



Faculty Perspectives on Benefits and Challenges of Hybrid Learning

Dr. Aliye Karabulut Ilgu, Iowa State University

Dr. Aliye Karabulut-Ilgu is a lecturer in the department of Civil, Construction and Environmental Engineering at Iowa State University. Her background is in Curriculum and Instruction, and her research interests include online learning, hybrid learning, and technology integration in higher education.

Dr. Charles T. Jahren P.E., Iowa State University

Charles T. Jahren is the W. A. Klinger Teaching Professor and the Assistant Chair for Construction Engineering in the Department of Civil, Construction and Environmental Engineering at Iowa State University. He earned his Bachelor of Science in Civil Engineering and his Master of Business Administration from the University of Minnesota and his PhD in Civil Engineering from Purdue University. He has over six years of industrial experience as a bridge construction project engineer for a construction contractor and as a research engineer for the Naval Civil Engineering Laboratory in Port Hueneme California. His teaching interests include construction equipment, cost estimating and construction process design including online and hybrid classes. His research interests include highway and heavy construction methods, road maintenance methods, innovations in construction process administration and online and active teaching methods.

Faculty Perspectives on Benefits and Challenges of Hybrid Learning

Abstract: Hybrid learning is an educational approach that combines traditional face-to-face education with online learning. Hybrid courses have gained popularity among faculty, students, and institutions, so it is important to understand why faculty members choose to convert their traditional face-to-face courses to hybrid format. This study, conducted in a major Midwestern university, presents the findings from a qualitative case-study documenting the experiences of four instructors, who could be identified as *innovators* and *early adopters* of hybrid learning in the university's college of engineering. Semi-structured interviews were conducted with each of the participants. Analysis of the data indicated that benefits of hybrid learning were flexibility, self-paced learning, and free time for complex problem solving. The challenges the faculty encountered, on the other hand, included time investment required in initial course development, reduced interaction with students, and technical issues. Recommendations offered by the faculty members could potentially serve as a guide for institutions considering implementing and/or expanding hybrid course development initiatives.

Introduction

Hybrid learning is an educational approach that combines online instruction with face-to-face instruction^{1,2}. Because of its blending feature, hybrid format is also considered as the best of two worlds providing the benefits of both the online and face-to-face environments². When executed well, hybrid learning provides several benefits at the student, faculty and institution level. Researchers argued that blended learning courses were in high demand because of the increased convenience and flexibility, and learning outcomes were higher than traditional and face-to-face counterparts. Similarly, the majority of the faculty were satisfied with their blended learning courses and blended learning provided benefits at the institutional level by improving the efficiency of classroom use³. A recent meta-analysis of the effectiveness of online education as compared to traditional education by the U.S. Department of Education also revealed that students in online learning conditions performed modestly better than students in face-to-face conditions; and students in hybrid learning conditions performed better than both completely online and face-to-face conditions⁴.

Prior research indicates that people choose blended or hybrid learning for three main reasons: 1) improved pedagogy, 2) increased access/flexibility and 3) increased cost effectiveness^{5,6}. Hybrid learning approaches increase the opportunities for active learning strategies, group work, and learner-centered pedagogies⁷. Learner flexibility and convenience is also of growing importance as more non-traditional students, who have job and family commitments, seek additional education^{5,8}. Finally, hybrid learning environments provide a large return on investment by reaching a large, globally dispersed audience⁵. In addition, hybrid learning holds the potential to address the cost problem by “taking faculty out of the easily automated business of delivery of information and allowing them to refocus their attention with students on critical thinking skills”⁹.

Theoretical Framework

Rogers' Diffusion of Innovations theory¹⁰ is adopted in this paper to understand faculty members' adoption process of hybrid learning. Rogers defines innovation as "an idea, practice, or object that is perceived as new by an individual or other unit of adoption" (p. 11). Therefore, innovativeness depends on how people perceive it rather than objective newness of an idea. Diffusion of Innovations theory examines elements of innovation diffusion, innovation-decision process, attributes of innovations and rate of adoption, adopter categories, and diffusion networks. This paper builds upon three major strands of the theory: adopter categories; innovation-decision process; and attributes of innovations.

