

Using Varying Pedagogical Approaches in College Classrooms: Increasing Motivation for Undergraduate Finance Students

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Abstract

This paper discusses the collaboration of a cross-discipline teaching partnership aimed at addressing lagging student motivation and engagement in finance courses at a regional university in Texas. Based on research in current university-student demographics, pedagogy and teaching methods, and pedagogical training for university faculty, this collaboration between the disciplines of Education and Finance resulted in the use of a variety of pedagogical tools and techniques in the finance classroom. These techniques include project based learning, tiered assignments, and immediate feedback assessment tools. Anecdotal evidence and faculty evaluation comments both suggest that implementing these techniques has led, for students, to increased participation in and greater understanding of requisite course content.

1. Introduction

The increasing diversity of students, the possibilities and challenges raised by technology-mediated instruction, and the trend toward emphasizing learning outcomes over teaching techniques all require that faculty members develop knowledge and skills as effective teachers. Ann E. Austin

University and college faculty members in the field of education are experts in a variety of teaching methods and educational theories. Faculty in other disciplines however are experts in content but are not necessarily given training or practice in the *delivery* of content. Additionally, the traditional role of faculty as classroom teacher has been down played in American universities, with the primary foci being research and publication [1]. Finally, with the ever-changing face of university student bodies, schools are faced with the task of engaging students who learn in a variety of ways, the least engaging of which is the traditional lecture [2].

Parallel to the changing demands that faculty be more responsive to students' learning

styles, educational research has given birth to a variety of teaching methods that faculty can use in their classroom practices. While primary and secondary school teachers are often eager to try new methods, university professors commonly use the 'lecture-notes-homework-exam' model by which they were taught. In the past, when only the academic and financial elite made it to universities, students felt privileged to have a coveted classroom placement. With the drastic rise in the number of students in colleges and universities, the increased diversity represented in the student body, and students' exposure to innovative and motivating teaching methods in PK-12 settings, students are no longer willing to sit passively in lecture halls copying word-for-word from lectures and chalk boards.

Accrediting agencies are also pressing for universities to implement a variety of teaching methods to better address the dimensions of diversity in the classroom in order to increase the impact of university instruction on students. Additionally, students today are held to increasingly demanding standards regarding knowledge and skill attainment; norm-referenced and criterion-referenced assessments are becoming more prevalent in all fields of study and higher emphasis is being placed on the results. Finally, employers who hire university graduates are looking for ever-more sophisticated candidates who are skilled in content as well as 21st century skills such as problem solving, creativity, teamwork, and effective communication strategies. Faculty, therefore, are justified in asking how to increase student motivation using innovative teaching techniques without losing valuable classroom time for addressing all content while infusing the curriculum with experience using in-demand 21st century skills.

This paper highlights a collaborative effort on the part of two university professors, one in the College of Business Administration and the other in the College of Education, and their use of three teaching methods in the business classroom aimed at increasing the motivation of students, thereby raising the interest in, motivation toward, and impact of instruction. The application of innovative

methods of project based learning (PBL), tiered assignments, and IF-AT assessment options are discussed, as are ways to balance innovation with content preservation, assessment and student feedback, challenges of implementation, and continual modifications to practice.

2. Review of Literature

2.1. Students

Today's college students are largely members of the Millennial generation, meaning they are more ethnically diverse, technologically savvy, and socially active than preceding generations. They are also, however, over scheduled and highly pressured by both parents and peers to be involved in a variety of activities as well as excel both academically and professionally. Unfortunately, due in part to nearly obsessive parental involvement in all phases of their lives, Millennial students tend to lack patience and problem-solving skills, both of which are critical for professional success in today's complex and global world [3].

Other sources discuss this generation's lack of academic interest, stating that "despite the increased involvement in college-prep courses, students show signs of increasing academic disengagement: Since 1989 the percent of students who report spending at least six hours per week studying or doing homework has dropped from 42.3 to 35.7. Further, the percentages reporting that they either asked a teacher for advice after class or visited a teacher's home have also been on the decline" [4]. Students today often lack the time in their schedule to spend in concentrated effort studying and are perceived as not having the motivation or courage to speak with a professor regarding content misunderstandings. These reports would indicate that the onus is then on the professor to ensure students are able to comprehend the material presented and apply it in real contexts.

