THE IMPLEMENTATION OF A FLIPPED CLASSROOM IN FOREIGN LANGUAGE TEACHING

Assist. Prof. Dr. Ahmet BASAL
Department of Foreign Languages Education,
School of Education, Yildiz Technical University,
Istanbul, TURKEY

ABSTRACT

Alongside the rise of educational technology, many teachers have been taking gradual but innovative steps to redesign their teaching methods. For example, in flipped learning or a flipped classroom, students watch instructional videos outside the classroom and do assignments or engage in activities inside the classroom. Language teachers are one group of educators exploring the flipped classroom. In foreign language classes, such an approach may offer great benefits for both the teachers and students since classroom time can be applied to more interactive tasks. By extending classroom hours in this way, language teachers can focus on successfully addressing all subjects in the curriculum. The aim of this study is (a) to gain insights into the perceptions of prospective English language teachers at a state university in Turkey on flipped classrooms and (b) to introduce the implementation of a flipped classroom into an English language class. A total of 47 prospective English teachers participated in the study. Qualitative research design was used and data were collected via an open-ended question. Findings of the study indicated that pre-service English teachers had positive perceptions towards the use of the flipped classroom as an integral part of face-to-face courses. It can be concluded that flipped classroom was beneficial in terms of 4 categories based on the content analysis of the responses: learning at one's own pace, advance student preparation, overcoming the limitations of class time, increasing the participation in the classroom. The study also provides recommendations towards LMS integration into courses in other English language teaching departments and for implementing flipped classrooms in language teaching.

Keywords: **Flipped learning, blended learning, English language teaching, Web 2.0 tools**

INTRODUCTION

Technology has become an integral part of educational settings. Wells, de Lange, and Fieger (2008) have suggested that technological advancements have significantly altered the ways educators teach and students learn. Moreover, teachers all over the world have felt a hidden pressure to integrate technology in their lessons. This pressure force teacher to re-evaluate their teaching styles. Rather than avoiding the call, educators should incorporate technology into their teaching, applying its advantages towards achieving learning objectives. The opportunities presented by technologies in education are limitless and borderless. Therefore, teachers are in search for ways to incorporate technology into their classrooms to create better learning opportunities for their students (Koehler, Mishra, Hershey, & Peruski, 2004).

Enriched learning environments with the use of technologies can offer students better learning opportunities (Chun & Plass 2000; Jonassen, D. & Reeves, 1996; Means 1994). Because new technologies offer them unique opportunities, language teachers have especially been integrating technology into their lessons more and more (Seljan, Banek,

Špiranec, & Lasić-Lazić, 2006). With the use of these technologies, the aim of teachers are to present rich learning experiences to the students and to create more engaging and motivating classroom atmosphere.

Among the technological mediums, video, is an effective teaching tool when used properly (Hartsell & Yuen, 2006; Shephard, 2003), and teachers all over the world have been using it to support their instruction. Video lectures, which are different than simply showing videos in the classroom, are not a new concept; however, the technology used to produce, edit, and distribute such videos has become far more accessible to teachers (Whitley-Grassi & Baizer, 2010). In this context, the flipped classroom can "improve learning experiences and capture the attention of Millennial students" (Roehl, Reddy, & Shannon, 2013, p. 49). One method for incorporating technology like videos is the *flipped* or *inverted* classroom, which brings an innovative perspective to traditional lectures.

FLIPPED CLASSROOM

According to Bergmann and Sams (2012), a flipped classroom can be described as a setting where that "which is traditionally done in class is now done at home, and that which is traditionally done as homework is now completed in class" (p. 13). In other words, the sequence is inverted. According to Lage, Platt, and Treglia (2000), "Inverting the classroom means that events that have traditionally taken place inside the classroom now take place outside the classroom and vice versa" (p. 32). However, this definition is incomplete. The flipped classroom is mainly perceived as students receiving video lectures for instruction, but that is only the tip of the proverbial iceberg. A successfully flipped classroom involves more than just recording didactic content and sending it to students before a lesson: the time spent in class should be more important than the videos. In this model, classroom time can be used for engaging in activities, discussing concepts, clarifying hard-to-understand information, and investigating questions related to content. The videos allow time in class for problem solving and hands-on activities, converting the classroom into a place where active learning occurs.

