Integrating Subject Matter and Practical Experience: 
Leveraging technology to support subject matter learning, creating room for business world relevant lectures and meaningful assignments

An Instructional Innovation Grant 
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Abstract
The innovation provides for a range of activities that accommodates the variability among both learners and instructors. Creating an integrated active learning environment allows students at varying levels of achieved learning and with different learning styles to individually progress towards higher levels of learning. Using technology as well other instructional tools to create an integrated active leaning environment supports learning in cognitive, affective and psychomotor domains of learning.
Background
This was an ambitious project to create and access the creation of an integrated active learning environment allowing students at varying levels of achieved learning and with different learning styles to individually progress towards higher levels of learning. The innovation was specifically applied in a core course (BUSA3000). Concurrently, similar implementation in elective courses at graduate level was pursued. The emphasis here is however to show how the innovation supports the achievement of higher level learning outcomes in a core undergraduate course.

Challenges of teaching BUSA3000 include:

- a significant amount of subject matter has to be addressed,
- many novel concepts need to be introduced to a full class of students where most have never been abroad and some never left the state,
- a framework has to be provided for meaningful CTW activity, information literacy, and presentation skills (in person or as a podcast).

BUSA3000 covers a significant amount of subject material and several diverse approaches (CTW, podcasting, information literacy). This provided a context for a series of teaching innovations structured together to reinforce each other on order to collectively create an enhanced environment for higher levels of learning. Some of the proposed activities had been explored briefly and in a preliminary fashion in the past.

Problem Statement
A primary problem faced in core courses is that on the one hand there is a broad range of skills, interest, motivation, and achieved levels of learning represented by the students in any particular section, while on the other hand the instructor seeks to teach a specific set of foundational subject matter content and assess learning outcomes in an equitable manner.

Several efforts by faculty in RCB have been made to address this problem, including Digital Tutors (Springer Sargent), Teaching As if Learning Mattered (Shrikande & Fendler), Quality Writing Across the Business Curriculum (Ellen & Willis), and The World of Wikis (Storey). Innovations like these address specific topics identified as challenges in the respective disciplines or fields of the innovators. The innovation sought in this project applied these types of specific innovations together in one single integrated active learning environment to accommodate the variability among the learners while
seeking to equitably define and assess learning outcomes in the context of a core course. Herein lays the specific innovation.

In the course of working on this project secondary problems that contribute to the pedagogical challenge were identified as a result of new challenges, which emerged during implementation. Additional reading in order to understand these challenges more fully also contributed significantly to the work product. Secondary challenges include (a) differences in learning styles of students, (b) divergent perceptions of importance of various pedagogical elements between student and instructor, (c) varying levels of instructional background, training, skill, experience and commitment on the part of the instructor, as well as the (d) availability of adequate assessment tools or skills in construction of assessment tools appropriate for the complex learning context.

The result was innovation that included a range of activities that (i) accommodates the variability among both learners and instructors, while (ii) allowing for the use of selection type testing (such as multiple choice) and (iii) rubrics to provide for equity between different sections in a multi-section core course.

Educational objectives

In the seminal work (Bloom et al 1956) and later revisions of Taxonomy of educational objectives: Handbooks I & II three domains of educational activity are identified. This work is later revised and expanded by Anderson, Krathwohl et al in A Taxonomy for Learning, Teaching, and Assessing: A revision of Bloom’s Taxonomy of Educational Objectives, offering a taxonomy table with the addition of four knowledge dimensions. A taxonomy of the psychomotor domain was described by Simpson (1972) with alternatives by Dave (1970) and Harrow (1972). Table 1 represents these taxonomies in a summary table.
Table 1 – Taxonomies

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<tr>
<td>1. Remember</td>
<td>1. Receiving phenomena</td>
<td>1. Perception</td>
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<td>2. Understand</td>
<td>2. Responding to phenomena</td>
<td>2. Set</td>
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<td>4. Analyze</td>
<td>4. Organize values into priorities</td>
<td>4. Mechanism</td>
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<td>5. Evaluate</td>
<td>5. Internalizing values</td>
<td>5. Complex overt response</td>
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<td>6. Create</td>
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<td>7. Origination</td>
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While all three domains of learning are identified, the agenda envisioned in *Taxonomy of Educational Objectives* and in *A Taxonomy for Learning, Teaching, and Assessing* views learning, teaching and assessing from the perspective of the **knowledge that is to be acquired** and the **cognitive processes required in order to realize the defined learning objectives**. The affective and psychomotor domains remained to be addressed by others at a later time. The innovation described in this report on the work conducted with the gracious support of the RCB Faculty Development Committee Instructional Innovation Grant describes specifically the creation of an active learning environment where multiple educational objectives in different dimensions for multiple domains (ideally all three) can be achieved concurrently.