2.2. Role of Faculty

Historically, practice in higher education assumed college and university faculty were required only to be experts in subject matter to be effective teachers. "At research universities, academics are expected to produce and to disseminate knowledge. For academics trained as researchers, this means that they are often well prepared for the research role. In contrast, many academics have had little or no formal teacher education to prepare them for the teaching role" [5]. Recently however higher education has recognized the need for faculty members to develop competencies beyond their disciplines and become

experts on the theory and practice of education [6]. Additionally, researchers note "excellence in teaching is complex and difficult to achieve. It is about content expertise and methodological technique, as well as about participants in the educational enterprise valuing and achieving quality outcomes" [7]. With the available literature on student characteristics and motivations, educational researchers and practitioners have developed and refined a variety of pedagogical tools for use in a wide range of classroom settings. Therefore it is appropriate to reflect on our professional responsibilities regarding our students. "Now we must turn this tough scrutiny on our own practices, traditions, and culture. Only by doing so will we make teaching truly central to higher education" [8].

3. Implementation

3.1. Concerns

As with any innovative idea, there are risks and considerations when implementing new methods of teaching in a college classroom. Beginning this process of pedagogical change, we were concerned with several issues, some of which we felt were in our control and we could address proactively; other issues we felt we could not control, and we would instead need to address in a reactive manner.

The first concern we had was the preservation of content. With ever-increasing demands for accountability by accreditation bodies and employers only willing to hire highly-skilled graduates with a plethora of 21st century skills *and* the skills incumbent in their course of study, it would be inappropriate to lower our academic standards and ask our graduates to enter the workforce with fewer skills than their predecessors. With classroom contact hours determined by university governing boards and state departments of education, increasing the number of hours we spend in front of our students is not an option. Instead, we had to ensure that whatever methods we employed did not supplant content delivery. Focus had to be on *how* the material was taught, not *what* material would be taught.

Another challenge we identified was in the implementation itself: the logistics of attempting new pedagogical methods without training in the basics of educational theory, brain-based learning, and human growth and development. While these topics are standard in schools and colleges of education and are the cornerstone of pedagogical innovation and change, they are not necessarily content expected to be mastered by faculty in other disciplines, who are experts in their own fields of study. One solution to mitigating this challenge is to engage in short-term intensive professional

development intended to introduce the basics of pedagogical theory without the in-depth study necessary for a degree in curriculum, education, or pedagogical design. This was initially achieved through one-on-one tutorials between the two faculty involved and continued with university-offered professional development, beginning with a short course in project-based learning.

3.2. Project Based Learning

The most labor-intensive step toward including more active pedagogy in the finance classroom was adding a PBL component. Starting with the project structure designed by the Buck Institute for Education (<http://bie.org/>), an endowed organization of national repute in education research, we identified and incorporated 7 components as essential to the success of the implementation of our PBL: (1) entry event; (2) guiding questions; (3) core content; (4) 21st century skills; (5) voice and choice; (6) opportunity for revision; and (7) presentation to an authentic audience. Working within the organizational construction of these 7 components, we designed a project involving the most critical question addressed in corporate finance: How do we evaluate investment opportunities to maximize shareholder wealth? Funck, Wentworth, and Saxon [9] provide a detailed description of the first implementation of PBL in this context.

For our purposes, it was critical to retain all teachable content, maintain individual accountability for students, and create authentic opportunities for students to practice real-world application of course content using 21st century skills. To do so, we started with the end in mind, the summative assessment project we designed for our students to complete, and back-planned the semester from there. We knew that changes to the course schedule would have to be made to allow time for working on and presenting the students' final products, but we did not feel that dropping *content* was an option. We also did not want to eliminate formative assessments, which provide important feedback to both instructor and students regarding progress toward learning goals. Our answer was to trade a portion of the traditional formal assessments with project components that would show content mastery and ultimately become part of the final project. We did, however, preserve several individual assessments in order to assess students individually on requisite knowledge and skills. This helped to build in the accountability for each student that we felt was important.