Rogers argues that not all individuals in a social system adopt an innovation at the same time. Rather, they adopt in a time sequence. The adopters of an innovation can be classified into five categories based on at what point they start using the innovation. These categories are: 1) innovators, 2) early adopters, 3) early majority, 4) late majority, and 5) laggards.

The model of innovation-decision process consists of five stages an individual goes through to evaluate a new idea and decides whether to adopt or reject the new idea. These stages are: 1) knowledge, 2) persuasion, 3) decision, 4) implementation, and 5) confirmation. At the *knowledge* stage, a potential adopter is exposed to an innovation and learns how it functions. At the *persuasion* stage, the user forms a favorable or an unfavorable attitude toward the innovation. At this stage, the potential adopters actively seek for evaluative information and consult with peers and other users to judge whether it is worth spending time, energy, and resources on the innovation. The *decision* stage is where the users engage in activities (e.g. trying out the innovation, observing other adopters) that would lead to a decision to adopt or reject the innovation. At the *implementation* stage, innovation is put into use. Active information seeking (e.g. How do I use it? How can I address technical issues?) usually takes place at this stage. The final stage is *confirmation* where the adopter seeks reinforcement for the innovation decision already made.

An innovation may be described by five characteristics, which may predict the rate of adoption: 1) relative advantage, 2) compatibility, 3) complexity, 4) trialability, and 5) observability. *Relative advantage* is whether the adopters see any advantage of the innovation over its predecessors. *Compatibility* refers to the degree which an innovation is compatible with existing beliefs, past experiences, and needs of potential adopters. *Complexity* is the perception of potential users on how difficult the innovation is to understand and use. The easier it is to use the more likely it is to be diffused. *Trialability* refers to the degree which an innovation can be experimented before fully adopted. Finally, *observability* refers to the degree an innovation can be observed before adoption. These attributes are critical to understand the reasons faculty members adopt and implement hybrid learning.

Methodology

This study was designed as a qualitative multiple case study to produce in-depth knowledge about the benefits and challenges of hybrid learning in a higher education context. Case study gives the participants a voice and an opportunity to present their views, which allows the researcher to interpret participants' sense making of the phenomenon under investigation¹¹.

Participants

This study was conducted in a department in College of Engineering at a large Mid-western university. Participants were selected for this study using a sample of convenience. An invitation e-mail was sent to five faculty members in the department who had been using hybrid learning in their teaching, and four faculty members volunteered to participate in the study. George¹ is a professor, and he assumes the program leader position for one of the two undergraduate programs within the departments. He has been teaching 26 years and his research interests include a wide variety of applied research topics in his area. George can be considered as an “innovator” in the department with regard to use of hybrid learning model, as he is the first one to implement in one of his undergraduate courses. He had been teaching this hybrid course for six semesters at the time of this study. As Rogers described the innovators, George had to deal with some uncertainty and the hurdles along the way, but it did not stop him from implementing this innovative teaching method. He also acted as an opinion leader as he communicated with his peers about how he used hybrid learning in his teaching and convinced a few to adopt this method.

John is a senior lecturer in the program that George leads, and he has been teaching approximately for 12 years. He had been teaching a hybrid course for three semesters at the time of this study. John can be categorized as an “early adopter” of hybrid learning in the department, as he was one of the first to follow George’s leadership in this initiative. As he indicated in his interview, he learned about hybrid learning from George. He stated, “He [George] started it. He got a lot of things wrong. Then he fixed some mistakes and I got involved with [a previous instructional designer].” (Interview, p. 4). The fact that he was able to observe another peer and try out the new teaching methodology with the help of an instructional design team made it easy for him to adopt this innovation. John also asked for feedback from students which confirmed his decision that this was a better way of teaching.

