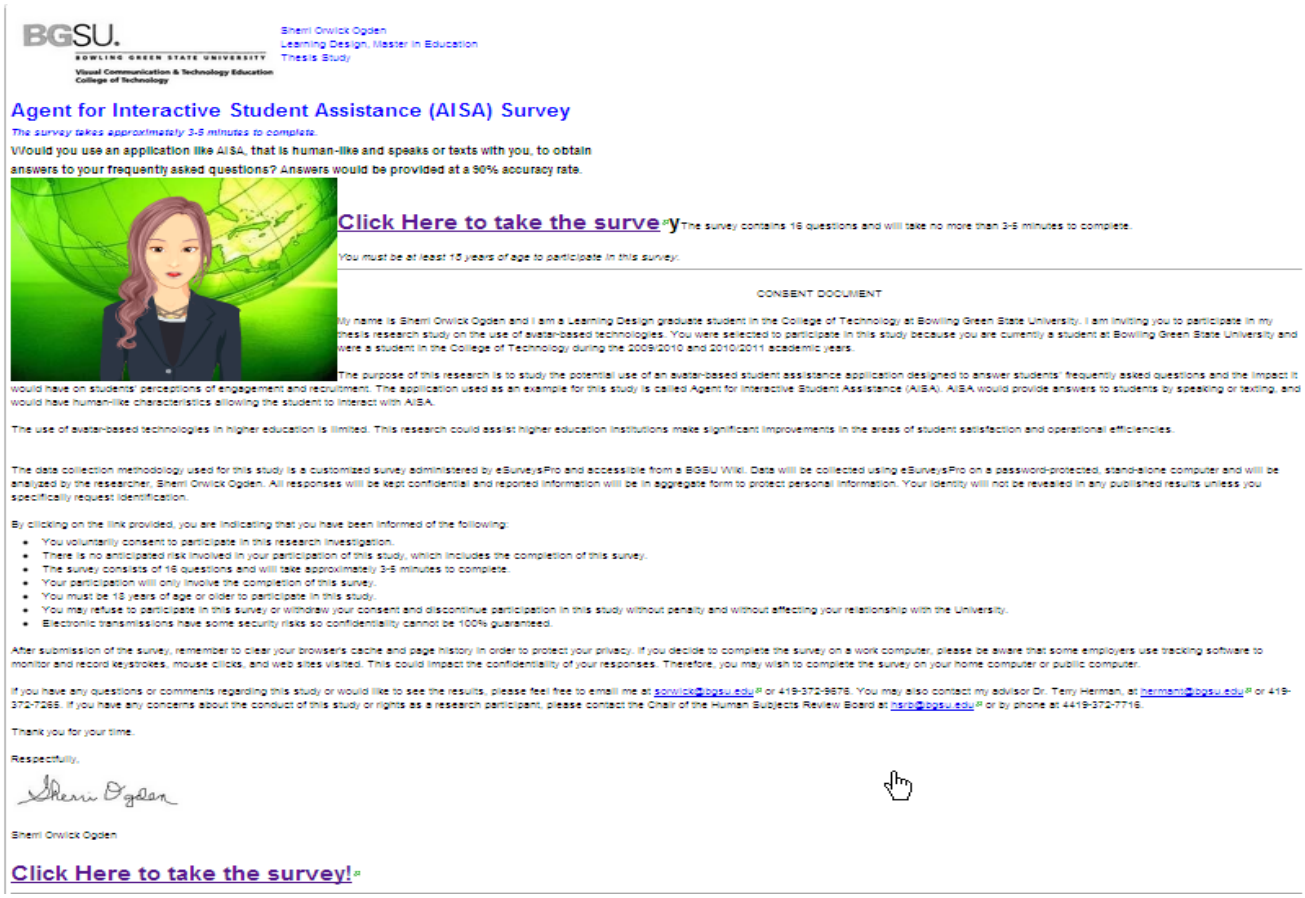
Respectfully,

Sherri Orwick Ogden

Graduate Student
Learning Design, Master in Education

Survey Website

http://aisathesissurvey.bgsu.wikispaces.net/Survey



BGSU. BOWLING GREEN STATE UNIVERSITY
Visual Communication & Technology Education
College of Technology

Sherri Orwick Ogden
Learning Design, Master in Education
Thesis Study

Agent for Interactive Student Assistance (AISA) Survey

The survey takes approximately 3-5 minutes to complete.

