Leveraging the constituents' requirements to the Information Systems curriculum objectives

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ABSTRACT

Information systems provide innovation to enhance businesses with technology. Curricula must adequately prepare future information systems professionals to be successful in their careers. To achieve such adequacy, information systems curriculum objectives need to be influenced by the business environment. This article presents a study to leverage the information systems field demands to the curriculum objectives. Constituents are professionals, alumni, and students who can provide pertinent advise regarding the curriculum objectives. Three focus groups were used to collect the constituents' needs. Most comments received from participants were either to support or to give strategy to the objective presented. The findings of this study revealed the information systems curriculum objectives are influenced by the constituents' requirements. These findings are consistent with other studies in this area, which implies constituents' needs regarding the information systems curriculum objectives are similar in different academic scenarios.

Keywords: IS skills, IS curriculum objectives, assessment

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Introduction

Both 'Association to Advance Collegiate Schools of Business' (AACSB) and 'Computing Accreditation Commission' of ABET (ABET CAC) put great emphasis on educational programs having a clear set of objectives and a quality improvement process to assess those objectives (Reichgelt, Yaverbaum, 2007). Thus, this article illustrates a study, which purpose is to find out if the objectives of an Information Systems (IS) curriculum meet the expectations of its constituents.

The study presented in this article is an important guide to enhance IS curriculum objectives according to the constituents' requirements. Such IS curriculum objectives enhancement leads to an adequate preparation of future IS professionals.

Topi, Valacich, Wright, Kaiser, Nunamaker Jr, Sipior, & De Vreeda (2010) specify the constant changes in the IS career, cause tailoring an IS curriculum to become a challenge when examining the local and regional IS needs. IS curriculum objectives assessment from the industry are essential for the successful preparation of IS students.

The study described in this article follows Stefanidis & Fitzgerald (2010) suggestion, which is to establish a correlation between what IS undergraduate degree programs offer to the industry's expectations. Indeed, Martz, Braun, & Hughes (2011) favor obtaining industry feedback for the assessment of the IS curriculum objectives.

The development of the study, described in this article, is based on the research guides provided by Rosamann & Vessey (2008). Data analysis, findings, and conclusions were written according to the guidelines provided by the Chenail, Cooper, & Desir (2010).

There are two concepts discussed in this article that need to be defined: the constituents and the IS curriculum objectives.

The constituents of an IS curriculum are all people who are served by the program. As for this study, the constituents are: Alumni, and IS professionals from the industry. Students are also part of this group of constituents.

The IS curriculum objectives are, as defined by ABET (2009), the goals, the set of skills that graduates need to master in approximately three to five years from the completion date of the Baccalaureus. In short, the IS curriculum objectives refer to the skills an IS professional must have in order to be successful.

Literature Review
The study presented in this article emphasizes upon the assessment of the IS curriculum objectives. Kelley, Pingsheng, & Beom-Joom (2010) recommend an IS curriculum that prepares students successfully, has a well-defined set of objectives. Prospective graduates can demonstrate the achievement of those objectives through a well-established assessment process.

As Brandon, Young, Shavelson, Jones, Ayala, Ruiz-Primo, Furtak (2008) points out, the assessment process is more effective when face-to-face collaboration is practiced rather than the use of distance meeting tools. Collaborations of this kind are more likely to be successful and contribute to new knowledge. This study followed the Brandon et al. (2008) advised since focus groups provide face-to-face interactions.

Since business and the IS field are constantly evolving, Lambrecht & Meggison (2007) recommend conducting assessment practices that consider student feedback in order to bring about effective teaching. In this study, feedback to assess the IS curriculum objectives was obtained not only from students, but also from alumni and industry professionals. This study addressed an assessment method, the focus group, to determine the effectiveness of the IS curriculum objectives according to its constituents' needs. As the authors suggest, academy can constantly strived for excellence by assessing the IS curriculum objectives since its impact directly influence the quality of IS curriculum.

IS curriculum objectives presented and evaluated in the study were developed according to the recommendations on the IS 2002 (Gorgone, Davis, Valacich, Topi, Feinstein & Longenecker Jr, 2003), IS 2010 (Topi et al., 2010) and the ABET criteria (ABET, 2009). Even though these approaches may seem to be different, they have common recommendations, which were followed to develop the IS curriculum objectives presented in this study.

