Using Enterprise Architecture in the Classroom

Kevin Lee Elder
Georgia Southern University, kelder@georgiasouthern.edu

Jamie Sharkey
USAA

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USING ENTERPRISE ARCHITECTURE IN THE CLASSROOM

Kevin Lee Elder
Department of Information Systems
Georgia Southern University
kelder@georgiasouthern.edu

Jamie Sharkey
Enterprise Architect at USAA

Abstract:
If you have been teaching for the most part of the last twenty years you have seen a change in the attitude of the students we are teaching. Yet, most professors are still trying to teach the same way they did twenty years ago. In this paper we present how we have researched what have been the success factors for Enterprise Architecture Implementations and how we have used this research method (content analysis) to transform the classroom experience for the students and how this has allowed us to move the class online. We detail the methodology used so that you can use the same methodology in your classroom.

Keywords: enterprise architecture, content analysis, classroom pedagogy

I. INTRODUCTION

Ensuring an organization’s data, information, personnel, and information systems are being utilized to achieve the identified capability requirements can be accomplished by employing an enterprise architecture. Faculty can use content analysis and a set of articles on Enterprise Architecture (EA) to teach students the importance of EA, as briefly outlined in this paper.

To effectively design and construct a building, a blueprint must be developed and maintained. A blueprint consists of a set of drawings that defines the various characteristics of the building. Each drawing is complementary of the others and provides a different view of the construction project. Therefore, the blueprint results in a framework, which allows architects, engineers, and construction personnel with divergent skill sets to “speak” a common language. This framework allows communication to become more efficient and creates an effective roadmap for transforming raw materials into a finished structure.

Developing and implementing an enterprise architecture has been identified as one of the top four Information Systems (IS) management issues since 1987 [Brancheau and Wetherbe 1987; Niederman, Brancheau et al. 1991; Brancheau, Janz et al. 1996]. These studies recognized there was no overarching framework guiding investments in information technology. As the private sector focused on exploiting their enterprise architecture to integrate its IT investments with its business objectives, similar studies conducted on public agencies have proved to have different outcomes. Swain and White identified developing an enterprise architecture as thirty-third in importance among top issues of public IS managers [Swain, White et al. 1995].

This research effort synthesizes the literary efforts of a wide range of academic and professional authors. This synthesis provides faculty with a method for identifying the key issues surrounding managing an enterprise architecture along with a set of exercises for use in the classroom to emphasize these issues.

To address the purpose of this research, the following central organizing research question is
What does literature identify as the key issues affecting any organization's ability to effectively manage its enterprise architecture? Using what method can we best teach students these enterprise concepts? This research effort will address multiple investigative questions in order to answer the main research question:

1. What is an enterprise architecture?
2. What does the literature identify as the issues that must be addressed to effectively manage an enterprise architecture?
3. Using what method can we best teach students these enterprise concepts?

II. LITERATURE REVIEW – DEFINING ENTERPRISE ARCHITECTURE

The term Enterprise Architecture (EA) lacks a universally accepted definition. Until 1986, there was little consistency among the concepts and terminology regarding enterprise architectures. In response, John Zachman presented a conceptual framework for defining this term. This framework, a two-way matrix, consists of six views and six information sources. The six views represent the perspective of each participant included in the enterprise architecture development process. Each view is independent of the next. Therefore, the level of detail does not increase with each successive layer. Instead, it varies within each participant's architectural representation [Zachman 1987].

To allow each participant's enterprise architecture representation to vary six information sources are presented across the top of the matrix. Collectively, these sources comprise each level's description. Just as the perspectives stand alone, so do the six descriptions. This allows the participants to describe the same product in multiple ways, which provides them with the ability to achieve multiple purposes with an enterprise architecture [Zachman 1987].

Since Zachman's seminal research, several studies have made attempts to further clarify the concepts surrounding enterprise architecture. Kim and Everest expanded on Zachman's definition of an enterprise architecture by presenting four sub-architectures: process, data, control, and technology [Kim and Everest 1994]. These four sub-architectures link IS planning with the corresponding levels of Zachman's architecture. Similar to Zachman's framework, the views complement each other and taken collectively present an IS enterprise architecture that provides the basis for constructing an information system and managing information resources [Kim and Everest 1994].

Segars and Grover's describe the development of an IS architecture as a three-level hierarchy of analysis and development [Segars and Grover 1998]. This description concludes that the development of an IS architecture is a set of high-level models showing corporate data, process and application structures in logical form, supported by a set of corporate definitions of core data and process components [Hamilton 1999].

