Teaching Computer Packages to Students Different in Everything

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Abstract

North Dakota State University offers two distinct courses focused on teaching microcomputer packages, with a specific emphasis on Microsoft Office applications. The first course, CSCI 114: Microcomputer Packages, is delivered in a traditional classroom setting with instructor-led lectures, while the second course, MIS 116: Business Use of Computers, is offered exclusively online. The former attracts students from diverse academic disciplines, whereas the latter is primarily attended by business majors.

This paper examines how differences in course delivery, along with variations in student motivation, interests, and prior computing experience, influence instructional approaches and learning outcomes. Although the flexibility of the online format attracts more students, the academic performance in the instructor-led course is consistently higher.

1. Introduction

Undergraduate students at North Dakota State University must fulfill general education requirements by selecting between two comparable courses: CSCI 114: Microcomputer Packages and MIS 116: Business Use of Computers. The former is conducted in a traditional, instructor-led environment, while the latter is offered solely online. Both courses provide essential computer skills required for subsequent coursework and professional life. Specifically, CSCI 114 emphasizes computer concepts, operating systems, and Internet fundamentals, whereas MIS 116 focuses on the application of computing within business contexts through data collection and analysis using both quantitative and qualitative methods.

Each course incorporates practical, hands-on training in Microsoft Office applications. CSCI 114 covers MS Word, MS Excel, MS PowerPoint, and MS Access, with a particular emphasis on MS Word due to its extensive academic and professional use, while MIS 116 offers in-depth instruction in MS Excel and MS Access. Both courses leverage current online tools, such as Blackboard and MindTap/SAM, to facilitate learning. The differences in course delivery, along with the diverse backgrounds and motivations of the enrolled students, pose significant challenges in achieving optimal educational outcomes. This paper describes these challenges and outlines the strategies implemented to address them.

2. Background

2.1 CSCI 114: Microcomputer Packages

CSCI 114 is delivered in a traditional instructor-led format, offering a general introduction to essential computing concepts such as types of computing devices, Internet usage, computer and software security, search engines, and web browsers. The course provides basic, hands-on training in Microsoft Word, Microsoft PowerPoint, Microsoft Excel, and Microsoft Access [1]. Notably, the curriculum allocates more extensive coverage to Microsoft Word, reflecting its critical importance in both academic and professional settings. This course attracts students from a wide range of disciplines.

2.2 MIS 116: Business Use of Computers

MIS 116 focuses on the practical application of computer technology within business environments. The course emphasizes spreadsheet and database management through extensive, hands-on use of Microsoft Excel and Microsoft Access. Recently, Microsoft Outlook and Microsoft Publisher have been incorporated to further enhance learning outcomes in business computing. The course is primarily attended by students majoring in Accounting, Business Administration, Marketing, Finance, or related fields such as Sport Management and Agribusiness.

3. Course Design

Both CSCI 114 and MIS 116 utilize Blackboard as the institutional learning management system to handle administrative tasks such as enrollment, announcements, and grade tracking. However, Blackboard does not provide the comprehensive course content necessary to meet the instructional objectives. To address this, instructors have supplemented Blackboard with Cengage textbooks and two online tools, MindTap and SAM, which deliver interactive, hands-on learning activities and e-text materials. Approximately three years ago, both courses transitioned from Pearson's MyLab IT to MindTap and SAM, which better meet the needs of North Dakota State University. These tools restrict access to authorized students and integrate seamlessly with Blackboard, allowing students to launch course activities directly from the LMS. Additionally, the MindTap dashboard provides detailed information on overall grades, assignment-specific scores, the number of attempts, and remaining submission opportunities.

SAM [7] delivers a variety of learning activities, including training simulations, examinations, and real-life scenario projects, that are graded online. Along with providing grades, SAM generates feedback reports that highlight errors and offer guidance for improvements, thereby enabling students to revise and resubmit their projects. Notably, project work constitutes the most heavily weighted component of the overall assessment in both courses.

MindTap [5] serves as an integrated platform for delivering the course content—supplementing SAM's activities with an eBook. Its dashboard facilitates the tracking of overall performance and provides an enhanced reading environment equipped with features for note-taking, text highlighting, and access to a glossary and dictionary.