The traditional classrooms are mostly teacher centered which is in conflict with the constructivist approaches to learning and teaching (Brooks, 2002).The flipped classroom is pedagogically sound because it serves the principles of personalized-differentiated learning, student-centered instruction, and constructivism. It is personalized because each student learns at his or her own pace. It is student-centered because class time can be used to participate in engaging activities, while the role of the teacher changes to facilitator and observer, allowing students to be more active. It applies the constructivist approach in which students take responsibility for their own learning; class time is free from didactic lecturing, allowing for a variety of activities, group work, and interactive discussion. In other words, students have a great variety of hands on activities, promoting more meaningful learning (Rajesh, 2015).

A flipped classroom frees up class time for teachers and presents learning choices to students rather than just informing them in a sit-and-listen format. With this model, teachers "... can deliver this instruction by recording and narrating screencasts of work they do on their computers, creating videos of themselves teaching, or curating video lessons from trusted Internet sites" (Hamdan et al., 2013). In other words, teachers can record videos, add interactive elements, and share previously recorded segments from other teachers. Students should watch these videos before coming the classroom so that they can be active in the classroom activities. With Internet access becoming more ubiquitous, sources of language teachers to reach more videos for using in their language teaching classes have been on the increase. Therefore, the videos embrace a "bring the world to the classroom" approach and are more engaging, motivating, and attractive to students.

Many scholars have mentioned the ineffectiveness of lectures in traditional learning environments (Berryman, 1993; Millis, 1995). In traditional classrooms, the teacher is the information provider via direct instruction and this model is teacher-centered, however, flipped classroom is more student-centered, creating a more suitable environment for better learning opportunities (Hamdan et al., 2013). In flipped classroom model, the role of the teacher has changed to a guide, facilitator and organizer. With all these roles, a more student-centered classroom environment can be created, paving the way for students achieving a more active role in their learning.

Flipped classrooms may eliminate the ineffectiveness of face-to-face lessons and support lectures with the use of technology. Flipped learning is also "one possible step towards a more customized learning environment" (Enfield, 2013, p. 27). The literature indicates that a flipped classroom is effective in terms of increasing the grades of students when compared to a traditional, lecture-based class (Day & Foley, 2006; Flumerfelt & Green, 2013). In addition, students prefer flipped classrooms to traditional lectures (Lage et al., 2000). DeGrazia, Falconer, Nicodemus, and Medlin (2012), also suggests that with video lectures outside the classroom, students come to class more prepared. When used properly, interaction between students and teachers actually increases in a flipped classroom (Roehl et al., 2013). Millard (2012) has suggested that the flipped classroom can contribute to student engagement, team-based skills, personalized student guidance, classroom discussion, and creative freedom of faculty. In one flipped instruction study, Enfield (2013) found that this model "was effective in helping students learn the content, and increased self-efficacy in their ability to learn independently" (p. 14). However, there is a lack of studies conducted to determine how flipped learning is perceived by the students. In this vein, the purpose of this study is to investigate the perceptions of prospective English language teachers at a state university in Turkey on flipped classrooms. This study is also sought to explore to introduce the implementation of a flipped classroom into an English language class.

METHOD

Research Design

This study included a qualitative component (open-ended question) to provide the perceptions of prospective English language teachers towards the use of flipped classroom. Content analysis was applied in the current study, "a research technique for making replicable and valid inferences from data to their context" (Krippendorf, 1980, p. 21) and "uses a set of procedures to make valid inferences from text" (Weber, 1990, p. 9).The following research question was asked: What are the benefits of using video lecture in Advanced Reading and Writing II? The question was intentionally stated as is, since no information was given to the students about the flipped learning model.