Even though research was completed to refine the definition of an enterprise architecture terminology such as architecture and infrastructure were still being used interchangeably. This stemmed from referring to the enterprise architecture as a "city plan" which focuses on developing detailed drawings of the interconnections between processes, infrastructure, data, and applications [Ross 2003]. Using the enterprise architecture in this fashion does not capture its ability to tie itself to the organization’s business strategy. Therefore, Ross provided the following definition of an enterprise architecture [Ross 2003]:

An enterprise architecture is the organizing logic for applications, data, and infrastructure technologies, as captured in a set of policies and technical choices, intended to enable the firm’s business strategy.

By looking across each of these conceptualizations of an enterprise architecture a common theme presents itself. Therefore, the operational definition of an enterprise architecture for the purpose of this paper is the organization of computing resources in an organization, which consists of data, information, applications, infrastructure, and personnel to enable a firm’s business strategy.
III. METHODOLOGY

As with any research, the researcher preserved a balance between maintaining a realistic perspective and ensuring control over the selected methodology [Mason, McKenney et al. 1997]. The researcher established the realistic perspective in the literature review by providing an account of the development of the enterprise architecture concept. Providing this context served as the necessary background information to formulate answers to the following investigative question:

1. What is an enterprise architecture?

To answer this question the researchers gathered evidence, determined patterns, and then developed an agreed upon operational definition for the purpose of this research [Mason, McKenney et al. 1997]. The evidence consisted of academic literature, government reports, and policies. Each of these was reviewed and through triangulation patterns were identified. These two steps allowed the researcher to reach an operational definition of the two investigative questions.

The literature review also explained how prior research efforts have only identified issues leading to the success or failure of developing and implementing an enterprise architecture. However, this body of knowledge has not addressed how to manage an enterprise architecture once it is in place.

Method for Question 2

The data for this research originates from written text discussing the concepts of enterprise architecture, enterprise infrastructure, systems development, and strategic data planning. Denzin and Lincoln suggests that a content analysis is an acceptable research methodology for this type of data [Denzin and Lincoln 2000]. Leedy and Ormrod agree that a content analysis is the systematic examination of written documents “for the purpose of identifying patterns, themes, or biases” [Leedy and Ormrod 2001]. Therefore, to carry out this research’s methodology a content analysis was performed.

In conducting the content analysis, a prescribed process was followed. There are many good sources for researching text and content analysis methods [Creswell, 2003, Frey & Botan, 2000, Orlikowski & Baroudi, 1991, Patton, 2002, Titscher & Meyer, 2000]; however, the researchers employed Neuendorf’s nine-step framework to carry out this process [Neuendorf 2002]. The sequence of steps prescribed by Neuendorf’s framework were modified to reflect the actions taken by the researcher. By explicitly explaining how the content analysis was conducted, future academic studies will be able to accurately replicate the study. The steps were:

Step 1: Theory and Rationale
Step 2: Sampling
Step 3: Conceptualization Decisions
Step 4: Coding Schemes
Step 5: Operationalization measures
Step 6: Training and initial reliability
Step 7: Coding
Step 8: Final Reliability
Step 9: Tabulation and Reporting

Weber asserts: “To make valid inferences from the text, it is important that the classification procedure be reliable in the sense of being consistent: different people should code the same text in the same way.” Weber continues to discuss the issue of reliability by stating “problems usually grow out of the ambiguity of word meanings, category definitions, or other coding rules”[Weber, 1990]. The following two types of reliability are pertinent to content analysis:

a. Stability – Addresses how consistent the results of the content classification are over time.
b. Reproducibility (inter-coder consistency) – Determines if the content classification produces matching results when the identical text is coded by more than one person.

In Step 7, the 24 coders were divided into two groups. Then one coder from each group was randomly paired up with a coder from the other group. Each pair of coders was then assigned the exact same five articles to analyze. To confirm the stability of the coding schema an independent t-tests was performed to determine if the average percent agreement for each group of two coders was or was not statistically different.

Reproducibility is addressed by measuring the agreement between each of the coders and the primary researcher. The use of the appropriate reliability coefficient calculation is important. However, if the coders are consistently making incorrect judgments about the presence or absence of the issues in the article being coded the level of reproducibility will be negatively affected [Kolbe and Burnett, 1991]. The primary researcher improved the reproducibility of this research by placing emphasis on improving the operational procedures used to properly code the content analysis articles. Focusing on the underlying classifications scheme, the operational definitions for coding categories, and the directions that guide the coding process directly improves the quality of judgment-based data [Perreault and Leigh, 1989].