4. Impact of Instructional Approaches on Students

Faculty often consider the relevance of subject matter to students' future careers; however, the depth of skills required in different industry settings can vary significantly and may not be immediately apparent unless instructors remain engaged with current industry practices [8].

A noteworthy observation is that some students cease completing assignments once they perceive that their overall grade has reached a "C." This tendency adversely affects performance on subsequent assignments, particularly those related to Microsoft Access, which are positioned later in the semester and are critical to achieving course objectives.

In CSCI 114, the instructor employed a strategy of walking students through a project analogous to the required assignment to effectively impart hands-on skills in Microsoft Office (Word, PowerPoint, Excel, and Access). This approach significantly improved learning outcomes. Conversely, in MIS 116, the instructor noticed that receiving multiple emails regarding the same project task prompted the creation of a tutorial posted on Blackboard. This resource proved especially helpful for students who began their assignments only a few hours before the deadline, thereby reducing individual inquiries. However, if such tutorials are posted too late (typically one day before the deadline), advanced students may have the opportunity to resolve issues independently.

5. Traditional Instructor-Led Versus Online Courses

Traditional instructor-led courses are inherently constrained by time and location, allowing instructors to predict the required instructional effort and provide immediate, personalized assistance. In contrast, online courses rely primarily on asynchronous communication, such as email, for support. As deadlines approach, instructors may receive numerous repetitive inquiries; providing individualized assistance under these circumstances can be both time-consuming and inefficient.

Despite these challenges, online learning offers the advantage of self-paced study, which can lead to longer retention of skills and concepts. Additionally, the immediate feedback provided in traditional classes may help prevent common errors and reduce the time required for subsequent corrections.

6. Different Approaches in Teaching Each Course

To mitigate the volume of repetitive emails in the online course, the instructor established a discussion board where students can post queries and review responses collectively. This strategy reduces redundancy, as students can refer to previously answered questions rather than contacting the instructor individually, a challenge that is less prominent in the traditional course.

Furthermore, different strategies are used to manage assignment deadlines in the online course. One approach makes all assignments available from the start of the semester and remains open until the end. However, this flexibility can lead to procrastination, with many students beginning assignments only near the end of the term. To counteract this, the instructor allows students the option to work ahead of schedule while enforcing a sequence of interim deadlines to ensure timely completion of grouped assignments. In the traditional instructor-led course, fixed assignment dates and in-class examinations help maintain student motivation and engagement.

7. Related Work

Prior research has underscored the importance of mastering spreadsheet and database skills for business students [2]. Saquer [3] discussed the design and evolution of data mining courses for both Computer Science and non-computer Science students at Missouri State University, a discussion that parallels aspects of the approaches presented in this paper. In [4], online learning is classified into synchronous and asynchronous modalities. Asynchronous learning involves interactions at different times via email and discussion boards, whereas synchronous learning employs real-time methods such as video conferencing and instant messaging, closely resembling traditional classroom environments. Furthermore, [4] compares traditional instructor-led methods with synchronous e-learning for teaching undergraduate medical students in otolaryngology.

In addition, [6] highlights the challenge of identifying essential data literacy competencies among undergraduates, noting that the varied backgrounds of students, similar to those enrolled in CSCI 114, make this task particularly difficult. Mandal et al. [9] describe a "paradigm shift" in which

students increasingly prefer online courses over traditional formats for learning IT-based subjects, a trend exemplified by CSCI 114 and MIS 116.

8. Conclusion

This paper presented our experience in teaching fundamental IT skills and concepts through two comparable courses: Microcomputer Packages and Business Use of Computers. While the former attracts students from a wide range of academic disciplines, the latter is predominantly chosen by business majors. We described the instructional approaches implemented in both courses and the strategies used to overcome various challenges.

To maintain student motivation, advanced learners are provided with opportunities to engage in challenging capstone projects, whereas students with limited prior experience receive additional support through tutorials, one-on-one guidance, and, in some cases, recommendations to repeat certain assignments. A further challenge discussed is the difficulty in ensuring consistent attendance in the instructor-led course. Our observations indicate that while the flexibility of online courses attracts more students, particularly those balancing part-time work, the traditional course format yields higher academic performance.

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