The active learning environment uses **technology to support** a combination of lectures, quizzes, hands-on class exercises, discussion, individual and group assignments, which enables the instructor to offer a learning environment larger than that which one instructor could typically manage in a
given course context using traditional approaches. While the extensive use of a series of instructional approaches and technologies is in itself innovative at some level, the truly unique innovation here lies in the enabling environment that results from the synergy when used collectively.

Specifically, the graded activities in this core course are a subset of the exercises, activities and assignments in the course. By creating a larger palette of exercises, activities and assignments students are free to select those activities that best suit their specific learning styles, needs and interests from the larger set of learning activities offered. In line with the coordinated nature of a multi-section core course, students do complete certain individual assignments and team assignments that are used to assess learning. However, this approach allows on the one hand for more equitable assessment of learning given diverse student experiences, while the active learning environment offers several opportunities in each one of the domains for levels of learning higher than those one would generally expect of students at the general level for the course (in this case a 3000 level undergraduate course).

Work Scope & Plan
BUSA3000 is a core course taught in multiple sections by a combination of tenure track, clinical and teaching non-tenure track, as well as part-time instructors. The course syllabus is based on a template syllabus developed by a course coordinator and may me customized by individual instructors within reasonable limits. The course objectives are defined in the template syllabus, remain the same across all sections.

The scope of this innovation lies in the sections I taught within this framework. Elements of the innovation described herein has been developed over the course of more than 8 years of teaching BUSA3000, with most of the integration of the innovative elements implemented incrementally each semester during the F09 (90 students), SP10 (135 students), SU10 (45 students), F10 (135 students), and SP11 (45 students) semesters.

Instructional technologies
An important element in the innovation is the use of several instructional technologies to facilitate instruction, student assignments preparation and submission as well as assessment. The use of
instructional technology is not an end in itself but a means of supporting an active learning environment that includes instructional variety.

Classroom Response System (CRS) or “clickers” are used daily in classroom participation and to administer quizzes and exams. Clickers allows the instructor to pose questions either one-at-a-time or in a batch with students answering the questions using a hand-held pad. Answers are automatically graded, tallied and posted to the course grade book while the aggregated results can be displayed to the students. The timeliness of immediate feedback and opportunity to compare their individual performance to the peer group has a marked impact on a student’s perception on their relative performance in the course. Students tend to value prompt feedback on assignments and quizzes even when there is not a clear correlation between the time-interval of feedback student performance or student evaluation of instructors.

While CRS significantly reduces instructor workload by grading quizzes and exams instantaneously, the true value lies in the ability of the instructor to evaluate student learning in real time and make appropriate changes. Regular quizzes (typically one per chapter per week in the 10 chapter course) administered at the beginning class and prior to covering the material in class allowed me as instructor to identify areas that needed emphasis in class.

During class and in graduate course the use of selective questions during the class period are used to facilitate class discussion or assess difficult/complex material. Examples include the use of questions with multiple correct answers or questions without any correct answers to set up a debate between students that committed themselves to a given answer.

The MyRobinson SharePoint site is used to share information between instructor and students and also between students in the class and in groups/teams using collaboration websites, document libraries, lists, web-parts, discussion boards, and wikis. ULearn is available as alternative LMS (Learning Management System) at GSU.

In creating the type of integrated learning environment envisioned here the careful use of whatever platform is used to provide course material, communicate with students, collect assignments and post grades. MyRobinson as a Web2.0 tool has some unique capabilities that make it an excellent tool for this purpose. However, many of the newer versions of LMS systems offer many similar
features that make these equally appropriate. In final analysis the approach in using of any specific LMS is more important that the selection of the LMS.

The Online Writing Environment (OWE) by Writing Across the Curriculum at GSU is allows students to submit on-line drafts of writing assignments, in the case of BUSA300 specifically the CTW assignments. OWE allows the instructor or a writing consultant (GRA) to provide online feedback on a writing assignment using rubrics and in-text comments. BUSA3000 is a designated Critical Thinking through Writing (CTW) course and therefore uses a process of revisions in the submission of some assignments. Students receive feedback on draft writing submissions with the option of incorporating suggestions by the instructor in subsequent versions. A rubric, available to students, is used to for feedback and grading.