To measure the strength of the research method employed a coefficient of agreement calculation was completed. The coefficient most commonly used in content analysis due to its applicability and ease of use is percent agreement [Perreault and Leigh, 1989; Kolbe and Burnett, 1991; Neuendorf, 2002]. Conversely, this coefficient has been identified as having the potential to over-inflate the level of agreement due to “chance agreement” [Neuendorf, 2002]. Chance agreement is directly impacted by the number of coding decisions. As the number of issues in the codebook increases the probability of chance agreement decreases [Perreault and Leigh, 1989; Kolbe and Burnett, 1991].

Since this research had 35 issues, chance agreement was not seen as a confounding factor. Therefore, percent agreement was selected as the inter-rater reliability coefficient. An agreement is defined as the two judges, the primary researcher and the coder, found the issue in the article or if both of them agreed the issue was not present in the article. For both the pilot and full study the percent agreement for each of the 24 coders was calculated twice.

First, the coder’s overall level of agreement with the primary researcher was measured. This was accomplished by totaling the number of agreements for each of the articles coded then dividing by the total number of issues (36 for the pilot study and 35 for the full study). Then the coder’s percent agreement average was computed for all the articles coded (3 articles for the pilot study and 5 articles for the full study). However, according to Neuendorf, reliability coefficients must be reported separately for each and every measured variable [Neuendorf, 2002]. Therefore, the second percent agreement measurement calculated the coder’s level of agreement for each issue. To calculate this figure the total number of agreements was divided by the number of articles coded. Once again the coder’s percent agreement average was computed across all of the issues.

Each coder’s two measurements of percent agreement were then plotted on a separate histogram. These two distributions allowed the researcher to calculate a confidence interval for the computed level of percent agreement. From these two confidence intervals, the overall reliability between the judges was established allowing the primary researcher to make inferences about the results.

IV. RESULTS AND ANALYSIS

In the literature review, the researcher provided an account of the development of the enterprise architecture concept. Providing this context served as the necessary background information to formulate answers to the first investigative question:

1. What is an enterprise architecture?
To answer these questions the researchers gathered evidence, determined patterns, and then develop an agreed upon operational definition for each question [Mason, McKenney et al. 1997]. First, through the review of academic literature the researcher was able to identify common themes resulting in the following operational definition of an enterprise architecture:

The organization of computing resources in an organization, which consists of data, information, applications, infrastructure, and personnel to enable a firm’s business strategy.

**Validity of Measurement Instrument**

To increase the level of objectivity of the coding process the primary researcher addressed shortfalls in the creation and operationalization of the measurement instrument. Once the initial coding schema had been created an independent review was completed to remove the primary researcher’s personal bias. The following two sections explain the results and steps taken to improve upon the measurement instrument’s validity.

**Issue Validation**

An emergent process of variable identification was employed by the primary researcher to identify the issues that must be addressed to manage an enterprise architecture. The emergent process of variable identification resulted in 36 separate issues to be recognized during the review of the 52 articles.

Four co-researchers were each assigned a subset of the 52 articles to address the potential for misinterpreted the identified issues. Each co-researcher was given 13 articles to review. Amongst the four co-researchers, only two of them disagreed with the primary researcher in regards to the presence of an issue within an article. The four co-researchers also reviewed the coding schema to check for syntax or spelling errors and to ensure there was no redundancy across the 36 issues. One of the co-researchers recommended combining two issues in the coding schema to reduce the possibility of misinterpretation during the content analysis.

**Instrument Validation – Pilot Study**

A sub-sample consisting of three of the 52 articles was selected to conduct a pilot study. Each of the 24 coders independently coded each article included in the sub-sample. This pilot study was conducted to develop a “valid, reliable, and useful coding schema” by considering three diagnostic measures [Neuendorf 2002]: 1.) The identification of problematic measures, 2.) The identification of problematic categories, 3.) The identification of problematic coders.

**Diagnostic 1: Problematic Measures**

To identify problematic measures the percent agreement for each article amongst the 24 coders and the primary researcher was computed. The overall percent agreement for each article was calculated by dividing the total number of agreements by the total number of issues. Then each coder’s average percent agreement amongst the three articles was determined. From this calculation, the ability to properly analyze article three was identified as problematic.