Dan is an associate professor in the program that George leads and he has 9 years of teaching experience; however, he has been teaching at the university involved in the investigation since 2012. He teaches courses mainly focusing on project cost issues, which is also a research interest of him. According to Rogers’ adopter categories, Dan can be classified in the *early majority* group. He tried to develop a few hybrid modules at the same time as John did, but he did not end up using them in that semester. He had been teaching his first fully developed hybrid course at the time of this study. He learned about innovative teaching methods through the teaching excellence center at the university. As he stated in the interview, he did not realize the value of the new teaching method in his first semester of trying. Yet, once he was more involved with it, he was able to recognize the advantages it would bring both for students and instructors. At the time of data collection for this study, Dan was convinced that hybrid learning was a powerful way of teaching and he was willing to invest time on developing content for hybrid format. Descriptions of the three hybrid courses that George, John, and Dan teach can be found elsewhere^{12,13}

Finally, Hannah is a lecturer in another program in the same department. She has 13 years of teaching experience, and 15 years of industry experience. She mainly teaches a course

¹ Pseudonyms are used to protect the identity of the participants

that is required for all students in the department. Hannah can also be classified in the early majority category in the adoption of hybrid learning model. She indicated that she heard George talking about it, but it was not until she attended a presentation where George and an instructional designer shared their experiences in converting a junior-level course to the hybrid format. She decided that hybrid format would address issues she had in her large lecture classroom, so she decided to implement it. She was teaching her first hybrid course at the time of this study. Hannah conducted an end-of-semester feedback to evaluate her course and the feedback she received was quite positive. That made Hannah not only keep using the hybrid format in that course but also convinced her to convert another course.

Data Sources and Analysis

Qualitative data were collected through semi-structured interviews with each of the participants. The interview protocol included the following questions, and follow-up questions were asked as needed.

1. Can you introduce yourself? What kind of courses do you typically teach? What are your research interests?
2. Why did you decide to convert your course to a hybrid format? How did you learn about hybrid format?
3. How do you design your hybrid courses?
4. What kinds of advantages do you see in teaching a hybrid course?
5. What kinds of disadvantages do you see in teaching a hybrid course?
6. What was helpful in designing your hybrid courses?
7. What kind of affect hybrid learning has on student learning?

The interviews were conducted in the fall of 2014. All the interviews were audio-recorded and transcribed verbatim for analysis, which resulted in 2 hours and 6 minutes of audio files and 18 pages of transcription.

Using an *analytic hierarchy*, which is defined as a series of ‘viewing’ platforms, each of which involves different analytical tasks is proposed to make sense of qualitative data^{14,15}. The analytic process used for data analysis in this study included three forms of activity: data management, descriptive accounts, and explanatory accounts. Data management was the process in which the raw data were reviewed, labeled, sorted, and synthesized. In descriptive accounts, key dimensions were identified and the data ordered earlier were further classified and typologies were established. In explanatory accounts, explanations of the identified patterns were established.

Findings and Discussion

Benefits of Hybrid learning

Participants in this study needed a more efficient way of teaching their content and realized that hybrid format could be the solution. For example, John decided to implement hybrid learning by recording theoretical material, which does not change over time, in the best way possible so that students can watch and re-watch until they understand the material. George and

Dan decided to adopt hybrid learning to create free time for more complex problem solving. Hannah decided to use hybrid learning as a solution to distraction in a large lecture hall.

The analysis of the data indicated that hybrid learning provided relative advantage for the participants of this study over other teaching methods. These benefits included: 1) free time for complex problem solving, 2) flexibility, 3) self-paced learning, 4) increased student engagement, and 5) increased student empowerment.

Participants of this study highlighted how taking the passive lecture component into online environment in the hybrid format created free time for more interactive exercises during class time. For example, Dan stated, “By saving that time, now we can try more challenging problems in class and address issues students may face when they go into the industry” (Dan, Interview p. 1). Along the same lines, George said:

Lecture type presentations had limited amount of interactions. That seemed it could be done more efficiently by having that material online and it would free me up to spend more time on more interactive activities. The students are doing more realistic type problems, discussing equipment, and case studies. (George, Interview p. 2)

The second advantage that hybrid format brought for instructors and students was flexibility, which was also highlighted in previous research^{5,8}. Instructors could engage in other research and administrative responsibilities without reducing the teaching load and quality of instruction. For example, George stated that he needed some efficiency in undergraduate teaching because he had heavy research and administrative duties, and hybrid learning was a good solution to balance all the work he had.

