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Abstract

Purpose – The purpose of this paper is to serve as a summary of resources on flipped learning for workplace learning professionals. A recent buzzword in the training world is "flipped". Flipped learning and the flipped classroom are hot topics that have emerged in K-12 education, made their way to the university and are now being noticed by the corporate world. Unfortunately many learning professionals have misconceptions about what it really means to flip a learning experience, and little literature exists to support implementation of flipped learning in the workplace.

Design/methodology/approach – The methodology adopted in this article is a literature review.

Findings – The paper presents several tools for moving lecture outside of the classroom and for making class time more student-centered through active learning techniques.

Practical implications – This paper discusses the benefits and challenges of a flipped learning approach, both in general and specifically in the workplace. Additionally, the paper explores several case studies of flipped learning use in the workplace.

Originality/value – The paper is a literature review that explores the definition of flipped learning as a learner-centered approach to education and looks at two models of flipped learning with applicability to workplace settings.

Keywords Higher education, Education, Workplace learning, Collaborative relationships, Training techniques

Paper type Literature review

A recent buzzword in the training world is "flipped". Flipped learning and the flipped classroom are hot topics that have emerged in K-12 education, made their way to the university and are now being noticed by the corporate world. Unfortunately, many learning professionals have misconceptions about what it really means to flip a learning experience, and little literature exists to support implementation of flipped learning in the workplace. Flipped learning is not just about watching lecture via videos outside of the classroom and doing homework in class. Flipped learning is a learner-centered approach where the educator actively considers the best way to use class time, so that learning and retention are maximized.

This paper explores the definition of flipped learning as a learner-centered approach to education and looks at two flipped learning models with applicability to workplace settings. It then discusses the benefits and challenges of a flipped learning approach, presents tools that can be used to create a flipped classroom and explores several case studies of flipped learning use in the workplace.

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Defining flipped learning

According to the Flipped Learning Network (FLN) (2014, p. 1).

> Flipped Learning is a pedagogical approach in which direct instruction moves from the group learning space to the individual learning space, and the resulting group space is transformed into a dynamic, interactive learning environment where the educator guides students as they apply concepts and engage creatively in the subject matter.

This definition touches on several key points. Direct instruction occurs in the individual learning space, but there is no prescription for how that instruction occurs. The group learning space is dynamic and interactive; this is not a place for a traditional discussion or a place where students are getting support on completing a worksheet. Rather the classroom is a space where learners are exploring, applying, creating and problem-solving. The word "guide" is used to describe the educator. They are there to observe, support students in the learning process and provide feedback when necessary. They are not instructing in the group space or even providing all the answers to questions.

Flipped versus blended learning

A common misconception is that flipped learning is just another name for blended learning. While flipped learning may manifest as a type of blended learning, there are significant differences. Blended learning is focused on technology, and engaging the learner; it is often seen as the combination of asynchronous e-learning events with traditional face-to-face instruction. Flipped learning, on the other hand, focuses on how to address different types of learning; in particular, it looks at how an instructor can best support a learner in higher-level learning tasks (Lankford, 2013).

As shown in Table I, use of a flipped learning model allows the instructor to spend more time to support higher-level learning tasks like application, analysis and creation. These are the tasks that should be occurring in a flipped learning classroom. Lower-level tasks such as remembering and understanding are completed independently in a flipped classroom. These may be done with some peer-to-peer collaboration, but for the most part, they are self-paced and not instructor-led. By freeing up the class time normally used on lecture, instructors are able to focus on high levels of learning, whereas in a traditional classroom, they often are unable to make it past understanding or application (Hamdan *et al.*, 2013; Lankford, 2013; Sams and Bergmann, 2013).