Sample

This study was carried out in 2012-2013 academic year in an English language teaching Department of a prominent state university in İstanbul, Turkey. A total of 47 pre-service teachers enrolled in the study and responded to open-ended questions. Within the participants 63.8 (n=30) were female and 36.1% (n=17) were male students. At the time of the study, participants were in their first year in the department. Participants were asked to answer the open-ended research question on a voluntary basis and they were allowed to write their answers to the open-ended question within 5 days. Following the 5 days, no answers were recorded. Among the 47 participants, 35 (75.4%) were responded to the open ended question in the study. Flipped classroom model was implemented in their Advanced Reading and Writing I-II, which is a required course for the first graders in the department.

Data Collection and Analysis

Qualitative data were collected through an open-ended question. Responses were subjected to content analysis with thematic categorization. The replies were coded and

grouped by two researchers to determine common themes. Next, the two researchers from the field of English language teaching compared and discussed their content analysis to determine the final versions. The validity of the common themes was achieved by the agreement of multiple classifiers upon the common themes by working independently of each other (in the current study by two researchers).

The flipped model in this study was applied during the 2012-2013 fall and spring semesters in the Advanced Reading and Writing I and II courses offered by the Foreign Languages Education Department of a state university in Turkey. The fall semester was used as the preliminary phase of the study. Some problems encountered during this first phase were eliminated in the second phase by taking related precautions:

Problem1: Some students came to class without watching the videos.
Solution1: Secret words were used in different segments of the videos, and students were asked to provide these words in class.
Problem2: Students complained about the late delivery of videos.
Solution2: Videos were posted via LMS at least four days before class hour.
Problem3: Students complained about the length of the videos.
Solution3: Videos were limited to 15 minutes.

At the end of the spring semester, in order to learn the opinions of the participants, the following research question was asked: What are the benefits of using video lecture in Advanced Reading and Writing II? Among the 47 participants, 35 replied to the research question. The question was intentionally stated as is, since no information was given to the students about the flipped learning model. Replies were collected through the use of "padlet.com", a Web 2.0 tool.

RESULTS AND DISCUSSION

Perceptions of ELT Students towards Flipped Classrooms

Participants indicated benefits such as learning at ones's own pace, advanced student preparation, overcoming the limitations of class time, and increasing participation. Examples of some excerpts are provided from student comments to illustrate each category of benefits.

Learning at One's Own Pace:

Some students explained benefits of watching videos at their own pace:

- **These videos are giving an opportunity to us to watch it again and again. (Participant 3)**
- **I can watch them over and over if I don't understand some points. (Participant 4)**
- **Even if you don't understand something, you can watch it later after the lesson. This is really a beneficial opportunity. (Participant 6)**
- **When I can't understand something, I stop the video and play again. I watch the video until I understand. (Participant 7)**
- **The other benefit of the videos is that unlike the class times, we may replay the video whenever we need and we may get the information that we missed before by watching the video again and again. (Participant 11)**
- **Also the videos are really important because we can stop it whenever we want and we can easily understand the subjects by doing that again and again. (Participant 22)**

Based on comments from participants, a flipped classroom can contribute to personalization with video lectures, which present opportunities to watch or re-watch lessons as needed. Moreover, with a variety of materials in addition to lecture videos, the flip can contribute even further to the individual needs of students (Strayer, 2007). Thyagharajan and Nayak (2007) observed, "Personalization is a key premise for an improved learning experience" (p. 829). Other researchers have claimed that using computer technologies is superior to traditional teaching in that "a computer can

supervise students individually; in principle at least, it is feasible to tailor education to the particular needs of a student" (Mazur, 1991, p. 38). Despite the same content and learning objective, personalized learning allows students to "progress through the material at different speeds according to their learning needs. Some students take longer to finish a topic, might skip topics that cover information they already know, or might repeat topics if they need more help" (Parsons & Beauchamp, 2012, p. 220).