**Diagnostic 2: Problematic Categories**

The second diagnostic measure examined the average percent agreement per issue for each of the 24 coders. This measure was calculated by adding the total number of agreements for each issue across the three articles. The sum was divided by the number of articles coded. Then an overall percent agreement was computed by averaging all of the coders’ respective scores per issue. Twelve issues were identified as problematic.

**Diagnostic 3: Problematic Coders**

The identification of problematic coders was accomplished by re-analyzing the measurement utilized to examine problematic issues. The average percent agreement was calculated across all the issues for each coder. This measurement allowed the primary researcher to identify any potential rogue coders. The average percent agreement per coder was calculated by adding up each coder’s percent agreement scores for each issue and then dividing this sum by 36. Five
coders scored below the lower bound of the confidence interval bringing the total number of problematic coders to six.

Table 1: Reliability Coefficient of Each Variable

<table>
<thead>
<tr>
<th>Issue</th>
<th>Reliability Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Understanding the business processes allows the architecture to ensure the implementation of IT systems that will match the required business needs</td>
<td>0.9167</td>
</tr>
<tr>
<td>The enterprise architecture must have senior management support</td>
<td>0.9167</td>
</tr>
<tr>
<td>Architecture must be capable of adapting or modifying itself to reflect changes in strategic objectives, reorganization and/or business process changes</td>
<td>0.8750</td>
</tr>
<tr>
<td>Identify gaps between baseline and established targets</td>
<td>0.8750</td>
</tr>
<tr>
<td>Gain knowledgeable architecture resources from consultants</td>
<td>0.8750</td>
</tr>
<tr>
<td>Evolve the architecture over time in a iterative step by step transition plan and analyze how changes in the organization's mission, functions, and needs might have an effect on system development</td>
<td>0.8333</td>
</tr>
<tr>
<td>The value added from the architecture must be measured by metrics that are clear, meaningful, and meaningful.</td>
<td>0.8333</td>
</tr>
<tr>
<td>Standardizing data definitions and data exchange procedures facilitates data integration and data sharing across diverse applications</td>
<td>0.8333</td>
</tr>
<tr>
<td>A culture must be developed that focuses on the importance of coordinated planning between</td>
<td>0.8333</td>
</tr>
<tr>
<td>Architecture development must be flexible to accommodate a range of architectures and functional</td>
<td>0.7500</td>
</tr>
<tr>
<td>Architecture must be tied directly to the organization's operational mission and vision</td>
<td>0.6667</td>
</tr>
<tr>
<td>Managing by processes allows architecture modules to become repeatable, reusable, measurable,</td>
<td>0.6667</td>
</tr>
<tr>
<td>Feedback is received on performance so future architecture changes will be more successful</td>
<td>0.6250</td>
</tr>
<tr>
<td>Central control of standardized processes allows for rapid innovation from individual business units--best practice processes can be recognized and implemented across the entire organization</td>
<td>0.6250</td>
</tr>
<tr>
<td>Framework guides architecture design and investment decision making</td>
<td>0.5833</td>
</tr>
<tr>
<td>Start with doable and critical system development projects</td>
<td>0.5833</td>
</tr>
<tr>
<td>Common understanding and conformance to architecture principles and standards leads to consistent enforcement of guidance, informed system development decisions, and reduced</td>
<td>0.5833</td>
</tr>
<tr>
<td>Data owners must be identified who are responsible for ensuring the integrity of the data that is</td>
<td>0.5833</td>
</tr>
<tr>
<td>Development of an architecture must include the business/functional users</td>
<td>0.5833</td>
</tr>
<tr>
<td>Select and train a team of enterprise architects, governing bodies and functional users with the ability and authority to answer human, technical, and business questions and carry out assigned</td>
<td>0.5833</td>
</tr>
<tr>
<td>Define the target business view</td>
<td>0.5417</td>
</tr>
<tr>
<td>Determine target architecture (Where we want to be)</td>
<td>0.5417</td>
</tr>
<tr>
<td>An architecture is a tool that allows the organization to gain a competitive by being a tool that can assist in making the decision whether or not to implement new technologies and/or retain legacy</td>
<td>0.5417</td>
</tr>
</tbody>
</table>