Would you use an application like AISA, that is human-like and speaks or texts with you, to obtain answers to your frequently asked questions? Answers would be provided at a 90% accuracy rate.

Click Here to take the survey The survey contains 16 questions and will take no more than 3-5 minutes to complete.

You must be at least 18 years of age to participate in this survey.

CONSENT DOCUMENT

My name is Sherri Orwick Ogden and I am a Learning Design graduate student in the College of Technology at Bowling Green State University. I am inviting you to participate in my thesis research study on the use of avatar-based technologies. You were selected to participate in this study because you are currently a student at Bowling Green State University and were a student in the College of Technology during the 2009/2010 and 2010/2011 academic years.

The purpose of this research is to study the potential use of an avatar-based student assistance application designed to answer students' frequently asked questions and the impact it would have on students' perceptions of engagement and recruitment. The application used as an example for this study is called Agent for Interactive Student Assistance (AISA). AISA would provide answers to students by speaking or texting, and would have human-like characteristics allowing the student to interact with AISA.

The use of avatar-based technologies in higher education is limited. This research could assist higher education institutions make significant improvements in the areas of student satisfaction and operational efficiencies.

The data collection methodology used for this study is a customized survey administered by eSurveysPro and accessible from a BGSU Wiki. Data will be collected using eSurveysPro on a password-protected, stand-alone computer and will be analyzed by the researcher, Sherri Orwick Ogden. All responses will be kept confidential and reported information will be in aggregate form to protect personal information. Your identity will not be revealed in any published results unless you specifically request identification.

By clicking on the link provided, you are indicating that you have been informed of the following:

- You voluntarily consent to participate in this research investigation.
- There is no anticipated risk involved in your participation of this study, which includes the completion of this survey.
- The survey consists of 16 questions and will take approximately 3-5 minutes to complete.
- Your participation will only involve the completion of this survey.
- You must be 18 years of age or older to participate in this study.
- You may refuse to participate in this survey or withdraw your consent and discontinue participation in this study without penalty and without affecting your relationship with the University.
- Electronic transmissions have some security risks so confidentiality cannot be 100% guaranteed.

After submission of the survey, remember to clear your browser's cache and page history in order to protect your privacy. If you decide to complete the survey on a work computer, please be aware that some employers use tracking software to monitor and record keystrokes, mouse clicks, and web sites visited. This could impact the confidentiality of your responses. Therefore, you may wish to complete the survey on your home computer or public computer.

If you have any questions or comments regarding this study or would like to see the results, please feel free to email me at sorwick@bgsu.edu or 419-372-9676. You may also contact my advisor Dr. Terry Herman, at herman@bgsu.edu or 419-372-7265. If you have any concerns about the conduct of this study or rights as a research participant, please contact the Chair of the Human Subjects Review Board at hsrb@bgsu.edu or by phone at 4419-372-7716.

Thank you for your time.

Respectfully,

Sherri Ogden

Sherri Orwick Ogden

Click Here to take the survey!

Survey Questions

1. **What is your current age?**

- 18-23
- 24-29
- 30-35
- 36-41
- 42-47
- 48-53
- 54 or over

2. **What is your gender?**

- Male
- Female

3. **What is your major?**

- Construction Management Technology
- Architecture and Environmental Design
- Engineering Technology (Quality or Mechanical Design Face-to-Face)
- Electronics Computing Technology
- Electro-Mechanical Design Systems
- Online Quality Systems
- Online Advanced Technological Education (ATE)
- Visual Communication Technology
- Learning Design (M.Ed.)
- Construction Management & Technology (MTM-CM)
- Engineering Technology (MTM-ENGT)
- Quality Systems (MTM-QS)
- Quality Systems Certificate
- Technology Management (Ph.D.)
- Other (Please Specify)

4. **Please indicate your student type:**

- Face to-Face Student (BGSU is the only college I have attended and I attend classes on campus)
- Face-to-Face Transfer Student (I transferred from another college and attend classes on campus)
- Online Student (I take classes primarily online and my major is an online program)

5. **In BGSU's College of Technology, how do you currently obtain answers to frequently asked questions?**
(frequently asked questions are those not related to class work but procedural questions such as "how do I register for a class" or "how do I schedule an appointment with my advisor?")