Level of learning	Traditional classroom tools	Flipped classroom tools
Remember	Face-to-face lecture	Pre-recorded lecture, reading, podcasts, Web sites
Understand	Q & A	Reflection, peer-to-peer discussion and collaboration
Apply	Homework	Instructor supported classroom activities
Analyze, evaluate, create	Homework or nothing	Student projects and presentations

Table I. Supporting bloom's taxonomy in traditional and flipped classrooms

The four pillars of F-L-I-P

The FLN states that there are four key features of flipped learning (FLN, 2014; Hamdan *et al.*, 2013):

(1) *Flexible environment*: A flipped classroom must be flexible in several ways. As classroom time is spent on activities, the physical space must be flexible; educators should be able to arrange desks, chairs, tables and materials according to the type of activity. The timeline will also need to be more flexible, as students will be learning at their own pace and class time will be less structured than in a traditional format. Assessments are also on a flexible timeline and should be meaningful (FLN, 2014, p. 2; Hamdan *et al.*, 2013, p. 5).

(2) *Learning culture*: A flipped learning environment is student-centered. A shift in learning culture and expectations may be necessary for both the instructor and students. The instructor must deliberately construct meaningful knowledge construction activities. Students have greater responsibility in the learning process and are not reliant upon the instructor for new content and learning evaluation (FLN, 2014, p. 2; Hamdan *et al.*, 2013, p. 5).

(3) *Intentional content*: An instructor in a flipped classroom should consider how to best present new information and concepts. Some material needs to be directly taught; other material can be introduced and learned through student exploration. A flipped instructor is intentional about using student-centered techniques to maximize classroom time (FLN, 2014, p. 2; Hamdan *et al.*, 2013, p. 6).

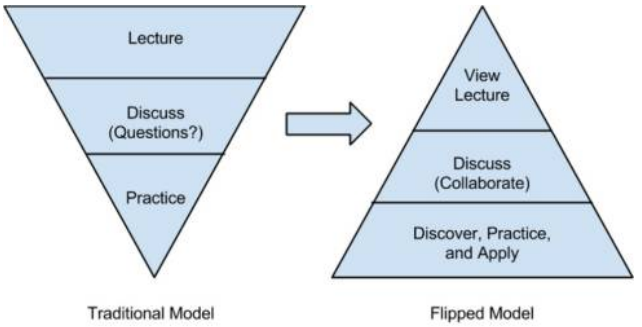
(4) *Professional educator*: A professional educator may be less visible in a flipped classroom than a traditional one, but they are more critical in this environment. A flipped educator is not just lecturing on an area of expertise, but supporting the students as they dive even deeper into a subject. They are providing continuous feedback and must be knowledgeable enough to support the flexible environment and uncertainties that come along with flipped learning (FLN, 2014, p. 2; Hamdan *et al.*, 2013, p. 6).

Flipped learning models

Turning tradition upside down

Lee and Recker (2013) present a simple model of a flipped classroom. They say the traditional model is upside down, leading to low learner retention and application rates, even though instructors are trying hard to engage students in the classroom. Instead of focusing the bulk of instructor resources on the presentation of material and leaving students with little support for practice, the flipped model simply refocuses course time and resources, as shown in Figure 1. Students watch a video lecture on their own time, and then collaborate with each other both outside and within the classroom where they have support as they discover, practice and apply.

This model is a good starting point for those new to flipped learning. Lee and Recker (2013) oversimplify flipped learning by using traditional lecture as the basis for all new learning. However, the model encourages application and discovery, rather than more routine assignments, as the best use of classroom time.



Source: Adapted with permission from "How to Apply the Flipped Classroom Model for Business," by Lee and Recker, 2013

Figure 1.
A simple model for flipping the classroom

Gerstein's Flipped Classroom Model

Jackie Gerstein presented the Flipped Classroom Model in 2011 to give some staying power to the trend of flipping. It is really a "cycle of learning model" (Gerstein, 2011, para. 10) that is based on the Experiential Learning Cycle and Huitt (2009) Cycle of Instruction. It also corresponds well to Bloom's Taxonomy. There are four components to this model, shown in Figure 2.