The challenge in using the OWE for CTW is that many (if not most) students have limited critical thinking skills as well as wide ranging writing skills. By itself feedback provided in any form has very little value if the students are not equipped to incorporate the feedback into their work as thereby improving the quality of the work submitted. In many cases the students ignore the feedback because they have no context or process whereby the modification of their work can be affected.

Creating a brief module on the structure of an argument (using Toulmin’s model for argument) for use at the beginning of the semester and consistently applying these principals of argumentation throughout the course (including the feedback on OWE) dramatically increased the value of both instructional tools.

Wikis are often viewed with skepticism in academic circles, mostly because of the concerns raised by the frequent use of Wikipedia by students. However, when used with care wikis offer much potential in the early stages of research as well as in a collaborative environment. In BUSA3000 I use wikis both to (i) share the syllabus and assignments instructions with students and (2) students contribute weekly to a team wiki as part of the group project in the class.

The most important value of the way wikis are used in the class team project may actually be in combating academic honesty issues. Teams of students collaborate each semester on research project about the business environment and practices in an assigned country. These projects are notorious for encouraging students to “copy-and-paste” collections of information from sundry sources into poorly referenced (if referenced at all) drafts that are then turned over to team member to be edited into a final country research report. Conflict often surface between students who take
academic honestly seriously, students with no clear understanding of intellectual property (often first generation college students of foreign students) and students who could care less other than to submit text to meet the page requirements of the assignment. Instructors fret at the challenge of resolving the challenges of these projects and at times consider the better to eliminate these assignments altogether.

Changing these team country assignments to a combination of a wiki and a short (5 page) team paper has eliminated almost all of the academic honesty issues from the submitted papers even of there is a new (but much more limited) challenge in appropriately referencing material in the wiki. Students are required to create a wiki on their country in MyRobinson. Working collaboratively they can then conduct research on the assigned country and contribute their findings to the appropriate portion of the wiki, adding a hyperlink to either the bibliography or the URL where they found the material. A significant amount of “cut-and-paste” still occurs but the nature of the exercise encourages providing citations at the time of the creation of the wiki entry. One could argue that the use of wikis in this manner may actually become part of a structured research (literature review) protocol.

Used this way wikis become part of the integrated active learning environment and support learning in emotive (team collaboration, peer review and feedback, valuing, organization and prioritization of values and internalization of values) and psychomotor (learning a skill set, guided response through instructor and peer feedback, mastering a mechanism, contribution through a complex overt response, adaptation of the process and the origination of new sets) domains. There is much potential still for refinement of the use of wikis in professional academic programs such as an MBA.

**Podcasting by students** is required as part of the final group project presentation with the option of making only traditional presentations available only in special situations. Students have access to training, equipment (hi-definition digital cameras, camcorders, microphones, editing equipment and software) and an excellent collection of stock photos, video and music at the DigitalAquarium at GSU. Increasingly students are interested in and capable of preparing a professional podcast as a submission of a presentation assignment.

One important lesson learned from the use is podcasts as team assignments is that video editing IS NOT conducive to group participation. Projects need to be structured and teams sensitized to the need to develop work plans and allocate individual workload to anticipate the unique nature of video production as a “singe person” activity. In an integrated learning environment that anticipates this
there then emerges an opportunity to for teams to engage in all levels of psychomotor learning (learning specific skill sets such as project management, editing, review; guided response through instructor and peer feedback, mastering multiple individual mechanisms; various contributions through a complex overt responses; adaptation of the processes in the execution of the project; the origination of new unique sets).

**Lecture Capture Podcasts** are increasingly enriching the learning environment. Research is beginning to assess and mostly show as insignificant the fear many instructors have that making their class lectures available after class will encourage absenteeism. Instead the value of lecture capture as an instructional tool has been demonstrated in many cases. Both the best students and the marginal students gain the most from the availability of captured lectures for review and/or study in preparation for exams and quizzes. Initially I recorded all lectures on an iPod, transferred these to a computer after class, produced and unedited podcast in MP3 format and then posted these to iTunes-U and MyRobinson for use by students. This was a time consuming task and a breakdown at any point in the process would result in unavailability of the recording and unhappy students.

RCB has made Tegrity available for lecture capture and this has automated the process completely. In addition, students now have access to the screen projected in class while they listen to the audio track. They can take notes, makes difficult sections for review (by themselves and also by the instructor) and discuss the classes with other students online. Since not all classrooms used for BUS3000 are Tegrity enabled a laptop with Tegrity installed is used for all instruction with either a wireless microphone or microphone array is used depending on the need to capture classroom discussion.