Advance Student Preparation:

As far as being prepared for the lesson in advance, participants had the following comments:

- **Pre-recorded videos have a positive effect on me because thanks to them I come to the lesson being prepared. (Participant 8)**
- **With these videos, we can get information about next unit's topic, so we can know what we will talk about next lesson. (Participant 13)**
- **Their positive effects are undeniable for sure, as they make us think more, analyze the subject and we become pre-prepared. (Participant 22)**
- **Watching the videos or reading the articles about the lesson beforehand gives us foreknowledge about what we are going to study in the lesson. (Participant 24)**
- **In my viewpoint, using videos sent to us before the lesson is really useful because we have an idea about future lessons in advance. (Participant 33)**

Advance student preparation improves understanding of the content of lessons. With flipped classrooms, students come to class with greater knowledge, and their participation increases (Bergmann & Sams, 2012). Based on the excerpts for this category, videos were clearly beneficial for advance preparation.

Overcoming the Limitations of Class Time:

- **Students also had comments about overcoming the limitations of class time:**
- **Our learning shouldn't be limited to class time only. (Participant 5)**
- **Considering the fact that the class time is not enough for learning, flip learning is quite useful and necessary for us. (Participant 24)**
- **Watching some videos or reading something about the next lesson's subject is really helpful for catching information better because class time isn't enough for learning a language. (Participant 27)**
- **I strongly believe that learning a language requires experience in the language. What I was trying to say was, the class time is not enough to learn English. (Participant 28)**
- **It is useful that lessons are not restricted to the classroom. (Participant 30)**

Traditional lessons are limited to classroom hours. With the use of technologies, "students as well as instructors could become free from the time and space constraints of having to be in the same physical room, at the same time" (Althaus, 1997; Bernard, 1997, as cited in Fung & Ledesma, 2005, p. 48). As seen from the responses, a flipped classroom decreases physical limitations of the classroom by presenting outside learning opportunities.

Increasing Participation:

- **Participants had a few comments about increasing participation in the lesson:**
- **We also have the chance to participate in the lesson more than before if we watch the videos regularly. (Participant 12)**
- **When we know the topic and learn something about it, we participate in class much more. (Participant 18)**
- **It is also good to be aware of the subject beforehand. Therefore we get something to say in the class, even if it is just a small sentence. (Participant 22)**

- **In my viewpoint, using videos sent to us before the lesson is really useful because we have an idea about future lessons in advance and we can be active in the lessons. (Participant 33)**

The replies in this category establish how a flipped classroom can contribute to student participation during lessons in class. The flipped classroom encouraged students to be more active. Because of the advance preparation of the students to the videos before coming to the lesson, such preparation helped to increase the student participation in the classroom activities. The participation of the in the lesson increases since when lectures occur outside classroom hours, time with the instructor is dedicated to discussions, increasing comprehension (Tucker, 2012).

Implementation of a Flipped Classroom

Many models have been presented in the literature for the flipped classroom; that is, no single accepted model has been established. It can even be stated that there are as many approaches to the flipped classroom as there are researchers implementing it. The term flipped classroom is commonly used for any class in which pre-recorded videos are used in lessons. However, the magic in a flipped classroom is in the overall approach: integration of videos with new applications of class time. Further, pre-recorded videos should be combined with in-class activities alongside other integrated elements of technology. Otherwise, class time may prove ineffective and time consuming. The flipped classroom has an underlying idea that instruction should take place both in and outside the classroom through a variety of mediums.

A flipped classroom can be divided into two learning environments: outside and inside the classroom. Both sides must be perfectly integrated for this model to be effective. The first step for teachers is planning in detail what will happen in each environment. The second step is selecting a variety of appropriate activities that address the needs of all learners. Such an approach may provide rich learning opportunities for students with different learning styles. The third step is to determine how to integrate tasks and activities that occur in both environments. This step is especially important since a flipped classroom is intended to be a blended approach. Therefore, no part can be planned or implemented separately. The fourth step is to use a learning management system (LMS), presenting all activities in an organized way. An LMS is an integral part of flipped classroom, because it connects the outside and inside parts like a bridge.