Completing a project in content courses is not new. It is a standard way to respond to the age-old student question of "When will I ever use this in real life?" Many experienced college and university faculty already have a project they incorporate in

their courses. PBL differs from other types of course projects, many of which have been designed, incorporated, and abandoned by educators at all levels, in how it is incorporated throughout the curriculum. In a PBL model, the project does not serve as an add-on to the curriculum; instead, it is an integral part of the students' experience for the entire duration of the course. With a traditional project, conversely, the project can easily be dropped if time does not permit it. Not so with a PBL model, where the project is introduced at the very beginning of the course, and students work throughout the semester on portions of the final product (also called a 'deliverable'). The project serves as the structure that gives meaning and focus to the knowledge and skills the students are learning throughout the course. It also serves as a motivating force as students understand the practical application of each new topic introduced.

Changing from a course with a project to a PBL course does not mean instructors have to begin anew, discarding a project they have used successfully in the past. Hansen describes his process of turning a summative assessment project into the basis for a PBL project [13]. (Note that Hansen's use of the PBL acronym refers to 'problem' based learning. A *problem*-based assessment is one type of *project*-based assessment.) Danford takes implementation a step further, involving corporate sponsors who in turn are presented with options for internationalizing their business. This added dimension creates even more motivation, in part from the very real clients for whom the students are 'working' and in part due to the competitive nature of business, which the students are able to experience first-hand in this PBL format [10].

Leadership at our university encourages faculty to include PBL in their content classes. Support for faculty interested in this methodology comes in the form of professional development and on-going access to education professionals with extensive training and experience in PBL design and implementation. Sessions are offered that include theoretical training while walking participants step-by-step through the development of a project for their own classroom. The authors of this paper took full advantage of the university's resources and attended several training/planning sessions while designing, implementing, and revising the project. The sessions offered ample time to collaborate on their project while PBL experts were on hand, allowing for immediate feedback and assistance when necessary.

While embarking on this journey, as academics we wanted professional and academic support for our choices. The Advance Collegiate Schools of Business (AACSB), the accrediting agency to which our College of Business Administration is aligned,

stipulate for accreditation that business curricula “facilitate and encourage active student engagement in learning” [11]. A PBL component addresses this mandate by offering students opportunities to apply knowledge and skills learned in the classroom to situations they could realistically face in their intended career as finance professionals. What can seem to be esoteric skills without practical uses then become critical components of what students intend to do professionally, an aim that is echoed by academics [12].

Implementation however was not without its struggles, even with all of the resources that were afforded us. Adjustments such as replacing group members when a student dropped the course had to be made as the semester progressed, and there were difficulties scheduling an authentic audience of business faculty and practitioners during the busiest time of the academic year: exam week. Other adjustments such as changing the introduction to the project (called the ‘entry event’) and revising project components to better reflect students’ need for choice was completed after each project implementation.

3.3. Tiered Assignments and Assessments

Sometimes, however, wholesale changes to the curriculum can seem overwhelming, and attempting smaller-scale innovations can be easier and less stressful for faculty. For example, in a newly-designed course focused on teaching financial modeling using Microsoft® Excel®, we chose to limit our pedagogical innovation to creating a tiered final product that allows students options for demonstrating their knowledge and skill level.

The basic tenets behind tiered assignments and assessments are differentiation and voice and choice. Differentiation is defined as tailoring educational experiences to better meet the needs of individual students. Voice and choice, often used to help differentiate instruction, means to give students options in their learning or in how they demonstrate their learning.

One way of differentiating assignments is to offer students a variety of options from which to choose based on individual learning styles. This enables students to showcase their knowledge in a way that best fits who they are as learners. According to Gardner’s Multiple Intelligences (MI) theory [13], there are a variety of ways in which students are best able to understand, retain, and illustrate their proficiency with content knowledge. In lecture-based classrooms, linguistic learners, (those who learn best through language) thrive. Lectures, however, do not necessarily address the learning needs of the other types of learners: visual (students who think in terms of maps, charts, graphs, and other organizational representations); bodily-

kinesthetic (your students who relate learning to the movement of their bodies and have difficulty sitting still while learning); musical (those who recognize rhythms and patterns in learning); interpersonal (group-oriented students who appreciate the social context of learning); intrapersonal (those who reflect on and personalize new information); and logical-mathematical (abstract thinkers who look for patterns and relationships in information).

Tiered assignments allow students to choose which assessment activities they complete, what steps and methods to use while they create their final product, or how they will represent the evidence of learning. This can be done using a single assignment sheet that lists alternatives from which the students choose, much like a restaurant menu from which diners choose an appetizer, salad, entrée, and dessert. To ensure that all students are held to high academic standards and show proficiency on all eligible content, scoring guides such as rubrics must focus on content and not offer biased advantages depending on the assignment choices students make.