Instructors also mentioned how hybrid format created flexibilities in students’ schedule. According to John, knowing that there would be fewer contact hours; students can plan their personal life accordingly which is especially helpful for non-traditional students, students who have part-time jobs or students who commute. This advantage was also highlighted by students in a previous research study conducted by the authors¹³.

Self-paced learning is defined in this study as being able to learn the course material in a flexible way through online videos. All the instructors in this study mentioned that students had the advantage of watching, re-watching, and/or pausing until they understand the material. John specifically mentioned that this format helped slower learners more because they needed the repetition. He stated:

I think for the students, who struggle with note taking in class, this gives them the competitive advantage of their peers who take good notes and just get it the first time. Exam results are showing that more students are obtaining a higher level of learning when we base on the types of problems we used in the hybrid learning; they have higher average scores (John, Interview p. 1).

Another thing the instructors noticed in their hybrid classes was higher student engagement in the material. In all the hybrid courses included in this study, the online activities prepared students for the in-class activities. Instructors noticed that students came to class having watched the videos and they knew the material very well, so they could just focus on solving

complex problems. Integrated quiz questions in the online videos seemed to contribute to student engagement in the material. For example, Hannah stated:

Before, they were asked to read the book and it did not always happen. So I still felt like I needed to cover the topics. Now I know they are getting the material because they are graded in the quizzes after the videos. They really are watching the videos. I think it really helps because I know they have the background information so we can immediately get into practice problems. (Hannah, Interview p. 1)

One final advantage the hybrid format brings was empowering students. This was highlighted by George who received help from a teaching team (i.e. graduate and undergraduate students) to run the interactive in-class sessions. During his in-class sessions, students work in small groups and the teaching team facilitated the sessions by answering questions and providing guidance. This created an opportunity for graduate students and senior students to be involved in teaching efforts and created more job opportunities for them.

Challenges of Hybrid learning

Results of the analysis indicated that faculty members have encountered three main challenges while converting their courses to hybrid format: 1) initial time investment, 2) losing interaction with students, and 3) technical issues. All the participants pointed out that front-end investment at the initial planning and development stage was overwhelming at times. For example, John indicated, “it was a big investment a year and half ago to create the perfect content” (John, Interview p. 1). Similarly, Dan mentioned how he was not really engaged in the conversion process when he first started because of the time commitment required in the process. He stated:

Time commitment is a big hurdle. Last year, they [instructional design team] wanted to work with me; I didn’t recognize the value though. Just like any other [faculty] member, I was very busy creating new research topics, writing papers. I was just too busy to invest the time (Dan, Interview p. 2)

To successfully overcome these challenges, faculty members needed to recognize the value of this new teaching approach and decide whether it was worth the time.

Developing complex in-class exercises was another time-consuming task for the participants of this study. As stated earlier, the overarching goal behind the conversion process was to create some free time during class time to have students work on more challenging engineering exercises. Creating engaging, real-life exercises also required considerable time investment from the faculty members as it was completely different than just taking an example problem from a textbook. For example, Dan mentioned how he tried to build relationship with industry leaders in and out of the state and ask for help to create realistic problems.

The second challenge or a disadvantage the hybrid format brought in was losing interaction with students. This can probably be considered as the flip side of the flexibility that the format brings in. All four participants in this study reduced the contact hours with students depending on how much time spent on online activities in order to not to overload students⁸. The participants mentioned that reducing the contact hours with students could be disadvantageous

for some students who needed more structured learning environments. It also forced them to better evaluate what can be done online and what needs to be done during face-to-face meeting time. For example, John mentioned how it was not a good idea to have the second class period online.