Overview of Findings for Question 2

The validated coding schema was then utilized to answer the final three investigative questions. This content analysis initially documented 35 latent issues across the 52 articles identified during the sampling procedure. One article was selected to be reviewed by all the coders to provide a measurement of inter-rater reliability. From this assessment 12 issues were identified as unreliable. The remaining issues answer the third investigative question of this research:

2. What does the literature identify as the issues that must be addressed to effectively manage an enterprise architecture?
The 23 issues are presented in Table 1: Reliability Coefficient for Each Variable. The respective reliability coefficients are also reported to ensure low reliabilities were not obscured. The top ten issues are reported as highly reliable. The remaining 13 issues must also be addressed, but as can be seen their respective reliability rating is below 70%. Such a low reliability rating causes the assessment to become difficult to interpret [Neuendorf 2002]. Nevertheless, this research was exploratory in nature making it difficult to maintain objectivity during the process of issue identification. Therefore, these issues are still reported.

The second investigative question was then answered by using the primary researcher’s validated codebook. A tally was added for each issue to find out how many times each issue appears across all 52 articles.

V. DISCUSSION
There is no consistency in the factors which cause these issues to be relevant. For example, the five most relevant issues are driven by four clearly distinct factors. Even when the top ten most relevant issues are reviewed seven different underlying factors are identified as the reason for their relative importance. Therefore, the conclusion reached from this research is that to effectively manage an enterprise architecture an organization must not focus on one organizational factor. Instead, a holistic management approach must be taken.

From the analysis, one interesting finding is worth mentioning. The first is that of the top ten most relevant issues three of them are driven by organizational factors. The researcher is hesitant to identify this as a clear answer to the goal of this research. However, it can be stated that the effective management of the enterprise architecture requires the dedicated support of the entire organization.

The ability to exploit an enterprise architecture to direct, measure, and capture change accounts for just over 15% of total number of issues identified in all the articles. This theme is seen in the next six issues. The low frequency score of these issues demonstrates the lack of attention placed on them. This adds support to the motivation for completing this research. The development and implementation of enterprise architectures has been discussed across a wide variety of literature. Conversely, the topic of managing an enterprise architecture has not been adequately addressed. Each of these issues covers a different aspect of managing an enterprise architecture. As can be seen, additional emphasis must be placed on properly managing an enterprise architecture.

The final three issues are concerned with centralized coordination of the enterprise architecture. Once again these three issues received the least amount of attention throughout the articles selected for the content analysis. This finding can also be attested to the fact that there is a void in the body of knowledge concerning the management of an enterprise architecture.
The 23 issues were reviewed causing four themes to be identified: (1) tying the enterprise architecture to the operational mission, (2) controlling the enterprise architecture, (3) directing, measuring, and capturing change, and (4) centralized coordination.

TABLE 2: ISSUE RELEVANCE

<table>
<thead>
<tr>
<th>Issue</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Architecture must be tied directly to the organization's operational mission and vision</td>
<td>33</td>
</tr>
<tr>
<td>Architecture must be capable of adapting or modifying itself to reflect changes in strategic objectives, reorganization and/or business process changes</td>
<td>27</td>
</tr>
<tr>
<td>Evolve the architecture over time in a iterative step by step transition plan and analyze how changes in the organization's mission, functions, and needs might effect system development</td>
<td>27</td>
</tr>
<tr>
<td>The enterprise architecture must have senior management support</td>
<td>27</td>
</tr>
<tr>
<td>Development of an architecture must include the business/functional users</td>
<td>26</td>
</tr>
<tr>
<td>Understanding the business processes allows the architecture to ensure the implementation of IT systems that will match the required business needs</td>
<td>20</td>
</tr>
<tr>
<td>Standardizing data definitions and data exchange procedures facilitates data integration and data sharing across diverse applications</td>
<td>19</td>
</tr>
<tr>
<td>Determine target architecture (Where we want to be)</td>
<td>16</td>
</tr>
<tr>
<td>Select and train a team of enterprise architects, governing bodies and functional users with ability and authority to answer human, technical, and business questions and carry out assigned tasks</td>
<td>15</td>
</tr>
<tr>
<td>Framework guides architecture design and investment decision making</td>
<td>14</td>
</tr>
<tr>
<td>Common understanding and conformance to architecture principles and standards leads to enforcement of guidance, informed system development decisions, and reduced redundancy</td>
<td>14</td>
</tr>
<tr>
<td>Define the target business view</td>
<td>13</td>
</tr>
<tr>
<td>An architecture allows the organization to gain a competitive by being a tool that can assist in making the decision whether or not to implement new technologies and/or retain legacy systems</td>
<td>13</td>
</tr>
<tr>
<td>Managing by processes allows architecture modules to become repeatable, reusable, measurable, and reduces redundancy</td>
<td>11</td>
</tr>
<tr>
<td>Identify gaps between baseline and established targets</td>
<td>9</td>
</tr>
<tr>
<td>The value added from the architecture must be measured by metrics that are clear, meaningful, and quantifiable</td>
<td>9</td>
</tr>
<tr>
<td>Gain knowledgeable architecture resources from consultants</td>
<td>8</td>
</tr>
<tr>
<td>Architecture development must be flexible to accommodate a range of architectures and functional areas requirements</td>
<td>7</td>
</tr>
<tr>
<td>Start with doable and critical system development projects</td>
<td>7</td>
</tr>
<tr>
<td>Feedback is received on performance so future architecture changes will be more successful</td>
<td>7</td>
</tr>
<tr>
<td>The culture must focus on importance of coordinated planning between business and IT</td>
<td>6</td>
</tr>
<tr>
<td>Central control of standardized processes allows for rapid innovation from individual business units--best practice processes can be recognized and implemented across the entire organization</td>
<td>4</td>
</tr>
</tbody>
</table>