When creating a tiered assignment it is critical to ensure that the structure of the assignment addresses the same content knowledge and skills regardless of which options the students choose. One way of doing this is by offering different outcome products that require similar knowledge and skill attainment levels. For example, if a student is expected to show proficiency in research skills, they might be offered the options of a written final report, an oral final report (linguistic and interpersonal learners), music lyrics (musical learners) or a poster-session-style gallery walk (visual learners). Each of these can require that citations and references be included without limiting a student’s ability to be successful due to anxiety over the *form* of the assessment.

In contrast to this, if the eligible content is in the *format* of the final product, such as a corporate financial statement, then options may be process rather than product oriented. For this example, faculty may offer the options of working individually (intrapersonal learners) or working in groups (interpersonal learners). Faculty could also offer the requisite data in narrative form (linguistic learners) or graphic form (visual learners). Note that not all learning styles must be addressed with all assignments. By offering a variety of choices on several key assignments, however, students are exposed to a variety of educational experiences, which further increases interest and motivation, contextualizes learning, and leads to greater retention.

The tiered assignment for this financial modeling class was integrated into the final course assessment, a group presentation using a variety of financial metrics (refer to Figure 1). The project begins by having students create a company name

and logo, product design, and presentation format. This allows students to showcase not only their strengths in the content; but, they are also expected to determine which of the calculations are most appropriate for their given data and that best supported their accept/reject recommendation for corporate consideration.

Tasks		Pts
Tasks every group must complete:	Create Company and Product	10
	Calculate WACC	15
	Capital Budgeting	20
	Project Metrics (6)	15
	Sensitivity (5) and Scenario Analysis (5)	10
	Include a chart (format and labeled)	5
	Presentation (PowerPoint and spreadsheet)	15
	Professional behavior and appearance	5
	Good design, appearance, organization	5
Total Section Points:		100
Select 1 of these tasks:	Find accepted projects with capital rationing and constraints	10
	Optimal capital budgeting with no capital constraints (IOS)	10
Total Section Points:		10
Select 1 of these tasks:	Cash Budget	15
	Financial Statement and Ratios	15
Total Section Points:		15
Select 1 of these tasks:	CAPM Demonstration	12
	Altman's Z-score analysis	12
Total Section Points:		12
Project Total Points		137

Figure 1. Example tiered assignment

In this case, once the students had created the structure for their final company and product, the assessment required that all students complete a series of tasks, including WACC calculations, capital budgeting, project metrics (with associated accept/reject decision), and sensitivity and scenario analysis. The students could choose, however, one option from each of the following subsets: (a) capital rationing and constraints *or* optimal capital

budgeting with no constraints; (b) cash budget *or* financial statements and ratios; *and* (c) CAPM demonstration *or* Altman's Z-score analysis. The assignment instructions make clear that students are to complete all of the tasks in the first section but should choose one option from each of the three remaining sections. It is important to note that students show their proficiency on all financial-calculation tasks via homework problems and in-class on-demand assessments, such as the quizzes described in the following section.

Offering tiered assignments and assessments is appropriate at the collegiate level as doing so allows instructors to tailor instructional design, process components, and outcome products, and allows students to demonstrate their knowledge and skills in ways that honor their intellectual differences by playing to individual strengths. Differentiation is becoming increasingly critical. Indeed, it has been suggested that college-level instructors can no longer ask 'if' they should differentiate their instruction, but now need to ask 'how' to differentiate instruction [14].

3.4. Alternative Assessments

The primary alternative on-demand assessment employed in our classroom utilizes the Immediate Feedback Assessment Technique (IF-AT). This system was developed and is commercially offered by Epstein Educational Enterprises (<http://www.epsteineducation.com/home/>).

The IF-AT system uses a multiple choice answer sheet with a rectangular opaque film covering the answer choices. Students select an answer by 'scratching off' the corresponding film; the correct response is indicated by a star symbol within the exposed rectangle. If/when a student selects an incorrect response (indicated by an empty rectangle), they must re-read the question, choose a different response, then scratch off remaining answer choices until the correct response is identified. This approach is referred to as an 'answer-until-correct' assessment format. Students earn full credit for selecting the correct answer on the first attempt, and they earn progressively less credit, at the instructor's discretion, for answering correctly on each subsequent attempt.

