Integrated Mobile Learning Platform: Content, Delivery and Experience - Five Years of Experiences from a Professional Graduate Program

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He has more than 20 years of experience in teaching, applied research, academic program management and business development. For more than 15 years he has worked with the Global Supply Chain Laboratory at Texas A&M University on applied industry consulting projects, consortia and professional development programs for more than 100 industrial manufacturers and distributors. He has published in academic journals and industry publications. His research areas include distribution management & leadership, talent / competency assessment & development, training design, development & implementation, distribution sales & marketing development and profitability & performance management.

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Abstract

This paper outlines more than five years of experiences in designing, developing and deploying an iPad based mobile learning platform for an online graduate program. This paper outlines the immersive mobile learning experiences such as (1) iPad with apps, (2) eBooks, (3) Videos & multimedia elements, (4) industry insights through interviews and podcasts and (5) remote management. The presentation will include a demonstration of fully integrated mobile learning solutions with iPad Pro, eBooks, educational, and productivity apps used by the Master of Industrial Distribution (MID) distance education program. The platform includes eBooks with highlight/notes capability, closed-captioned video examples of professors & industry executive interviews, and educational apps. Student engagement and productivity will be highlighted with examples. Feedback from the early years was used to improve the design of the eCampus (BlackBoard LMS) course layout, assessments (assignments, tests, projects), group activities such as case presentations, team recording of the presentation, and local/cloud storage of student's work. This mobile learning experience provides cutting-edge, relevant, and applied education in a convenient, flexible, and portable format. The platform is popular with professional students who travel often.

Introduction

The Master of Industrial Distribution (MID) is a 30-credit hour online graduate degree from the top 10 ranked College of Engineering at Texas A&M University in College Station, TX. The program began in 2001 (19 years) and has graduated more than 600+ professionals in addition to 98 currently enrolled students in two cohorts. The Master of Industrial Distribution (MID) is a 21 month, part-time, lockstep, online graduate program designed for working professionals. The program focuses on Supply Chain Management, Logistics, and Profitability of distributors and manufacturers (suppliers) in the industrial channels. The MID program involves immersive learning experiences such as residency week, a global class & trip, and a capstone project.

Curriculum

The MID Program is designed to dramatically increase the student's ability to think globally, integrate trends, acquire knowledge, and act strategically. The courses provide the critical skills and knowledge necessary to be successful and gain a competitive advantage for the student and their company through the immediate application of education and research directly into teaching. Through our cohort, lockstep approach to learning, the students and their peers interact to gain new insights and broadens their personal and professional experiences. The students are able to immediately apply the knowledge they gained from MID courses to everyday challenges they face in the workplace.

Figure 1: Master of Industrial Distribution Curriculum

YEAR 1

AUGUST · RESIDENCY WEEK

IDIS 650: The Science of Distribution
Distribution Strategy · Sustained Competitive Advantage · Optimizing Distributor Capability · Framework · Financial Framework · Opportunity & Capability · Value Added Services · Relationship Management

FALL

IDIS 651: Distribution Customer Experience
Customer Stratification · Customer Insights Pricing Science · Value Proposition Design · Value Creation · Market Intelligence · Digitizing the Sales Process · Changing Role of Sales Force · Customer Engagement

IDIS 652: Digital Distributor
Digital Transformation · Analytics Framework · Business Insights · Marketing / Branding · Omni Channel Experience · eCommerce · Social Media · Software Selection & Implementation · AI, Bots & IoTs

SPRING

IDIS 653: Distribution Operational Excellence
Inventory Stratification · Forecasting · Purchasing Policies · Warehouse Mgmt. · Network Optimization · Transportation · Lean Distribution · Value Stream Mapping

IDIS 654: Distribution Channel Development
Role of Distributor · Supplier Selection & Mgmt. · Channel Management Methodology · Design Channel Goals · Developing Channel · Value Proposition · Manage Channel Alignment · Adapting to Channel Forces