Gerstein (2011) suggests that the process starts with experiential engagement that gets learners interested in the subject. However, this might be more appropriate for the classroom where students meet on a regular basis as opposed to a shorter workplace learning event. Gilbert (2013) begins the process with concept exploration.

Concept exploration. Concept exploration is an educator-led part of the process that introduces learners to what they are learning. This is traditionally the lecture or presentation part of a course. In a flipped learning environment, learners are allowed more control over this part of the learning cycle than they might have traditionally. Educators assign a short video or audio lecture, Web sites or other materials to explore. Learners then get to take control of their learning by reading, watching, exploring and listening to these elements at their own pace and level. Educators may give students even more control by allowing them to find and share resources (Gerstein, 2011; Gilbert, 2013). Some learners may choose to dive deeper than they would be able to in a traditional classroom setting.

Note that this phase does not need to be technology heavy; videos, podcasts and other media-rich technologies are not essential for flipped learning. Students can also use text books, newspapers, journal and magazine articles, a user manual or any other low-tech material to explore a topic. Looking back at Bloom's Taxonomy, these activities support remembering.

Meaning-making. After exploring a new concept, but before coming to the classroom, students make meaning out of the information they have watched, listened to or read. Instructors might use a number of methods for this phase. Those who most want to encourage peer-to-peer learning might have a social networking group or discussion board in which students participate. Those who are most concerned with ensuring that the students come to class prepared might have a quiz or other comprehension check. In

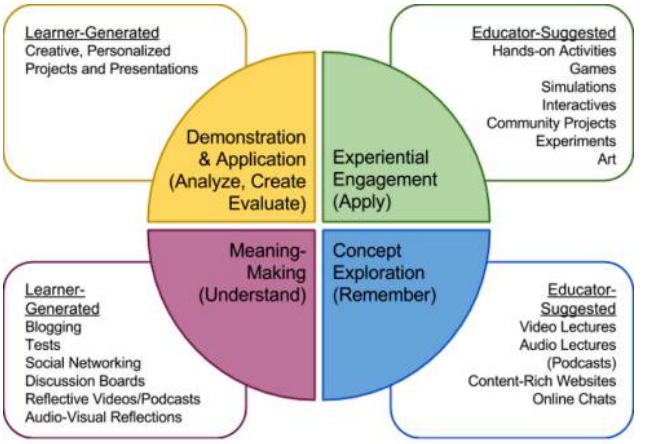


Figure 2.
The Flipped Classroom Model

Source: Adapted with permission from Gerstein (2011) and Gilbert (2013)

addition, instructors may ask students to reflect on what they learned through a blog, short video, podcast or other presentation (Gerstein, 2011; Gilbert, 2013). Regardless of the type of activities used in this stage, students are working toward understanding level objectives.

Experiential engagement. Whether this stage occurs before concept exploration or after meaning-making, it will be the first time the learner and instructor are interacting together on this content. When used before concept exploration, educators might have students conduct an experiment or play a game that piques their interest in a topic. When used after meaning-making, students are able to apply what they have learned. They might complete a simulation, practice a skill or work on an art project. Application is occurring at this stage in a way that allows the instructor to gauge student understanding, support correct application, assist students that are having difficulties and provide additional challenges to students that find the initial application easy (Gerstein, 2011; Gilbert, 2013).

Demonstration and application. In the last stage of the Flipped Classroom Model, students analyze, evaluate and create. Instructors also have a chance to evaluate for mastery and offer additional support to students that need more practice. Creation of a personalized project or presentation may occur within or outside of the classroom, but should always be shared with the instructor and peers. This goes beyond reflection and personal understanding in that learners have to create something that is individualized and extends beyond the lesson with applicability to the learners' everyday lives (Gerstein, 2011, para. 23).