The incorporation of this immediate feedback technique into the finance classroom provides three major advantages. The AT-IF system allows (1) students to correct their misconceptions; (2) instructors to differentiate and reward students for partial information; and (3) an increase in the level of student engagement.

With the IF-AT system, students receive immediate feedback, which allows quizzes and exams to be used as a teaching tool instead of solely as an assessment exercise. "At one end of the

continuum is a clear distinction between providing instruction and providing feedback. However, when feedback is combined with more a correctional review, the feedback and instruction become intertwined until 'the process itself takes on the forms of new instruction, rather than informing the student solely about correctness'" [15].

In contrast, feedback associated with traditional essay format or multiple choice testing is normally delayed or absent. Epstein et al. (2002) stated, "...drawbacks of both [essay or traditional multiple choice] test formats are the failure to facilitate learning during the test-taking process and the return of either instructor- or machine-graded tests without information to correct inaccurate responding, an essential feature of the learning process" [16]

The feedback provided to students through the use of the AT-IF system is corrective. The student's final response is always correct; students therefore know the correct response for each question before the assessment exercise is completed [17]. The research of Dihoff, Brosvic, and Epstein found, "...combining immediate feedback with the opportunity to answer until correct not only assesses but also teaches, in a manner that promotes retention of course material across the academic semester" [18].

To demonstrate the impact of immediate feedback, Epstein et al. [16] conducted a study in which students used either the IF-AT or traditional Scantron forms to respond to unit exams, and then all students used a Scantron form to complete the final examination, which contained questions repeated from the unit exams. Study results indicate that 60 percent of the errors made on the unit exams utilizing the AT-IF system were completed correctly on the final exam. Only about 30 percent of the errors made by students using the Scantron forms (in the absence of corrective feedback), however, were corrected on the final examination.

DiBattista and colleagues administered to undergraduate students questionnaires pertaining to student perceptions of the IF-AT system. The majority of students indicated, "... the immediate feedback provided by the IF-AT allowed them to learn from their mistakes, but also that they learned more using the IF-AT than using Scantron forms" [17].

A second advantage to using the IF-AT system is that it allows students to earn at least partial credit: a student who knew enough to narrow down the options can be distinguished (and subsequently rewarded differently) from another student who simply guesses because they lack understanding of the material. Research suggests it is appropriate to reward students for proximate knowledge, "Informed guesses, which are based on a critical analysis of the alternatives presented in a [multiple choice] item, provide a valid measure of achievement" [19].

Multiple-choice tests provide the advantage of easy and quick grading, but are unable to differentiate between students with partial knowledge and those who guess answers. With the AT-IF system, instructors are able to assign partial credit without the problems associated with essay assessment, including subjectivity in scoring, variation in the quality and quantity of feedback, and the substantial investment in instructor time and energy, which subsequently lengthens the time between assessment and feedback [16].

Another advantage to implementing the IF-At system, is the ability to increase student engagement in the learning process. When using this system, the instructor becomes more a manager of the learning process while students are empowered to take more control in the learning process. "Active involvement in the assessment process plays a crucial role in the acquisition of information, the incorporation of accurate information into cognitive processing mechanisms, and the retrieval of correct answers during retention tests" [16].

Cotner et al. examined rapid feedback techniques, with the intent of encouraging student engagement with course material. "When used in groups, the IF-AT is particularly effective as a means for encouraging not only individual engagement but also student-student interaction and peer instruction, teaching techniques that have been shown by several decades of research to be excellent for encouraging active processing of course material and hence for enhancing student learning" [20].

Supporting our three objectives in utilizing the AT-IF system, Cotner et al. state "... there is no doubt that students enjoyed the use of the IF-AT in all three courses. It also seems clear that students appreciated group interaction centered on the IF-AT and that they value the immediate feedback provided by the IF-AT because it reveals misconceptions and improves their exam preparation. Furthermore, none of these effects seems to diminish with repetition: students continue to remain engaged during IF-AT exercises throughout a semester, and they do not appear to tire of the IF-AT even when the technique is used during every class session" [20].