SUMMER BREAK

YEAR 2

AUGUST · RESIDENCY WEEK

IDIS 656: Leading People and Managing Performance in Distribution
Culture · Change Management · Talent Planning · Talent Acquisition · Talent Management (Sales Management) · Talent Development · Talent Retention · Employee Engagement · High-Potential & Leadership Development

FALL

IDIS 655: Global Distribution
Generating Growth · Managing Growth · Sustaining Growth · International Sales & Marketing · Global Trip & Case Studies

GLOBAL PROJECT & TRIP

IDIS 660: Distribution Capstone Project - Part I
Process improvement or new business development project with ROI calculation.
Problem Statement · Proposal · Background Research · Data Collection · Mid-Term Steering Committee Update

SPRING

IDIS 664: Distribution Profitability Analysis
P&L · Balance Sheet · Income Statement · Cash Flow · Internal Rate of Return · Time Value of Money · Net Present Value · Capital Investment Decisions · Mergers & Acquisitions · Risk Management

IDIS 665: Distribution Capstone Project - Part II
Distribution Transformational Project
Data analysis · Solution / Recommendation Development · ROI Calculation · Report Writing · Steering Committee Presentation

CAPSTONE PROJECT & GRADUATION

Class Profile

Students enrolled in the Master of Industrial Distribution (MID) program represent a diverse group of professionals with a wide range of education and work experience from multiple business verticals and geographic locations. About a quarter of the program enrollment includes Veteran and active-duty military personnel.

Figure 2: Class Demographics

Access

The wholesale distribution is one of the largest sectors of the U.S. Economy. There are about 15 universities in the U.S that offer undergraduate degrees in this area. Only Texas A&M University offers a graduate program in Industrial Distribution. The program is designed as a flexible distance learning program to provide access to working professionals in the industry. Distance learning offers an opportunity for distribution professionals from around the U.S. and globe to be able to advance their careers.

Mobile Learning

One of the student services requests over five years ago was to provide all books electronically since many of the students travel extensively, and carrying along heavy books is inconvenient. We worked in 2014-15 to design, develop, and implement a mobile learning initiative with iPads for all incoming students starting in August 2015. The goal was to access courses online through eCampus from anywhere. Course content includes eBooks, reading materials, videos, audio lectures, and experiential learning exercises. The deployment was improved in the upcoming years.

Since 2018, all incoming students will receive a 12.9" iPad Pro with keyboard along with eBooks, apps, and tools required for classes are provided. The following are key software and services provided.

Software
- eBooks in one Platform – Vital Source
- Microsoft Office 365
- Educational Apps
- Productivity Apps

Services
- Video Production
- Closed Captioning
- Mobile Device Management
- Help Desk
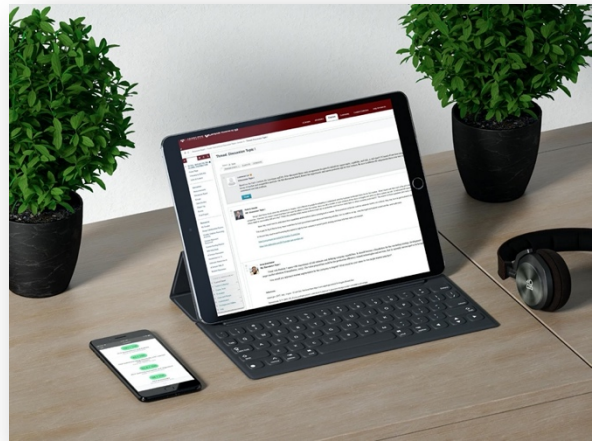
Asynchronous Learning

The entire system is set up to be asynchronous learning. This means students can log-in anytime, plan class deadlines around business travel and office projects. Student peer learning experience is enhanced through discussion boards and group projects, all of which can be accessed asynchronously. Students can also access the MID's course contents and dedicated student services using the mobile platform. These includes:
- Course Registration
- All textbooks & course material delivery.
- Video lectures, class notes.
- Ability to complete all assignments, home works and exams.
- Residency Week materials.