Using flipped learning in the workplace

Benefits of flipping the workplace

Flipped learning has many benefits that are immediately obvious. Inherent in the definition of flipped learning, instructors are able to spend classroom time on application and higher-level learning rather than on lecture and other lower-level thinking tasks. This has the added benefits of giving "instructors a better opportunity to detect errors in thinking"

(Educause, 2012, p. 2) and supporting "creative problem solving and effective communication" (Partridge, 2013, para. 2) skills. Passive learning cannot exist in a flipped classroom and, therefore, all students are actively involved in the learning process. In addition, learners are less likely to become frustrated because they can consume lecture type materials at their own pace, and instructors can revisit concepts, support learners as needed and offer instant feedback in the classroom (Lee and Recker, 2013).

Another major benefit of flipped learning is that it supports diverse learners more than most classroom settings. Instructors are able to provide multiple resources for pre-class time instruction such as videos and print materials, allowing students to gather information in a way that works best for them. Learners that are not native English (or other language) speakers, with little background in the subject area, or with learning disabilities are able to review the materials repeatedly and reflect on the information well before they are asked to use it in class. All students benefit from a reduction in cognitive load by learning basic material in advance, instead of learning that knowledge in the same class where they are expected to apply it (Hamdan *et al.*, 2013). Once in the classroom, an educator is able to support diverse students by utilizing active learning techniques that allow them to move at their own pace. The instructor can offer individualized support while floating between groups of learners (Sams and Bergmann, 2013). In addition, students who master material more quickly can be used to assist those that need extra support.

In a corporate setting, additional benefits are possible such as reduced travel costs, reduced opportunity costs and increased practice time. In addition, both employees and managers may see an additional return on training time for employees if they are able to solve real problems in the training environment (Lee and Recker, 2013).

Challenges to flipping the workplace

Instructor time and skills. Some oft-repeated concerns about flipped learning stem from a misunderstanding of what flipped learning is. One vocal critic, Gary Stager:

> […] argued that the Flipped Learning model places too much emphasis on lectures and homework, neither of which is productive, and merely flips the position of the two […]. He predicts that mediocre teachers will be hired to create videos of lectures that are not customized for the specific needs of a class (Hamdan *et al.*, 2013, p. 16).

On the contrary, flipped learning done correctly places less emphasis on lecture and requires more highly skilled instructors that can be flexible in the classroom.

Flipping a classroom often means that instructors need to learn new skills. They will also have to spend more time, especially in the initial stages of flipping the classroom, to convert lectures to a format that can be used by students outside of class and to prepare in class activities (Educause, 2012). For this reason, Sams and Bergmann (2013) suggest starting out slowly when entering the flipped learning world.

It is also important to consider that a flipped classroom does not need to be flipped 100 per cent of the time. Not all material works well in a flipped learning classroom and instructors must know when to use this model. Lee and Recker (2013) maintain that a flipped model works best when you need skill mastery or behavior change. "Courses that are more Socratic or inquiry-based, or those that don't have reams of factual content for students to learn, aren't particularly suited to flipping" (Sams and Bergmann, 2013). Even when material is well suited for using a flipped model, the materials can be difficult and time-consuming to produce when done well.

As it places a higher responsibility onto the learner than a traditional classroom model, the use of poor-quality instructional design in a flipped setting can severely disrupt future attempts at flipping the classroom.

Unprepared students. With increased student responsibility comes the concern that students will come to the classroom unprepared. For mandatory or compliance-related learning events, this concern is amplified. However, several possible solutions exist.

Prerequisites. Course prerequisites that ensure completion of pre-work can exist in several forms. Learners may be required to participate in an online discussion or complete a quiz during meaning-making (Gilbert, 2013). Alternatively, if the pre-work is in the form of a video or online tutorial, completion may be required even before the learner can register for the in-person portion of the course. An learning management system (LMS) can assist in enforcing these prerequisites.