That's not the best way to build a relationship right off the bat. I've already thought this through and will change it for next semester. I'm wondering now when not to use hybrid but I don't know yet. I am thinking early material may need to be taken out [from hybrid format] to build the relationship in the early stages...It may delay the time you learn their names, and get to know them (John, Interview p. 3)

Participants were asked what was helpful during the course conversion process that assisted them addressing any challenges they had. Three categories emerged: experience in the material, instructional design support, and institutional support. The instructors had been teaching the courses they converted to hybrid format for a while, which helped them decide what needed to be done in class and what could be done online. These instructors were also familiar with the struggles students had on certain topics, and were able to tackle those in different ways. Along these lines, John did not recommend using hybrid learning for a brand new course because the instructor would not know what would be difficult to grasp for students.

Another way the participants were supported as they implemented hybrid learning was the expertise of an instructional design team. The team was made up of a PhD level instructional designer, one graduate student, and 2-3 undergraduate students. The undergraduate students were usually selected from a pool of students who had already taken the courses on which they would work. These students played an active role developing online content, editing video lectures, and creating quizzes. The existence of such a team addressed some of the challenges raised earlier such as initial time investment. George, John, and Dan referred to the expertise provided by the team as a contributing factor to their adoption of hybrid learning. For example, Dan stated, "The initial challenge that I felt was too huge so I couldn't have started without this great support group" (Dan Interview p. 5). Similarly, George indicated, "Just having somebody who was able to come up with most of the production of the online material was very helpful. Given the amount of research I am doing I wouldn't have time to learn how to produce material" (George, Interview p. 3).

Finally, institutional support was another contributing factor to adoption of hybrid learning model. In the case of this study, George mentioned a grant he received from the college, which lifted some of the costly financial burden at the initial stages (e.g. hiring the instructional design team members). Dan also highlighted the importance of strategic support at the college and university level. He mentioned that small grants provided as incentives for faculty may not be enough to encourage the hesitant and less confident faculty members to experiment with new teaching techniques.

In addition to financial support, leadership provided by other faculty members who demonstrated innovative teaching methods and the encouragement instructors received from administrators was another contributing factor to the diffusion of hybrid learning in the department included in this study. For example, Dan referred to George playing a very supportive role in this initiative. He stated:

George leads the division on hybrid modules, and he has been passionate about [content] learning. He was the main reason our program is much more advanced than any other program. The [content] program is the leader in many aspects including this new format. (Dan, Interview p. 5)

Likewise, George mentioned how the department chair was supportive of hybrid learning and other innovative teaching techniques, which allowed instructors like George to experiment with different teaching techniques.

Conclusions, Limitations, and Practical Recommendations

In sum, the analysis of data indicated that hybrid learning provided relative advantage over other teaching techniques for participants in this study. The motivational factors behind the course conversion for the participants in this study included creating free time during class time for complex problem solving, and avoiding distraction in large lecture halls. Furthermore, the hybrid format brought the advantages of flexibility and self-paced learning. This innovation was also compatible with how they viewed learning, which accelerated their adoption. The complexity in the course conversion process created some challenges for the instructors but they overcame those struggles through support systems provided at the department and college level.

This paper reports an exploratory case study with no intention of making broad generalizations. However, experiences shared by the participants of this study could inform instructors and higher education professionals who are interested in hybrid learning. Based on the findings of this study, we can make the following recommendations for instructors and institutions considering implementing and/or expanding hybrid course development initiatives.

Provide Institutional Leadership: As potential adopters of hybrid learning, instructors may need to feel that their efforts are supported at the department, college and university level. Mostly, this support would be financial through grant opportunities, course releases, and as such. However, even acknowledging the efforts and facilitating the process might be influential in diffusing innovations like hybrid learning.

Start with opinion leaders: According to Rogers, opinion leaders have relative influence on their peers in diffusing innovations in a social system. This study also confirmed that having a person like George, who is open to innovations and ready to experiment with new ideas, introduce new teaching methods like hybrid learning will lift the initial uncertainty for potential adopters.

Start with a course you have experience teaching: Participants in this study indicated that the experience they had teaching the course they converted was one of the most important factors that helped them in the conversion process. Having taught the course in a face-to-face environment several times, they could easily identify what would work online and what needed to stay for in-class time. Therefore it is recommended that faculty members who are considering implementing hybrid learning could start with the courses they have taught before.