- ☐ Website
- ☐ Email
- ☐ Face-to-Face
- ☐ Phone
- ☐ Other (Please Specify)

6. **Who do you contact most often to obtain answers to your administrative-related questions?**

- ☐ Staff (secretaries or other office personnel)
- ☐ Faculty (instructors, lecturers, professors)
- ☐ Other (Please Specify)

7. **If you had access to an Agent for Interactive Student Assistance (AISA) application as described in the instructions, would you utilize it if you could receive a correct answer 90% of the time instead of contacting a faculty or staff member?**

- ☐ Yes
- ☐ No
- ☐ Maybe
- ☐ Other (Please Specify)

8. **How often do you think you would utilize AISA?**
- I wouldn't use it
- Very little
- Some
- Often
- Very Often

9. **Are you currently satisfied with the response time to receive answers to your administrative-related questions?**
- very unsatisfied
- unsatisfied
- somewhat satisfied
- satisfied
- very satisfied

10. **What is your preferred way to obtain answers to your administrative-related questions?**
- Website
- Email
- Phone
- Face-to-Face
- Social Media (ex: Facebook or YouTube)

11. **If AISA was available for frequently asked questions, would you also want to be able to to obtain answers to classroom-related questions from AISA** (such as homework assignments)?
- Yes
- No
- Maybe

12. **If you accessed AISA to obtain answers to frequently asked questions as opposed to contacting department staff, how do you think that would affect your sense of engagement with the College of Technology?**
- a lot less engaged
- less engaged
- no difference
- more engaged
- a lot more engaged

13. **Please explain why you would feel more or less engaged.**

14. **If AISA was available when you were deciding to attend BGSU, would it have made an impact on your decision to enroll in BGSU's College of Technology?**

- ☐ no impact
- ☐ very little impact
- ☐ some impact
- ☐ a lot of impact
- ☐ would be a major factor in my decision
- ☐ Other (Please Specify)

15. **If AISA was avilable when you were deciding to attend BGSU, what kind of impact would it have had on your decision to enroll in BGSU's College of Technology?**

- ☐ no impact
- ☐ I would be more interested in enrolling in the College of Technology
- ☐ I would be less interested in enrolling in the College of Technology
- ☐ Other (Please Specify)

16. **Overall, how do you feel about having an Agent for Interactive Student Assistance (AISA) application available through the College of Technology for students to use to find answers to their questions?**

- ☐ I don't care
- ☐ I don't like the idea
- ☐ It would be OK
- ☐ I like the idea
- ☐ I really like the idea

APPENDIX B

Qualitative Answers

Survey Question 13

Engagement	Please explain why you would feel more or less engaged	Age	Please indicate your student type:
A lot less engaged	When I'm frustrated the last thing I want to talk to is an automated program. I think it would be similar to calling a tech support agent that is located in India. While I may, or may not, get the answer to my questions, I would probably be frustrated and disappointed at the end.	42-47	Online Student (I take classes primarily online and my major is an online program)
A lot less engaged	Being a distance learning student that would provide enough of a disconnect.	48-53	Online Student (I take classes primarily online and my major is an online program)
A lot less engaged	The program is 100% online which I like. However, if I had a question that I could not figure out myself in the first place, I would want a real person to contact.	48-53	Online Student (I take classes primarily online and my major is an online program)
A lot less engaged	I think AISA is an ok idea but I much rather have face to face communication. I think if AISA was to be utilized I would feel a lot less engaged because what if I still had questions or did not understand completely how to use the system I would pretty much be screwed.	24-29	Face-to-Face Student (BGSU is the only college I have attended and I attend classes on campus)
Less engaged	I like to speak with someone, even if it's through email.	24-29	Face-to-Face Transfer Student (I transferred from another college and attend classes on campus)
Less engaged	I usually ask faculty about class assignments, etc. and I would feel like I had less interaction time with them. Also, since the teacher grades the class, I'd be hesitant to ask AISA for class questions, as they may be wrong.	24-29	Online Student (I take classes primarily online and my major is an online program)
Less engaged	Like it or not, students are customers to a certain extent. If the question will cost me money or time, I want to talk to a person.	54 or over	Online Student (I take classes primarily online and my major is an online program)
Less engaged	avatar is not personal	36-41	Online Student (I take classes primarily online and my major