Culture of responsibility. If possible, a change in culture can be a more effective way to ensure that pre-work is completed by students. Lee and Recker (2013) discuss the need for management, individual managers and trainers to reinforce student responsibility and accountability.

Access to technology. While access to technology can be a large concern for K-12 education, it is less of a concern in the workplace. Ostensibly pre-work will occur in the office where learners will have access to the same technology as the instructor. However, technology could become an issue in less developed countries or rural areas with less access to the Internet and computers. If this is an issue, instructors should prepare accordingly. Videos and online resources could be loaded on to a DVD or flash drive, or print materials could be used in lieu of more technological options. In addition, smart phones are often available when other technologies are not (Hamdam *et al.*, 2013).

Trainers should bear in mind that highly produced videos and online courses are not required for a flipped course. While significant preparation is necessary, the initial information given to students does not need to be flashy if the technology and time are not available for production.

Tools and strategies for flipping the workplace

Tools for moving lecture out of the classroom. Many tools created specifically for flipped classroom use, such as sites with instructional videos or cloud based software that integrates several types of sharing and collaboration activities, are unfortunately geared toward a K-12 audience. However, there are a large number of tools that can be used to flip the classroom in the workplace. Table II shows a list of some commonly used tools that can be help instructors flip the corporate classroom [Dunn, 2013; Lee and Recker, 2013; Partridge, 2013; Regional Educational Media Center Association of Michigan (REMC), 2013, REMC, 2014].

Student-centered learning techniques. To achieve higher-order learning, flipped learning educators use student-centered techniques such as active learning, collaborative learning and problem-based learning. Hamdam *et al.* (2013) and Bishop and Verleger (2013) discuss the research supporting the efficacy and benefits of student-centered learning theories and methods.

Active learning. Active learning is a broad category that includes several other techniques and methods. Michael (2006) defines active learning as "the process of having students engage in some activity that forces them to reflect upon ideas and how

Action	Tool(s)
Create a video lecture	Screenr, Screencast.com (screencasting) Powtoons (animated video creation) Explain Everything, Screenchomp, ShowMe, Educreations (tablet apps)
Create an audio lecture	Audacity
Create an interactive video with knowledge checks	Articulate Studio or Storyline Adobe Captivate or Presenter Camtasia Lectora
Upload a video, audio lecture, podcast or other resources (books, articles, job aids)	YouTube, Vimeo (non-interactive video) iTunes (audio) Box, Dropbox, Google Drive LMS such as Moodle
Collect, curate and share a list of resources	Diigo Padlet Evernote
Create lessons with pre-made videos	TED-Ed
Quiz or poll learners	Poll Everywhere, Google Forms, Survey Monkey Socrative, InfuseLearning, GoSoapBox (tablet apps) LMS such as Moodle
Encourage collaboration, communication or discussion; provide ongoing support	PBWorks, Wikispaces (wikis) Twitter Facebook Google+ Celly Podio
Collect student reflections	FlipGrid Padlet PBWorks, Wikispaces (wikis) WordPress, Blogger (blogs)

Sources: Dunn (2013); Lee and Recker (2013); Partridge (2013); Regional Educational Media Center Association of Michigan (REMC) (2013); REMC (2014)

Table II.
Tools for flipping the workplace

they are using those ideas" (as cited in Hamdan *et al.*, 2013, pp. 6-7). Active learning includes problem-based learning where students focus on using resources to solve a particular problem. Most of the strategies put forth in the Flipped Classroom Model, such as experiments, preparing and delivering presentations, games and simulations, utilize active learning. Active learning also includes peer-assisted learning techniques. Peer-assisted, collaborative and cooperative learning. There are several opportunities for learners to work with their peers in a flipped environment. They may work with peers during concept exploration or meaning-making by chatting online, responding to posts on a discussion board or through the social media use. They may work with peers in the classroom for engagement and application by collaboratively solving problems or cooperating to complete projects. Peer tutoring may also be used, so that students at different levels of understanding are actively engaged (Bishop and Verleger, 2013; Hamdan *et al.*, 2013).