Get as much help as you can: Results from this study indicated that hybrid learning has both advantages and challenges. When the instructors in this study weigh the two, they decided that the advantages outweighed the challenges. Participants in this study had access to an

instructional design team, who lifted some of the production work for the instructors. Even if the instructors may not have such a team in their department, they might have a support team at the college or university level. Instructors need to actively seek for help and utilize every opportunity.

Bibliography

1. Garrison, D. R. and Heather K., "Blended Learning: Uncovering its Transformative Potential in Higher Education," *The Internet and Higher Education* 7 (2004): 95-105.
2. Lamport, M. A. and Hill, R. J. "Impact of Hybrid Instruction on Student Achievement in Post-Secondary Institutions: A Synthetic Review of the Literature," *Journal of Instructional Research*, 1 (2012), accessed June 12, 2014 <http://www.gcu.edu/Academics/Journal-of-Instructional-Research/Impact-of-Hybrid-Instruction--.php>
3. Dziuban, C. D., Hartman, J. L., and Moskal, P. D. "Blended Learning." edited by Center for Applied Research EDUCAUSE, 2004, accessed June 12, 2014 <https://net.educause.edu/ir/library/pdf/erb0407.pdf>
4. Means, B., Toyama, Y., Murphy, R., Bakia, M., and Jones, K., "Evaluation of Evidence-Based Practices in Online Learning: A Meta-Analysis and Review of Online Learning Studies." Washington DC: U.S.Department of Education, Office of Planning, Evaluation, and Policy Development, 2010.
5. Graham, C. R. "Blended Learning Systems: Definition, Current Trends, and Future Directions." In *Handbook of Blended Learning: Global Perspectives, Local Designs*, edited by C. J. Bonk and C. R. Graham, 3-21. San Francisco, CA: Pfeiffer Publishing, 2006.
6. Vignare, K., "Longitudinal Success Measures of Online Learning Students at the Rochester Institute of Technology." In *Elements of Quality Online Education: Practice and Direction*, edited by J. Bourne and J. C. Moore, 261-78. Needham, MA: Sloan Consortium, 2002.
7. Collis, B., "Course Redesign for Blended Learning: Modern Optics for Technical Professionals," *International Journal of Continuing Engineering Education and Lifelong Learning*, 13 (2003): 22-38.
8. Kaleta, R., Skibba, K. and Joosten, T., "Discovering, Designing, and Delivering Hybrid Courses." In *Blended Learning: Research Perspectives*, edited by A. G. Picciano and C. D. Dziuban, 111-43. Needam, MA: The Sloan Consortium, 2007.
9. Peercy, P. S. and Cramer, S. M., "Redefining Quality in Engineering Education Through Hybrid Instruction," *Journal of Engineering Education* 100 (2011): 625-629.
10. Rogers, E. M., "Diffusion of Innovations," New York: Macmillan Publishing, 1983.
11. Merriam, S.B., "Qualitative research: A guide to design and implementation," San Francisco, CA: Jossey-Bass, 2009
12. Mallen, J., Jahren, C., Koehler, N., & Karabulut Ilgu, A., "Workflow for Developing Online Content for Hybrid Classes". Proceedings of ASEE's 121st Annual Conference and Exposition, Indianapolis, IN, 2014.
13. Karabulut-Ilgu, A., Jahren, C., Jeong, D. & Cormicle, L. A case study of hybrid learning implementation in construction engineering. Proceedings of 5th International/11th Construction Specialty Conference, Vancouver, British Columbia, 2015.

14. Ritchie, J., Spencer, L., & O'Connor, W., *Carrying out qualitative analysis*. London: Sage Publications, (2003)
15. Spencer, L., Ritchie, J., & O'Connor, W., Analysis: practices, principles and processes. In J. Ritchie & J. Lewis (Eds.), *Qualitative research practice: A guide for social science students and researchers* (pp. 199-218). London: Sage Publications, 2003