Engagement	Please explain why you would feel more or less engaged	Age	Please indicate your student type:
			is an online program)
Less engaged	Sometimes you still need some human contact. I like to have a conversation with someone when I have more detailed questions.	42-47	Online Student (I take classes primarily online and my major is an online program)
Less engaged	I don't know if, at first, I would trust the accuracy of the answers.	48-53	Online Student (I take classes primarily online and my major is an online program)
Less engaged	Because I would be with the AISA, not the secretary or advisor that I could form a relationship with.	18-23	Face-to-Face Student (BGSU is the only college I have attended and I attend classes on campus)
Less engaged	I believe that an avatar system would be a good thing for the College of Technology. However from a personal standpoint, I really enjoy having a human contact to work with. I believe that personal service can create a human bond and trust and also can create a confidence in the customer. I believe that my age is a huge factor in my answers. However, I also believe that persons of younger ages would probably prefer the avatar system.	36-41	Online Student (I take classes primarily online and my major is an online program)
Less engaged	Being an online student is difficult without much interaction. I often feel like I am on my own. I think another barrier to human interaction, however helpful it may be, would make me feel even more alienated	36-41	Online Student (I take classes primarily online and my major is an online program)
Less engaged	No need to contact COT if answers were given via AISA.	30-35	Online Student (I take classes primarily online and my major is an online program)
Less engaged	I would feel cut off from the faculty.	24-29	Online Student (I take classes primarily online and my major is an online program)
Less engaged	Because I would be talking to a computer/avatar instead of my professor making our interactions less frequent.	18-23	Face-to-Face Student (BGSU is the only college I have attended and I attend classes on campus)
Less engaged	This would be one less interaction with staff that I only "know" online to start with.	36-41	Online Student (I take classes primarily online and my major is an online program)

Engagement	Please explain why you would feel more or less engaged	Age	Please indicate your student type:
Less engaged	Less engaged - Less face-to-face contact.	18-23	Face-to-Face Student (BGSU is the only college I have attended and I attend classes on campus)
Less engaged	I feel that if I didn't interact with people from the college of technology I would be potentially less prepared for life after graduation, that an AISA wouldn't be able to give me life tips etc that an actual person would be able to give.	18-23	Face-to-Face Student (BGSU is the only college I have attended and I attend classes on campus)
Less engaged	Just the idea that it is negating human contact.	30-35	Online Student (I take classes primarily online and my major is an online program)
Less engaged	I already feel like I have limited contact with the college being an online student. I think that it would make it worse if I was forced to use software like AISA.	30-35	Online Student (I take classes primarily online and my major is an online program)
Less engaged	As online students we are already disconnected for our instructors. It seems that AISA would just make our classes less interactive.	24-29	Online Student (I take classes primarily online and my major is an online program)
Less engaged	Not seeing professors face to face would create less time with department staff.	18-23	Face-to-Face Student (BGSU is the only college I have attended and I attend classes on campus)
Less engaged	I would be able to simply access everything from my computer, so wouldn't have to leave my room.	18-23	Face-to-Face Student (BGSU is the only college I have attended and I attend classes on campus)
Less engaged	AISA appears to me to be a toy, a technical gizmo. Typed FAQs are quicker because I can go to the question I want and read it. AISA could become annoying to me.	54 or over	Online Student (I take classes primarily online and my major is an online program)
Less engaged	avatars bug me	18-23	Face-to-Face Student (BGSU is the only college I have attended and I attend classes on campus)
Less engaged	It would be an automated response. Humans can provide more direct answers.	24-29	Online Student (I take classes primarily