Individual accountability is a key element of cooperative learning; group projects which can be completed by one or two of the students in a group are not an example of cooperative learning. Rather, each student has a role that they must fulfill for the group to be successful. Group self-evaluation is also part of cooperative learning, making it more structured than other types of peer-to-peer learning techniques (Bishop and Verleger, 2013).

Examples of corporate use

New hire onboarding. Many new hire onboarding classes are similar to the example presented by Lee and Recker (2013); a trainer walks new employees through a manual of processes and procedures, with little application and practice. One US technology company flipped this model. They used to hold a 6-hour classroom session. Now, the company first gives students access to the manual and a training application with exercises to complete. Students can complete this part of the training in as little as 3 hours. A virtual 1-hour follow-up session is then conducted to emphasize key points, assess student understanding and allow students to ask questions. In this example, training time was decreased and retention was increased.

Product training. Vayuvegula (2012, 2014) presents an example where employees need to learn about a new software product and what it can do. Traditionally, an instructor would conduct a face-to-face training explaining the basics of how to use the software and what it does. In the flipped model, employees completed an e-learning course to learn about theory behind the product. Learners also had access to the product before the class and could experiment and come to the second part of the course with questions. A synchronous session was conducted virtually. Users were able to ask questions and share their experiences with the instructor, rather than listening to lecture. This added value as the learners found that the information was immediately applicable and tailored to their needs.

A flipped model could also be used in the hair care industry. Sams and Bergmann (2014) share an example of how a hair care company is reconsidering how it trains stylists to use its products. The company usually conducts one-day workshops for a new product where a trainer presents information in the morning and students practice on models in the afternoon. The company is looking toward a flipped learning model using instructional videos viewed prior to the event to give stylists more time to perfect their application of products.

Skills training. Lee and Recker (2013) present a model for flipping sales training rather than using a traditional model with lots of lecture on models, skills and methods, each followed by a role play. In the flipped model, learners watch recorded lectures then answer some questions online and participate in forums. They then have a live session, either face-to-face or virtually, to answer questions, discuss and spend a larger amount of time on practice. One key feature of this model is that the collaborative tools used in the meaning making stage, such as forums, can be used after the synchronous session to support sales reps as they are applying their new skills in the field.

Flipped webinar. Hart (2011) used a flipped model to host a webinar on social media that was more social in nature than a typical webinar. Rather than a long presentation with a few minutes for questions at the end, Hart asked participants to read an article beforehand, explore the topic further if desired and leave comments on a blog site. The questions were used to create slides to support her answers where necessary. The

format of the webinar was informal. Hart answered questions that were left on the blog, encouraged discussion and integrated some collaborative activities.

Conferences. The Professional Convention Management Association is also looking at a flipped model for conferences (Sams and Bergmann, 2014). The association would like to assist presenters in creating short videos explaining what the session will cover. The association hopes that participants will be able to make better decisions about what sessions to attend, and perhaps allow session presenters to give participants materials to preview so sessions could be more interactive.

Conclusion

Flipping the classroom has a great number of benefits and should be considered when skill mastery or behavior change is desired. Flipped learning creates a student-centered classroom where students are actively learning and instructors are better able to support application and higher-level learning. In addition, students are able to learn at their own pace and instructors can more easily support a diverse group of learners. Flipping the classroom may also result in lower travel and opportunity costs and offer a greater return on investment.

Unfortunately, many flipped learning Web sites, tools and resources are geared toward the K-12 or university environments. However, several of these resources are readily applicable to a corporate setting, including models which offer guidance for how to structure a flipped learning event, a variety of software applications that can be used to facilitate moving the lecture outside of the classroom and active learning strategies that educators can use to engage students and apply knowledge during a synchronous session. A variety of case studies exist as models for how to utilize these tools to apply flipped learning in the workplace.

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