- Capstone project materials presentation.
- Technical support for eCampus or Blackboard Learn LMS courses
- Tuition & fees billing checks and reminders

eBooks Platform

VitalSource was selected as the eBook platform based on the wide availability of educational books and their willingness to work with industry trade publications to get some of the books that the MID program was using on the eBook platform. Since 2015-16, all books are available in the VitalSource eBooks platform and delivered through their app – The Bookshelf. Each semester, new book codes are emailed to the students. The students can claim their book in the app. The eBooks can be downloaded in two mobile devices and two laptop/desktop devices for easy reading on big or small screens. Additionally, all eBooks can be read on a browser anywhere. All eBooks are purchased as perpetual licenses so that the students retain the books even after completing the MID program.

Remote Management

The iPads are set up using the JAMF remote management system by the university I.T. departments. On day one of the program, when the students start the iPad, all apps are automatically installed within a few hours. This pre-configuration helps with the quick and painless deployment of the iPads on day one with minimal tech support. The iPads belong to the students, and they are free to install/delete any apps. If the student loses the iPad, it can be remotely erased and removed from the remote management. At the end of two years, the iPads are released from Texas A&M University remote management. This remote management has helped a few times to reset passwords, install new apps, force iOS updates, and send messages to the iPad.

Learning Effectiveness

The MID Program enhances learning effectiveness through multiple experiential learning activities. There is a Residency Week each August, the Global Distribution course & trip during the second year and capstone project in the last semester. During the Residency week, students are involved in case study problem-solving exercises, industry leader presentations, and group solution development activities. During the global class and trip, the students work on a live project with a global company, visit their operations, interact with their leaders and professionals, and develop recommendations for the project. The technology platform and mobile learning help support all of the above immersive learning experiences.