Research Question 3 Classroom Presentation

Our 3rd research question referred to the best method to present this research in the classroom:

3. Using what method can we best teach students these enterprise concepts?
In order to answer our third research question we tried two methods to teach the students the material. For the first two semesters we took the research and presented it to the class in the customary manner. The students read the articles, turned in summaries of the articles, had classroom discussions and took exams. It is quite time consuming as the faculty member to read through and grade article summaries to ensure the students have learned the material in the articles. The average scores on the questions concerning the key issues presented were approximately 80 percent for both types of exams, essay and multiple choice exams.

For the last three semesters we took a different approach. We had the student’s write summaries of the first few articles, but then we had the students do content analysis of the remaining articles, in the same manner as we conducted the research for the first two research questions as stated above. The students were given the same articles as in previous terms, but now they we’re not writing summaries, they we’re conducting content analyses on the articles and identifying the key issues for themselves. They would turn in their coding in the form of an excel spreadsheet and this was compared to the results of this research and a coefficient of agreement between the student and the ‘experts’ result was generated. This was score was used for the students homework grade. The students could do as many of the 40 or so articles as they wanted to do. The faculty can simply cut and paste the students article score into a ‘key’ spreadsheet and the coefficient is generated automatically. Their top ten scores for agreement were used to calculate their homework grade, and a top score board was used to show the top scores. A sort of competition arose and the students were more engaged than when they simply read and summarized the articles. Their test scores went up as well, from 80 percent previously, to 82, 83.5 and finally 85 percent in the last class offering. Since this content analysis as automated in excel spreadsheets, it took far less time to grade and more discussion time could be used. It also was easy to setup in an online classroom environment using discussion threads and content analysis score submissions. Student satisfaction as well as test scores and instructor end of term ratings have all increased.

CONCLUSION

Ensuring an organization’s data, information, personnel, and information systems are being utilized to achieve the identified capability requirements can be accomplished by employing an enterprise architecture. Faculty can use content analysis, the research methodology laid out here and a set of articles on Enterprise Architecture (EA) to teach students the importance of EA, as briefly outlined in this paper. Using the content analysis approach for classroom work and submissions has automated the process and allowed for greater retention of the material presented, and raised student test scores. Faculty could apply this method to any body of knowledge, any set of research papers, and any class (both online and traditional) and get better results on tests, grades in class, faculty and student satisfaction scores.
LIST OF REFERENCES


ABOUT THE AUTHORS

Kevin Lee Elder is Associate Dean of the College of Information Technology & Associate Professor of Information Systems at Georgia Southern University. He is the author of more than 30 articles with more than 30 different co-authors. His work focuses on curriculum design, enterprise architecture, management of information systems, usability and knowledge management. He is currently researching and organizing a center for health informatics. Kevin is a former editor of the Journal of Information Systems Education.

Jamie Sharkey is an Enterprise Architect for USAA. He formerly worked with several services in the United States Department of Defense during and after his 20 years serving in the United States Air Force. While attending the Air Force Institute of Technology and completing a Master’s Degree in Information Resource Management he began his study of enterprise architecture. Jamie is a certified Enterprise Architect.