Theoretical framework

The IS curriculum objectives in this study are five: professional skills, technology skills, information systems skills, life-long learning skills, as well as values and soft skills. Ramos (2008) presented those objectives for the first time and are used in the IS curriculum of a university located in the Caribbean region. Table 1 shows each objective name and its description.

Table 1: IS curriculum objectives as name and described by Ramos (2008)

	Objective name	Objective Description
1	Professional skills	To implement and manage information systems in an organization.

	Objective name	**Objective Description**
2	Technology skills	To apply technological, analytical, and critical thinking skills in the solution of problems related to information systems in organizations.
3	Information Systems Context skill	To take into consideration the context in which information systems operate, when being implemented and managed.
4	Life-long learning skills	To maintain his/her professional expertise by updating his/her knowledge in technology and information systems.
5	Values & Soft skills	To perform his/her functions showing respect and acknowledgement of ethics, interpersonal relationships, communication, and team work.

Aasheim, Williams, & Butler (2009) and Havelka & Merhout (2009) show studies similar to the one presented in this article.

The Aasheim et al. (2009) model indicates the mastery of skills required emphasizing upon entry-level positions. The set of 32 skills measured by the authors was summarized in the traditional categories: technical skills, organizational knowledge skills, interpersonal skills, and personal attributes skills. The ranking of their model includes interpersonal, personal, technical, and organizational skills in addition to managerial aspects. Interpersonal skills include oral and written communication, teamwork, and other interpersonal skills. Personal skills refer to honesty, integrity, analytical skills, flexibility, motivation, creative thinking, organizational and entrepreneural skills added to risk-taking abilities. As for technical skills, those include awareness

of technology trends, operating systems, telecommunication and networking, security, hardware concepts, database, software package, web development languages, systems development of life cycle, and languages programming. The organizational and managerial aspects consist of knowledge of business functions, project management, knowledge of company goals and strategies, knowledge of a specific industry, as well as leadership skills.

The Havelka & Merhout (2009) model shows a qualitative approach to identify the appropriate set of skills that comply with Information Systems academics and Information Systems professionals. The model presents four categories: personal attributes skills, professional skills, business knowledge, and technical skills. The set of skills listed in order of priority is personal attributes, technology skills, interpersonal skills, plus organizational and managerial skills. Personal attributes include leadership, problem-solving skills, and innovation including creative thinking. Technology skills are defined as the total commitment on the part of IS professionals to use technology in the business scenarios. Interpersonal skills include strong written and verbal skills, as well as teamwork. The organizational and managerial skills include management of multiple priorities, multi-tasking, and business fundamentals together with analysis skills.

In short, Aasheim, Williams, & Butler (2009) and Havelka & Merhout (2009) show a list of objectives similar to the objectives presented in this study.

Table 2 presents the name equivalencies for each objective.

Table 2: Objective names equivalencies.

	Objective names as Ramos (2008)	**Objective names as Aasheim et al. (2009) and Havelka & Merhout (2009)**
1	*Professional skills*	Organizational and managerial skills
2	Technology skills	Technology skills
3	*Information Systems Context skills*	Organizational and managerial skills
4	Life-long learning skills	Personal attributes skills
5	Values & Soft skills	Interpersonal skills

Research Objective

The research question is:

- Are the IS curriculum objectives leveraged to the constituents' requirements?

Methodology

Three focus groups provided vis-à-vis meetings to address the constituent's perspectives concerning the IS curriculum objectives, which is consistent to the Brandon et al. (2008) advice to conduct focal groups. This is a qualitative study in which three focus groups were used for data gathering. Each focus group was targeted to a different constituent group: alumni, IS professionals, and students. IS professionals are practitioners in the IS area from local businesses. The length of time of each focus group was two hours. The purpose of each focus group was to gather the participants' concerns and opinions in regards to the program's objectives. The order, which the objectives presented to the participants, was:

1- Organizational and managerial skills, which includes professional skills and information systems context skills

2- Technology skills

3- Personal attributes skills (life-long learning skills)

4- Interpersonal skills (values & Soft skills)

An attendance of six to twelve was expected for each focus group. The alumni who participated in the first focus group were six IS professionals who graduated from the program three or more years ago. The participants for the second group were IS professionals. They were also six. Both alumni and industry professionals were IS professionals from well-known service companies in a Metropolitan area. The last focus group was composed of six currently enrolled students in the IS program.