4. Discussion

The purpose of incorporating innovative teaching methods in undergraduate finance courses was to increase student interest and motivation in the content, which would ultimately lead to deeper and more sustainable learning. This was in response to our perception that students were not connecting with the lecture-style teaching in a meaningful way, a belief supported by literature on Millennial students. Students seemed disengaged and did not willingly participate in classroom discussions. Very

few students asked questions during class and rarely offered suggested solutions to posed problems.

The colloquial saying is 'the proof is in the pudding.' Pedagogical changes were in response to a perceived lack of student motivation, and if the extra effort did not seem to increase student engagement, then it would be difficult to justify the time away from other professional responsibilities, such as research, writing, and service. Additionally, all the innovation and effort is for naught if students do not learn at least as much as they would when given traditional instruction. Although educational researchers show data indicating academic success using alternative teaching methods, if the same did not hold true for our students, then the pedagogical changes could not be justified.

Our initial pedagogical innovation was the utilization of the IF-AT assessments, to which students responded favorably. Over the course of several semesters the authors continued to find research-supported, student-centered teaching methods that would address the needs of learners in an ever-changing world. Working with university leadership intent on bringing more practical-application experiences to the classroom, the design and use of a PBL model was successful and well received by students. Due to the success realized from previous pedagogical changes, we were motivated to implement student choices by including a tiered component to the summative course assessment when developing a new course.

We have also noticed an increase in interest and motivation on our own part. It is satisfying to watch students enter the classroom for their final presentation with obvious enthusiasm. In the PBL course, there are so many volunteers to present first that numbers have to be drawn to determine presentation order. This student excitement comes from having a deep understanding of the financial metrics they are presenting and a sense of ownership of the final project. This is in stark contrast to the apprehension previously displayed by students entering for the traditional final exam, who are unsure of their knowledge attainment (because it has not been tested in practical applications).

A primary concern of faculty who use innovative teaching methods is a negative impact in the feedback they receive from students. Many universities include student-completed evaluations in some form in the tenure and promotion process, making any change in the status quo a potentially risky endeavor. Through anecdotal feedback and comments on the faculty evaluation form, students expressed appreciation for the variety of teaching methods used and enhanced educational experience. One student commented, "I went to work with my dad and on his wall was the exact information we are working on in the PBL assignment. It's great to know we are preparing for exactly what we need for

our jobs." Another student stated, "I had a great time with this project, and have enjoyed your class tremendously this semester." This feedback was valuable in the decision to continue and modify the attempts to add varied learning experiences to the finance classroom.

While not all students appreciated the change in methods, there were by far more positive comments regarding the new methods than there were negative comments. In general, negative comments dealt with the group/collaborative context, and centered on dissatisfaction with the amount and quality of their peer's production. For instance, one student commented, "every group had people not doing their share." To address this, a peer evaluation component was integrated into the PBL assignments. This evaluation allowed students' voices to be heard regarding the collaboration component of the project and held all group members accountable to the outcome product. This was not done as a punitive action, however. It was added and explained as a pre-emptive measure, to inform all group members that their participation in the group was critical to group success, and failure to participate was not an acceptable option. By outlining the expectations in advance, students were aware of their responsibilities and could act accordingly.

Additional complaints centered on the extra time that was necessary to complete tasks. According to student evaluation ratings, some students felt as though the "amount of work in other (non-reading) assignments" was relatively higher in this course and "I worked harder on this course than on most courses I have taken." A basic understanding of learning theory reveals that the more time and effort a student spends on content, the more likely they are to learn the content and the more deeply they will learn. Therefore, students who comment that they are required to spend additional time in preparing for their assessments actually convinced the authors that implementation of these new methods was a positive step that would help students despite the students' responses. "It was the one of the only group projects I have participated in where everyone was on the same page."

5. Conclusion

The application of innovative methods such as project based learning, IF-AT assessments, and tiered assignment options presents both challenges and rewards to faculty who are willing to put in the extra time and effort necessary to learn, design, and implement these methods in their classes. While this has not been without struggles and frustrations, the authors believe the innovations offered their students the opportunity to be more successful in attaining content knowledge and skills while

increasing motivation for completing assignments. While this article has focused on three teaching tools, several others have been implemented as well. These faculty members intend to continue to innovate in their classroom with the goal of engaging students who go on to become skilled and knowledgeable assets to their employers.

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