Included in the Program Cost: iPad Pro 12.9", Apple Keyboard, Earphones

Figure 2: Installed Apps
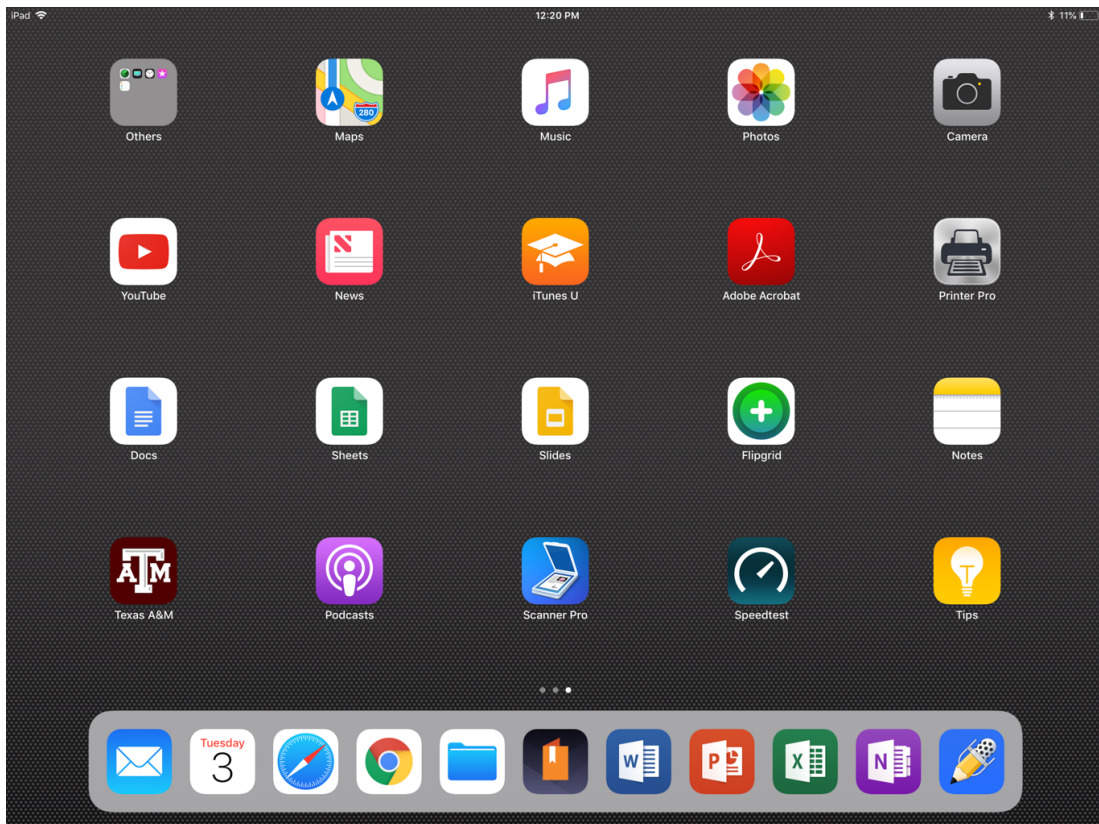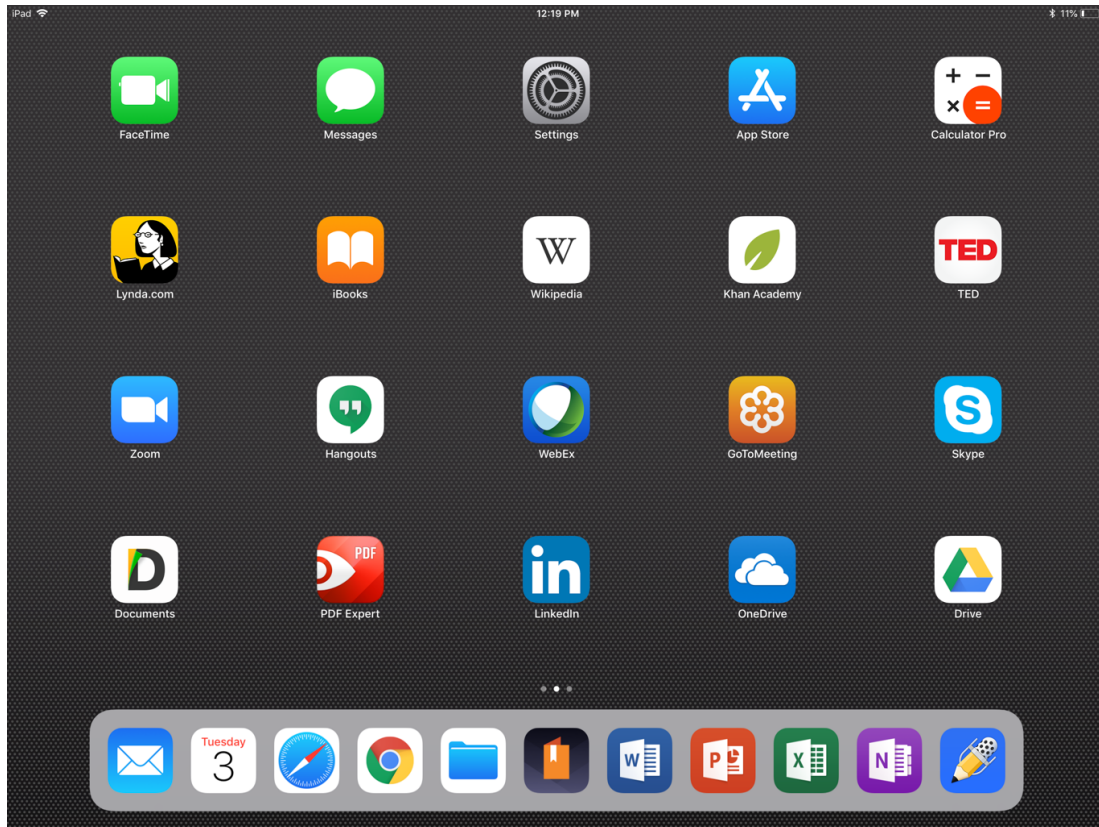
Lessons Learned

The experience from the mobile learning implementation over the past five years were positive. Feedback from instructors, students and graduates were helpful in assessing the usefulness, flexibility, convenience and how technology helped the overall learning experience. During the past five years, the following observations were made and lessons were learned in the following areas.