Data Collection

The research methodology, which was the focus group, requires the use of qualitative data, analysis tools and techniques.   During each focus group the participants' comments (phrases), regarding each objective was captured and noted by the researcher. Those comments or phrases were analyzed and then classified into four categories: supports the objective, strategy to deliver the objective, implies modification to the objective, if necessary, or other. The order of priority for the objectives was based on the number of supportive comments received.

Limitations of the Study

There were two main limitations for this study. First, the absence of videotaping in the focus group sessions, did not allow verification of each noted comment. Second, no electronic use of a qualitative analysis tool was used for the categorization of the phrases.

Data Analysis

Data, in this study, was analyzed by categorizing each participant's comment in relation to each of the objectives as previously explained. The phrases that begin with a verb were considered as supportive of the objective. The phrases that implied how, were classified as strategy providers to deliver the objective. The phrases that implied modification or opposition to the objective were acknowledged. The phrases that had no close relation to the objective being discussed were classified as "other".

Its rationale was the more supporting comments participants made, implied they agree to the objective presented. Further, the more comments received regarding strategies to deliver the objectives, implied they not only agree to the objective presented but also gives direction on how to deliver the objective.

The supporting phrases and strategy provider phrases were combined as the key to infer the IS curriculum objective is in agreement to the constituents' needs. That inference is considered the answer to the research question.

Findings

A total of two-hundred-one (281) comments were captured as either supporting or providing strategy phrases. The main researcher of the study annotated those comments as those were spoken by each participant.
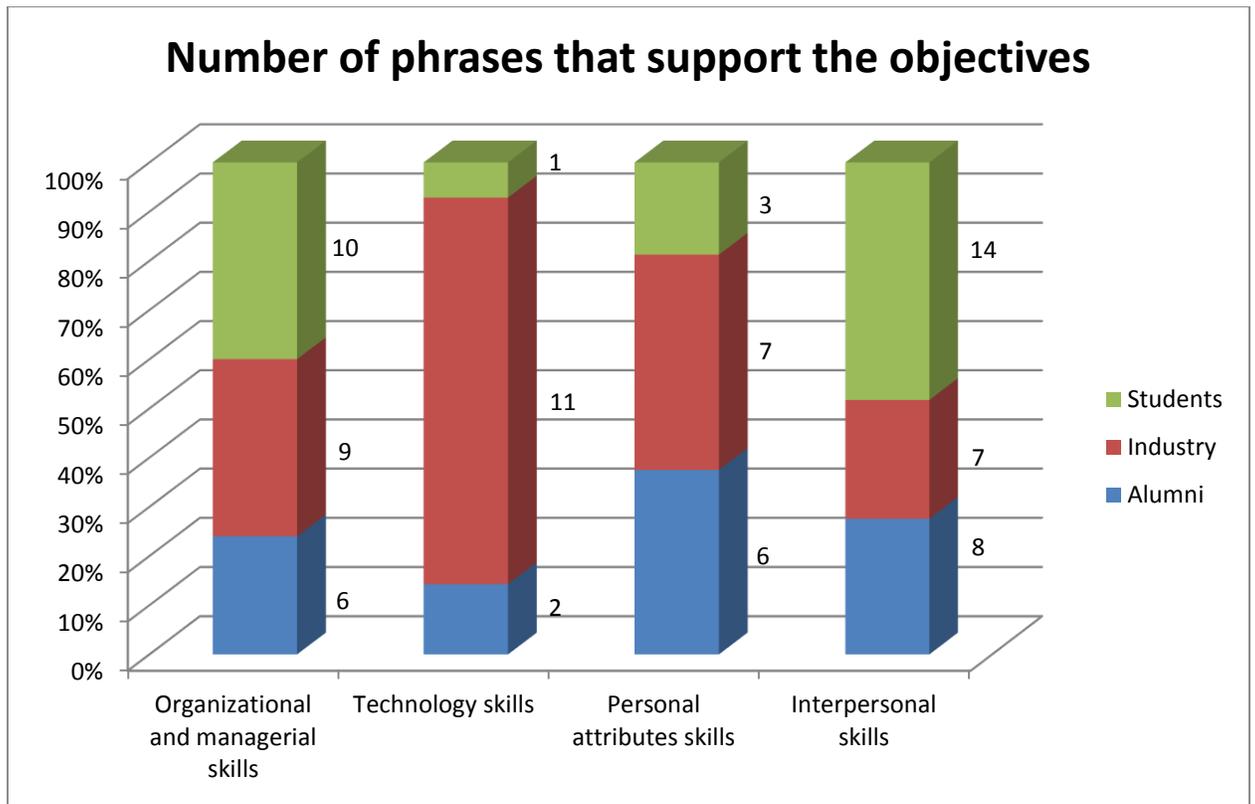
The findings of the study are summarized as follows:

1- Eighty-four (84) phrases were classified as supportive to the objective.

2- One-hundred ninety-seven phrases (197) were classified as suggestions or strategies to deliver the objectives.

3- No phrases were captured as implying change or opposition to the objectives.

4- No phrases were captured as other.

Figure 1 shows a column graph that details the number of phrases that support the objectives to each constituent group.

Figure 1: Number of phrases that support the objectives

Number of phrases that support the objectives

Skill	Alumni	Industry	Students
Organizational and managerial skills	6	9	10
Technology skills	2	11	1
Personal attributes skills	6	7	3
Interpersonal skills	8	7	14

There are some interesting facts to highlight from Figure 1:

1. Students gave more importance to interpersonal attributes.

2. Industry gave more importance to technology skills.

3. Alumni gave more importance to personal attributes skills.

4. Industry provided the most number of comments among all the three groups.

5. Alumni as well as students gave the least importance to technology skills.

6. Most of the comments received for organizational and managerial skills were from industry and students.

7. Most of the comments received for personal attributes skills were from industry and alumni.

Some of the supported comments received for the "organizational and managerial skills" objective were:

- "The IS professional needs to master the skills necessary to occupy upper management positions in the company. By playing a diversity of roles, the IS professional learns about different viewpoints, becomes more versatile, and is able to consider technology options beyond the traditional frames", as stated by an alumnus.

- "Professional skills constitute the goal which enables students to learn about implementation and improvement of systems", as stated by a student.

Some of the comments received as strategies for the "organizational and managerial skills" objectives were:

- "When teaching, emphasize upon the fact that IS is the energy that moves business. IS is not just about programming", as stated by an alumnus.

- "The word 'supervision' may be taught as part of the IS maintenance", as stated by an IS professional.

- "It would be great to be able to choose from an ample variety of 'real job' working experiences before graduation", as stated by a student.

Discussion

The IS curriculum objectives are leveraged or influenced to the constituents' requirements by the focus group interactions from the study. Most comments received from participants were either to support or to give strategy to the objective presented. Based on the constituents' statements, the IS curriculum objectives presented to them meet to their requirements.

According to the participants of this study, all objectives presented and discussed are relevant to the IS career. In addition, it is recommended to emphasize upon values and soft skills as well as life-long learning. Therefore, reinforcement of those skills is essential throughout the course of the IS academic career. Moreover, technological and professional as well as information systems context skills should be emphasized upon only in certain key courses of the IS curriculum.

Therefore, the findings of this study reveal IS curriculum objectives are leveraged to the constituents' requirements. The results of this study applied to only the sample. Generalizations of this study are to be done with cautious.

The findings of this study are consistent to the Aasheim et al., 2009 and the Havelka & Merhout, 2009 studies. This implies constituents' needs regarding the IS curriculum objectives are similar in different academic scenarios.

The study presented in this article gives a clear direction which IS curriculum objectives are relevant in the IS field according to its participants.

Future Direction

As Downey, McMurtrey & Zeltmann (2008) states: "because of the rapid change in the Information Systems field, the critical skills for the profession must be reassessed on a continuous basis". This study addresses the issue quite well. More studies can be conducted in order to assess

the objectives, an integral area of the IS curriculum. By conducting similar studies, the interactions between academics and program constituents is promoted and enriched.

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