**Online video content** from sites like TED.com, iTunes, iTunes-U, YouTube and news organizations around the world are used in class, assigned for home work or used by students to illustrate and support their claims in group projects. In the context of international business there is an ever-changing environment, a huge corpus of relevant content literally every changing in each country concurrently and an equally rapidly changing technology framework enabling the sharing of the content. No amount of explanation or expert or personal authority in explaining life in modern India (for example) can match a 10 minute video from India that communicates the intellectual content as well as the colors, sounds, context.
As instructor this makes for a rich field of potential material. Conversely, not using this type of content quickly creates questions about the usefulness and timeliness of the content. An imbedded challenge is finding the appropriate content to illustrate concepts in class. Here an integrated approach where students are encouraged to find and use similar material in their projects becomes a practical way to “cast a wide net” in search of content. Often students identify and share excellent examples.

**FaceBook Pages** offer a way to reach students in a place where they spend a significant amount of time instead of being a competitor to the instructor. FaceBook pages are used effectively to share news stories and other content of interest with students on a regular basis. These postings are made to remain synchronized with the course and provide students with an opportunity to relate current events, views and discussions in the “real world” with what they learn in this class. In the case of BUSA3000 students in all sections are able to access the information posted for my section. FaceBook pages have been used successfully to engage students in class discussion on a topical subject. Students are spending time on FaceBook for personal reasons and often check FaceBook regularly during the day using their smart phones. Posting an article or video link relevant to the next class after they have “liked” the BUSA3000 page means that the article shows up in the news feed. While more extensive research needs to be conducted to assess the impact of this on learning it has been clear from class discussion that significantly more students read articles posted this way than articles posted to MyRobinson. More important is the broader reading that students do one they access the BUSA3000 page. They often link to other similar articles and/or read earlier articles also listed on the page. An unexpected outcome has been the number of students who continue to consult the BUSA3000 page after completion of the course and even after graduation from their RCB degree program. Indeed, engaged alumni have become an valuable source of new material for the BUSA3000 page and course.

**Additional Learning Activities**
As described earlier, the innovation in this project lies in the integration of many different elements in order to create and active learning environment. While technology enables the overall environment it is only part of the picture. Additional activities become important to support the overall improvement in levels of learning.
**Toulmin's Model of Argument:** One important additional activity is the offering of a framework for critical thinking. The challenge of instilling critical thinking skills is well documented. An important step in this direction was made with the creation of a set of short lectures on the fundamentals of critical thinking including using Toulmin’s Model of Argument. These lectures are used throughout the course, starting with a presentation of the model and followed by applications of the model in chapters and discussion throughout the semester.

Freestanding lectures however tend to have limited impact on learning. Lectures paired with the feedback on the CTW term paper offer students opportunities to learn how to evaluate and structure proper arguments in the context of hot-button contemporary discussion about trade, investment, competitiveness, outsourcing, etc. In addition rigorously requiring students to apply the basic principles of argument during class participation significantly improves the quality of class discussion. Also requiring the use of structured arguments for group assignments and even in peer evaluations are beneficial.

**Assessment of effectiveness**

Published research indicates that grades are often not good short-term measure of the success of teaching innovation and that student evaluations often decline for a while during and after implementation of instructional innovation.

In the proposal it was anticipated that students performance (grades) and student course evaluations (SEIPs) would be used to assess the success of the innovation. However, analysis of the data resulted in inconclusive results, both on terms of absolute measures and statistical validity. Work on assessment if the value of the innovation continues using new methods that will hopefully provide a better measure of the success of failure of the innovation.

With quantitative measurement inconclusive I was forced to look at qualitative assessment. Informal survey data shows that students in significant numbers respond favorably to the options available them in the course to for achieving higher levels of learning. A significant number also express the wish that other instructors will make use of some of the tools and learning activities in their classes. Informal surveys of students in other sections of BUSA3000 suggest that they perceive the additional options as something that they would value if offered to them.

Preliminary evidence suggests that students have valuable learning experiences at higher levels in all domains, including students who:
• Develop skills in managing group projects, make personal contributions to team projects and evaluate themselves and their peers in team activity participation,
• Respond to challenges in group projects that indicates higher levels of affective learning than observed prior to innovation
• Set personal priorities in individual and group projects. The option of rising to higher levels of learning in areas where they are stronger to offset for constraints on time and relative value of some other activities
• Develop higher levels of psychomotor learning as they participate in case discussion, classroom activity, use technology in taking exams and preparing written and presentation assignments
• Advance to higher levels of cognitive learning

Specific learning outcomes for higher-level learning in all domains and the assessment of these are currently being implemented in an elective course (4000 level) and will also be implemented in graduate courses during the summer and fall of 2011.