In a flipped classroom, videos are recorded before a lesson and sent to students over the Internet. Rather than simply captured lectures, these videos must include animations, quizzes, or other elements that engage students. Monotonous videos will make them passive learners. Videos should be supported by Web 2.0 tools such as Padlet, Voxopop, and Jogtheweb. A learning management system (LMS) helps keep all the tools needed for a flipped classroom under control in a single place. Many LMSs have free, easy-to-use sites on the Internet (e.g., www.engrade.com, www.schoology.com, or www.edmodo.com), perfect for establishing an organized flipped classroom. With an LMS, teachers can send videos, activities, and assignments; contact students; check and grade assignments; and link to other resources. This learning environment is open and accessible 24 hours a day, 7 days a week. Another underlying idea of the flipped classroom is to provide a non-stop connection between teachers, students, and materials, which can only be achieved through an LMS.

CONCLUSION

Flipped learning or a flipped classroom is a kind of blended learning. The concept is not new, but the term is recent. Generally, the flipped model has been presented as using lecture videos outside the classroom. It allows teachers to spend class time on more engaging activities that enhance the content of the lecture and present learning experiences outside the physical constraints of the classroom by using appropriate technologies. The flipped classroom can provide several benefits:

- **free classroom time,**
- **opportunities for personalized learning,**
- **opportunities for more student-centered learning,**
- **a continuous connection between student and teacher,**
- **increased motivation of students,**
- **a learning environment full of familiar tools, and**
- **variety in lecture content attuned to different learning styles.**

In the literature, some drawbacks of flipped learning have been identified. However, as a researcher and a language teacher, I believe that, other than technical issues, the success of a flipped learning model depends on the teacher applying it. In order to derive the above-mentioned benefits, teachers should know the relevant theories first. Teachers wanting to flip their classrooms should bear in mind that flip learning is not simply adding lecture videos outside the classroom. Choosing appropriate, engaging activities for classroom time and having a constant connection with students through the use of an LMS and other Web 2.0 tools are also important.

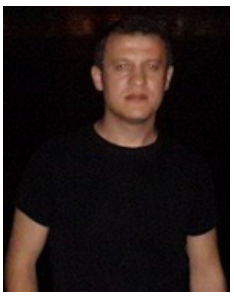
The role of the teacher in this model is to guide the students. Therefore, the teacher in the flip model could be considered the most important element for securing desired outcomes. In fact, "... the key to successful use of technology in language teaching lies not in hardware or software but in "humanware" – our human capacity as teachers to plan, design and implement effective educational activity" (Warschauer & Meskill, 2000, p. 316) and "technology can only become effective and useful in language teaching and learning environments in hands of competent teachers" (Basal & Aytan, 2014, Conclusion section, para.1). Therefore, it can be clearly stated that whatever models or technologies are used in education, the desired outcomes can only be achieved by the human factor, the teachers. This is also the case in flip model.

A flipped classroom may bring many benefits for ELT teachers, including videos of real life situations where students can listen to native speakers and teachers can take advantage of ready-to-use rich content. Once ELT teachers are comfortable with the flipped learning model, they can develop new and customized ways to improve its effectiveness in their teaching environments. The flip model cannot be changed in its essence, however, the teacher implementing the model can modify it based on the needs and interests of the students, content of the lesson and the changeable dynamics of the classroom.