Engagement	Please explain why you would feel more or less engaged	Age	Please indicate your student type:
			online and my major is an online program)
Less engaged	Because you would basically be talking to a computer. With a professor they can help explain if you need them to explain more than most students.	18-23	Face-to-Face Transfer Student (I transferred from another college and attend classes on campus)
Less engaged	There would be less direct communication with the COT since I'd be online using AISA.	18-23	Face-to-Face Student (BGSU is the only college I have attended and I attend classes on campus)
Less engaged	Want to hear the information from a person because if it is wrong information I can go back to the person and tell them.	42-47	Face-to-Face Student (BGSU is the only college I have attended and I attend classes on campus)
More engaged	More engaged, because I tend to not ask questions because I feel it is an imposition to others. With the AISA service, I would review the frequently asked questions that I do not have answers to. I believe AISA could be viewed as an efficient and interactive tutorial where a student can pick and choose which part they need to review, as opposed to listening to a lengthy tutorial. This would possible free up department staff from answering redundant questions, and allow staff to concentrate on other work related responsibilities.	42-47	Face-to-Face Transfer Student (I transferred from another college and attend classes on campus)
More engaged	AISA is a tool that will cause more engagement because it allows for easier access.	42-47	Online Student (I take classes primarily online and my major is an online program)
More engaged	It is often easier to access a web page during non-office hours. With working full time the benefit of taking classes on-line is that I can access the information at non-traditional times and I think that using the Avatar would be beneficial since it is not always convenient to make calls from work to get a hold of BGSU staff during the traditional office hours.	36-41	Online Student (I take classes primarily online and my major is an online program)
More engaged	Bringing a face to solely online communication can make it seem less...distant. I would be totally aware I was seeing an avatar, but the fact that the avatar was put in place by the college as the face of the school, so to speak, for me would seem a little less...removed.	30-35	Online Student (I take classes primarily online and my major is an online program)

Engagement	Please explain why you would feel more or less engaged	Age	Please indicate your student type:
More engaged	I would feel a connectivity and personal interest toward achieving success at BGSU, College of Technology.	54 or over	Online Student (I take classes primarily online and my major is an online program)
More engaged	I would feel more engaged because AISA would provide immediate gratification or answers as opposed to waiting for an email response or returned call.	36-41	Online Student (I take classes primarily online and my major is an online program)
More engaged	By virtue of using technology while studying the field of technology will help with understanding the uses of new technology. I am of the belief that this is one field that requires engagement at all times of all new technical procedures and processes.	36-41	Online Student (I take classes primarily online and my major is an online program)
More engaged	I would be utilizing the wave of the future. Check out Star Trek.	48-53	Online Student (I take classes primarily online and my major is an online program)
No difference	I would still want to meet face to face for some questions, but would also utilize the AISA for questions	18-23	Face-to-Face Student (BGSU is the only college I have attended and I attend classes on campus)
No difference	I am indifferent about feeling engaged using an automated service for answers. If I receive the correct answer to a question in a timely manner then I would be satisfied.	36-41	Online Student (I take classes primarily online and my major is an online program)
No difference	I don't think that there would be a difference.	18-23	Face-to-Face Transfer Student (I transferred from another college and attend classes on campus)
No difference	It's nice to have human interaction with the school but all I really want are the answers to the questions. Whatever system delivers the answers efficiently is OK with me.	30-35	Online Student (I take classes primarily online and my major is an online program)
No difference	I believe I would feel the same...the main point to have my question answered.	54 or over	Online Student (I take classes primarily online and my major is an online program)
No difference	Electronic means of answering question is already very commonplace. This would just be another tool and I don't feel it would change my current feelings toward my department.	30-35	Online Student (I take classes primarily online and my major is an online program)

Engagement	Please explain why you would feel more or less engaged	Age	Please indicate your student type:
No difference	The level of engagement wouldn't be different in that I would still realize that it is a computer answering my questions.	36-41	Online Student (I take classes primarily online and my major is an online program)
No difference	I would feel no difference because I would utilize both.	30-35	Online Student (I take classes primarily online and my major is an online program)
No difference	Might feel less engaged during class because the answers could be found with the avatar.	30-35	Face-to-Face Transfer Student (I transferred from another college and attend classes on campus)
No difference	No reason	30-35	Online Student (I take classes primarily online and my major is an online program)
No difference	It wouldn't change the way I feel because I'm essentially communicating via email regardless of who or what's on the other end.	36-41	Online Student (I take classes primarily online and my major is an online program)
No difference	I would feel no difference. My mode of preferred learning is reading/online and I feel that AISA might slow down my process.	42-47	Online Student (I take classes primarily online and my major is an online program)
No difference	It's the same either way	18-23	Face-to-Face Student (BGSU is the only college I have attended and I attend classes on campus)