Instructional & Engagement Experiences and Lessons
- The technology-enabled the interaction between students and instructors in an online environment. The discussion boards, Blackboard Ultra recording room (for case study presentation recording), and Zoom meetings on the iPad engaged the students with peers and instructors.
- Positive instructor experiences include conducting the class discussions, case study presentations, project feedback via iPads. The interactive nature of the platform engages the faculty. Some faculty also hold monthly check-in class/webinars with their students. The mobile platform has provided faculty the convenience to record their feedback as a voice memo rather than traditional typed feedback that took longer.

Learning Experiences and Lessons
- As the MID Program doesn't have an on-campus equivalent program, all of the course design, content development, and multimedia such as video recordings, voice-over PowerPoint, podcasts, industry executive presentation recordings are all produced especially for online consumption. Best practices in student attention span are used to create short videos and multi-part presentations. The faculty and program staff help to add a variety of materials to keep students' curiosity and attention.
- Watching class videos and reading books on the iPad has cited by many students as a rich learning experience. As a substantial percentage of the students travel for work, and they cite the convenience, portability of using the iPads on the ever-shrinking airline leg space.

Reflections on Use of Technology
- Writing assignments and engaging in discussion boards seemed to relatively convenient on the iPad as well. Working in PowerPoint, Excel, especially formatting, appears to be a challenge due to lack of pointer and compatibility of iPad created presentations on Windows desktops.
- Over the past three years of using iPad Pros (12.9" iPads), there has been no incident of malfunction, failure, or hardware issues. The remote app installation, password resets, and management is seamless and works in the background.

Assessment and Graduate Feedback

There has not been a formal evaluation of the mobile learning platform in the exit interviews. The MID Program plans to add multiple questions in the May 2020 exit interviews. However, there has been numerous anecdotal feedback and references from students and graduates that are summarized below.

- The mobile technology platform is a recruitment tool that helps professionals who are skeptical about the remote aspect of online learning. The familiar iOS platform of using apps enables almost near instant adoption within the first week of the program.
- The retention rate of the program is very high, near 95% over the past five years. While the cohort model, professional support services, and value from course content is a primary driver, the technology supports the ease-of-use, engagement and enables learning outcomes.
- The engagement rate of videos is measured using how many students started the video, finished the video, and completed at least 50%. The shorter videos of less than ten minutes have the highest completion rate as well as any external industry interviews, even if they are longer.

Continuous Improvement

The MID program continues to improve the design, development, and delivery. Student feedback on technology, the mobile platform has been helpful in making necessary updates. Some of the steps taken include:
- Content delivery enhancements through the mobile learning experience with iPad, eBooks, and apps.
- Applied content development includes industry-focused live case studies, videos, interviews, and podcasts.
- Teaching enhancement includes quality matters certification and the use of industry executives to co-teach classes
- Learning experience enhancement includes reflective discussion boards, group projects, and peer-group learning.

Based on the 15 years of development and improvement, the Master of Industrial Distribution program was awarded the following two awards:

- 2016 **21st Century Best Practice Distance Learning** from the United States Distance Learning Association (USLDA) (USDLA, 2016).
- 2016 **Outstanding Commitment to Excellence and Innovation** award from TxDLA (Texas Distance Learning Association) (TxDLA, 2016).

Additionally, the MID program is now the largest distance education program in the College of Engineering.

Conclusion

The integrated mobile learning platform for the Master of Industrial Distribution has helped deliver content and provide a rich learning experience for online graduate students who are working professionals. The model is now viewed as a full-service, digital-first education program at Texas A&M University. We hope to continue to improve the mobile learning experience to deliver an interactive and engaging learning experience.

References

[1] United States Distance Learning Association (2016). *2016 USDLA International Awards*. Retrieved from https://www.usdla.org/awards/2016-usdla-international-awards-2/

[2] Texas Distance Learning Association (2016). *Outstanding commitment to excellence and innovation in distance learning.* Retrieved from http://www.txdla.org/Default.aspx?tabid=141