For ELT teachers wishing to flip their classrooms, here are some practical and valuable suggestions:

- **Take into account the learning styles of your students.**
- **Learn to use basic technological tools.**
- **Plan in detail what to do both inside and outside the classroom.**
- **Choose appropriate activities based on the learning styles of students.**
- **Use a great variety of activities to engage all students.**
- **Incorporate appropriate Web 2.0 tools.**
- **Use an LMS (learning management system) to integrate activities inside and outside the classroom.**

BIODATA and CONTACT ADDRESSES of the AUTHOR



Ahmet BASAL, Ph.D., is an assistant professor in the Department of Foreign Languages Education, Faculty of Education at Yildiz Technical University in Turkey. He holds an MA from the English Language Teaching Department of Cukurova University and a Ph.D. from Curriculum and Instruction Department of Firat University. His research interests include materials development in ELT, web-based language education, language teacher education and computer assisted language teaching-learning.

Assist. Prof. Dr. Ahmet BASAL
Yildiz Technical University, Faculty of Education
Department of Foreign Languages Education
Davutpasa Campus, 34220 Esenler, Istanbul, TURKEY
Phone : 02123834877
E-mail: ahmetbasal@gmail.com

REFERENCES

Basal, A.,& Aytan T. (2014). Using Web 2.0 Tools in English Language Teaching. *International Conference ICT for Language Learning*. 7th Edition Pixel. Italy. Retrieved from: http://conference.pixel-online.net/ICT4LL/files/ict4ll/ed0007/FP/1314-ICL807-FP ICT4LL7.pdf

Bergmann, J., & Sams, A. (2012). *Flip your classroom: Reach every student in every class every day*. Eugene, OR: ISTE.

Berryman, S. E. (1993). *Designing effective learning environments: Cognitive apprenticeship models*. Retrieved from http://www.tc.columbia.edu/iee/ BRIEFS/Brief01.htm

Brooks, J. G. (2002). *Schooling for life: Reclaiming the essence of learning*. Alexandria, VA: Association for Supervision and Curriculum Development (ASCD).

Chun, D. M., & Plass, J. L. (2000). Networked multimedia environments for second language acquisition. In M. Warshauer & R. Kern (Eds.), *Network-based language teaching: Concepts and practice* (pp. 151-170). New York: Cambridge University Press.

Day, J., & Foley, J. (2006). *Evaluating web lectures: A case study from HCI.* Paper presented at the Conference on Human Factors in Computing Systems, Montreal, Quebec, Canada. Retrieved from http://dl.acm.org/citation.cfm?doid=1125451.1125493

DeGrazia, J. L., Falconer, J. L., Nicodemus, G., & Medlin, W. (2012). *Incorporating screencasts into chemical engineering courses.* Paper presented at the 119th Annual Conference of the American Society for Engineering Education, San Antonio, TX. Retrieved from http://www.engr.uky.edu/~aseeched/papers/2012/5025.pdf

Enfield, J. (2013). Looking at the impact of the flipped classroom model of instruction on undergraduate multimedia students at CSUN. *Techtrends, 57*(6), 14-27.

Flumerfelt, S., & Green, G. (2013). Using lean in the flipped classroom for at risk students. *Educational Technology & Society*, *16*(1), 356-366.

Fung, A. C., & Ledesma, J. (2005). Extending the classroom. In A. Tatnall, J. Osorio, & A. Visscher (Eds.), ***Information technology and educational management in the knowledge society*** **(pp. 47–56). New York, NY: Springer.**

Hamdan, N., McKnight, P., McKnight, K., Arfstrom, K. M., & Flipped Learning Network,. (2013). ***The flipped learning model: A white paper based on the literature review titled A review of flipped learning*****.**

Hartsell, T., & Yuen, S. (2006). Video streaming in online learning. ***AACE Journal, 14*****(1), 31-43.**

Jonassen, D. & Reeves, T. (1996). Learning with technology: Using computers as cognitive tools. In D. H.Jonassen (Ed.), ***Handbook of research on educational communications and technology*** **(pp. 693-719). New York:Macmillan.**

Koehler, M. J., Mishra, P., Hershey, K., & Peruski, L. (2004). With a Little Help From Your Students: A New Model for Faculty Development and Online Course Design. ***Journal of Technology and Teacher Education, 12*****(1), 25-55.**

Krippendorf, K. (1980). ***Content analysis: An introduction to its methodologies*****. London, UK: Sage.**

Lage, M. J., Platt, G. J., & Treglia, M. (2000). Inverting the classroom: A gateway to creating an inclusive learning environment. ***The Journal of Economic Education, 31*****(1), 30–43. Retrieved from http://www.jstor.org/stable/1183338**

Mazur, E. (1991). Can we teach computers to teach? ***Computers in Physics, 5*****(1), 31–38. Retrieved from http://mazur.harvard.edu/sentFiles/Mazur_256459.pdf**

Means, B. (1994). Using technology to advance educational goals. In B. Means (Ed.), ***Technology and education reform: The reality behind the promise*** **(pp. 1-22). San Fransisco: Jossey-Bass Publishers.**

Millard, E. (2012). 5 reasons flipped classrooms work: Turning lectures into homework to boost student engagement and increase technology-fueled creativity. ***University Business, December*****, 26–29. Retrieved from http://www.universitybusiness.com/article/5-reasons-flipped-classrooms-work**

Millis, B. J. (1995). Introducing faculty to cooperative learning. In W.A. Wright (Ed.), ***Teaching improvement practices: Successful strategies for higher education*** **(pp. 127–154). Boston, MA: Anker Publishing Company.**

Parsons, J., & Beauchamp, L. (2012). ***From knowledge to action: Shaping the future of curriculum development in Alberta*****. Edmonton, AB, Canada: Alberta Education.**

Rajesh, M. (2015). Revolution in communication technologies: impact on distance education. ***Turkish Online Journal of Distance Education-TOJDE, 16*****(1), 62-88.**

Roehl, A., Reddy, S. L., & Shannon, G. J. (2013). The flipped classroom: An opportunity to engage millennial students through active learning strategies. ***Journal of Family and Consumer Sciences, 105*****(2), 44-49.**

Seljan, S., Banek M., Špiranec, S., & Lasić-Lazić, J. (2006). CALL (computer-assisted language learning) and distance learning. In P. Biljanović & K. Skala (Eds.), ***MIPRO 2006: 29th International Convention (*****(pp. 145–150).** ***Opatija Croatia: Proceedings*****.**

Shephard, K. (2003). Questioning, promoting and evaluating the use of streaming video to support student learning. ***British Journal of Educational Technology, 34*****(3), 295-308.**

Strayer, J. (2007). *The effects of the classroom flip on the learning environment: A comparison of learning activity in a traditional classroom and a flip classroom that used an intelligent tutoring system.* (Doctoral dissertation). Retrieved from https://etd.ohiolink.edu/

Thyagharajan, K. K., & Nayak, R. (2007). Adaptive content creation for personalized e-learning using web services*. Journal of Applied Sciences Research, 3*(9), 828-836.

Tucker, B. (2012). The flipped classroom. *EducationNext*, *12*(1), 82–83. Retrieved from http://educationnext.org/the-flipped-classroom/

Warschauer, M., & Meskill, C. (2000). Technology and second language learning. In J. Rosenthal (Ed.), *Handbook of undergraduate second language education* (pp. 303-318). Mahwah, New Jersey: Lawrence Erlbaum.

Weber, R. P. (1990). *Basic content analysis* (2nd ed.). Newbury Park, CA: Sage.

Wells, P., de Lange, P. A., & Fieger, P. (2008). Integrating a virtual learning environment into a second-year accounting course: determinants of overall student perception. *Accounting & Finance*, *48*(3), 503-518.

Whitley-Grassi, N., & Baizer, J. S. (2010). Video lecture capture in physiology courses: Student attendance, video viewing and correlations to course performance. *International Journal of Instructional Technology and Distance Learning, 7*(10), 31-38.